Gendered Livelihoods

in

Small Mines and Quarries in India: Living on the edge

Working Paper

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Gendered Livelihoods in Small Mines and Quarries in India: Living on the edge

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INTRODUCTION

This scoping study aims to provide a clearer picture of gender roles, issues and concerns in the artisanal and small mines[1] (ASM) sector in India. Women constitute a large segment of workers in the informal[2] mines all over the world. In India, however, the patriarchal social structure tends to obscure the contributions made by the women workers in these mines. This exploratory research addresses this gap in existing knowledge and leads to engendering the development initiatives in small mines and quarries in the country. Women workers in the informal mines all over the world form the proverbial 'poorest of the poor', in urgent need of developmental interventions that will improve their ability to choose. I hope that this report will provide the necessary backdrop, relevant information and interpretation of their livelihood needs for developing policy measures. One of the objectives of developmental interventions is to explore the prospects for establishing sustainable livelihoods for local communities in these mineral-rich tracts. Addressing the needs, roles and concerns of both women and men who participate in the mining activities is the first step towards this goal.

An informed estimate of the approximate numbers of people involved in artisanal and small mines and quarries in South Asia is around 2.5 - 3 million, depending on the definition of what exactly is ASM and who is a miner[3]. This estimate takes a rather broad view of ASM: beginning from sand mining to stone quarrying, alluvial gold digging and coal 'collection', to licensed operations meeting local needs or exporting their products elsewhere within the region or in the world. Clearly, ASM occurs in scattered ways taking many different forms all over the region. Indirectly, these practices together provide the livelihood for at least 6 million people. The largest numbers of these people are located in India, with Sri Lanka, Pakistan and Nepal, and even Bhutan and Bangladesh, having innumerable small mines and quarries. Recent liberalisation of these economies has caused a large number of people to become jobless in the conventional fields that would otherwise have employed them. The displacement of rural workers from the agricultural sector has caused an exodus of labour, seasonally or permanently, from that sector.

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[1] I have used the term ASM and 'small mines and quarries' interchangeably, although in India with its long tradition of mining the term 'artisanal' mining takes a different connotation. Artisanal mining, however, has no legal acceptance and the more popular term is 'small-scale mining' or SSM.

[2] 'Informal' here implies the large range of activities and practices in mining and quarrying: digging, cutting, panning, processing, breaking, amalgamating, carrying, transporting, and marketing of a wide range of minerals or products from the earth's surface or the interior.

[3] An older study by Carmen and Berger (1990) puts the figure in India at around 0.5 million people as employed in the small-scale mines. Since then, mining has increased in pace and the fact of informalisation of mining has become a reality.

Consequently, irrespective of the trend towards increased mechanisation of the ASM sector, the number involved in such mining is predicted to increase. Individually, the countries are yet to recognise the small mines and quarries as an area requiring special attention for developmental intervention and poverty eradication programmes, implying a continuing concentration of issues in this sector.

The proportion of women among the workers in the small mines and quarries varies from country to country, according to location, nature and value of the mineral, processing techniques used, marketing systems, local social milieu, availability of alternative occupations and other factors. In the actual mining jobs, panning, processing, transportation and related jobs on the fields, the percentage of women vary from a low of 10% to a high of 50%. The numbers have increased with the rise in the numbers of quarries, and decline in alternative occupations. Given the seasonality of these jobs, insecurity and low wages, and the global trend of 'feminisation', 'informalisation' and casualisation of women's labour, it can safely be assumed that the work participation of women in the ASM will also rise.

Figure 1 Map of South Asia Region

'Informalisation' of women's work in ASM in the South Asian context does not mean self-employed or entrepreneurial work but informal wage workers, associated with all the negative aspects of informal work. A UNIFEM report (2005: 59) on *women, work and poverty* notes that three dimensions of work and arrangements are relevant in determining the nature, costs and benefits of informal work: place of work, employment relations and production systems. In ASM in India, women are not owner-entrepreneurs, having no control over the land or the mineral resource contained therein, are employed as casual workers usually by labour contractors, in low-technology, labour-intensive processes. This gives rise to high direct and indirect costs of informal work in the ASM sector: long hours and unscheduled overtime, lack of benefits and social protection, occupational health hazards, high indebtedness and periodic/seasonal shocks to work, insecurity of work and incomes, variability and volatility of income, lack of training, and lack of legal status, organisation and voice.

It is, however, important to bear in mind the confusion over a unified definition of ASM in India, as 'artisanal' is often equated with traditional practices such as panning or gemstone mining in inclines or shafts. The term 'quarry' popularly implies shallow or surface workings whereas 'small mines' may also mean deep underground but unmechanised operations. The governments commonly use the term 'quarries' to imply licensed ASM operations. In this report, I have used the terms 'small mines and quarries' as well as 'ASM' to mean all licensed small, medium and some large mechanized enterprises, unlicensed and unregulated and small operations, scavenging operations, and finally non-legal (beyond the legal domain) practices of small scale mining. A range of minerals is mined in India, but excepting the gemstones industry and some scattered gold and diamond in India, the largest segment of the minerals are low value, building/construction materials and coal; there are one or two exceptions such as some export-oriented marble and mica in India. This fact brings us to the important in this enquiry of the question of adopting the most suitable approach which is outlined later in this paper.

Objectives of the study

This report explores how we can assist in significantly increasing the ability of women workers in the artisanal and small mines to control their futures and in the process lead to noteworthy reductions in poverty. The overall objective is to 'engender' the informal mining industry in India – sensitisation of all stakeholders to incorporating a gender lens in ASM related measures – leading hopefully to culture-specific policy interventions to formally involve women in the development processes in the ASM areas. The research indicates towards an equitable and inclusive sustainable development for the mineral-rich tracts of India, incorporating gender equality and mainstreaming of ASM as the ultimate means of achieving sustainable development. The more specific objectives of the research are to examine women's roles and participation in a range of informal mining practices in the country, in view of gender, labour and mining rules and policies.

The research is set in the framework of minerals that are being mined in different locations in India and the overall gender-labour scenario in these mines and quarries. Information on the existing laws and regulations with regard to women's work in the informal mines are presented, and personal field surveys provide the basis of my observations on the proportion of women workers in ASM, the ethnic and social groupings that they come from, the sorts of jobs they perform, how much they earn in what kinds of working conditions, health issues and safety, household and intra-household resource allocation in miner families, household and labour market linkages, linkages between education, health and nutrition, access to various kinds of services, ownership of land and other property, the strategic and gender needs of these women, and the policy implications of their participation in these mines. These questions lead us to the broad objectives of 'gender equality in development' and the increasing focus on 'the community' in mining regions. These sit comfortably with the current policy interventions of international agencies in developing nations. The specific outcomes of the project would be the generation of a body of knowledge that doesn't exist or is scattered in obscure locations, and the framing of this knowledge in a regional context.

The specific questions addressed by this study are as follows:

- What are the social and economic backgrounds of women workers in small mines and quarries?
- What is their proportion, in what sorts of jobs, at what wage levels and under what kinds of working conditions in the small mines and quarries?
- What are the existing laws and regulations, and the overall perceptions of stakeholders with regard to women's work in this sector?
- What are the strategic and practical gender needs, interests and concerns of these women workers?
- What are the policy implications of women's participation in the small mines and quarries in terms of sustainable development, poverty alleviation and achieving the targets of Millennium Development Goals?

Employment in small mines and quarries

As noted before, there are few quantitative statistics concerning how many people work in ASM be they formal, legal, informal or illegal. Consequently the considerations that follow are more in the nature of informed guesses, supported by field surveys and a critical reading of the various reports and existing data.

The DGMS indicates that about 166,000 people were employed in 2002 in non-energy mines as listed in the following Table for a selection of mine products.

Table 1 Employment in production of selected minerals, 2002-'03

Mineral	Employment (000s)
Copper	7.3
Gold	6.1
Iron	38.7
Lime	30
Manganese.	14.8
Mica	0.9
Stone	4.9
Others	63
Total	165.7

Source: Annual Report, Directorate General of Mines Safety, Dhanbad.

From the DGMS 1998 data reported in Chakraborty (2001), it appears as though just over 12% of the workers were women. These data are derived from those mines which formally report to DGMS, and are thus not comprehensive. Indeed Chakraborty points out that in one part of West Bengal (Pacami-Hatgacha) only, there are an estimated 38,000 working in the (basalt) stone quarries which is over seven times the number given in the DGMS All India list for stone quarries. Thus we can conclude that DGMS data is very selective.

Pacami-Hatgacha is not the only cluster of stone quarries in the state of West Bengal, which is primarily a flat plain consisting of Gangetic alluvium. Other quarries exist particularly in Birbhum district near the Rajmahal fringe, and a large number of people are engaged in sedimentary stones and gravel quarrying in the Himalayan foothills in the north of the state as well as gravel collection from river beds in North Bengal. If we assume that 100,000 quarry workers provide for the 80 million population of West Bengal and that demand for such a bulk product is driven by population, there would be about 1.25 million such workers in all of India. To this number needs to be added those working in other ASM, largely in illegal coal mines and gold panning.

This is an overly simplistic approach as can be appreciated from the fact that the Tamil Nadu Commissioners in 1995 noted there were 750,000 quarry workers in that state alone. As Tamil Nadu had a population of 62 million in 2001, this would lead to an estimated total of more than 12 million workers in the and quarries for the whole of India using the same criteria of estimation derived from the West Bengal data. The difference may well reflect the heterogeneous distribution of the resource being mined, including large quantities of low value products like sand from river beds and stones for construction purposes, to high value products such as gold and gem stones.

The Rajasthan-based NGO, Mines Labour Protection Campaign, estimates that there are 2 million people in the M&Q sector, most of whom fall in the bonded labour category http://www.dalits.org/CasteRaceandWCAR.html. This is fairly consistent with official data from the NSSO 60th round on employment and unemployment which estimates that 0. 6% of the 410 million (Census, 2001) workforce is in M&Q, giving an number of ~ 2.5 million[4]. Another official piece of data estimates that 64% of all unorganized labour falls within the agriculture and mining sectors (http://planningcommission.nic.in/midterm/english-pdf/chapter-08.pdf). To these numbers must be added those who work in illegal mining as they would be very reluctant to

[4] I am thankful to Professor Amitabha Kundu of Centre for Studies in Regional Development, Jawaharlal Nehru University, New Delhi, for this information.

admit to such practice, so that a total of 3 million people in the ASM sector would be not unreasonable.

WHY GENDER IN ASM

Women and men as workers in Indian ASM

Women constitute a large segment of workers in the informal mines all over the world. Although the mining industry tends to appear as a masculine one, women constitute a large segment of workers in the artisanal, small and informal mines all over the world (WMMF, 2000). The Global Report by the Mining, Minerals and Sustainable Development (MMSD) Project on Artisanal and Small Scale mining noted (Hentschel et al. 2002: 21): '*In contrast to large-scale mining, the involvement of women in small-scale mining activities is generally high*'. The number of women participating in informal mining activities has increased over time. Of the 13 million or so miners engaged in the world in ASM, Hinton *et al* (2003) estimated that approximately 30% are women. An ILO report (!999: 25) describes:

> …the impact of structural adjustment programs, low commodity prices or drought on private and public sector employment, trading, farming and inflation has led many people, especially women who relied on subsistence agriculture to seek new, alternative or additional paid employment for better quality of life, more usually just to survive.

As women enter the informal mining sector as an alternative to subsistence agriculture, families may have marginally better incomes for maintenance. A gender sensitive approach that aims to empower women and ensure their participation in all levels of mining has the potential of alleviating poverty substantially. With many of these women being the main carers of children and older members of the family, gender sensitization of the stakeholders and targeting developmental interventions at women workers would have significant impacts on improving the livelihoods of millions of people. Of the considerable number of people depending on these mines and quarries for their livelihood, there are no reliable quantitative data although it is generally recognized that informal mines can indeed be beneficial to the economy. The mines and quarries are ailed by numerous factors, including: a high degree of health, safety, and environmental risks; limited access to credit and a lack of equipment and appropriate technology; disorganization, which often means illegal activity; and sometimes conflicts with large mining companies. The World Bank (2002: 22) does not see artisanal mining as strictly a mining problem '*but rather as a poverty issue which must be addressed by a comprehensive approach.*' By focusing on women workers, this report intends to indicate to ways of empowering the 'poorest of the poor' group in ASM.

Gender is the crosscutting theme that touches upon each of these factors. It has been recognized that, if informal mining is to develop into a sustainable activity, these individual issues must be addressed using a gender lens. Chakravorty notes in his MMSD report on India (2001, p. 38),

> …employment of women is very popular in opencast mines because they are more regular and dependable and do not indulge in excessive drinking……..Women are in demand also for hand sorting and blending for improving the quality of extracted minerals which can not be gainfully carried out mechanical.

However, the lengthy report devotes only small sections to gender issues. Hinton *et al* (2003) estimated that less than 10% of miners in Asia are women. Above all, most women come from indigenous and similarly marginal ethnic communities such as low castes (Lahiri-Dutt, 2003). Women work in large numbers, in risky and manual jobs in the mines, with little or no safety or security, at low wages and often as part of family labour. A UNIFEM study noted that only 6% women have access to loans in a country like South Africa, where women's mining associations have attempted to overcome the barriers such as lack of collaterals for loans, poor education and

negative attitudes of bankers towards women miners. In India's patriarchal society, women normally do not own small or artisanal mines, nor even cut the minerals themselves, but tend to work as transporters or loaders, and as processors of minerals. This leads to the unfortunate lack of identification of women as 'miners' (Susapu and Crispin, 2001) reinforced in India as women are banned from working underground under the Mines Act 1952.

Informal mines and mining communities in India are diverse and dynamic, varying undoubtedly according to location, mineral being mined and the specific nature of the extraction process, and local culture. Consequently, women workers in these mines cannot be clubbed into one single category but tend to be heterogeneous, performing multiple roles. Since mechanization in these mines is usually low, particularly in the low-end products such as non-dimension stone for construction, the mining processes continue to be labour intensive. The patriarchal society of India and with increasing religious fundamentalism assigns a place for women at home, and neglects to see the productive roles of women in the small mines and quarries. The gender roles of women and men as workers in the small mines are changing with current economic changes, and these have often negatively impacted upon women's decision-making power within the mine, the mining community and the family. Empowering the women miners may have much more tangible developmental results than interventions such as regularization of the informal mines.

In India, women's lack of ownership of the small mines and quarries reflect their low control and rights over natural resources, especially land (noted before by Agarwal, 1994). The proportion of women among the workers in the small mines and quarries varies from country to country, according to location of a particular mine/quarry, the nature and value of the mineral, processing techniques used, marketing systems, local social milieu, availability of alternative occupations and other factors. In the actual mining jobs, panning, processing, transportation and related jobs on the fields, the percentage of women vary from a low of 10% to a high of 50%. The numbers have increased with the rise in the numbers of quarries, and the decline in alternative occupations, especially in agriculture or other traditional means such as forest-based livelihoods. The jobs are almost always on a piece rate basis and controlled by contractors rather than the mine/quarry owner himself. If the family is in bondage, women are used as cheap or even unpaid labour, thus adding a different dimension to the question of 'bondage' and 'forced labour'. Women being responsible for the subsistence of families, often bring children to work to assist the mothers, exposing them to the harsh working conditions at an early age. Whereas more attention is on reducing child labour in the quarries, improving the status and the working conditions of the mothers is yet to find a place in the development agenda. Given the seasonality of these jobs, insecurity and low wages, and the global trend of 'feminisation', 'informalisation' and casualisation of women's labour, it can safely be assumed that the participation of women in the ASM will also rise.

> *Gender inequalities undermine the effectiveness of development policies in fundamental ways. Yet, this is an issue that often lies only at the periphery of policy dialogue and decision-making, both in national and international arenas. Part of the neglect comes from policymakers' reluctance to deal with topics that they deem inextricably associated with societal norms, religion, or cultural traditions. Part comes from a belief that gender gaps should be addressed by advocacy, not policy. And part comes from real (or feigned) ignorance about the nature of gender disparities to people's well-being and countries' prospects for development…the costs of this reluctance, apathy, or ignorance are high. (King and Mason, 2001)*

Small mining and quarrying in India is carried on in most places with acquired mining rights under some statutory control. Some mining and quarrying may occur illegally without a license or after the expiry of the permit, or even on old and abandoned mine sites. Artisanal mining, on the other hand, is carried on by indigenous communities in remote locations on and from common lands. Such mining is generally unauthorized as it is unlicensed, and commonly seen as illegal. Strictly speaking, it might be better to describe such mining 'non-legal' as often the operations are

beyond the purview of the law. The range of ASM practices is such that to reduce complexity and to give some simplistic ideas about where women's labour is concentrated, I have drawn the following broad diagram. The thematic diagram shows the economic organisation, production relations and levels of capital accumulation on one horizontal axis, again broadly classified into three: subsistence, transitional and capitalist. In reality, there is a continuum rather than three watertight compartments. The legal status is given on the vertical axis, showing again a gradual transition from completely licensed (legal) to scavenging, then completely illegal (unauthorized and unlicensed), with non-legal practices (those beyond the purview of the law, neither illegal nor legal) occupying the other extreme. The diagram shows the increased use of machines with increasing legality factor and capitalist mode of production. The maximum concentration of women's labour is to be broadly found in the non-legal and manual, subsistence mining practices.

The location of women's productive labour is given in the following thematic diagram, revealing that women workers are concentrated in the unmechanised and subsistence-based practices. The diagram brings out the need for relating gender and development policies in the ASM sector.

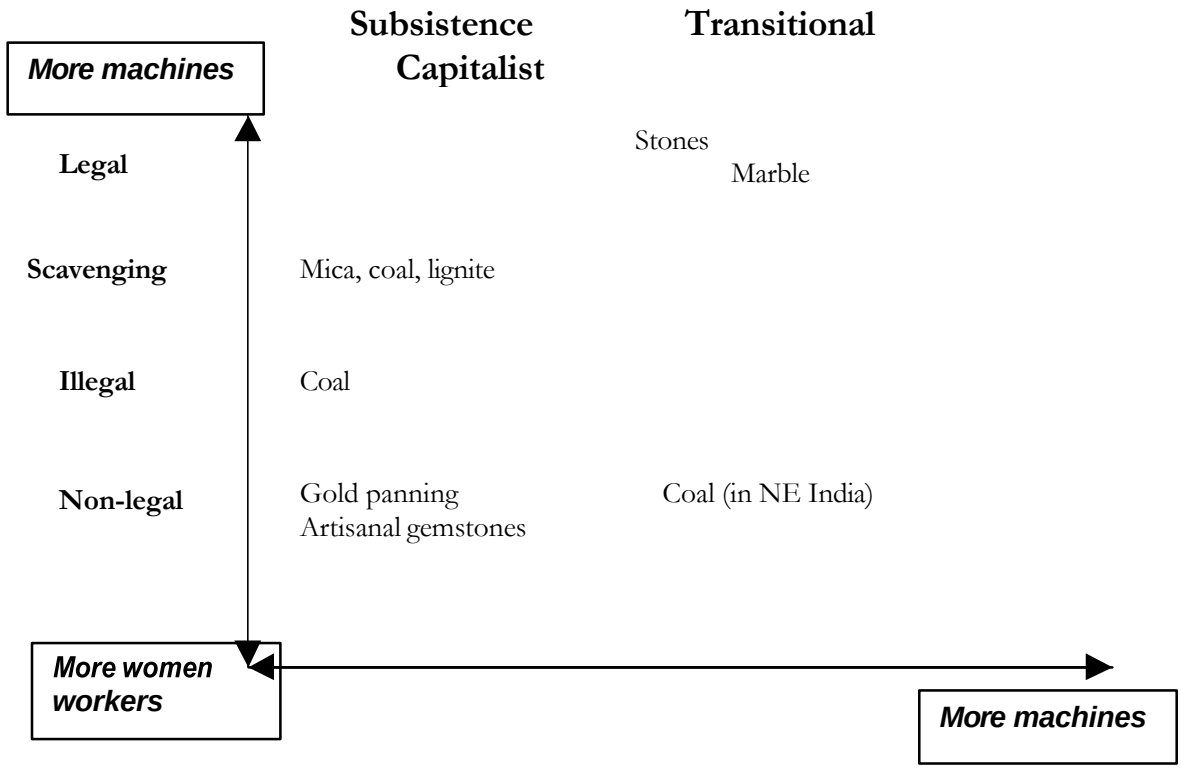

Figure 2 Placement of women workers in small mines and quarries

This research addresses the gap in the existing knowledge of gender roles and concerns in the ASM sector in India, and leads to 'engendering' the public perceptions and developmental interventions in informal mining and quarrying. Women workers in many of the informal mines in India form the 'poorest of the poor'. This research investigated the prospects for establishing sustainable livelihoods for local communities in the mineral-rich tracts of these countries by addressing the roles, concerns, needs and perceptions of the women participating in the mining activities.

The overall purpose of this research is to pinpoint areas of intervention in alleviating poverty among the informal mining communities in India. We firmly believe that empowering women workers in the informal mines can lead to their increased capability, more sustainable livelihoods, and ability to transform or overcome cultural barriers. Thus, the research questions address the broad objective of 'engendering development' of World Bank's current policy interventions in

developing nations. It generates a body of knowledge that can lead to specific policy interventions in informal mining and quarrying, but can also form the basis for similar kinds of investigation in other parts of the Asia-Pacific region or elsewhere in the world. The specific outcomes of the project are directions for formulating gender-sensitive policy interventions for this mining sector in India that is important for directly and indirectly providing the livelihoods of millions of people.

> *Gender discrimination remains pervasive in many dimensions of life worldwide. This is so despite considerable advances in gender equality in recent decades. The nature and extent of the discrimination vary considerably across countries and regions. But the patterns are striking. In no region of the developing world are women equal to men in legal, social, and economic rights. Gender gaps are widespread in access to and control of resources, in economic opportunities, in power, and political voice. Women and girls bear the largest and most direct costs of these inequalities – but the costs cut more broadly across society, ultimately harming everyone.*
>
> *For these reasons, gender equality is a core development issue – a development objective in its own right….Promoting gender equality is thus an important part of a development strategy that seeks to enable* all people *– women and men alike – to escape poverty and improve their standard of living. (King and Mason, 2001)*

APPROACH AND METHODOLOGY

Of the number of approaches generally adopted in researching ASM, the most common is the examination of the physical environmental impacts of these mining practices, assessing and measuring these (commonly negative) effects on the earth's surface or on humans, with the hope of finding a way to control such effects. Other approaches have looked at ways of regularizing ASM, or have explored the various kinds of networks amongst the small scale miners.

For this report, I have used the livelihood approach with special emphasis on understanding gender roles and relations in the small scale mines and mining communities, and on understanding the gender needs and interests amongst the ASM workers. My approach stems from my belief that to make any developmental intervention successful, it must address the gender inequities in power relations. Gender Analysis in Development (GAD) thus forms the overarching framework of this study.

The livelihood approach puts importance on the overall processes of securing a survival by an individual, family or other social group, and the term 'livelihood' means more than just financial resource, representing a broad amalgamation of various elements of assets such as natural, physical, human, financial and social capital, activities such as strategies of use, and the access to these mediated by institution and social relations. All of these combined together determine the living gained by the individual or household. The ways women and men seek and sustain a livelihood are different; as gender roles are different, so are the livelihoods gendered activities. Understanding the livelihood strategies of poor women as well as management of scarce natural resource at their disposal are of critical importance for making developmental interventions successful and equally benefit both women and men (Valdivia and Gilles, 2001).

The methodology used in collecting information for preparing this report is field-based, supported by pre-field and post-fields stints of intensive library research, followed by data collation, report-writing and finally presentation. The core fieldwork was done in three months (March-May, 2005) to collect data for this report, but much of the work is informed by my prior experience in these locations.

Research strategies

The foremost problem that a researcher encounters whilst working on the ASM sector anywhere in the world is the paucity of easily available numerical data or even literature depicting the overall contributions made by the women workers in small mines and quarries. Following Heemskerk (2005, p. 84-85), listed ten obstacles in effective collection of micro-economic data: production variability, income variability, poor field records, the fear of government interference, lack of trust of outsiders, difficulty of isolating incomes from mining, heterogeneity, transient nature of miners, dangers to researchers, and finally cultural barriers. Whilst all these are true for India, the regional context of administration, history and the particularly focused nature of my enquiry made data collection even more difficult. For me, the additional obstacles were several and as follows:

first, and foremost is the confusion over definitions of mines, small mines and quarries or over what is legal and what is not. The official thinking is that the 'smallness' of these mines and quarries leads to only small amounts of capital accumulation. Consequently, the various practices and structures – of accumulation as well as of labour – remain unexplored. Some areas of the artisanal and small mining practices remain illegal and hence outside of the purview of 'official' data collection processes. A greater amount of attention tends to be drawn towards the larger mines; often their importance is highlighted by the creation of a separate Ministerial body such as the Ministry of Coal in India.

second is the confusion over jurisdiction or the administrative body responsible for collecting revenues and keeping records. The classification of minerals falls into different types; for example the Directorate General of Mines Safety data identifies coal and non-coal minerals whereas the Minerals Act classifies only 'major' and 'minor' minerals. The administrative responsibilities of these major and minor minerals then fall respectively upon the Central and State/Provincial governments, who see these quarries as a quick way of earning revenue. For example, to begin with, there is not yet a clear-cut definition of ASM in most countries of South Asia and often amounts of production is taken as an indicator of the 'smallness' of the mine.;

third is the confusion over child labour and women's labour, as 'women and children' are administered by the same Ministry often named as such, seen as part of a whole, a family unit in which women are primarily mothers looking after their children based at home;

fourth is the confusion over legal provisions for protecting labour especially female labour, ensuring their safety and protecting the environment, often leading to the most well-meaning NGOs, to say nothing of government officials, seeing women as illegitimate workers in mines and quarries;

fifth, relating to the conventional wisdom made popular by the mining engineers and related technocracy is that small-scale mines are also 'small' as a problematic - in their impacts; in their production; in the area they cover; and in terms of the 'national good'. This tends to keep ASM hidden from other major areas of natural resource management (such as land, water and forests) in which the livelihoods of poor people have come under great scrutiny and intervention in recent decades;

sixth is that ASM, unlike agriculture or forestry occurs in a scattered and spread out form in remote locations that are difficult to access.

seventh is the strength of the anti-mining movements led by the pro-environment groups; and

lastly, the notion that these mines and quarries are part of the 'unorganised' sector, that is, a part of the informal economies of these countries, yet the term 'informal' being coterminous with illegal.

Thus, the national data collection mechanisms (of the unorganized sector) such as the National Sample Surveys, that could provide valuable information on the mines and quarries are not continually revisited, the Census classifies 'Mining and Quarrying' as one and the same occupational category, the Mine Owners' Associations are equally secretive about their profit levels or modus operandi as the District Administrations giving licenses. As a combined result of all these factors, the information on the livelihoods of quarry workers is still rather scanty and incomplete, and often based on gross estimations arrived from localised studies or sample surveys. The researchers' personal training or subjective bias tends to come out rather clearly from these studies. Clearly, livelihood research in ASM has to be contextual, and has to involve the various stakeholders or interest groups including the research community. It can be viewed as an entry point into a large thematic area of which little is available in the public domain. By looking at people as active agents in organising the system of resource use in practice, it provides a research in a timeframe that extends into the past, and reflects the raw material from which a more rational use of resources can emerge. This research has the ability to perform the social role of providing an input into the economic development process to serve as a vehicle for public participation in decision-making. At the same time, the process of understanding itself may be rewarding to the researcher.

Understanding that generating quantitative data may be difficult because of the very nature of these mines and quarries, I explored other, trusted, qualitative ways to improve the understanding of women's participation and contributions in the mines and quarries. These methodologies required me to visit the field personally, to establish contacts with key personnel and civil society groups working on the ground, and to establish local partnerships to build up on their local knowledge and for mobilizing additional support. In the field, I used the qualitative methodologies of key informant interviews, focus group discussions and participant observation. Such methodologies, developed by social scientists in recent decades and made popular by developmental experts, have been extensively used by me in my previous work. These methods have been useful in researching livelihood strategies of poor people (Lahiri-Dutt, 2005). The methods are participatory, consultative and community-based approaches that help to initiate a process of not only mutual learning and dialogue, but one of changing the mindset of all stakeholders concerned. This set of methods has become significant in recent years in the field of social research as it emphasizes a 'bottom-up approach' (Whitfield and Strauss, 1998). The participatory approach is based on field visualization, interviewing and group discussions promoting interactive learning, shared knowledge and flexible yet structured analysis (IDS 1997). The participatory process addressed the fundamental question: 'can gender roles be changed and equality made possible in the patriarchal societies of South Asia where the masculine image of mining is reinforced in the informal mining communities'?

In the case of India, I built on the foundations of Chakravorty (2001) and Ghosh (1996), in particular the work done by NISM on the Orissa manganese mines and the stone quarries of West Bengal. As India is the major mining country in South Asia, the more research effort was devoted to this country. I personally carried out research surveys during March-April-Maythe following locations:

- the illegal collieries of eastern India;
- the non-legal collieries of north-eastern India;
- the gravel and stone quarries in southern Himalayan slopes;
- the stone quarries of eastern Indian basalt traps;
- the marble quarries of Rajasthan;
- the gold panners of the Subarnarekha river;

- the gravel quarries around the Himalayan foothills areas of Sylhet, Bangladesh, and
- bonded labour in stone quarries around New Delhi.

In addition, I engaged with local stakeholders, including mine owners' associations, government officials, trade union workers and NGOs in these series of discussions. This process led to community mapping of needs and strengths, and was intended as a sensitization process as well as a research process. In most cases, each locally-based partner in this research came out with a report based essentially (with many variations) on a template created by me with the objective of gathering as much primary information as possible. This process roughly follows 'Business Partners for Development' model suggested as an effective one by Davy (2001: 1):

> Working in partnership with NGOs, community groups and government agencies….can strengthen ...community-liaison capacity, permitting consistent, realistic messages to be delivered to communities affected ….Tri-sector partnerships can help community groups acknowledge responsibility for their own development, thereby moving from being 'victims' of development to becoming full participants in it.

Consequently, I involved a range of partners: locally-based civil society activists, social scientists and geologists from government-sponsored research institutions, and journalists and photographers.

These strategies intend to refocus attention on the livelihoods of women and men engaged in ASM in their productive capacities as miners, with a view of finding ways - through their own voices - to empower them and make them partners in the development process. While information from a participatory research process is valuable and useful, the process of gathering such information itself is priceless too (Guy, 1996). For each of us involved in the process, it was an enriching experience as new aspects of livelihoods emerged through the research.

Sustainable livelihood approach

It is generally claimed that ASM brings about economic development to mineral-bearing tracts; however, very little of the benefits actually trickle down to the lowest level; the workers. Women, in particular, fail to receive sustainable livelihoods from small incomes generated by their work, which is often not directly covered by health and safety insurance. Whether ASM can benefit people in poor communities is therefore a major livelihood question in the South Asian region and indeed this question is being intensely explored at various levels. The research approach followed in this study, therefore, adopted a livelihood approach, which is slightly different from the 'sustainable livelihoods approach' described by Carnegie (2002) in its greater focus on seeking people-centred interventions for pro-poor development:

> The idea of 'livelihood strategies' concentrates on the process by which families construct portfolios of activities, and the social relations in order to improve their well-being, or cope with crises (Valdivia and Gilles, 2001, p.7).

The word 'livelihood' means the command an individual, family or other social group has over an income/or bundles of resources that can be used or exchanged to satisfy its needs. This may involve information, cultural knowledge, social networks, legal rights as well as tools, land or other physical resources. (Blakie et al, 1994; Valdivia et al., 1996). The livelihood approach to understanding survival strategies of the poor people as well as development processes has received a spurt in the last decade. This has been a response to the need for making the development process work for the poor taking into account what is important for them. Oberhauser et al (2004) considered the study done by Chambers in 1983 as the pioneer work on the livelihoods of the poor. In his later studies (such as the one by Chambers and Conway, 1992) it was repeatedly asserted that livelihoods are more sustainable when households have secure

ownership of or access to resources and income-earning activities, including reserves and assets, enabling them to offset risks, and endure contingencies. Since then a number of studies have been done on different aspects of livelihood. Most of the livelihood studies are based on poor community people living in rural areas of developing countries mostly in Asia and Africa (for example see Ashley et al, 2000; Brock and Coulibaly, 1999; Scoones, 1998; Francis, 1999; Bebbington, 1999; Yaro, 2002; Marzano, 2002; Bryceson, 2000; Bryceson et al 2003 etc.). Developmental agencies and governments are increasingly using the concept of livelihoods in the design of policies, projects and programmes.

The difficulties of survival of the ASM workers arise from poverty and hardship; the work itself as well as the extremely poor environmental conditions that offer little alternative resources for subsistence. Despite the poor environment and obvious vulnerability, all ASM workers have well established livelihood strategies that help them to survive. These are characterised by highly diversified options for income-generation, work in the quarries are most often combined with farming, livestock, fishing, petty trading and working as agricultural labour. However, for the extreme poor, these strategies merely permit survival and do not enable them to accumulate sufficient assets to overcome their poverty and advance their lot (Ellis, 1998; 1999).

Livelihood strategy is thus linked with diversification of income and assets (Datta and Hossain, 2003). The livelihood strategies of poor people are more complex if they have a lower level of capacity to maintain sustainable livelihood with a single source of income without much diversification. The situation turns worse in cases of exclusion from the mainstream services and infrastructure. Livelihoods of ASM workers could be made more secure when households, especially women, develop means of securing the ownership of or access to resources and better incomes, some form of security to protect them from injuries and ill-health to enable them to tide over the difficult times, to ease shocks and meet unforeseen events such as a sudden loss of job. The basic elements of livelihood analysis consider resources (what people have), strategies (what people do), and outcomes (the goals people pursue). Research and policy initiatives connecting livelihoods research with poverty reduction objectives received high emphasis in livelihood analysis mostly done by developmental agencies like department for International Development (DFID) and Institute of Development Studies (IDS).

Since the late 1980s, an added aspect has been the emphasis on sustainability. The livelihoods are 'unsustainable' since they are poorly equipped to cope with sudden or even long-term changes. Consequently, many livelihood studies done by the development agencies for their policies and programmes to alleviate poverty has put their thrust on examining the sustainability as an insurance against total breakdown of livelihoods (Carney, 1998; Ashley and Carney, 1999; Brock, 1999; Carswell et al, 2000; Toufique, 2001; DFID, 2002). The concept of sustainable livelihoods used in these studies relates to the conditions of poverty, well-being, capabilities, resilience and natural resource base of households and communities. Sustainable rural development and the search of its different indigenous systems developed by the communities themselves are also analysed by some scholars (Shepard, 1998; Baumgartner and Hogger, 2004). In studying ASM, the use of livelihoods approach involves a step by step process of understanding the livelihoods of women and men associated with ASM, the roles mining and quarrying are playing in these livelihoods, examining the activities, issues, services from private and public sources, how important and accessible they are, the willingness of the various institutions at various levels of governance in meeting the needs of the poor, and the implications for government policies and programmes (Carnegie, 2002, p. 65).

Another set of literature has looked into the issue of diversification of the livelihoods of poor people as the critical element in creating better options for sustainability. If the livelihood is dependent upon only one economic activity, then it is easier for the people who are unable to cope with these changes to sink quickly into the depth of poverty (Ellis, 1998, 1999; Toulmin et al, 2000; Deb et al 2002). Both the environmental conditions as well as the economic policies of the state make some communities marginal over time with the loss of their age-old livelihood resources. The question they deal with then is how to develop strategies to diversify the survival

base in order for the poor to cope better (Karnath and Ramaswamy, 2004; Ginguld et al, 1997). This is of critical importance in understanding the livelihoods in ASM; as noted in the study, many small mining and quarrying workers are poor landless farmers looking for additional and cash incomes, particularly during non-farming seasons (such as the post-monsoon dry winter period in the Indian subcontinent). Temporary but sudden shocks such as droughts also increase the helplessness of the rural poor and force them to seek jobs outside of the farming economy, and the small mines and quarries are often the primary absorbers of such communities.

Vulnerabilities do not always affect women and men in similar ways. Women in poor communities may constitute even the poorest or weakest group, bearing the burden of care for the children and family. The ways women and men seek and sustain a livelihood then are different. The studies (for example Masika and Joekes, 1996; Francis, 1998, 2002; Cleaver, 1998; Valdivia and Gilles, 2001; and Hapke and Ayyankeril, 2004) look at livelihood as a gendered activity. Most of these studies have emphasised the livelihood strategies of poor women as well as management of scarce natural resource at their disposal. A few studies such as the one by Francis (1998) analyse the bargaining power of women and their access to household resources along with their contribution towards the livelihoods of the households. Critical questions such as 'do women have greater bargaining power when their contribution to household livelihoods is mediated through markets? Does money talk?' are raised to examine women's power in the household management system. She showed that women struggle to earn livelihoods for the family and in running the household but do not enjoy significant additional power as a consequence (Francis, 1998: 75).

A crucial aspect of livelihoods is women's access to and control of resources such as land. According to Mukund (1999) remedying this situation is one of the most significant steps that could be taken towards enhancing South Asia's rural livelihoods. For example, while women in India have the legal right to own land, very few actually do. Even for those women who do own land, ownership rarely translates into control of the land or of the assets flowing from the land (Agarwal, 1994). The impacts of this lack of ownership are particularly disempowering for women, if not left behind in the villages by out-migrating husbands, they follow the men into the cities or into the mines and quarries as part of the cheaper labour. It has been noted (Hanstad, et al. 2004: 32) that the cost of excluding women from control of land and its resources is significant: 'where women direct the use of income from productive land, they tend to spend the money to meet the basic nutritional, welfare, and educational needs of their children and family. Conversely, where men control the use of household assets, they tend to spend money on personal goods and to fulfill individual desires.' The lack of land rights also limit women's access to those livelihood assets that flow from the control over land: incomes generated from the lands, obtaining loan or credit, or exercise significant bargaining power within their communities, and remain dependent on their relationships with male family members for economic security and social status. Such disenfranchisement means that women are easily pauperized by the termination of the relationships in one way or the other.

Case example: Livelihood shift from agriculture to wage labour in mining

Yagantipalli village in Andhra Pradesh has 500 households, of which 150 are from Backward Castes, 120 Scheduled Caste households and the rest from other castes. Around 60% of the village households possess agricultural lands. They used to grow cotton, paddy and chilies in the irrigated plots and millets, gram, coriander seeds and sunflower under rainfed farming. The village had 100 agricultural bore wells and 15 open wells. Excepting ten, all other wells in the village have dried up over the years, due to the complete drying up of the Daddanala Tank due to consecutive years of droughts. This tank, located about 15 kilometers away, used to recharge these wells. In order to tide over this crisis, both small and marginal farmers took up livelihoods associated with risk. One of the main adjustment mechanisms was by taking up mining and quarrying based wage labour in the nearby quarries. About 60% of the workers were migrants from Markapur and Nandyal areas of Prakasham and Kurnool districts. As livelihoods options available are not many, most of them have resorted to working as wage labour in the small mines and quarries. Over the years, the small and marginal farmers have not received great benefits out of farming; the livelihood has become highly uneconomical and also resorted to suicides in several parts of the state. The villagers with no livelihood options have been forced to take up poorly paid jobs in the burgeoning quarrying and mining industries.

When asked, women workers stated that working in factories was better for them than working in quarries, where the piece rate work does not allow any flexi time to devote to household chores. Working regulated hours in the factory enabled them to attend to household chores and children. The remote location of the quarries from residential villages and the difficulty in transportation are also factors that sometimes discourage women to take up work there. In case there is resentment from women, the contractors or the quarry owners threaten them with dismissal or beat them up. Women stressed that the factory owners are slightly more humane as compared to the quarry owners. The latter often use abusive language too one and all in the quarries.

Women generally go in groups for work in quarries or the family is involved. In the absence of family support or ability to send children to schools, women take their children along as assistants who soon turn into full-fledged labourers themselves. Women and children working in the mines are constantly exposed to large quantities of dust, causing various respiratory illnesses due to the 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 women the most during pregnancy. Poor livelihood options leave them with no choice but to expose themselves and their children to severe health risks, which not only threatens their lives, but also that of the unborn fetuses. For example, the most common diseases suffered by people due to the dust from the mines and quarries are tuberculosis, cough and cold, malaria, skin diseases, diarrhea, staining of teeth, joints pain, arthritis and fatigue syndromes.

Andhra Pradesh has highest number of child labourers in the country accounting 1.66 million (1991). According to the latest census 2001, the number of child labourers in the country is fairly receding so in the southern states too. Andhra Pradesh has 1.36 million children and stood second across the country. The children have no rest, no play, no learning, nothing but the grim grind of a joyless existence (Sinha, Asian age, May 16, 2005). Child labour is a complex problem that straddles such developmental issues as poverty, education, rural to urban migration, lack of credit facilities for the poor, and caste exploitation. In and around the state capital, there are an estimated 1400 quarries, which cater to the needs of railways, road construction and maintenance, housing and infrastructure building. Most of them employ child labourers.

During our PRA exercises, children interacted freely and stated their problems of low pay, long and erratic working hours, harassed by mine owners to do even household chores, and errand jobs. A larger number of girls than male children were found; none of them have ever attended school. They told us that the reason for them working in the mines was the need to repay the advance money borrowed by the workers initiated the children into mining work.

One of the women workers tried to send her child to school, and she was performing better in her studies. The child expressed her happiness about her results to other children and they were feeling happy about her success in class. Immediately the mine owner shouted at the girls and said what are you going to achieve after studying? Are you going to become District Collector? He gave a big lecture to them and stated how unemployment is rampant among the educated.

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MINERALS FOR ASM IN SOUTH ASIA

The range of minerals produced in India is spectacular, and provides a more or less complete description of geological variety in terms of reserves, value, and usability. In the national economic picture, mineral revenues constitute only a small part: although India is currently one of the major miners of the world, this fact does not show up in the breakdown of its GDP because of low capital accumulation from many of these mines and the fact that the small quarries and traditional mineral processing activities are part of the 'informal sector' of Indian economy which, according to some experts, can be around ~88% (Harriss-White 2003). However, this kind of mining becomes important because together, these mines employ a very large number of people. In many of these mines, often little or no machines except simple tools are used in the processes, every stage of processing being literally done by the human hand. Again, the importance also lies in the range of minerals mined under ASM in India, beginning from gemstones and gold to low value bulky products such as gravels, sand and building stones. Whereas the stones are meant primarily for local or domestic consumption, some of these products can have high values and serve non-local markets, such as the gemstones and marble from Rajasthan. Even low value products such as stones may be exported although the exact amount of revenue earned by them is unrecorded.

India has a very long history of artisanal mining extending back to the ancient times. Kautilya's *Arthashastra* (see the English translation by Shamasastry, 1956, p. 82-89) gives detailed instructions on the examination of gems that are to be entered into the Treasury, and on conducting mining operations and manufacture. It describes not only the methods of testing gems, but also of methods of extracting minerals from hard and soft ore bodies, and of making gold and silver coins from the metals thus obtained: 'Mines which yield such minerals as are made use of in preparing vessels (*bhanda*) as well as those mines which require large outlay to work out may be leased out for a fixed number of the shares of the output or for a fixed rent (*bhagena prakrayena va*). Such mines as can be worked out without much outlay shall be directly exploited (by governmental agency).' From the documentation, it can be assumed that mining was a well-organised activity around that time in India. So was illegal mining. *Arthashastra* also gives instructions on dealing with illegal mining: 'A mine labour who steals mineral products except precious stones shall be punished with a fine of eight times their value. Any person who steals mineral products or carries on mining operations without license shall be bound (with chains) and caused to work (as a prisoner).'

The capital city of Delhi, referred to as Indraprastha in the epic Mahabharata and flourishing since the Mughal times, stands in the middle of Gangetic plains on the edges of Delhi ridge, a part of the Aravalli ranges made of quartzite. The series of empires that used this location as a

capital used local stones to build the forts, palaces and mosques. Besides building stones, the mining of which seems to be ubiquitous, there were precious metals such as gold and silver, and the mining of precious and semi-precious and gemstones. For gemstones, Rajasthan has been well-known since the early times, although no official records can be produced to confirm the claim. This is because of poor record keeping traditions of ancient India, which was always famous for its oral traditions. However, indirect evidences such as place names are often indicative of mining: Panna in central India has been a centre of emerald (*panna* means emerald), Katni in Central India has been the centre of limestone quarrying. Similarly, Jhalda in the eastern fringe of Chotanagpur plateau had been a point for iron works.

Quite a few industries grew up in the ancient times based on the quarries. The tradition of making gold and silver jewelry, and using well-cut and polished gemstones in them gave rise to a line of expert craftsmen and artisans. This tradition has now metamorphosed into the diamond cutting-polishing industry of Mumbai. Limestone quarries gave rise to *chuna* factories, preparing the essential ingredient in making the cementing material for use in buildings or for human consumption in betel leaves.

However, with the advent of British rule and introduction of modern legal frameworks of resource governance, many of the old systems were destroyed and a new system of artisanal mining came into existence. The legal frameworks that that were established during the colonial times aimed at the control the mineral resources of India by the British state. Colonial mining also brought in European models of labour relations and management techniques, and altered the earlier systems. Consequently, the traditional artisanal systems mining gradually became outside of the legalized sphere of resource governance, thus invisible and in many cases illegal. Thus, in India as in several other post-colonial countries, the 'legal battle' has become an established reality in the area of artisanal mining (Cramer, 1990).

At present, the Indian mining industry exhibits almost the entire spectrum of extractive and mineral products, including iron ore, coal, lignite, base and precious metals, building materials and gemstones. Operations range from small mining and quarrying through to some of the largest mining operations. A range of mining practices ranging from major opencast and strip mines, through underground long wall and hard rock ore mines, through dredging operations, soil and gravel extraction, to panning and hand excavation of gemstones are found in the country. India is included among the top ten mineral producing nations in the world, and its economy benefits from the revenues accrued from minerals output, raising the hope of a possible 'small scale route of mineral-based development' (Ghose, 1991; 1986). Mineral distribution in the country is widespread; the prospective deposits occurring from the fragile foothills of the Himalayas, deserts, arid and semi-arid regions, along vast coastlines, plains and rich forests (Srivastava, 1987; Ghose and Kumar, 1997a). Quite commonly, mineral deposits are worked in areas considered ecologically sensitive and/or rich in bio-diversity (Rai 1994; Ghose and Sen 2001). Again, it is recognized that small-scale mining can make a significant contribution to development, which has been one of the principal motives for a persistent interest in the sector

Definitional confusion

As noted before, the ASM sector in India is wide-ranging in mining practices, size, legality and production, giving rise to significant confusion over its definition. Let us first discuss the various definitions available.

The Mines and Minerals (Regulation and Development) (MMRD) Act of 1957[5] is the main legal framework governing the mines besides the Indian Mines Act of 1952 which is primarily

[5] According to this Act, a 'mine' means any excavation where any operation for the purpose of searching for or obtaining minerals has been or is being carried on and includes many other specific activities and operations. 'Minerals' according to this Act means all substances which can be obtained from the earthy by mining, digging, drilling, dredging, hydraulicing, quarrying or by any other operation and includes mineral oils which in turn include natural gas and petroleum.

meant for labour welfare and safety and health issues. The Indian Bureau of Mines (IBM), working under the MMRD Act is important for two reasons; first it classifies all minerals into two categories, major and minor, and second, it gives the responsibility of developing the minor minerals to the concerned State Governments. The IBM does not maintain statistical data pertaining to the minor minerals' production, but, for the purposes of employment of technically qualified personnel, identified (Rule 42 of Mineral Conservation and Development Rules, 1988) yet another two categories: Category A and Category B, decided on the basis of labour employment and the standard of mechanical equipment used. None of these two categories is specifically defined as SSM although Category B comprises the smaller mines which together constitute about ~88% of the reporting mines producing about 10% of the total value of mineral production of the country.

The situation is then complicated by the fact that IBM provides production-related data on the basis of two categories of minerals: fuel minerals (petroleum, coal and lignite) which were exclusively reserved till recently for the government to operate, and non-fuel minerals which may include important minerals such as gold, copper and diamond. Some experts note the maximum production capacity of 50,000 tonnes per annum as the criterion to define Indian small-scale mines (Ghose, 2003a), but clearly this definition has inherent faults in describing valuable minerals such as gemstones or gold.

The Government of India often put some small mines and quarries under the head of 'small/unorganised industries'. In India, the characteristics of small industries as per accepted definitions are: relatively little specialization in management, close personal contact of top management with production, workers, customers, suppliers and owners, lack of access to capital through the organized security market, and often difficulty in obtaining even short term credit, no special bargaining strength in buying/selling, a relatively close integration with the local community through local ownership and management and dependence on nearby markets and sources of supply. The limit of fixed capital investment that was used in defining such small industries has changed over time; by around 1991 it was raised to INR 7.5 million.

Who owns the minor minerals in India?

The Central Government has empowered the respective State Governments to frame their own rules in the case of minor minerals under section 15 (1) of M.M. (D&R) Act, 1957. Accordingly, individual states like Andhra Pradesh or Rajasthan have framed their own Minor Mineral Concession Rules, 1966. Subsequently, in pursuance of Granite Conservation and Development Rules, 1999, the Sate Government has 'suitably amended the Andhra Pradesh Minor Mineral Concession Rules, 1966 in tune with G.C.D.R. 1999. These amendments will ensure greater revenue earnings, scientific exploitation, greater regulation and supervision over mining activity, removal ' of procedural delays and expeditious disposal of applications.

In pursuance of the 73rd Amendment to the Constitution of India (Central Act 40 of 1996), a provision has been incorporated in the Minor Mineral Rules to obtain the recommendations of Gram Sabha or Panchayats for granting of leases in the scheduled areas. Thus, the local governments also have some form of control over permitting a mining operation.

In order to improve the infrastructure facilities in the mineral bearing areas, the State Government of Andhra Pradesh is allocating 35% of the minor mineral revenue for the establishment of infrastructure facilities. The entire minor mineral revenue is being allocated to local bodies. The funds are being distributed in the ratio of 25:50:25 to Gram Panchayat, MandaI Parishad and Zilla Parishad.

According to Rudra (2002), the mining and quarrying enterprises of industrial minerals and construction materials that occurs at subsistence level throughout India, that is, the operations producing relatively smaller quantities of mineral and employing relatively fewer persons, are termed as small mines. Sahu (1992) described the small mines as 'those whose production, or excavation quantity is limited in tonnage and not very large, mostly manually operated and sometimes employing machines to small capacity. Such mining activities are usually confined to deposits which are shallow in depth and small in extent.' The salient features of ASM as evident from this discussion are small production, labour intensiveness, shallow nature of deposits, and low technology deployment. The National Institute of Small Mines (NISM) defined the categories of mines in India according to their production, a system which is clearly meant for low value bulky products such as stone[6]. This averaged production figures would be inadequate for classifying minerals such as gold. The definitional confusion has been noted to act as a major issue in the ASM sector; the exact definition of mines as small, medium and large scale also differs from country to country, without any universal yardstick (Noetstaller, 1987).

What is happening to the minerals and mining under economic reforms?

The Industrial Policy Resolution of 1956 has spelt-out the policy as regards the role of Public and Private sectors including Mining. This resolution divided the minerals into three broad categories. The minerals included in Schedule-A were Coal, Lignite, Oils, Iron Ore, Manganese, Chrome, Gypsum, Gold, Diamonds, Copper, Lead, Zinc, Tin, Molybdenum, Wolfranite and Atomic Minerals. Schedule-B consisted of all other minerals other than minor minerals. Schedule-C or the third category included Minor Minerals. Earlier to the Industrial Policy resolution of 1956, all the Minerals were regulated by Mines and Minerals (Regulation and Development) Act, 1948 and the rules made there under which are called Mineral Concession Rules, 1949.

[6] Small scale mines upto 0.1 mtpy, medium scale mines upto 0.1 to 0.5 mtpy, large scale mines over 0.5 mtpy.

In response to the Industrial Policy Resolution of 1956, the Mines and Minerals Act had divided the minerals into three categories as stated above for the purpose of grant of mineral concessions. Though the ownership of minerals is vested with the State Governments, the constitution gives the Parliament the ultimate powers to make laws for the regulation of Mines and Minerals Development in the public interest. The law that now governs all the mines, quarries and minerals are: the Mines and Minerals Regulation and Development Act, 1957 and Mineral Concession Rules, 1960 framed by the Government of India. The stated objectives of this Act and the Rules are the conservation of important minerals and the efficient and economic working of mines in the national interest.

The Government of India had pronounced a New Industrial Policy in the year 1991 and entered into the market economy through privatization of productive enterprises, de-regulation of the industrial organizations and liberalization of trade regimes. Keeping in view the New Industrial Policy and in tune with the same, the National Mineral Policy was revised in 1993. The salient features of the new policy are: the Introduction of foreign technology and foreign participation in exploration and mining for high value and scarce minerals..

Foreign Equity Investment in joint ventures in mining, promotion of Indian companies would be encouraged. Foreign Investment equity would normally be limited to 50%. This limitation would not apply to captive mines of any mineral processing industry. Enhanced equity hoarding would be considered on case-to-case basis. In reply to joint venture projects of minerals and metals in which the country is deficient or does not have exportable surplus, a stipulated share of production would have to be made available to meet the needs of the domestic market before exports are allowed. In case of ores whose known reserves are not abundant preference will be given to those who propose to take up their mining for captive use. Basing on the new mineral policy, in January 1994, certain amendments have been made to M.M. (R&D) Act, 1957.

The artisanal mining practices in India represent an informal, illegal and unregulated system of small-scale mining by local communities, similar to those prevalent in some of the world's poorest countries and as such do not figure in the official records. Because of inadequate facilities and illegal operations, artisanal miners do not make large profits out of their activities. The artisanal miners even risk their own lives in these of unsafe mining operations for making a livelihood for supporting their families. Some of the profits earned out of mining actually go into the hands of middlemen due to the poor organisation of the economy. Because of the poor economic status of the artisanal miners, high value minerals like precious or rare metals and gemstones or essential natural resources like coal are the main minerals worked by the artisanal miners. Deposits that are considered uneconomic for exploitation by modern industries are also mined by artisanal communities. However, artisanal mining activities have also been noted for creating environmental problems; the most common example being that of mercury pollution in surface water by gold amalgamation, and land surface degradation by unregulated digging. Despite these problems, this mining provides sustenance to many people. It is for this reason that Ghose (2002) estimated that the small scale and the artisanal sector together comprise 95-98% of the entire mining activities in India. This view is supported by that of Chakravorty (2001), who opines that in reality, the large-scale mines contribute only about 2% of the mining activity in India. Among the 40 different minerals exploited by small-scale miners, the most important minerals in terms of value exploited by artisanal mining are gold (both lode and placer deposits), tin, coal and lignite, and gemstones. It has been reported (Chakraborty 2002) that such mines constitute about 90% of the total number of mines (about 3,700) and produce about 42% of the value of total output of non-fuel minerals and minor minerals taken together, and 6% of fuel mineral (coal) (Anon, 2001a). If the production from non-reporting informal mines (500) is added up, all of which work on a small scale (mostly extracting minor minerals), the total contribution of the ASM sector would be slightly higher. According to Chakraborty (2002), some 3000 small-scale mines account for about 5% of fuel mineral production in India. It is estimated that the share of Indian small mines in global ASM sector production in certain minerals is significant, especially antimony (45%), calcium (50%), chromites (75%), clays (75%), feldspar (80%), fluorspar (90%), gypsum (70%), tungsten (80%) vermiculite (90%).

The definitional difficulty arising from the absence of any nationally accepted criteria for identifying such mines, results in the lack of reliable statistical data. Although the importance in terms of local employment and poverty alleviation is emphasized, no single database is maintained and published for achieving a better appreciation of the role of small-scale mining in the country's economy. Nevertheless, available facts and figures indicate that current ASM practices will continue to be in operation for decades to come (Ghose 2002; 1994) in spite of the many environmental problems associated with them. Small mines and quarries represent a growing and important component of the mineral sector in terms of output value, contribution to the economy and employment. Many years ago, Argall estimated (1978) that small-scale mines worldwide contribute about one sixth of the value of global non-fuel mineral production. In developing countries, the output continues to remain significantly higher.

Out of some 80 minerals, including minor ores, being mined in India, around 70 of them are extracted by the small-scale sector (Ghose 1997). However, it is not easy to group these mines. In many mines, production is as low as tens of tonnes per day or even less, while some mines have a daily production of 150 to 200 tonnes. Investment and productivity in these mines also vary widely. While some of the mines are operated manually, some are considerably mechanised.

The increasing importance of small mines and quarries to local and state economies has led to their increased importance as an employment-generating economic activity, in India (Ghose 2003c) and elsewhere in South Asia. Because little is known of the extent of their production and their technical, and environmental implications, there is a need to obtain better information so that the promotion of small-scale mines can proceed in an effective manner. Information on employment; output; capital investment; revenue generated; and safety and health aspects are either inadequate or non-existent. In terms of government assistance to the sector, a case can be made for implementation of a straightforward reporting scheme, which would provide the data necessary for policy development and subsequent control of the sector, so that small-scale mines can make their best contribution to the economy and welfare of the country.

The employment effects of small mines and quarries are considerable, especially amongst the *adivasi* and rural communities. The Indian mining industry and bureaucracy, therefore, consider it essential to improve the techno-economic efficiency of small mines and quarries in all spheres: from exploration to exploitation, including management and control (Chakraborty, 2002). Small mines and quarries have some benefits including their ability to operate in remote areas with little infrastructure, enabling the exploration of otherwise uneconomic resources, and a high degree of flexibility because of low overheads. The government notes that small mines and quarries may also fit in well with existing social and production structures, particularly if seasonal operation is required to be compatible with agricultural production in the same area. The ability of small mines and quarries to generate employment, income, and entrepreneurial skills in rural areas can act as restraint on migration to urban areas. In addition, because they are generally locally owned, small mines and quarries can provide a larger net gain to the community and to the national economy than do larger, foreign-owned mines. On the other hand, small mining and quarrying is well-known for being inefficient, suffering from poor working conditions, safety and health problems, and causing environmental degradation (Hickie and Wade, 1998). There is no doubt, therefore, that the small mines and quarries, which make an essential contribution to economic growth, need to be integrated fully into their respective local economies. However, the process may be more difficult in real life due to the extremely poor working conditions and semi-feudal structures and production relations that still exist in the quarries.

LIVELIHOODS IN ASM

The small mining and quarrying sector in India is a repository of concentrated poverty and extreme forms of exploitation of the workers, both women and men. The sector, usually administered in the category of 'small scale industry', is generally locally administered and loosely

controlled, the revenues benefiting state or provincial governments. In most states or provinces the quarries are part of the 'unorganised sector', a misnomer given the intricate structures and organisation that exists in the industry. The states see this quarrying sector as an easy and relatively quick source of revenue generation and, as in most cases they are cash strapped, they prefer to side with the quarry-owners who often have their associations acting as pressure groups on the politicians and the governments. The term 'unorganised' is valid primarily in terms of the lack of unionization amongst the quarry workers and their invisibility to the development planners. In reality, the large number of small mines and quarries are part of the burgeoning informal economies of India. However, for mines, the term 'informal' comes with the stamp of illegality, and is often rejected by mine-owners and district administrators.

Consequent to their informal nature, the female and male quarry workers have failed to create any significant impacts on stopping the exploitation as a group. In most small mines and quarries, employment is through a contractor or thekedar, and the contact between the mine owner and the mine workers is minimal. Often migrants, they are treated by local villagers as outsiders, workhorses by the mine-owners, non-existent by public leaders and ignored by the government officials. Much of the work remains manual, although in some higher-value products such as marble, machines are widely used for cutting and polishing. However, the unmechanised or poorly mechanized nature of small mines and quarries requires abundant cheap labour, which in most cases is provided by the rural poor displaced from agriculture. Mining work is commonly done on a contract basis, often in piece rate, but also on daily wages. Jobs in the small mines and quarries are sexually segregated, reflecting what is often referred to as horizontal segregation, offering women and men restricted entry to particular jobs. For example, local transportation is almost always done in headloads of baskets by women, whereas the technical jobs requiring skill or use of machines are almost always reserved for men. As mine owners put it, women are docile, possessing the proverbial 'nimble fingers', and are not supposed to do heavy work. However, in almost all small mines and quarries, it is women who head load the cut mineral ores from the mine site to the crusher, factory or the truck stop. Obviously, head loading of 20-30 kilograms is not considered to be a heavy job unsuitable for women. The sheer physical burden of transportation on women has been noted as one area that needs immediate developmental intervention (Fernando and Porter, 2002). Women working in the small mines and quarries are completely at the mercy of the petty contractors who tend to subordinate them through direct and indirect means of oppression including physical exploitation. Food insecurity of the family, direct responsibility of providing food for young children, and the non-availability of better paid and regular jobs drive them to take up work in the quarries.

Protection of women in the workplace

The general approach so far in South Asia has been to create 'special' measures for women in various fields. Examples of such protective measures are many: beginning from the recent 73rd and 74th amendments of the Indian Constitution reserving seats for women to enhancing their political participation to old Acts or legal provisions such as breast feeding breaks for women workers under The Plantation Labour Act, 1951; prohibition of night work, provision of crèches (for factories employing over 13 women workers) under The Factories Act, 1948; and finally, the prohibition of women from working underground under The Indian Mines Act of 1952. Often, in informal sector employment, these provisions are not followed. In fact, often in cases of accidents or collapse of unofficial mines or quarries, women have been found underground, either dead or injured. Above all, these very measures are cited as barriers for the gainful employment of women. Intended as a means to protect them from the harsh working conditions, these measures usually work to act against women in the labour market..

For women, who form varying proportions of the quarry workers (depending on the type of mineral, extraction techniques, local social and cultural attributes, and the availability of alternative occupations), the burden of poverty reaches extreme proportions. Women are involved in mining in three different categories of jobs – those who are working in the extractive process, those who are involved as workers in sorting and crushing of the preparation of minerals, and those who are working as food and beverages suppliers, clerks and secretaries, peons, nurses etc. In small mines and quarries, it is the first two groups that are most common. These women are in most cases from extremely poor, *adivasi* (indigenous), *dalit* (downtrodden – lower castes) communities, with low levels of literacy, usually in younger age categories (age groups 5-30 years), and commonly working in head loading, transporting, stone breaking, sorting, cleaning and such other jobs. The legal right that women have over lands and natural resources, is not translated into real life ownership and control whether amongst the indigenous or non-indigenous communities.

Women bear the worst brunt of mining
when a new mine is established, it is usually the men amongst the displaced project affected people (PAP) who get the jobs in the formal mines, turning the rest of women in villages into scavengers[1]. According to the civil society movement leader Bhanumathi (2003: 2), 'where (large-scale mine) displaced women were absorbed into mining related activities, it is mostly in the small private or unorganized sector where women are the first to be retrenched, have no work safety measures, are susceptible to serious health hazards which also affects their reproductive health, and are exposed to sexual exploitation. Women displaced by mining … or migrant women who live in mining areas are "self-employed" in the mines. This is mostly illegal if not unorganized and the best term to describe their status is (as) "scavengers of mining". They face constant harassment from the mining companies, police and politicians for eking out this meager form of livelihood. Besides, as they arte scavengers, they work in totally unprotected working conditions.' Lahiri-Dutt and Herbert, 2005.

This fact of women's participation in small mining and quarrying work in India is crucical: we must answer 'who participates' first before looking into the status and concerns of women and men and attempt to explain. What we see in the small mines and quarries all over South Asia is a large number of toiling women from extremely poor and lower castes and marginal ethnic groups, engaged in risky, insecure, low-paid and manual jobs. Technology has been seen as playing a critical role in improving the productivity and viability of the ASM sector in India. However, the use of technology also seems to be working against the interest of women workers. Mining is an area where tools are an integral part of mineral extraction process; even the simplest panning requires some amount of use of tools and processes to extract the ore. However, the more mechanized mines (and the more mechanized jobs within mines) are almost always restricted for men, and women are given to perform the more arduous, more repetitive, more manual parts of the work. Therefore, it is most important to bear in mind that whilst formulating or suggesting policy measures for ASM, one needs to take into consideration the overall scenario of poverty in which the small mines and quarries operate. Consequently, the gender impacts of simplified measures such as the popularization of technology-intensive processes need to be carefully assessed because they would undoubtedly have a further negative impact on women workers by marginalizing them.

Women in the small mines and quarries provide a specific case example of patriarchal dominance; they on the one hand share the general destiny of women in rural societies, and on the other have specific conditions reflecting the organisation of the ASM. As in most cases the quarry workers come from rural and agricultural backgrounds ~30% of whom are women in India (Krishnaraj and Shah, 2004, p. 44-45), the proportion of women in the mines and quarries reflects a similar division. In fact, of all female workers, ~85% are employed in primary sector activities in India (Krishnaraj and Shah, 2004, p. 46). There is no definitive numerical data recorded with regard to women's participation in the unorganized mines and quarries in India; in

the formal sector, women's proportional employment has been steadily declining since the independence of India as per a Ministry of Labour's Statistical Profile on Women and Labour (Fifth Issue, 1998) – from 1.02% in all mines in 1901 to 0.05% in 1991, from ~50% in coal mines to only 4%. In view of the fact that women's employment in all industrial categories have gone up during recent years, the report notes that this decline in women's employment is possibly indicative of their substitution by men. Consequently, the small mines and quarries absorb the cheap labour of women in large numbers as contract workers under conditions of bondage and utter exploitation.

A typical day of a woman mineworker starts at 6 a.m. when she packs her lunch, usually the traditional pakhalo (boiled rice soaked overnight in its own starch water) and sets off on foot for the mine site, which is a kilometer away. Other women mineworkers in nearby villages trudge 7 km to work each way. At the mine site they work continuously till noon, after which they take an hour's break and return to work till 4 p.m. Then they start the long walk back home, hurrying to get back to their hearth to cook for their families, to collect water from the village well, to wash and clean up. The women are out of their houses from 6 a.m. to 6 p.m. investing 12 hours in work and commuting to and fro. They call Sunday the day 'off', and on this day they walk 2 km to the forest to collect fuelwood which will hopefully last for the week. All the women mineworkers follow this routine, and the ones who live nearer the mines empathized with women staying in far off villages, who often get back home so late that they find it difficult to manage household chores….Badoni Purthi who started working as a contract labourer after her husband Dobor Purthi, who worked in the underground mines died of tuberculosis, has five children whom she leaves behind at home to fend themselves. But the women who were breast feeding infants had to take the infants to the mine site where there was a crèche and only one harried 'house mother' to look after everyone's children. This being the case the women said that they also took along one of the older children to take care of siblings. …Many of the women mineworkers of Bondaniya were contract labourers and only a few were directly employed by the companies. Indeed the women complained that one of the companies actively discourages any direct employment and would rather hire a contractor, who in turn prospers by engaging cheap labour who are denied benefits accruing to the women mineworkers directly employed by the company, like bonus, wage increments, provident fund etc. …Due to the piece rate women and men are paid differential wages: Padmini Koi gets Rs 70 a day for the same eight-hour working day as a man who gets Rs 75 because women are said to be slower than the men in filling up the boxes. The case of Jannotriya, another tribal woman, is telling. The company normally recognises a trade union, which can hold dialogue with the company official for the betterment of wages and working conditions. She felt the need for a parallel trade union as the contract labourers could not talk to the company officials directly. But she lost her job when she took part in the effort to form a 'parallel' trade union of contract workers. (Parthasarathy, 2004)..

The overall working condition is poor for all workers, but especially so for women: wages for women are less then men, holidays are rare and unpaid, pregnancies are unpaid, no equipment or safety gear is offered, no toilets or living facilities are provided, and women are often subjected to physical and sexual exploitation by the contractors, co-workers and other local men. The occupational hazards range from ill-health such as respiratory problems, silicosis, tuberculosis, leukemia, arthritis, poor vision and deafness to reproductive tract problems. They occur due to constant exposure to dust and noise, poor water supply and sanitation. Whereas major accidents claim mostly the lives of men due to their preponderance in the underground jobs, minor accidents due to blasting or falls are also common for both women and men. Snake bites in conditions of inundation can also claim lives.

An example of the sexual division of labour in the small mines and quarries is in the table below, giving a detailed break up of the workers and the jobs performed by them in the mica factories in Giridih in Eastern India. Note how the more arduous, tedious and manual jobs are done by women whereas men tend to do more specialised and skilled jobs that often involve the use of machines.

Table 2. Sexual Division of Labour in the Mica Quarries and Factories of Giridih, Eastern India

Name of the Factory	Division of Labour	
	Male	Female
G.Roy Pvt. Ltd*	Screening, Packing	Picking
ICR*	Punching, fabricating, Checking, Metering, Binding, Parting, testing, Moulding, outgoing quality control	Silvering, Assembling, Capacitor testing
Metros	Passing, Pressing, Checking	Splitting, Silvering
MMTC	Passing, Pressing	No female workers
Anjana Minerals*	Punching, Sorting, Checking, Cutting & Packeting	Splitting
Ratan Mica*	Sorting, Fabricating, Checking & Packing, Condenser, Thickness	Splitting, Silvering
CMR*	Sorting, Fabricating, Checking & Packing, Condenser, Thickness	No female workers
Jai Mica	Cutting, passing, Checking	Splitting
High-rise	Weighing, Lifting, Replacing	Picking, Clearing
Mica Manufacturing	Fabrication	Splitting, Silvering
Ruby Mica*	Cutting, Passing, Grinding	Splitting & metering
Biswanath & Co.	Sorting, Passing, Binding, Di punch	Screening, Packing
RP Tarway	Packing	Screening, picking & splitting
KR Modi	Cobbling, checking, packing	Splitting, Silvering
Sitaram Rajgariah*	Fabricating, Packing	Splitting
Vinayak	Packing, Machining	Picking
Sankar	Screening, Machining, Packing	Head loading, picking
Paresramka	Machining, Packing	Cleaning, Picking
Swetmal	Sorting, Grinding, Packing	Picking, Screening
Prakash	Picking, screening, grinding, weighing, loading	Picking, screening
Gaurishankar	Packing	Picking & Screening
Shyam International	Grinding, Packing, Screening	Drying, Packing

*Large factories. Others are smaller sized factories

The poor working condition leads to severe **occupational diseases and health issues**. Amongst them, air-borne diseases of the respiratory tract such as tuberculosis and silicosis are

most important, reducing the working ability and lifespan on the workers7. Surveys conducted by the Indian Council of Medical Research have reported incidence rates between 16-57% of silicosis in different parts of the country. The incidence is high in Rajasthan, where mining and quarrying is second only to agriculture as sources of employment; according to another study conducted in the state by Prof. PK Gupta and his associates at the department of Chest Diseases of Dr SN Medical College, Jodhpur, and the NGO Gramin Vikas Vigyan Samiti (GRAVIS), radiological investigations showed that 56% of mineworkers were affected with silicosis or silica-tuberculosis. If these numbers are indicative of the ground conditions, then one at least 800,000 workers in the small mines and quarries might be affected only in the state of Rajasthan. Air pollution – primarily the presence of suspended particulate matter in the air – also affects surrounding village residents. According to a Supreme Court Guideline (1997), no stone crusher should be located closer than 1 km from a village in India, but this guideline is often not strictly implemented, given the population density.

Water borne diseases are extremely common, including frequent outbreaks of enteric diseases amongst all workers. In addition, the poor water supply and sanitation in the workplace and in the slums where they live also leads to urinary tract diseases amongst women quarry workers. Access to health facilities is poor, the workers being migrant labourers living in a clustered form in slums, and hence the diseases virtually engulf the workers in a vicious circle of vulnerability eroding away their livelihoods: poor working and living conditions, ill-health, poor treatment, poor access to medication, job insecurity leading to continuous labour in spite of poor health, eventually causing the inability to work at a relatively early age. The average lifespan of a quarry worker, according to a civil society group (Prasaar) working on occupational health issues around Delhi quarries, is not more than 50 years. According to the head of Prasaar, Mr Azad, at the time of taking up the jobs in the quarries, a worker is fully aware of the sure death trap, but it's the absolute lack of alternatives that force a person in his twenties to join work in the quarries. In his view, the average working life of a worker – both women and men – is between 12-15 years. After a decade or so of working in the collieries, the worker becomes ill and gradually becomes unable to work, eventually dying in the late 40s or early 50s. The degraded working and living conditions, and uncertainties of life also encourage excessive alcohol consumption habits amongst the quarry workers – both women and men falling victims of the habit. However, alcoholism is prevalent primarily amongst men, affecting women most pervasively. It leads to frequent physical violence at home (such as wife-beating and ill-treatment of children), confrontations amongst neighbours and workmates and desertion of wives by husbands, and above all plunging the entire family into poverty and perpetual indebtedness.

[7] 'The potential hazards from silicosis have been known for a long time, and a number of state governments (in India) have passed legislation to address this. On the basis of a coal mining report, silicosis was first made noticeable under the Factories Act. Under the Workmen Compensation Act, 1923, the Rajasthan Silicosis Rules, 1955 were established. A decade later, the government came out with the 'The Rajasthan Workmen's Compensation (occupational diseases) Rules, 1965 in exercise of its power under Section 32 of the Workmen's Compensation Act, 1923. These new Rules of 1965 came into force with effect from September 20, 1965 of that year, and these define afresh the Occupational Diseases under various classes: Pneumoconiosis – which covers Silicosis or Coal Miners Pneumoconiosis or Asbestosis or any of these diseases accompanied by Pulmonary tuberculosis – was mentioned under one of these classes. Rule 4 of the rules promulgated in 1965 also provides for the establishment of a Pneumoconiosis Medical Board. This board would conduct medical examinations, submit medical reports and grant medical certificates to workmen employed in mines. But the government did not act promptly to constitute this board – an all too familiar example of the administrative machinery simply being disconnected from the law. Finally in 1993, twenty eight years after the notification, the Department of Labour of the Government of Rajasthan constituted the Pneumoconiosis Medical Board in 1993 with three doctors. These developments, anyhow, meant nothing in practice; to date, no person affected with Silicosis has ever received any compensation or reimbursement of costs of treatment by the court orders in Rajasthan. Besides the fact that almost none of the mineworkers are aware of the regulations and laws, the procedure for filing a compensation petition is very complicated. The biggest hurdle in the whole process is the difficulty in obtaining a certificate from the Pneumoconiosis Board. With the board inordinately delayed – and even then largely idle – actual relief for the mineworkers remains out of reach.' (full report available from www.indiatogether.org/2005/aug/env-lungdust.htm accessed on 23 December, 2005).

Hexavalent chromium is known to adversely affect women's health as it is known to be teratogenic (causing birth defects in fetuses whose mothers are exposed to the chemical), embryotoxic, and to cause stillbirths; it is also said to reduce fertility, and, moreover, it is excreted through breast milk. It is well-recognised that there is a gap, a missing link between women's health and the prevailing development scenario. Gender biases in the society contribute significantly to further widen these gaps. Women in particular are more susceptible to pollution of the water source, as they have to spend more time in it on account of their household chores like collecting water, washing clothes, utensils and bathing children'. (Parthasarathy,.2004: 221)

Women's status and position in the ASM economy in India as a whole is not only subordinate, but is placed at the bottom. This low status is reflected in their holding the lowest, unhealthiest and most risky jobs, in them being relegated to those jobs that do not involve the use of machinery, in their being unable to organise and collectively bargain, in their having no prospect for advancement, and above all in their complete lack of ownership of any ASM unit whatsoever. This is known as vertical segregation, one of the features that make the labour market so much against the interests of women. Reducing gender segregation requires proactive state intervention in areas such as special training for women, and the removal of protective and anti-discrimination legislation. The protective laws are intended to protect women's interests, but are well-known to be in fact working against their interest by making them less desirable as labour. The reduction of gender segregation also means that women would be seen as legitimate workers, their needs and rights would be promoted, and their voices heard within each organisation: the workers' organisations, mine-owners' organisations, the local administration and local social and political leaders. Unfortunately, that has not happened in India. Women are toiling everywhere in Indian rural and urban economies, but it is the ASM sector that has a unique and large concentration of the poorest and least advantaged women who continue to remain invisible. One such category of women are those who support their households and families themselves, that is women heads of households. The text in the box gives an example of a typical women headed household in a small quarry-crusher area.

Case example: Women-headed households in the quarries

Thimakka, a widow, 50 years old, belongs to Vaddara community with one adult male and two women and an infant. All the three adults in the family are employed as wage labourers in the nearby stone crusher. She has worked in the factory for the last 15 years or so after migrating from the Besthavaripeta village, in Markapur, Prakasham district of Andhra Pradesh. Thimakka migrated along with her husband with a one-year old son. He worked for three years, but developed tuberculosis and died within a few years. They entirely spent their little savings, sold the small amount of land they owned and the valuables for his treatment. Although Markapur is well-known for its slate mines and quarries, Thimakka had no expertise in working in them. It was sheer economic necessity that turned her into a slate quarry worker.

Thimakka is currently working as a contract labour in the same crusher. Her job is to break the larger stone into 9square-inch size pieces. One tractor load can earn her Rs. 105, however, the stones are initially blasted by using gunpowder and hence Rs. 40 is deducted from her payment. So she gets paid a measly amount of Rs. 60-70/- (US$ 1.2) per day.

Thimakka has neither debts nor savings, but lives on a day to day basis. Most of the money is spent on food items, as she and her family do not have ration cards to prove her citizenship. Over the years, her health has deteriorated and medical expenses are increasing. No politician approaches them for votes, as they have no voting rights. Due to sound and dust pollution she along with her family are suffering from frequent respiratory problems. She does not visit the government's health care centre as her time availability is limited and she feels that the centres only prescribe medicines instead of diagnosing the ailments.

Two years ago her house was gutted in a fire accident, and the crusher owner has provided her with a shelter free of cost. Hence, she feels more obliged to work. The management gave them only Rs.1,000 towards contingency expenditures, as they had lost all possessions. None of the family members are aware of any government poverty alleviation measures. No scheme seems to have helped them to rise above the poverty level. No old age pension scheme has been designed to help women workers like her who has to keep working till her last breath just to be able to support the family and survive.

Source: Dr Jayalakshmi, National Institute of Rural Development, Hyderabad.

The forms of production in small mines and quarries vary depending on the type of mineral, its value, its extent and the processes employed and the structure of the organisation[8]. Speaking in a general manner, one can note the following interest groups involved in administering small mines and quarries in the South Asian countries. However, it is important to note that these categories are not mutually exclusive, and may not be present in all quarries.

- The government officials of the departments having jurisdiction over licensing the unit, supervising it and recording its production. These departments are: Department of Mines and Geology (to scrutinise whether the land applied for being mined has already been granted to or applied by somebody else or not, or if the land is in a protected forest or wildlife sanctuary area or not), the local forest department which establishes the status of the area in their records and through physical verification, and issues a 'no objection certificate' (NOC), the Ministry of Environment and Forests to ascertain the implications and repercussions on local forests, the District Collector, the Sub-district or *tehsil* officials or the *Patwaris*, and the head of the village council or *Panchayat pradhan* – all requiring to survey the current use of the land and to provide NOCs. In some cases, State Pollution Boards are also involved.

- Mine- (or quarry) owners or the lessees (who take out the mine leases) obtain the permits/licenses/permissions, invest the capital, and hire contractors to run the day to day mining operations. The proportion of women in both these categories is almost zero.

- Contractors, managers, supervisors, account-keeper and other such helpers in the site office. This is also an entirely male domain of work.

- Mine workers or the actual miners who dig the ground for ores and stones. Often there may be three subdivisions in this category: those who dig, those who carry loads, and those who process. Even in case of gold panning, digging may constitute a separate job element than processing such as sorting, sifting or panning. Women's labour is usually found to be concentrated in the two latter sub-groups. In case of many illegal and non-legal mines, the main cutter may have the responsibility of selling the diggings or panned products to local customers after semi-processing.

- Local customers who sell it in turn to *mahajan*s or dealers after further processing. For example in case of coal, the local customers may take the mineral home for coking. This group may also include dealers[3] purchasing crude minerals from mine-owners in case of legal mines. In case of illegal mines purchases is made from local suppliers and then sell it to local market after semi-processing. Agents may be another intermediary in this group. Similarly,

[8] The form of production is essentially based on the type of relationship between the owner and the workers, and the type of production process carried out in an industry (Harris, 1982: 947).

dealers could be yet another sub-group. Women are almost never found in any of these roles.

- In case of larger scale operations or higher value products, such as some marble or mica, the manufacturing exporters form the next category of interest holders. There may be merchant exporters who are not manufacturers, but sub-contracts to unregistered workshops for processing, exporting or sale of the finished products.

- Unregistered workshops who semi-process crude mineral output. Some of the workshops may also process final products. An unregistered workshop is a place where some aspects of 'production' such as processing, servicing, repairing or making of goods for sale go on.

- Household industry where women and men work under the putting out system. A household industry is defined as an industry conducted by the head of the household himself/herself and/or mainly by members of the household at home or within the village in rural areas, or only within the premises of the house where the household lives in urban areas. In case of mica or gemstones, this becomes an important group.

It is clear that although women are present in large numbers, they are at the bottom of the hierarchy of production (Lahiri-Dutt, 2003). They play major roles in subsistence as well as commercialized small mining and quarrying, but generally have very low level of control over the products of their labour or to act as autonomous subjects. Production relations in the small mines and quarries are characterised by semi-feudal and pre-capitalist forms as well as capitalist wage relations, making exploitation easier. This is partly a reflection of the rural context in which the small mines and quarries are often located, far away from the modern social values and systems. In fact the quarries that are located closer to the metropolitan cities (such as those New Delhi), have been under close scrutiny of environmental and civil action groups, who wished to stop their operation in order to protect the local environment. Living and working conditions are deplorable; small and low temporary huts with plastic sheets for roofing, no clean and safe accessible drinking water supply, no electricity, no health services and no educational facilities for the children to naturally join in to support the family at times of ill-health of the elders, not uncommon or infrequent.

A common feature in labour organisation in small mines and quarries is sub-contracting. As the mine owner sub-contracts a thekedar for the regular supply and control of labour, at every stage in the production, a closer examination would reveal both vertical and horizontal forms of sub-contracting, as well as mixed forms. In horizontal sub-contracting the larger units give out part or whole of the processing work to smaller sized units, unregistered workshops and dealers without an intermediary and without raw materials. In vertical sub-contracting a jobber makes the connection between a factory and workshops with inputs. In the mixed form, both larger and smaller units sub-contract directly to unregistered workshops without inputs; and also assign quarry sardars with inputs to sub-contract to unregistered workshops and home-based processors. The final products that are made by larger units are more standardized, making larger batches of standardized products, than those of smaller sized factories/crushers/processing plants, unregistered workshops and household units. To keep the number of labourers at a minimum and to keep the wages at a minimum, the raw materials and semi-processed products are sent to local workshops for processing. Women workers often carry out one or more parts of the processing.

The small mines and quarries have **different categories of female and male labourers**: permanent, casual, contract, self-employed producers, dependent producers and unpaid family members. The permanent workers have a relatively stable job, mostly without any written agreement, and expect to work in the same production unit for a long time and may be protected by labour legislation. The casual labourers are recruited on a short-term basis and are not covered by labour legislation. The contract labourers are recruited either for certain numbers of days or for certain amounts of work (piece rate), and are paid accordingly without being covered by any

sort of legislation. The unregistered processing plants or workshops are run by self-employed producers with hired labour as dependent producers. The unpaid family labour may include women and children, who are extending a helping hand to improve the family's chances of survival. It is notable that women are never recruited as long-term wageworkers. In both larger and in smaller mines and quarries, women are almost always employed as casual workers or contract workers. The casualisation of work occurs more where parts of the production process are sub-contracted to smaller units by the larger production units. Seasonality influences all aspects of production including the recruitment of casual and contract workers. In illegal mines and quarries, the male head of the household can be described as a self-employed producer. In household production units women's participation is complete on putting out system with girl children as unpaid family labour.

A most regrettable feature of women and men's concerns in the small mines and quarries is the question of **bondage**, a little known form of slavery today, but a most widely used method of enslaving people in South Asian countries. According to Srivastava (2005: 3), 'This is a system of forced, or partly forced, labour under which the debtor enters into an agreement, oral ort written, with the creditor. According to this agreement, in consideration of an "advance" obtained by the debtor or by any of his lineal ascendants and in consideration of interest on such as advance or in pursuance of any customary obligation or by reason of his birth in any particular caste or community, the debtor agrees to render, by himself or through any member of his family, labour for the creditor for a specified or unspecified period of time either without wages or for nominal wages, or forfeit the freedom of employment or other means of livelihood, or forfeit the right to move freely throughout India, or forfeit the right to appropriate or sell at market value any of his property or the product of his own or any of his family members' labour'. Large segments of society in South Asia accept this brutal form of labour as the normal state of affairs. The first systematic survey of bonded labour carried out by the Gandhi Peace Foundation and National Labour Institute in 1978 placed the number of bonded labourers at 2.62 million. The survey also found that 61.5% of the bonded labourers were from Schedules Castes (SC, lower castes) and 25% were from Scheduled Tribes (ST, indigenous peoples or *adivasi*s) (Sarma, 1981). The National Commission on Rural Labour (NCRL) in 1991 presented a clearer picture of bonded labour in India, and noted that bondage among women on account of social as well as economic factors and mentioned the examples of indebtedness-induced prostitution of women and children. The Commission also mentioned the high incidence of child bondage and tribal exploitation in many parts of the country. Of the vast number of bonded labourers in South Asia, a large proportion is toiling away in the small mines and quarries, and crushers (Ministry of Labour, 1991). In South Asia's caste-bound and hierarchical society, this takes many forms such as inter-generational bondage, child bondage, loyalty bondage, bondage through land allotment, and widow bondage. Debt bondage is the most prevalent form amongst the various kinds of bondage.

Debt-bondage is a creditor-debtor relationship between the employer and the employees which can then spill over to other members of the family, especially **women and girl children** who have the least control over their fates. This is a kind of forced labour and servitude characterised by compulsion, whether customary or otherwise. The United Nations Working Group on Contemporary Forms of Slavery estimated in 1999 that 10 million of 20 million slaves of the modern world live in India alone. Of this number, more than half are women and children. A Human Rights Watch report (1996: 89) puts the figure at a higher level: 'Approximately fifteen million children work as bonded labourers in India'. It also notes that 'While both boys and girls work as child labourers, the girl child is often subject to even more dismal treatment than her brothers. Girls consistently earn less money than boys (as women earn significantly less than men in India), and are subject to gender-specific forms of abuse from their employers, including rape. In addition to lower pay and greater abuse, girls suffer from the high demands placed on them within the Indian household. Girls have to work in the house – they tend to the other children, they clean, they go to the market, they cook – even if they are also working long and gruelling hours outside the home.' It is indeed true that girls are over represented amongst the child labourers found in the small mines and quarries. When a woman marries a bonded labour, she

also marries the conditions of his bondage, and as women they are forced to work longer, often outside of quarry jobs, and exemplify the description of Justice P.N. Bhagwati of the Indian Supreme Court (1982): '[Bonded labourers] are non-beings, exiles of civilization, living a life worse than that of animals, for the animal is at least free to roam about as they like …This system, under which one person can be bonded to provide labour for another for years and years until an alleged debt is supposed to be wiped out, which never seems to happen during the lifetime of the bonded labourer, is totally incompatible with the new egalitarian socio-economic order which we have promised to build…'.[9]

In Pakistan's small mines and quarries Saleem showed the 'vicious circle' of bonded labour where about 80-85% of them came from only two districts, Swat and Shangla of North West Frontier Province (NWFP): 'An agent of the mine owners, who always remains behind the scene in most cases, recruits the people for this exhausting grind by giving them "advance money". The advance money ranges from Rs 40,000 to 45,000 in Balochistan, Rs 25,000 to 30,000 in Sindh and at its lowest in the NWFP.' The bonded labourers in Nepal are called *kamaiya*s and belong mainly to the Tharu community. Deep in poverty, they are forced to borrow rice and other food from the landlords and get trapped into bondage. Once indebted, the borrower and his heirs are all bonded to the landlord, but the condition of women in these families is the worst.

The system of bondage continues in spite of the efforts of bodies such as the National Human Rights Commission in India to free such labour as it is a dynamic problem and the lack of alternative occupations and proper rehabilitation process push them back into bondage, which often assures at least two square meals a day. It has been noted by the Human Rights Watch (1996: 9) that:

> Those who stand to gain from the abolition of debt bondage …are precisely those who are least likely to be in a position to exert pressure or claim their rights. Bonded labourers are extremely vulnerable to negative repercussions should they attempt to organize or otherwise agitate for enforcement of the law. Even requests for minimal improvements can lead to a violent response from employers. Bonded labourers have been severely beaten after asking for a raise of a few cents a day, or asking the employer to fulfil a promise to give them a few sacks of grain each year, or for other relatively mild "challenges" to the status quo. Scores of children told Human Rights Watch that their master would beat them if they brought up the subject of wages. More serious challenges to the master's authority may be met with a more violent or even deadly response. During a much-publicized series of events in 1985, in the state of Haryana, protesting quarry workers were beaten to death by their employers' hired thugs while uniformed police officers looked on. One of the workers was beaten to death and thirty-four others were seriously wounded. Police later took the injured workers from the hospital to the police station, where they were arrested and fingerprinted. According to a regional activist in the state of Rajasthan, mine owners continue to respond to labor disputes with unchecked brutality. "Murder and mayhem is nothing to these people. If they are challenged, they will kill the workers and bury the bodies in the quarries".

> *The Bhovi community comes under the Scheduled Castes. …they are traditional stone cutters and are experts in it. The entire family would be working ion the quarry and they live and die in the quarry. Almost all of them are bonded labourers. They are illiterate and do not send their children to schools. Their children also work along with their parents in the quarry. Though they are touchables, their social and economic conditions to a large extent are equal to untouchables. Some times they move from quarry to quarry in search of work.*

[9] See http://www.antislavery.org/homepage/campaign/bondedinfo.htm (accessed on 16th December, 2005) for more material on 'unfree' labour.

Sreedharan, Oruvingal and R. Muniyapa (2000: 6)

The relationship between women's labour and bondage are acknowledged, but the question of linkages between **gender and child labour**[10] in the small mines and quarries is still ill-understood. This is because of the fact that even to this day, 'women and children' are seen as a single category in many official circles[11]. This often leads to a justification of protective legislation such as the prohibition of women's work in the mines and quarries. The working conditions, unfortunately, are well-recognised to be extremely poor, and the work is arduous, making it easy for justifying such prohibition. What it does in fact, is to make illegitimate women's rights as equal citizens with equal economic rights to earn adequate and safe livelihoods, turning them into non-citizens. It is indeed true that women are accompanied by children into the small mines and quarries, but at the same time, it would be completely wrong to assume that one must get the women out of the quarries in order to secure a brighter future for the child workers. The argument itself could be faulty: the most common form of child labour is apprenticeship, often seen as a process of educating the child by parents in to a valuable work skill to help survive in the future. The question of child labour is entangled with the question of bonded slavery in children, rising in recent decades in South Asia (Datta and Chanda, 1998: 2). In fact more children accompany their fathers as apprentices than their mothers. The question of child labour also involves the question of 'gender' of what is sweepingly seen as 'the child'. It must be mentioned that girl children are often at a greater disadvantage than the boys because of their gender.

The Indian Constitution prohibits the employment of child labour in factories and mines[12]. According to the Child Labour (Prohibition and Regulation) Act 1986, children are prohibited from working in quarrying and mining as these fall under 'hazardous industries.' In spite of this preventive measure, children continue to be engaged in mining and quarrying work in entire South Asia, as a more docile and cheaper form of labour. The Government of India has begun a National Child Labour Programme which is designed to release and rehabilitate children under the purview of the Act.

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[10] The term is used to mean children between 5 to 14 years of age, in gainful occupation injurious to their physical, mental, moral and social development, used as synonyms of 'employed child' or 'working child', young people who are leading adult lives working long hours for low wages.

[11] This is evident from the fact that many national or state machineries for women, ministries and government departments, set up during the 1950s in almost all third world countries still reflect a welfare approach' to women's issues in their nomenclature; in India for example, the ministry is still known as Ministry and Women and Children's Welfare and in Bangladesh Women and Children's Affairs, putting women and children's concerns in the same category. The implicit understanding behind such nomenclature is the acceptance of motherhood being the primary roles and responsibility of women. It is assumed that women will automatically benefit from improvements in the conditions of their families assuming in the benefits trickling down through the male head of household (Elson 1995). Women are thus seen mainly as passive recipients of developmental assistance whose major role was at home, raising the children and minding the household, rather than participants in the development process. Consequent to perceiving women only as mothers and/or housewives, their needs were determined to be maternal and child health and nutrition. Many of these official institutions tend to remain weak, under-resourced, vulnerable to changing political fortunes and often ghettoised within social and welfare departments (Oxaal 1997), and South Asia is no exception. This weakness is evident in spite of the noticeable changes are in the air; the Pakistan government now calls the relevant institution the Ministry of Women Development and Sri Lanka Ministry of Women's Empowerment and Social Welfare.

[12] Article 24 of the Indian Constitution states that no child up to the age of 14 shall be employed in any factory or mine. The Labour Act of 1951, the Mines Act of 1952, and the Factories Act of 1954 also strictly ban the employment of child labour.

… a significant gap in the entire discussion …is the lack of initiatives that see the problem (of child labour) in cultural terms. Some of this is addressed by the suggestion to make education compulsory in order to remove child labour. But that suggestion also has ignored the need for assessing the impact of gender roles in child labour. Making education compulsory will address the problem of keeping children in schools. But women can play an important role in making the decision to send children to schools. If there is a choice between sending male or female children to school, male children will inevitably get preference. Female literacy can go a long way in ensuring reproductive decision-making in which women can have a say in deciding on the number of children the family is to have. Studies on women and literacy have shown that literacy is related to population control. ….This study therefore makes the case for female literacy and education to be at the heart of reform policies and programs that seek to make education compulsory in order to remove child labour. (Rekha Datta and Rupa Chanda. 1998).

The small mines and quarries **employ both migrants and members of local communities**. Migration can play different roles in the livelihoods of poor households of ASM workers; it is a part of the normal livelihood/survival strategy of the poor and does not occur only during times of emergency in the counties of India, although the rate of migration increases at times of socio-economic distress, political crisis and/or natural disasters. **Migration** operates through various networks: friendship networks, kin relations and village ties. These networks provide sources of information regarding a new mineral deposit or new quarries where scavenging might be possible or jobs could be had. Women commonly migrate with their families and provide a family unit of labour, including young children who are able to work. Another common aspect of this networked migration is seasonality of mobility, many small mining and quarrying workers are poor landless farmers or other rural workers seeking additional and cash income on a temporary basis during the non-farming seasons (such as during the dry winter period in the Indian subcontinent cash-income opportunities in ASM during the drier part of the year. Such seasonal migrations from poverty-stricken rural areas to economically better-off areas, or to mineral-rich tracts for cash incomes at times of agricultural stress or quiescence are common in India.

Temporary but **sudden shocks to livelihoods** such as droughts also increase the helplessness of the rural poor and force them to seek jobs outside of the farming economy, and the small mines and quarries are often the primary absorbers of such communities. Being poor means low asset levels, little or no access to capital, low skills and hardly any ability to influence public policy choices and resource allocation, making survival all the more difficult at times of severe crisis. Consequently, if they live in a mineral-rich tract, local communities tend to fall back upon working in quarries or scavenging from old and abandoned, or even operational, large mines. If they live in agricultural areas, groups and families often migrate in search of such jobs to mining areas. For example, the largest segment of workers in the collieries of northeastern India comes from Nepal.

Sudden and systemic shocks also encourage a large number of displaced rural landless to join the mines and quarries. These shocks commonly have two origins, **natural disasters and hazards**, to which the poor is the most vulnerable, and **regional social and political conflicts** arising out of the complex history of the region. In a region where agriculture is still intended primarily for subsistence and is heavily dependent on monsoon rains, a couple of successive years of drought often forces rural labourers out of the villages. Similarly, floods or storms, earthquakes and location-specific hazards such as river-bank erosion in the flood plains often drive poor people into the small mines and quarries seeking jobs. In many large mining areas, the poor attention to preserving ecological integrity has caused the decay of farming and destruction of local natural resources, and the involvement of peasants into what is often seen as illegitimate practices by the state authorities. Persistent conflicts including low-key violence and the exercise of muscle power based on local politics or ethnic/religious context threaten the well-being of poor, causing their flight not only into the big cities but also into mining-quarrying jobs. Communal violence causes thousands of deaths and disruptions in civic life, forcing the poor to leave their original homes in search of more secure futures. Such violence may also occur with

the widening of income disparities in areas of better economic performance and non-fulfilment of rising expectations of local communities. Above all, displacement due to large scale developmental projects, particularly large dams and mining-power generation schemes, have been well-known to drive poor peasants into informal, risky and insecure forms of occupations such as those in the small mines and quarries. Migration is thus related to a set of other factors: development-induced displacement, poverty-induced migration, forced migration of various sort and conflict related migration. Being a gendered process, migration, however, leads to shifts in gender roles and responsibilities (Jolly and Reeves, 2005). As women as new migrants move into small mines and quarries as workers, they usually have little or no support network. These support networks were useful in looking after children, in facing harassments, in tackling discrimination, and in preventing physical integrity. New vulnerabilities that are nearly impossible to deal alone are created for women migrants working in the mines and quarries.

The **connection between poverty and work in ASM** is more or less clear in South Asia. However, small mines and quarries are not yet an identified part of 'target' population in the various poverty reduction country programmes. Existing poverty-related documents and the emerging pro-poor strategies of development are largely silent on formulating specific interventions for reducing poverty in mining communities, and remain focused upon agricultural and other rural-based communities. The major policy initiative in the mining sector includes the National Mineral Policy of India[13], which mentions 'Small Deposits' (7.12) only once in passing: 'Efforts will be made to promote small scale mining of small deposits in a scientific and efficient manner while safeguarding vital environmental and ecological imperatives. In grant of mineral concessions for small deposits in Scheduled Areas, preference shall be given to the Scheduled Tribes'. This mention does not differentiate between traditional and non-traditional artisanal practices and small businesses such as quarries. It is also notable that no mechanism of giving preference to the tribal or indigenous peoples to take up grants of mineral concessions has yet been set in place. On the other hand, the inalienable and non-transferable tribal land is regularly usurped through corruption by more powerful and better-off groups. It is not uncommon to find a person of tribal origin working as a wage labourer in a quarry operating on the land that was originally owned by himself or his family members.

The **interface between the environment, large-scale mining and ASM** in India is extremely complex. This is primarily due to three factors: the enormous importance of mining in the 'nation-building' agenda of the country governments, consequent invisibility of small mines and quarries and their concerns and issues, and the strength of resistance of anti-mining movements led by civil society groups. The ill-effects of large scale mining in India, particularly the utter neglect of social and gender concerns therein, have triggered off these movements. The resistance means that a negative attitude pre-exists against all types of mining in the minds of environmentalists and human rights advocates. Consequently, the owners who try to make a quick profit from exploiting small mineral deposits and the workers are demonised, and the mineworkers remain invisible in the pro-environmental agenda. The mine owners' argue that their profit levels are low and the government procedures in setting up a quarry are far too complicated and lengthy (Goyal, 2005). In general, they neglect to recognise workers' rights to a safe and enabling working environment. On the other hand, cash-strapped state governments, usually in charge of administering the mines and earning revenues from them, see the small mines and quarries as a way to 'develop' the state, meaning enhancing the state exchequer. The environmentalists have pointed out that the cumulative effects of the small mines and quarries are no less then the large mines, the latter being at least nominally subject to environmental regulations. The impacts of these mines and quarries include dereliction of land, deforestation and lowering of the ground water table, pollution of local air and water sources, and rapid social and cultural change amongst local communities. These impacts draw the attention away from the

[13] Other countries of the region do not yet have any definitive Mineral Sector Policy. Pakistan is on its way towards building up one, but if the Mineral Sector Development Policy Note of November 20, 2003, is of any importance, the country is still in the stage of broadly outlining the mitigation issues of large scale mining and institutional support to ASM.

extreme poverty driving the local and migrant poor to take up jobs in the mines and quarries, and the informal or unorganised nature of them mean that they remain outside of the purview of the governments. There is also an antagonism between large scale mining and scavenging operations on them that often exist as parasites. The interface between large scale mining and agriculture is also problematic; poor environmental care has resulted in the dereliction of large areas of land in mineral tracts and displaced a large percentage of peasants from their traditional livelihoods, without opening many alternative economic opportunities for them (Lahiri-Dutt, 1999). Resettlement and rehabilitation processes for mining displaced people have left much to be desired (Lahiri-Dutt and Herbert, 2005). As a result, illegal mining is rife in the coal-bearing tracts of eastern India, and one of the studies estimated the amount of illegally-mined coal distributed just by ordinary bicycles is around 2.5 million tonnes annually only in the eastern coal-producing region (Lahiri-Dutt and Williams, 2005). Therefore, conflicts of interests between large-scale resource projects and small mines and quarries are not uncommon.

THE POLICY IMPLICATIONS OF GENDERED LIVELIHOODS IN ASM IN INDIA

Before we discuss the policy implications of gendered livelihoods in India, let me stress upon the fact that work is a part of any human being's life, and women and men toiling in the small mines and quarries in India are not an exception to that fact. The work itself must not be seen as a negative aspect; although women's work in mining has been a contested area since the advent of modern mining in Europe, often trying to 'protect' women from the poor conditions existing in the mines. The results of protective measures have not been effective, as we know that when poverty is the driving force, both women and men do take up the subsistence burdens of their families, irrespective of legal structures regulating their work. Work and consequent economic benefits from the small mines and quarries can, however, be seen as enabling and empowering for women and men. What is needed is an improvement in the conditions surrounding the work, and in this regard, measures such as protecting workers' interests, safety and health, providing a safe and secure working environment, assuring continued employment and old age security, and improvements in wage levels. Many of these ills are not isolated; they are closely associated with rural poverty and consequent exploitation and cannot be dealt with in segregation. For women workers of the small mines and quarries in particular, elimination of bias and harassment, and acceptance of their multiple and productive roles in the economy, in the society and at home is needed. The small mines and quarries are an integral part of the informal sector of the Indian economy; they are not yet well understood and well documented. Improving the record keeping, increasing the understanding of production relations and processes, and tracking the processes of change through gender-based data collection and analyses would be the first step towards building pro-poor policies that actually work effectively at the grassroots level.

Development policy in recent years has increasingly focussed its attention on the area of women's work in the informal economy including the small mining sector (Heemskerk, 2003). However, as we noted in our research, women form the poorest in the small mining economy that itself is a repository of extreme poverty and exploitation. Such is their invisibility that often the perceptions of stakeholders regarding women's work roles and issues surrounding their work are not well-developed or the opinions of experts are neglectful. For example, there is not yet a great appreciation of the production relations that tie women and men into bondages of various sort within the mines and quarries. Another example is the use of technology; the ability to use technology or 'appropriate technology' is often seen by the ASM experts as gender-neutral and the panacea for all social ills. However, in my study I noticed that technology intensive mining processes not only tend to exclude women but relegate them to lower status and low skilled jobs. Often these are more risky and dangerous jobs, and reproduce the social biases against women workers within the industrial production in mines and quarries. Consequently, the status of

women in the ASM economy is low, and the strategic and gender needs and concerns of women are not fulfilled. The existing laws regarding the small mines and quarries are unclear and ill-defined; the legal framework on women's work need to be revisited. This is not uncommon for any part of the informal sector. However, small mining and quarrying, as we noted, is here to stay. These small mines and quarries are a major source of revenue for the states, the state Mineral Development Corporations are aggressively advancing mining leases. In Rajasthan, for example, this has resulted in several court cases and the rise of powerful civil society movements such as the Mine Labour Protection Campaign.

These considerations lead us to ask the simple yet critical question, 'will promoting women's work in the ASM sector in India improve the quality of life for rural poor women of the country?' This question has great implications for developing pro-poor livelihood policies that are effective in three areas: sustaining the economic benefits for the states, for the families and the individuals – in other words sustaining the development from mineral extraction; raising the well-being of the innumerable poor people engaged annually or seasonally in small mining and quarrying – in other words poverty alleviation through income generation; and in raising the standards of living in meeting the Millennium Development Goals. The answer is definitely in the positive, although the need of the hour is to develop a gender sensitive and pro-poor framework of developmental interventions that would be effective in dealing with the big challenges that small mines and quarries pose to the Indian policy-makers.

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