Livelihood Concerns of Women and Men in Small Mines and Quarries of South Asia

Kuntala Lahiri-Dutt
Fellow, Resource Management in Asia Pacific Program
Research School of Pacific and Asian Studies
The Australian National University
ACT 0200, Canberra, Australia
Email: kuntala.lahiri-dutt@anu.edu.au

Abstract
The global trend of informalisation of women's work is also evident in what is commonly known as artisanal and small-scale mining (ASM) practices. Women constitute a large segment of workers in the informal mines and quarries all over the world, working as cutters, diggers, sievers, panners, crushers, processors and transporters of a broad range of minerals from sand, gravel and stones to gemstones, gold and diamonds. Small mines and quarries are extremely diverse in their nature, but comprise a repository of extremely poor people. Women are quite invisible although they participate in large numbers in these mineral extraction practices. This paper focuses on the small mines and quarries of South Asia, and reviews the gender and livelihood issues and concerns in these mines. This research presented here is exploratory in nature, making some estimates based on proxy indicators and field surveys, and addresses a gap in existing knowledge in ASM and on gender roles in the informal work in the mines and quarries in South Asia. The paper aims at providing the necessary backdrop, relevant information and interpretation of their livelihood needs for developing policy measures in relation to the informal mining industry in South Asia and for sensitisation of stakeholders to the issues rooted in gender. The more specific objectives of the research are to examine women's roles and participation in a range of informal mining practices in the region within the overall livelihoods framework.

Gender and artisanal and small mining

A recent estimate suggests that over 20 million people in the world depend on mineral resource extraction on an informal basis for their living, a figure that is immensely more than those employed by the formal mining industries. Indeed, employment in the formal mining sector is steadily declining (ILO, 2002). For many, the mineral extraction practices form a continuation of traditional modes of life, but there are also those seeking, seasonally, extra cash income, those made jobless by economic reforms and also refugees displaced by big project developments. Internationally these informal modes of mineral extraction practices are collectively known as 'Artisanal and Small-Scale Mining' (or ASM in brief). Estimates of the number of people involved in ASM depend on what is meant by ASM, the focus often being on gold, diamonds and other high value materials, but, when bulk commodities are included such as coal, limestone, sand and gravel, the numbers skyrocket.

The significant contribution of small mining to the world mineral production was noted early on by mining engineers (see for example Argall, 1978; Carman, 1985; Noestaller, 1987; 1994). These mines and quarries are part of the burgeoning informal or 'unorganised' sector of third world economies; however the term 'informal' is often used synonymously with 'illegal'. The strong anti-mining movements led by pro-environment groups have generally focused on three main areas: the negative aspects of unregulated mineral extraction; not differentiating between ASM and large-scale mining and overlooking the question of livelihoods of the large numbers of people involved and their livelihoods in ASM (Bhanumathi, 2004; Vagholikar et al, 2003). The official attitude is often to regulate, regularize and formalize the supply chains and links especially in the high value mineral products such as gold and diamonds (CASM, 2005). It is well-known that women comprise a significant part of the labour force in the informal income-generating activities and women do indeed constitute a large segment of workers in the informal[1] mines all over the world. This paper examines this area of work and livelihoods of women and men, the regional focus being South Asia. The patriarchal social structure of South Asian societies tends to obscure the contributions made by the women workers in these mines, and the roles and livelihood concerns of women and men. The global report on ASM by Hentschel et al (2002) as part of the Mines, Minerals and Sustainable Development (MMSD) process, a policy process taken up by the

[1] '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. In my earlier works (Lahiri-Dutt 2003(a); 2004) I have used the term informal as coterminous of ASM.

Global Mining Initiative, has only a very small section on South Asian ASM, and even a shorter one on gender.

This paper presents a review of the emerging issues related to livelihoods around mines and quarries in South Asia and addresses a gap in existing knowledge in ASM and on gender roles in the informal mines. It is part of a wider, exploratory and ongoing research based on the case study method by several partners and myself in selected locations[2]. Although a large number of lives depend on the incomes generated from small-scale mineral extraction, and women perform a range of productive or income-generating activities around these mines including those at home, this paper focuses only on women as compared to men working in ASM. Women workers in ASM form the proverbial 'poorest of the poor', in urgent need of interventions to improve their freedom and ability to choose livelihoods. The paper aims at providing the necessary backdrop, relevant information and interpretation of their livelihood needs for developing policy measures in relation to the informal mining industry in South Asia and for sensitisation of stakeholders to the issues rooted in gender. The more specific objectives of the research are to examine women's roles and participation in a range of informal mining practices in the region within the overall livelihoods framework.

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 actual mining jobs, panning, processing, transportation and related jobs on the fields, the percentage of women can vary from a low of 10% to a high of 50%. It has been noted (for example in a report on women *ninja* miners of Mongolia by MBDA 2004) that often ASM is a dangerous and physically demanding activity, leading to a gender division of labour in which mean undertake the 'heavy jobs', women take care of most day-to-day chores. However, Moretti (2005: 5) observed that limited female participation is not exclusively a matter of personal preference but the outcome of men's nearly complete domination of the contemporary space of production and social reproduction. Moretti's work gives the example of Mount Kaindi's (Papua New Guinea) extractive landscape where in accordance with 'traditional' principles of land ownership almost all registered mining leases, tributary rights and customary land are held by men and transmitted patrilineally. Even in matrilineal societies such as the Maroons of Suriname, Heemskerk (2000: 7) noted the

[2] Some of the material – including those done by our partners - from this research is now available at our website (see www.asmasiapacific.org)

apparent autonomy hides gender inequality in relative access of women and men to political power, money, capital assets and contacts with the outside world. Amutabi and Lutta-Mukhebi (2001: 5) explain this disempowered status in terms of lack of land rights, 'in mining areas in Kenya ... women have only access to but do not control land. This does not make it possible for women to have full control over the mining activities effectively. The traditional social system deprives women control of mining pits and only allows them access through men. Thus, their overall status in the production process is low'. A similar pattern may be observed in Latin American ASM communities; women occupy a number of roles as labourers undertaking the most labour-intensive and informal jobs in Bolivia (as *palliri*s), or are associated with subsistence activities such as those in Colombia (Veiga 1997). Hilson (2001; 2002) documented the involvement of women in Ghanaian small-scale mining showing women comprise approximately 15% of the legal small-scale metal mining labour force and about 50% of the ASM or *galampsey* industry. Women are represented more heavily in lower value industrial minerals, the proportion rising to over 75% in salt mining. Hinton et al (2003: 13) noted that the key factors in determining gender roles and status of women in ASM include: 'women's and men's access to and control of, resources; their ability to attain knowledge of resources, their decision-making capacity or political power; and beliefs or attitudes that support or impede the transformation of gender roles.' Observing the gender roles, Amutabi and Lutta-Mukhebi (2001: 15) comment: 'at Mukibira, it was noticeable that women do most of the work. They help in digging pits, panning, washing and selection using mercury. They also do the marketing, as they seem to be preferred by buyers. This is because women are generally regarded as being more honest then men'. Graulau (2006: 299) put women's labour as the core of capital accumulation in the mining frontiers of Brazilian Amazon: 'Vulnerability of women's labour in *garimpagen* is inscribed in broader processes of capital accumulation in the Amazon region….. Women's labour has been crucial in the expansion of capitalism and the reproduction of its modes of production in the mining frontier.'

In Asia, even in countries like the Philippines, where traditionally ASM has provided livelihood to a large number of people as the primary occupation with some shifting cultivation, the numbers of women in ASM have been rising (Caballero 2006). Only sparse data are available on China but according to Professor Shen Li, of the Chinese Academy of Sciences, the number of people could reach 100 million if cheap industrial minerals such as sand, stone and gravels are included[3]. In South Asia, like everywhere else with the rise in the numbers of quarries, and decline

[3] Personal communication. However, Professor Li is an authority on ASM in China and the head also of CASM China network. See http://www.casmsite.org/regional_CASM-China.htm

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. UNIFEM (2005: 59) 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 South Asia, women are not owner-entrepreneurs, having no control over the land or the mineral resource contained therein; they 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 ASM work: 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 lack of a unified definition of ASM in South Asia, 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 South Asia, but excepting the gemstones industry of Sri Lanka and some scattered gold and diamond extractions in India and Pakistan, the largest segment of the minerals are low value, building/construction materials (such as stones of various sort, gravels, sands and clays, and limestone) and coal; there are one or two exceptions such as some export-oriented marble and mica.

I have used the livelihood approach[4] 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. The ways women and men seek and sustain a livelihood are different; as gender roles are different, so are the livelihoods gendered activities. Understanding

[4] 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.

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). Labonne (1999) and Carnegie (2002) have used this approach in the earlier studies of ASM communities in Africa, whilst Jennings (1999) brought the attention to the labour and social issues in global ASM.

The paper first gives an approximate indication of numbers based on existing information on the small mines and quarries, then describes the livelihoods and forms and structures of production, examines the position of women and men in ASM, and reviews the gender concerns thereof (Lahiri-Dutt 2005 gives more on the methodology). Extensive 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.

Data on South Asia

The foremost problem affecting research on the ASM sector anywhere in the world is the paucity of data or even literature which stems from a mix of reasons: omitted from official data because of their smallness; poor records on account of their informality; fear of government interference etc (Heemskerk 2005, p. 84-85). Lack of distinction between child and women's labour by government departments was also an impediment.

Because of these difficulties, I have used qualitative methods to improve the understanding of women's participation and contributions in the mines and quarries through visits to the field to establish contacts with key personnel and civil society groups working on the ground. As India is the major mining country in South Asia, a greater research effort was devoted to it. In addition, I engaged with local stakeholders, including mine owners' associations, government officials, resource persons, trade union workers and NGOs. This partnering process led to a wider engagement, community mapping of needs and strengths, and was intended to be a sensitisation process as well as a research process. There are some earlier works; in case of India, I built on the foundations of Chakravorty (2001), Chakraborty (2002), Ghosh (1996), Sahu (1992), Rudra (2002), and Ghose (1996; 1994; 1991; 1986), in particular the work done by National Institute of Small Mines (NISM) on the Orissa manganese mines and the stone quarries of West Bengal.

The problem with data can be illustrated by DGMS information which gives 166,000 people as employed in non-energy mines in 2002 (Table 1).

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.

Corresponding data for 1998, reported in Chakraborty (2001), indicated that just over 12% of such 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 just in one part of West Bengal alone (Pacami-Hatgacha), 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. 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 there are 100,000 quarry workers who 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 must be added those working in other ASM, largely in illegal coal mines and gold panning.

That 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. With a population of 62 million in 2001, this would lead, as per West Bengal, to an estimate of more than 12 million workers in the quarries for the whole of India.

Other estimates and data are

- 2 million people working in the M&Q sector, most of whom fall in the bonded labour category http://www.dalits.org/CasteRaceandWCAR.html.
- 2.5 million[5] in M&Q (NSSO 60th round)
- 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 admit to such a practice, so that a total of 3 million people in the ASM sector would be not unreasonable.

With regard to numbers of women, they undoubtedly constitute a large segment of workers in the artisanal, small and informal mines all over the world (WMMF, 2000). 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 are no definitive 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.

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

The Global Report by the Mining, Minerals and Sustainable Development (MMSD) Project on Artisanal and Small Scale mining (Hentschel et al. 2002: 21) pointed out that: '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. Hinton *et al* (2003) estimated that approximately 30% are women but in Asia the proportion is less than 10%. This figure is widely referred to, although it is not based on official information. It is also unclear if women and children are lumped together in this figure, a practice not uncommon in ASM (see CASM, 2004). Given the high rate of participation of women in informal work especially in the primary sector in South Asia, in places in my view, the proportion of women is higher than just 10% and may well be growing (ILO 1999: 25).

For Sri Lanka some official statistics are available (Department of Census and Statistics Sri Lanka), which list 1,689 mining and quarrying operations with an average of 10 employees each in year 2000. These statistics include those activities with more than 5 employees. However, besides these ~1700, many operations are small, individual or family-run, and hence unreported. If we take the number of operations at a conservative 2,000 and take the average number of labourers as 10 as per the report, we get a figure of 20,000 people in actual digging and quarrying operations in Sri Lanka. Women's labour is concentrated in assisting the artisanal gemstone miners, and in the cutting and polishing processes of gemstones.

For Pakistan, official statistics estimated that about 23,000 persons were employed in mining and quarrying for the year 2003-'04. However, this is a country where the mining sector is yet to develop along modern lines and most mining, including that of semi-precious stones, is undertaken artisanally in the remote and inaccessible areas of Baluchistan and North West Frontier Province where governance structures are loose (For more details, see www.sbp.org.pk/departments/stats/PakEconomy_HandBook/Chap_10.pdf). However, if we take the Indian situation as a rough guide, then of a 53 million workforce, nearly 400,000 would be in ASM sector, a similar discrepancy as between official DGMS numbers and other estimates.

In the case of Nepal, the labour force survey carried out for 1998-'99 made no mention of mining and quarrying, but UNECAP traders manual for Nepal lists 0.08% of the active male population over ten and 0.04% of women are employed in the M&Q sector http://www.unescap.org/tid/publication/t&ipub2311.pdf. The labour participation rate of those in the 16-64 age group is high (almost 90%)

http://www.ilo.org/public/english/employment/gems/eeo/download/nepal.pdf. These data lead to an estimate of ~ 120,000 in the M&Q sector. Again, any illegal mining activity would have to be added. If we turn to the Indian data as a benchmark we would estimate a value of about 130,000 workers, remarkably similar

No statistics are available from Bhutan, although field visits have pointed to the large number of stone quarries along the Himalayan foothills.

In the northeastern corner of Bangladesh, bordering Assam, at least 100,000 people are involved in dredging the river beds and quarrying the foothills for stones and gravel in Sylhet, based on my own observations and local informants. Some of these gravel quarries are licensed but including the unlicensed, along with the scavengers, the total employment figure would probably be much higher. Similarly, there are gravel miners and sand miners all over India digging out low value stone products as industrial or building material from dried up river beds and hills. As many of these are seasonal livelihoods, I have chosen to use a conservative approach in arriving at my rough estimation of 3 million.

Mineral-based livelihoods in South Asia

In national economies of South Asia, mineral revenues constitute only a small part: for example, although India is currently one of the major miners of the world, this fact does not show up in the breakdown of its GDP. This is 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 an expert view, comprises around ~88% of the total economy (Harriss-White 2003). The large number of people surviving on mineral extraction use low levels of technology; in many of these mines only simple tools are used, every stage of processing being done by the human hand. Whereas low-value products like stone and gravel are meant primarily for local or domestic consumption, some of the minerals can have high values and serve non-local markets, such as marble from Rajasthan or the gem stones of Pakistan. Even low-value products such as stones may be exported although the exact amount of revenue earned by them is unrecorded.

Many of the mineral-based livelihoods are a direct continuation from traditional artisanal mining. The long history of mining is evidenced from old texts such as Kautilya's *Arthashastra*

that was written in c250BCE (see Shamasastry, 1956, p. 82-89). It gave detailed instructions on the methods of testing gems and also methods of extracting minerals from hard and soft ore bodies, and of making gold and silver coins from the metals thus obtained. From the documentation, it can be assumed that mining was a well-accepted livelihood activity[6]. The introduction of scientific knowledge through engineering institutions and modern legal frameworks of resource governance in British period meant that many of the old systems were destroyed and a new understanding of mining as an area of work requiring a range of licenses and permits, formal knowledge of geology and production. The legal frameworks established during the colonial times aimed at the control the mineral resources by the British state. Colonial mining also brought in European models of labour relations and management techniques. Consequently, traditional artisanal mining gradually ended up outside the legalized sphere of resource governance, becoming invisible and in many cases even illegal as per the current mode of mineral classification. In addition to traditional mining, there are also unclear and non-legal spaces in mining created again by definitional lacunae. For example, Meghalaya is a 'fifth schedule' state in Indian Northeast, implying that mineral resources there belong to local land owners. However, coal, which is abundant there, is classified as a 'major mineral' meaning that technically it can only be mined by the state or major players. Consequently the 30,000 or so engaged in coal mining in Meghalaya fall in the vacuum of this non-legal space. This legal complexity adds to the illegitimacy of quarrying; in South Asia, as elsewhere, the 'battle' for the legal recognition of artisanal mining goes on (Cramer 1990).

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[7]. In general, small mine operators complain about the lengthy legal procedures (see Goyal, 2005) and demand a 'one-stop shop' for government clearance. A range of interest groups are 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.

- Various government departments - Mines and Geology for license to mine; 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

[6] Illegal mining also occurred, and *Arthashastra* gave instructions on how to deal: 'A mine worker 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).'

[7] 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).

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 obtain the permits/licenses/permissions, invest the capital, and hire contractors to run the day to day mining operations. These owners often have local associations. The proportion of women in both these categories is almost zero.

- Contractors, managers, supervisors, account-keeper etc. This is also an entirely male domain of work.

- Mine workers - often there may be *three* subdivisions in this category: those who dig, those who carry loads, and those who process. 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/buyers 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 purchasing crude minerals from mine-owners in case of legal mines. In case of illegal mines, purchases are made from local suppliers and then sell it to local market after semi-processing. 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, there are the manufacturing exporters and their agents.

- Unregistered workshops who semi-process crude mineral output and maybe process final products.

- Household industry where women and men work under the putting-out system. In case of mica or gemstones, this becomes an important group.

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 partly due to their often remote location. 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. The small mines and quarries have permanent, casual, contract, self-employed producers, dependent producers and unpaid family members. Permanent workers may be protected by labour legislation but casual labourers, recruited on a short-term basis are not 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. The casualisation of work occurs more where parts of the production process are sub-contracted to smaller units by the larger production units. The work is casual and also highly seasonal; most quarries either shut down or reduce production in the monsoon months. The workers either choose to work in the agricultural fields or are forced to seek other jobs. This seasonality in production 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 may also participate as home-based workers, with girls helping or training as unpaid family labour.

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. Friendship networks, kin relations and village ties 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. Seasonality of mobility implies that 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 not uncommon.

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. 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.

Natural disasters or environmental hazards also encourage a large number of displaced rural landless to join the mines and quarries. 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, lack of attention to preserving ecological integrity has caused the decay of farming and destruction of local natural resources, and the involvement of peasants in 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. Ethnic violence in Sri Lanka and political instability in rural Nepal have been crucial in ensuring a steady supply of cheap labour into the artisanal gemstone quarries and the stone quarries along the Himalayan foothills. 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 (Rao 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.

Women's status and position in the ASM

CASM/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.' As people enter the informal mining sector as an alternative to subsistence agriculture, families may have marginally better incomes for maintenance. However, 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. Gender crosscuts each of these factors. Yet, it is not commonly recognised as such. If informal mining is to develop into a sustainable activity, these individual issues need to be examined through a gender lens.

Chakravorty notes in his 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 mechanically.

This observation indicates the gender-blind nature of knowledge in ASM, because of its failure to enquire into crucial issues such as the concentration of women in the more arduous manual jobs. The lengthy report also devotes only a limited attention to gender issues. Most women in ASM are from indigenous and similarly marginal ethnic communities such as low castes (Lahiri-Dutt, 2003b). 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. The sexual division of labour in the small mines and quarries presented by Chattopadhyay (2002) for the mica factories in Giridih in Eastern India clearly shows that men tend to do more specialised and skilled jobs that often involve the use of machines. In South Asia, women's lack of ownership of productive resources probably is the most crucial factor in ensuring their low status in almost all land-based production systems (Agarwal 1994). In the absence of a collateral, the lack of access to credit becomes a significant problem in mining; even in 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, only 6% women have access to loans. In South Asia, women most commonly do not own small or artisanal mines, nor even cut the minerals themselves, but 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 in 2001 noted this

phenomenon also in Papua New Guinea). The culturally rooted gender bias is then reinforced in South Asia through legal instruments that limit women's labour to specific jobs in specific places and times.

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. It depicts the economic organisation, production relations and levels of capital accumulation on the horizontal axis as a function of legal status. 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.

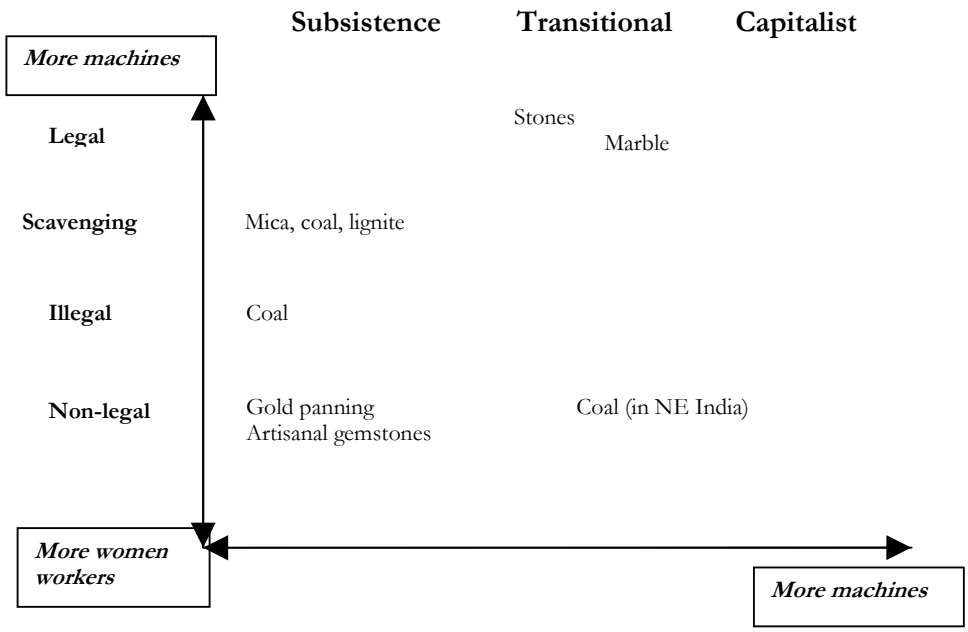

Figure 1: Place of women workers in small mines and quarries

The diagram illustrates the need for relating gender and development policies in the ASM sector.

Gender and livelihoods and ASM

The small mining and quarrying sector in South Asia is a repository of concentrated poverty and extreme forms of exploitation of the workers, both women and men. Mining work is commonly done on a contract basis, often at piece-rates, but also for 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 or materials is almost always done in head loads 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 within the mine to be unsuitable for women but this is one area that needs immediate intervention. Women working in the small mines and quarries are 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.

Women in ASM are involved in *three* different categories of jobs: a) in the extractive process, b) as workers in sorting, transporting and crushing of the preparation of minerals, and c) 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, carrying, stone breaking, sorting, cleaning and such other jobs. Parthasarathy (2004) describes the life of a woman in a quarry:

'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… 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…. 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.'

This description brings out the overall working condition for women: lower wages then men, no equipment or safety gear or safety education, no toilets or living facilities within close proximity, rare and unpaid holidays, and unpaid pregnancies. Often this is associated with 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.

The poor working conditions 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 workers[8]. Surveys conducted by the Indian Council of Medical Research have reported incidence rates amongst stone quarry workers between 16 to 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

[8] '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. However such developments have 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).

another study conducted by the Department of Chest Diseases of the Medical College in Jodhpur, and the NGO Gramin Vikas Vigyan Samiti (GRAVIS). Radiological investigations showed that 56% of mineworkers in Rajasthan are affected with silicosis or silica-tuberculosis. If these numbers are indicative of the general incidence of such disease, then at least 800,000 workers in the small mines and quarries might be affected just in the state of Rajasthan. Air pollution – primarily the presence of suspended particulate matter (PM) in the air – also affects surrounding village residents indeed silica dust is just one component of airborne PM. The Supreme Court Guideline of 1997 rules out the location of stone crusher within a kilometre radius of human habitation, but this guideline has not been strictly implemented.

Water-borne diseases are also extremely common, including frequent outbreaks of enteric diseases amongst all workers. 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 Executive Director of Prasaar, Mr Azad, at the time of taking up the jobs in the quarries, a worker is fully aware of the death trap lying ahead, but the lack of alternatives force a person in his twenties to 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. Alcoholism is prevalent primarily amongst men, but affecting women and the family, leading to domestic violence (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.

Women are at the bottom of the hierarchy of production playing 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.

The question of bondage, a contemporary form of slavery, is a widely used method of labour employment in ASM in South Asian countries[9]. Srivastava (2005: 3) defines bondage as, 'a system of forced, or partly forced, labour under which the debtor enters into an agreement, oral or written, with the creditor'. In South Asia's caste-bound and hierarchical society, bondage of an individual man turns into inter-generational bondage, child bondage, loyalty bondage, and bondage through land allotment spilling over to other members of the family, especially women (widow bondage) and girl children who have the least control over their fates (see Sreedharan and Muniyapa 2000; Bakshi 2002; also Lerche 1995 for distinctively different approaches to the question of bondage). Quarry workers and gem cutters are highly represented amongst those in bondage (see Kapadia's 1995 work). Mendelsohn's (1991) research described the intervention of a non-governmental organisation to release the stone quarry workers around New Delhi. Olsen and Ramana Murthy (2000) traced the condition of contract and bonded labourers in Andhra Pradesh. Debt bondage, the most prevalent form amongst the various kinds of bondage, enslaves more men but for women, it can mean double exploitation' (Herzfeld 2002). When a woman marries a bonded labour, she also marries the conditions of his bondage. In case of a woman head of household being in bondage, the consequences are forced work for long, often outside of usual quarry jobs, and complete disempowerment.

In Pakistan's small mines and quarries Saleem (2003) 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.' Ercelawn and Nauman (2001) described the condition of both women and men bonded labourers in Pakistan. The bonded labourers in Nepal are called *kamaiya*s and belong mainly to the Tharu community (Sharma et al 2001). Deep in poverty, they are forced to borrow rice and other food from the landlords and get trapped into bondage. Once indebted, the

[9] 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 *adivasis*) (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). 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. Human Rights Watch (1996) puts the figure at a higher level: 'Approximately fifteen million children work as bonded labourers in India'.

borrower and his heirs are all bonded to the landlord, but the condition of women in these families is the worst.

The relationship between women's labour and bondage is 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[12]. It is indeed true that women are accompanied by children into the small mines and quarries, but in fact more children accompany their fathers as apprentices than their mothers. The question of child labour also involves the question of 'gender' within the category of 'the child', as girl children usually are at a greater disadvantage than the boys because of their gender.

The Indian Constitution prohibits the employment of child labour in factories and mines[13]. 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.

---

[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] Many national or state machineries for women set up during the 1950s in most 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). Changes are also 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, although essentially these institutions remain weak and under-resourced.

[12] 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.

[13] 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 prohibit the employment of child labour.

The connection between poverty and work in ASM is apparent in South Asia, yet, workers in small mines and quarries do not form the 'target' population in the various poverty reduction country programmes. Existing documents and the emerging pro-poor strategies of development are largely silent on formulating specific interventions for reducing poverty in these communities, and remain focused upon agricultural and other resource-based communities. The major policy initiative in the mining sector includes the National Mineral Policy of India[14], 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 ill-effects of large scale mining in India, particularly the utter neglect of social and gender concerns therein, have triggered off resistance movements resulting in a negative attitude 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

[14] 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.

rapid social and cultural change amongst local communities. These impacts draw the attention away from the 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 just 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.

Policy Implications of Gender in South Asian ASM

The livelihood issues and subsistence effects of small mines and quarries are considerable, especially amongst the indigenous and rural communities. The South Asian mining industry and bureaucracy generally neglects to prioritise the social issues surrounding the small mines and quarries, instead valorising the improvement of techno-economic efficiency in all spheres from exploration to exploitation, including management and control. Small mines and quarries 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 restrain 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, centrally or 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 important contribution to economic growth, need to be integrated fully into their respective local

economies. However, the process may be more difficult in reality due to the extremely poor working conditions, low wages and semi-feudal structures and production relations that still exist.

Gender equity is a core development issue – 'a development objective in its own right' (King and Mason, 2001). Promoting gender equality as part of a development strategy in the small mines and quarries should not mean continuing with or reinforcing the low status of women as compared to men but to create situations that might enable all people to earn a decent living from a decent workplace, allowing escape from poverty and improvement in the standard of living. The gender roles of 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 has the potential to bring tangible developmental results than interventions such as the regularization of the informal mines.

For women earning benefits from ASM, first of all, it is imperative to make their productive work more visible, and to make their voices heard. At present, women and their labour are almost invisible in the quarries, and their issues are neglected. Work is a part of any human being's life, and women and men toiling in the small mines and quarries in South Asian countries are not an exception. The work in the mines must not be seen as a negative or undesirable thing in itself; and legal frameworks restricting women's work need to be revisited immediately. Women's work in mining has been a contested area since the advent of modern mining in Europe, and the response in general had been to 'protect' women from the poor conditions existing in the mines. In all South Asian countries, women's work in underground mines and at night is prohibited by the law in an effort to protect them. The results of protective measures have not been effective, as we know that when poverty is the driving force, more women than men take up the subsistence burdens of their families, irrespective of legal structures that regulate their work. Equal rights to work and consequent economic benefits from the small mines and quarries, on the other hand, can be seen as enabling and empowering for women. The need is to improve the conditions surrounding women's work, and in this regard, measures such as protecting women's interests, safety and health, providing a safe and secure working environment, assuring continued employment and old age security for citizens, and improvements in wage levels. For this purpose, a concerted effort is needed as many of these ills are closely associated with rural poverty, patriarchal society and consequent exploitation of women. The need is also to ensure a more equitable distribution of economic benefits from ASM between women and men. This would also involve giving incentives to women to own small mines and quarries – possibly through a greater attention to land ownership

and training programs - for their economic and social empowerment. These legal and economic measures are connected to a range of social and technical measures: ensuring health and giving education to create livelihood options, training women to use machines that lessen manual work burdens, and providing training on risk, safety and security to improve the overall productive efficiency.

International efforts have been taken to address specific issues in ASM such as UNIDO's Global Mercury Project (see at http://www.unido.org/doc/44254) to control the unsafe use of mercury in gold amalgamation to improve local ecology and environmental health. ILO's major program, International Program for the Elimination of Child Labour (IPEC – see at http://www.ilo.org/public/english/standards/ipec/newsroom/index.htm), has been operating through governments, employers, workers, non-governmental organisations and teachers. Whilst South Asian countries have benefited from them, a distinct gender focus is missing from these global projects. Commitment to gender mainstreaming would begin at the international policy level and trickle down to the individual country's strategy level. The promotion of micro-credit programs can provide financing for women in communities on mineral tracts. Church and Guerin (nd) have shown how small interventions as microfinance and credit for women have been effective in dealing with the problem of debt bondage in certain cases. They have also pointed out that financing women have been more effective in poverty eradication than providing credit to male heads of households. Elsewhere, there are examples of locally based non-governmental organisations such as Mine Labour Protection Campaign (in Rajasthan marble and stone quarries – see http://www.minelabour.org/newsview.php?newsid=-16), BIRSA (see http://www.birsa.org/), Jharkhand Mines Area Coordination Committee (see www.firstpeoplesfirst.in) and JOHAR (in Jharkhand stone and limestone quarries see www.johar.in) for making marginal improvements in women mineworkers' lives and for making their voices heard.

For women in the small mines and quarries in particular, the immediate need is to eliminate gender bias and harassment, and accept their multiple and productive roles in the economy, in the society and at home. This will enhance women's ability to ensure food security for the family and provide for children more effectively (Ramchandran 2006). It is also important to better understand the small mines and quarries as an integral and legitimate aspect of the livelihoods of innumerable women and men in South Asian informal sector. 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 and omitted from the opinions of experts. For example, there is not yet a real 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 needs to be revisited. This is not uncommon for any part of the informal sector. However, small mining and quarrying, is here to stay. Leases for small mines and quarries are becoming a source of revenue for the states, and the state Mineral Development Corporations are aggressively advancing mining and quarrying. However, the responsibility of these corporations to not extend in ensuring gender equity, safe working environment and secure wages. Being loosely controlled, even the licensed quarries create environmental pollution and hazards for the region and local residents. Near metropolitan cities and capitals, for example, environmental degradation caused by the quarries has led to several Public Interest Litigation and the rise of powerful civil society movements.

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.

Acknowledgements

This study was undertaken with a small grant from Communities and Small Mines (CASM), Australia South Asia Research Centre and Resource Management in Asia Pacific Program of The Australian National University, Canberra, and the Rajiv Gandhi Institute of Contemporary Studies, New Delhi. I thank these institutions for their generous help. Thanks also to the following for generously sharing their knowledge: Fr Tony Herbert of Prerana Resource Centre, Mr Xavier Dias, Mr Birsingh Singku, Swami Agnivesh of Bandhua Mukti Morcha, Mr Rana Sengupta of Mine Labour Protection Campaign, Mr Ravi Rebapragada and Bhanumati Kalluri of mines, minerals & People, Mr Ajoy Konar of Burdwan Abhijan Gosthi, Mr Bulu Imam of INTACH, Mr Joydeb Bannerji of Coal India Limited, Dr Jayalakshmi of NIRD, Hyderabad; Dr Nitish Priyadorshi of Ranchi University, and Dr M.K.Ghosh of Centre for Mining Environment at The Indian School of Mines.

References

Agarwal, Bina. 1994. *A field of one's own: Gender and land rights in South Asia*, Cambridge University Press, Cambridge.

Amutabi, M. and M. Lutta-Mukhebi. 2001. Gender and Mining in Kenya: The Case of the Mukibira Mines in the Vihiga District, *Jenda: A Journal of Culture and African Women's Studies*, Vol. 1, No. 2, pp. 1-23.

Argall, G.O. Jr. 1978. Future of small-scale mining- important for the future, *Conference UNITAR* New York, USA.

Bakshi, R. 2002. Bonded labour, *The South Asian*, (Available from http://www.the-south-asian.com/Nov2002/Bonded_labour.htm accessed on 17 December, 2005).

Bhanumathi, K. 2003. *Labour and women in mining*, Publication for National Seminar on Women and Mining in India, May, New Delhi, mines, minerals and Peoples, Hyderabad.

Blaikie, Piers, Terry Cannon, Ian Davis, and Ben Wisner, 1994. *At risk: Natural Hazards, People's Vulnerability and Disasters.* London: Routledge.

Caballero, Evelyn. 2006. Traditional small-scale miners: Women miners of the Philippines, in Kuntala Lahiri-Dutt and Martha Macintyre (eds) *Women Miners in Developing Countries: Pit women and others*, Ashgate, Aldershot, pp. 145-162.

Carman, J.S. and Berger, A.R. 1990. Small-scale mining: a general review, In:. *Small-scale Mining: A Guide to Appropriate Equipment*, McDivitt, J.F. Intermediate Technology Publication, London. pp ix-xi.

Carman, John 1985. 'The contribution of small-scale mining to world mineral production', *Natural Resources Forum,* Vol. 9, No. 2.

CASM 2005. *The Millennium Development Goals and ASM*, Communities and Small scale Mining, World Bank, available from www.casmsite.org

CASM 2004. *Women and Children Workshop*, Communities and Small scale minining Annual General Meeting, Colombo, Sri Lanka, October, 2004.

Carnegie, James. 2002. *Sustainable livelihoods approach and artisanal and small-scale mining, Seminar on Artisanal and Small-scale Mining in Africa*, Identifying best practices and building the sustainable livelihoods of communities, Younde, Cameroon.

Chakraborty, M.K. 2002. Issues and problems of Indian small-scale mines, *National Seminar on Policies, Statutes & Legislation*, January, CMRI, Dhanbad, India.

Chakravorty, S. L. 2001. *Artisanal and small-scale mining in India*, MMSD, No. 78.

Chattopadhyay, M. 2002. Gender and Labour: A study of mica manufacturing industry of Giridih, Report Submitted to Sociological Research Unit, Indian Statistical Institute, Calcutta.

Churchill, Craig and Isabelle Guerin. (nd) *Microfinance-led strategies to eliminate bonded labour*, ILO Working Paper, available from www.ilo.org/public/english/employment/finance/download/churchguer.pdf

Cramer, S. 1990. The legal battle of small-scale mining, *Appropriate Technology*, 17 (2) pp5-7.

Elson, D. 1995. Rethinking strategies for development: from male-biased to human-centred development, in D. Elson (ed) *Male bias in the development process*, Manchester: Manchester University Press.

Ercelawn, Aly and M. Nauman 2001. Captive labour in sharecropping: Men, women and children, *Bonded Labour in Pakistan: An overview*, Report of a study done for ILO, Presented in International Conference on Water, Human Rights and Governance, Kathmandu, January, Organised by Nepal Water Conservation Foundation.

Ghose, A.K 1991. Towards an integrated plan for socio-economic development: The small-scale route, *Jr. of Mines Metals and Fuels*, March, pp. 7.

Ghose, A.K. 1994. New configuration of small-scale mining for developing countries, in A.K. Ghose (ed) *Small-scale Mining – A Global Overview*, Oxford & IBH Publishing Co. New Delhi, pp29-42.

Ghose, A.K. 1986. 'Mineral development in LDCs-constraints and challenges', in A. K. Ghose (ed) Strategies for Exploitation of Mineral Resources in Developing Countries. Oxford & IBH Publishing Co., New Delhi, pp49-58.

Ghose, A.K. 1990(a). Minerals , metals and developing countries: A forward look, *Proc. 14th Congress of CMMI*, Edinburgh, Institution of Mining & Metallurgy, London, pp249-255.

Ghose, Achyuta K. 1997. Scope of mechanization and application of appropriate technology in Indian small-scale mines, *Minetech*, 18(1&2) pp32-36.

Ghose, Ajit K. 2004. The employment challenge in India, *Economic and Political Weekly*, Vol. XXXIX, No. 48, pp. 5106-5116.

Ghose, Mrinal K. 2002. Environmental management in small-scale mining in Indian context, *TERI Information Digest and Energy Management*, 1(4) pp629-636)

Ghosh, A. 1996. *Small scale mining in India, Oxford and IBH publications*, New Delhi.

Government of India, 1991. *Report on Bonded Labour*, Ministry of Labour, New Delhi.

Government of India, 1991. *Report of the National Commission on Rural Labour*, Government of India, New Delhi.

Government of India, 2000. *Release of Bonded Labourers and their Rehabilitation*, National Human Rights Commission, New Delhi.

Government of India, Central Statistical Organisation. 2001. *National Account Statistics, Back Series 1950-51 and National Accounts Statistics 2001*., New Delhi.

Government of India, 1998. *Statistical Profile on Women and Labour*, Fifth Issue, Ministry of Labour, New Delhi.

Government of India, 1997. *Supreme Court Guidelines on Bonded Labour*, Available from

Government of India, 2003. *Mineral Sector Development Policy*, Available from

Government of India, 2002. *National Mineral Policy*, Available from

Government of Sri Lanka. 2000. *Annual Report*, Department of Census and Statistics, Colombo.

Goyal, G. 2005. Role/rigmarole! Minor miner! Paper presented in *Philippines Learning Event of CASM Asia Pacific*, Organised by RMAP, ANU and Philippines Sustainable Development Network, Asian Institute of Management, Baguio City, Manila, 7-9 June, 2005.

Graulau, Jeannette. 2006. Gendered labour in peripheral tropical frontiers: Women, mining and capital accumulation in post-development Amazonia, in Kuntala Lahiri-Dutt and Martha Macintyre (eds) *Women Miners in Developing Countries: Pit women and others*, Ashgate, Aldershot, pp. 289-305.

Harriss, John. 1982. *Capitalism and Peasant Farming: Agrarian structure and ideology in Northern Tamil Nadu*, Oxford University Press, Bombay.

Harriss-White, Barbara (2003) *India Working*, Cambridge University Press, Cambridge.

Heemskerk, Marieke. 2000. *Gender and Gold Mining: The case of the Maroons of Suriname*, Working Paper on Women in International Development, 269, (ed) A. Fergusson, Michigan State University, Ann Arbor, Availale from http://www.isp.msu.edu/WID/papers/abstracts.html. (accessed on 31 December 2006).

Heemskerk, Marieke. 2003. Self-employment and poverty alleviation: women's work in artisanal gold mines, *Human Organization, Society of Applied Anthropology*, Spring issue, available from http://www.findarticles.com/p/articles/mi_qa3800/is_200304/ai_n9202578/print accessed on 20 December, 2005.

Heemskerk, Marieke. 2005. Collecting data in artisanal and small-scale mining communities: Measuring progress towards more sustainable livelihoods, *Natural Resources Forum*, Vol. 29, pp. 82-87.

Hentschel, T, F. Hruschka and M. Priester. 2002. Global report on artisanal and small scale mining, MMSD, 2002.

Herzfeld, Beth 2002. Slavery and gender: Women's double exploitation, *Gender and Development*, 10(1), 50-55.

Hilson, Gavin 2001. *A Contextual Review of the Ghanaian Small-scale Mining Industry*, Country Study Commissioned by MMSD, available from http://www.iied.org/mmsd (accessed on 31 December 2006).

Hilson, Gavin 2002. Small-scale mining and its socioeconomic impact in developing countries, *Natural Resources Forum*, Vol. 26, no. 1, pp. 3-13.

Hinton, J., M. M. Veiga, C. Beinhoff. 2006. Women in artisanal and small-scale mining in Africa, in Kuntala Lahiri-Dutt and Martha Macintyre (eds) *Women Miners in Developing Countries: Pit women and others*, Ashgate, Aldershot, pp. 209-225.

Hinton, J., M. M. Veiga, C. Beinhoff. 2003. Women and artisanal mining: Gender roles and the road ahead, in Gavin Hilson (ed) *The socio-economic impacts of artisanal and small scale mining in developing countries*, AA Balkema, Swets Publishers, Netherlands.

Human Rights Watch (1996) *The small hands of slavery: Bonded child labour in India*, Human Rights Watch, Asia, Available from http://www.hrw.org/reports/1996/India3.htm accessed on 20th December, 2005.

ILO 1999. Social and Labour Issues in Small-scale Mines, International Labour Organisation, Geneva.

ILO 2002. The evolution of employmewnt , working time and the mining industry. Document TMMI/2002, International Labour Organisation, Geneva

Jennings, Norman. 1999. Social and labour issues in small scale mines, Report for discussion at the Tripartite Meeting on Social and Labour Issues in Small Scale Mines, Geneva, 17-21 May, 1999.

Kapadia, Karin. 1995. The profitability of bonded labour: The gem-cutting industry in rural South India, *Journal of Peasant Studies*, 22(3) 446-83.

King E.M. and Mason A.D., 2001, Engendering development: Through gender equality in rights, resources and voice, A World Bank Policy Research Report, World Bank and Oxford University Press, Washington D.C., and New York, p. xiii.

Krishnaraj, Maithreyi and Amita Shah, 2004. *State of the Indian farmer: A millennium study, Volume 25, Women in agriculture*, Government of India, Ministry of Agriculture and Academic Foundation, New Delhi.

Labonne, B., Gilman, J. 1999. Towards building sustainable livelihoods in the artisanal mining communities, paper presented at the Tripartite Meeting on Social and Labour Issues in Small Scale Mines, Geneva, 17-21 May, 1999.

Lahiri-Dutt, Kuntala. 2005. Researching the livelihood strategies of artisanal and small scale miners in India and other countries of South Asia: Some lessons from the field, Paper presented in the *Philippines Learning Event of CASM Asia Pacific*, Organised by RMAP, ANU and Philippines Sustainable Development Network, Asian Institute of Management, Baguio City, Manila, 7-9 June, 2005.

Lahiri-Dutt, Kuntala, 2004. Informality in mineral resource management: Raising questions on community economies in Asia, *Natural Resources Forum*, Vol. 28, No. 2, May 2004, pp. 128-132.

Lahiri-Dutt, Kuntala. 2003a. Informal mining in eastern India: Evidence from the Raniganj coalbelt, *Natural Resources Forum*, Vol. 28, No. 2, May 2004, pp. 128-132.

Lahiri-Dutt, Kuntala, 2003b. Not a small job: Stone quarrying and women workers in the Rajmahal traps in eastern India in Gavin Hilson (ed) *The socio-economic impacts of*

artisanal and small scale mining in developing countries, AA Balkema, Swets Publishers, Netherlands, 2003.

Lahiri-Dutt, Kuntala, 2002. *When the Mines Come*, Results of the Oral Testimony Project, Panos Institute, New Delhi and London, in collaboration with Prerana Resource Centre, Hazaribagh.

Lahiri-Dutt, Kuntala. 1999. The promised land: Coal mining and displacement of indigenous communities in eastern India, *Asia-Pacific Journal on Environment and Development*, Vol. 6, No 1, June, Bangladesh Unnayan Parishad, Dhaka, pp. 31-46.

Lahiri-Dutt, Kuntala and David Williams. 2005. The coal cycle: A small part of the illegal coal mining in eastern India, *Journal of Energy Research*, Tata Energy Research Institute, New Delhi, September, 2005.

Lahiri-Dutt, Kuntala and Tony Herbert. 2004. Coal sector loans and displacement of indigenous populations: Lessons from Jharkhand, *Economic and Political Weekly*, Vol. XXXIX No. 23, June 5-11, 2004, pp. 2403-2409.

Lerche, J. 1995. Is bonded labour a bound category? Reconceputualising agrarian conflict in India, *Economic and Political Weekly*, 22(3), April, 484-515.

Mendelsohn, O. 1991. Life and struggles in the stone quarries of India: A case-study, [in Faridabad, near Delhi], *Journal of Commonwealth and Comparative Politics* (London), 29:1 (Mar 1991), 44-71.

Moretti, Daniele (2005) The shifting gender of the gold: Assessing female participation in artisanal and small-scale mining among the Anga of Mount Kaindi, Papua New Guinea, Paper presented in Manila Learning Event, Communities & Small scale Mining Asia` Pacific Network, Asian Institute of Management, Manila, June 2006.

National Commission for Women, India. 1993. *Proceedings of the National Workshop on Employment, Equality and Impact of Economic Reform on Women*, New Delhi.

National Sample Survey Organisation, 1994. *Sarvekshana*, Vol. 17, No. 3, January-March, New Delhi.

Noestaller, Tichard 1987. *Small-scale mining: A review of the issues*, World Bank Technical Paper No. 75, Industry and Finance Series, Washington, DC.

Noetstaller, R 1994. Small-scale mining, practices, policies, perspectives, In A.K. Ghose (ed) *Small-scale Mining – A Global Overview*, Oxford & IBH Publishing Co. New Delhi, pp3-10.

Olsen, Wendy K. and R. V. Ramana Murthy, 2000. Contract labour and bondage in Andhra Pradesh (India), *J_spot the Journal of Social and Political Thought*, 1(2), June 2000. pp. 1-25, available from http://www.yorku.ca/jspot/2/wkolsenrvramana.htm accessed on 6th February 2006).

Parthasarathy, M. 2004. Exploring the impact of chromite mining on women mineworkers and the women of Sukinda valley, Orissa: A narrative, in Sumi Krishna (ed) *Livelihood and gender: Equity in community resource management*, Sage Publications, New Delhi, pp. 214-225.

Ramachandran, Nira (2006) *Women and Food Security in South Asia: Current Issues and Emerging Concerns*, UNU-WIDER, Research Paper No. 2006/131, United Nations University.

Rao, Nitya. 2005. Displacement from land: Case of Santhal Parganas, *Economic and Political Weekly*, Jharkhand Special Issue, October 8.

Registrar General and Census Commissioner, 1993. *Census of India, 1991, Final Population Totals: Brief Analysis of Primary Census Abstract, Series 1*, New Delhi.

Rudra, A.K. 2002. Policies, statues and legislation in small and medium mines, *National Seminar on Policies, Statutes & Legislation*, January, CMRI, Dhanbad, India

Sahu, N. K. 1992. Mine reclamation and afforestation: Different methods, Lecture notes of Training Course on Management of Small Mines: Techno-Administrative Aspects, Organized by TISCO, Noamundi, 1-10 February.

Saleem, Ahmad 2003. *Mines industry: A hotbed for bonded, child labour*, available from https://www.dawn.com/2003/07/15/nat14.htm

Sarma Marla (1981) *Bonded Labour in India: National Survey*, Bibilia Impex, New Delhi.

Shamasastry, R. 1956. *Kautilya's Arthashastra* (translated in English), Sri Raghuvir Printing Press, Mysore.

Sharma, Shiva, B. Basnyat and Ganesh, G.C. 2001. *Nepal, Bonded labour among child workers of the Kamaiya system: A rapid assessment*, International Programme on the Elimination of Child Labour (IPEC), International Labour Organisation, Geneva.

Sreedharan, Oruvingal and R. Muniyapa (2000: 6) The chained bonded labourers of Karnataka, available from http://www.ambedkar.org/books/bl.htm (accessed on 20 December, 2005)

Srivastava, Ravi S. 2005. *Bonded labour in India: Its incidence and pattern*, Working Paper, International Labour Office, Geneva.

United Nations 1999. *Report of the Working Group on Contemporary Forms of Slavery*, United Nations, New York.

UNIFEM, 2005. *Women, work and poverty: Progress of the world's women, 2005*, UNIFEM, New York.

Vagholikar, Neeraj, Kaustabh A. Moghe and Ritwick Dutta (2003) *Undermining India: Impacts of mining on ecologically sensitive areas*, Kalpavriksh, Pune.

Valdivia, Corinne and Jere Gilles, 2001. 'Gender and Resource Management: Households and Groups, Strategies and Transitions.' *Agriculture and Human Values* 18(1): 5-9.

Veiga, M. M. 1997. *Introducing New Technologies for Abatement of Global Mercury Pollution in Latin America*, UNIDO/UBC/CETEM/CNPq, Rio de Janeiro.

Weightman, B. A. 2002. *Dragons and tigers: A geography of South, east and southeast Asia*, New York: John Wiley and Sons, Inc.

WMMF, Mining communities workshop: Artisanal mining, in *Proceedings of the 1st WMMF*, Toronto, Canada, March 8-11, 2000.