

# DIGGING TO SURVIVE: WOMEN'S LIVELIHOODS IN SOUTH ASIA'S SMALL MINES AND QUARRIES

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*The global trend of the informalisation of women's work is also evident in what is commonly known as artisanal and small-scale mining (ASM) practices. Small mines and quarries are extremely diverse in nature, but comprise a repository of extremely poor people. This article focuses on the gender and livelihood issues and concerns in small mines and quarries of South Asia. In view of the lack of official quantitative data, the research presented here is based on proxy indicators and field surveys. It addresses a gap in existing knowledge in ASM and makes visible gender roles in the informal work in the mines and quarries. The article provides the necessary backdrop, relevant information and interpretation of livelihood needs with a view to sensitising policy-makers to the issues rooted in gender.*

OVER 20 MILLION people in the world depend on mineral resource extraction on an informal basis for their living, an astounding figure that is much more than the number of workers employed in formal mining industries.<sup>1</sup> For many of these people, informal mineral extraction forms a continuation of traditional modes of life, but there are also those seeking seasonal cash incomes, those turned jobless by economic changes brought about by reforms and also those displaced by big project developments. Internationally, these informal modes of mineral extraction practices are collectively known

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as artisanal and small-scale mining (ASM; see Hentschel et al. 2002). Estimates of the number of people involved in ASM depend on what is precisely 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 can skyrocket. In South Asia, no singular definition of ASM exists, as 'artisanal' is equated with traditional practices such as panning or gemstone mining. The term 'quarry' implies shallow inclines or surface workings whereas 'small mines' may also mean deep or even underground but largely unmechanised operations. Most of these quarries are generally licensed and described as 'small-scale mining' operations. In this article, I have used 'small mines and quarries' as well as 'ASM' broadly to mean all licensed small, medium and some large mechanised enterprises, unlicensed and unregulated and small operations, scavenging operations and finally non-legal (beyond the legal domain) practices of small-scale mining. Collectively, these mining operations produce a large range of minerals in the region, 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/industrial materials (such as stones of various sort, gravels, sands and clays and limestone) and coal; there are exceptions such as some export-oriented marble and mica.

These small mines and quarries are part of the burgeoning informal or 'unorganised' sector of third world economies. In South Asia, however, they have often remained invisible to developmental planners and policy makers. For example, the recent *Report on Conditions of Work and Promotion of Livelihoods in the Unorganised Sector* in India defines the unorganised sector as consisting of 'all unincorporated private enterprises owned by individuals or households engaged in the sale and production of goods and services operated on a proprietary or partnership basis and with less than ten total workers' (NCEUS 2007: 3), and unorganised or informal employment as those working without employment/social security benefits provided by the employers. These definitions should have necessitated the inclusion of small mines and quarries within the purview of this report, which unfortunately was not the case. This invisibility, despite a long artisanal mining tradition in many parts of the region, is possibly because of the poor social understanding of the South Asian mining bureaucracy, which often leads to the equation of everything 'informal'<sup>2</sup> with 'illegal'. Such synonymy between informality and illegality also reflects the little explored issue of mineral ownership by the state and the corporatisation of mineral enterprises. Even most civil society activism has tended to see mining as tantamount with environmental destruction, and rightfully so; the cumulative effects of ASM on environmental health are undeniably negative and have indeed been the focus of a great amount of research internationally. Strong anti-mining movements in South Asia led by pro-environment groups have generally focused on these negative impacts of unregulated mineral extraction, without differentiating between ASM and large-scale mining and neglecting to problematise the question of livelihoods of the large numbers of people involved in ASM (for examples from India see Bhanumathi 2003; Vagholikar et al. 2003).

The significant contribution of small mines to the world mineral production was recognised early (see, for example, Argall 1978; Carman 1985; Noestaller 1987, 1994). Internationally, although it is recognised that small and artisanal mining forms a crucially important part of the country's mineral production,<sup>3</sup> official policies have been either to regulate or to regularise and formalise the supply chains and links especially in high value mineral products such as gold and diamonds (CASM 2005). The focus of one set of environmental experts has been on the negative environmental impacts, deforestation and related destabilisation of the earth's surface amongst others (see Baluda 2000; Murao et al. 2000). Multi-country efforts such as UNIDO's Global Mercury Project (GMP) have addressed specific issues—controlling the unsafe use of mercury in gold amalgamation—to improve local ecology and environmental health (UNIDO n.d.). Yet, since the late 1980s high prices of almost all minerals, but particularly gold, have resulted in a series of 'new gold rushes' in several locations in the Asia-Pacific such as Kalimantan or Mount Kare in Papua New Guinea. Burke points out (2006: 231) that the attention of policy makers has been on the illegality rather than on investigating policy options that could work for people, the state's exchequer and the environment. The earliest policy intervention was in the pre-Harare days—late 1980s and early 1990s—in the Philippines, where the Department of Environment and Natural Resources developed a plan for small centres to hire out equipment and train miners in safe work practices. The other example of policy intervention was in Papua New Guinea where, unlike the Philippines, ASM is legal because minerals are owned by the land owners, enabling projects to be attached to local offices of the Mines Department. Burke notes (2006: 233) that both projects seem to have originated as 'mercury awareness' education programmes, albeit in two different contexts of legality and resource ownership. Although both projects had a 'people-focused' approach in their respect for miners and their livelihoods, and in making them efficient and safe, there have been only a few such projects in the Asia-Pacific region since then. An emerging policy approach is from Africa where 'partnerships' between the mining companies and local mineral producers have been effective in the cases of gold and diamonds, giving rise to fair trade concepts in ASM, formalisation of supply chains and supporting locally-based initiatives to help communities develop alternative skills and employment generation activities.

In spite of these initiatives, comparatively little attention has been paid to understanding gender in mineral-based livelihoods worldwide. Since women comprise a significant part of the labour force in the informal income-generating activities, it can be expected that they would constitute a large segment of workers in informal mines. Women, also as wives of miners, would form the most vulnerable amongst the mining communities, necessitating a better understanding of gender in these mines. In a review of the emerging issues related to livelihoods and gender roles around mines and quarries in South Asia, this article addresses a gap in existing knowledge on ASM in the informal mining sector.<sup>4</sup> 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 article 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 abilities, and also a group with significant agency and ability to choose alternatives. I have used the livelihood approach<sup>5</sup> with special emphasis on understanding gender roles and relations in the mines, and on understanding the gender needs and interests amongst ASM workers. It has been pointed out that the ways women and men seek and sustain a livelihood are different; just as gender roles are different, livelihoods too are gendered activities (Valdivia and Gilles 2001). Earlier studies of ASM communities in Africa, by Labonne and Gilman (1999) and Carnegie (2002), have used this approach, whilst Jennings (1999) brought the attention on labour and social issues in global ASM to the foreground.

The article aims at providing the necessary backdrop, relevant information and interpretation of women's livelihood needs in the informal mining industry in South Asia. It aims to sensitise stakeholders to the issues rooted in gender and for developing policy measures. The more specific objectives of the research are to investigate women's roles and participation in a range of informal mining practices in the region. The article first gives an approximate indication of numbers based on existing information on small mines and quarries, reviews the livelihoods and forms and structures of production examining the position of women and men in ASM and outlining the gender concerns thereof. Short field surveys during 2005–2006 primarily in India, Sri Lanka, Nepal and Bhutan provide the basis of many observations, although India rightly receives the greatest attention.

## II EMPLOYMENT DATA ON SMALL MINES AND QUARRIES IN SOUTH ASIA

The foremost problem affecting research on the ASM sector anywhere in the world is the paucity of data—or even literature—on the subject. This stems from a mix of reasons: the sector is omitted from official data because of its smallness; record keeping is poor on account of the informality and unorganised nature of the sector; confusion over exact categorisation as either primary or secondary activity and, in case of unlicensed operations, the fear of government interference (Heemskerk 2005: 84–85). In South Asia, all this is applicable; in addition, the blurring of children and women's labour also is an impediment. For secondary sources of quantitative data, some earlier works exist, including Chakraborty (2002), Chakravorty (2001), Ghose (1986, 1991, 1994), Ghosh (1996), Rudra (2002) and Sahu (1992). Special mention must be made of the work done by National Institute of Small Mines (NISM) on the Orissa manganese mines and the stone quarries of West Bengal.

Chakravorty (2001) indicates that just over 12 per cent of ASM workers were women. His data were derived from the incomprehensive *Annual Report 2002* of the Directorate General of Mines Safety (DGMS), which notes that only 166,000

people were employed in non-energy mines in India. He points out that in one part of West Bengal alone (Pacami-Hatgacha), there are an estimated 38,000 people 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 the 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. Assuming that there are only 100,000 quarry workers providing for the 80 million population of West Bengal, and demand for such a bulk product is driven by population, there would be about 1.25 million such workers in all of India. That this is a conservative estimate can be appreciated from the fact that the Tamil Nadu Commissioners in 1995 noted that there were 750,000 quarry workers in that state alone (Srivastava 2005: 24). With a population of 62 million in 2001, this would lead, using West Bengal as the basis for calculation, to an estimate of more than 12 million workers in the quarries for the whole of India.

According to the recently released 2001 Census of India data on workers, women comprise around 14 per cent of all full-fledged workers in India in the mining and quarrying sector. However, the extent of informalisation of women's labour is evident from the much higher proportion—33 per cent of all workers—being women amongst those defined as 'marginal workers'.<sup>6</sup> For example, in state-owned coal mining, women comprise around 5.6 per cent of the workers, but around 17 per cent of marginal workers in the same sector are women. The participation of women is highest in dolomite mining (33 per cent), mica mining (25 per cent), clays mining (23 per cent), stone quarrying (23 per cent), salt extraction (23 per cent), manganese ore mining (21 per cent) and gemstones mining (19 per cent), indicating that women's labour is concentrated in the small-scale or informal mining sector. Even within these sectors, women's participation is higher as marginal workers in dolomite mining (40 per cent), mica mining (40 per cent), clays mining (35 per cent), stone quarrying (38 per cent), salt extraction (59 per cent), manganese ore mining (40 per cent) and gemstones mining (34 per cent). In gold ore mining, women comprise 57 per cent of marginal workers, with chromium ore mining also employing women as 38 per cent of the marginal workers. The total number of marginal workers in the mining and quarrying occupational category is slightly over 225,000, which clearly is nowhere near reflecting the reality.

With regard to numbers, women undoubtedly constitute a large segment of workers in the artisanal, small and informal mines all over the world (WMMF 2000). In most cases the quarry workers come from rural and agricultural backgrounds, about 30 per cent of whom are women in India (Krishnaraj and Shah 2004: 44–45). Thus, the proportion of women in mines and quarries is likely to reflect a similar percentage. In fact, of all female workers, about 85 per cent are employed in primary sector activities

in India (Krishnaraj and Shah 2004: 46). 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 per cent are women, but in Asia the proportion is less than 10 per cent. 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, the proportion of women is higher than just 10 per cent as noted by Chakravorty (2001), and following the international trend, may well be growing (as observed by ILO 1999: 25).

For Sri Lanka some official statistics are available (Government of Sri Lanka 2003), which list 1,689 mining and quarrying operations with an average of 10 employees each in 2000. These statistics include those activities with more than five employees. The Census of Industries (2004) in Sri Lanka counted 21,388 workers in 5,414 small mines and quarries, each employing 10 or fewer workers in 2003. However, besides these larger and formal sites, many operations are small, individual or family-run, and hence unreported. If the number of operations are assessed at a conservative 2,000, with an 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. In Sri Lanka, women's labour is mainly concentrated in servicing and assisting the artisanal gemstone miners as against the mainland roles of cutting and carrying, but also in the industrial cutting and polishing of gemstones (Herath 2003).

For Pakistan, official statistics estimated that about 23,000 persons were employed in mining and quarrying for 2003–04 (State Bank of Pakistan 2005). 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 the North West Frontier Province where governance structures are loose. If we take the Indian situation as a rough guide, then of Pakistan's workforce of 53 million, nearly 400,000 would be in the ASM sector.

In the case of Nepal, the labour force survey carried out for 1998–99 made no mention of mining and quarrying, but UNESCAP (2003: 5) estimated that 0.08 per cent of the active male population and 0.04 per cent of women over ten years of age were employed in the mining and quarrying (M&Q) sector. According to the ILO (2003), the labour participation rate of those in the 16–64 years age group in Nepal is high (almost 90 per cent). These data lead to an estimate of approximately 120,000 in the M&Q census category in Nepal.

No statistics are available from Bhutan, although field visits have revealed a large number of stone quarries along the Himalayan foothills. In the north-eastern 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 field observations. 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. Since many of these would be pursued as seasonal livelihoods, it is appropriate to adopt a conservative approach in arriving at the approximate estimation of 3 million workers toiling away in small mines and quarries in the South Asian region.

### III MINERAL-BASED LIVELIHOODS IN SOUTH ASIA

In the 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 Gross Domestic Product (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 the Indian economy which, according to an expert view, comprises around 88 per cent 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, with 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 gemstones of Pakistan. Even low-value products such as stones may be exported although the exact amount of revenue earned by them is unrecorded.

#### MINING TRADITIONS

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*, written in circa 250 BCE (Shamasastri 1956: 82–89), which gave instructions on methods of gem-testing and 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.<sup>7</sup> The introduction of scientific knowledge through engineering institutions and modern legal frameworks of resource governance in the British period meant that many of the old systems were destroyed. In their place, a new understanding of mining, as an area of work requiring a range of licenses and permits, as well as a formal knowledge of geology and production, emerged. The legal frameworks established during the colonial times aimed at the control of 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 legalised

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 once again by definitional problems. For example, Meghalaya is a 'fifth schedule' state in the northeast of India, where mineral resources belong to local landowners. 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 workers engaged in coal mining in Meghalaya fall in the vacuum of this 'non-legal' space.

#### LEGAL COMPLEXITIES

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: various government departments,<sup>8</sup> mine (or quarry) owners or the lessees, contractors, managers, supervisors, account keepers, mine workers, local customers/buyers, manufacturing exporters and their agents for higher value products such as some marble or mica, registered or unregistered workshops and household industries for processing. However, from field observations it can be noted that these categories are not mutually exclusive, and may not be present in all quarries. Mine workers have the least bargaining power amongst these groups, and include three kinds of workers: those who dig, those who carry loads, and those who process. Work is usually conducted on a piece-rate basis, leading to relentless exploitation. Women's labour is usually concentrated in the two latter sub-groups. In the case of many illegal and non-legal mines, the main cutter may have the responsibility of selling the dug or panned products to local customers after semi-processing (Lahiri-Dutt and Williams 2005).

#### PRODUCTION RELATIONS

From field surveys it becomes apparent that production relations in small mines and quarries are characterised by semi-feudal and pre-capitalist forms as well as capitalist wages, making exploitation easier partly due to the remote locations of the mine sites and partly by virtue of the unorganised nature of production. Living and working conditions are deplorable by any standard; it is common for shelters to be no more than small and low temporary huts with plastic sheets for roofing. There is usually no clean and safe accessible drinking water supply, no electricity, no health services and no educational facilities. For the children to naturally join in mining activities to support the family at times of ill-health of the elders is neither uncommon nor infrequent.

A common feature in labour organisation in small mines and quarries is sub-contracting. The mine owner sub-contracts a *thekeedar* (contractor) for the regular supply and control of labour. 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. Contract labourers are recruited either for certain numbers of days or for certain amount 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. 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 wage workers. 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 during the monsoon months. The workers either choose to work in 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.

#### MIGRATION AND PRODUCTION RELATIONS IN ASM

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 normal livelihood and survival strategies of the poor and does not occur only during times of emergencies in the districts of India, although the rate of migration increases at times of socio-economic distress, political crisis and/or natural disasters. 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 seasonal migrations from poorer 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 force the rural poor to seek jobs outside of the farming economy, and small mines and quarries are often the primary absorbers of such labour. 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.

#### LINKAGE BETWEEN DISPLACEMENT AND VULNERABILITY OF LIVELIHOODS

Natural disasters or environmental hazards also encourage a large number of displaced rural landless to join 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 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 and religious identities threaten the wellbeing of poor, causing their flight not only to the big cities but also into mining-quarrying jobs (Amarasinghe 1999). 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 small mines and quarries (Rao 2005). Women as new migrants move into small mines and quarries as workers, with little or no support networks that 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 with alone, are created for women migrants in mines and quarries.

#### IV WOMEN IN ARTISANAL AND SMALL MINES AND QUARRIES

The proportion of women among the workers in 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 as low as 10 per cent to a high of 50 per cent (Hinton et al. 2003). It has been noted (for example in a report on women *ninja* miners of Mongolia by Appel 2005) that often ASM is a dangerous and physically demanding activity, leading to a gender division of labour in which men undertake the 'heavy jobs' and women take care of most day-to-day chores.

Moretti (2005: 5), however, 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 that the 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 the 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 *palliris*), 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 that women comprise approximately 15 per cent of the legal small-scale metal mining labour force and about 50 per cent of the ASM or *galampsey* industry. Women are represented more heavily in lower value industrial minerals, the proportion rising to over 75 per cent 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 than men'. Yakovleva (2007), whilst examining the causes of female participation in ASM in Ghana, highlighted the lack of alternative economic opportunities, and focussed on the risks faced by women in low-skilled jobs. In the mining frontiers of Brazilian Amazon, Graulau (2006: 299) put women's labour as the core of capital accumulation: 'Vulnerability of women's labour in *garimpagem* 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 number of women in ASM has been rising (Caballero 2006). Only sparse data are available on China, but according to 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.<sup>9</sup> In South Asia, like everywhere else, there is a rise in the number 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 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.

#### V WOMEN'S STATUS AND POSITION IN 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. CASM (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 move back and forth between the informal mining sector and farming, or take ASM up as an alternative to subsistence agriculture, families may have marginally better incomes. Mining work is commonly done on a contract basis, often at piece-rates, but also for daily wages. Jobs in 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 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. Chakravorty (2001: 38) notes:

... 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 fully reveals the gender-blindness of scholarship on ASM, because it neglects to enquire into why women might be concentrated in the more arduous job of hand-sorting and ignores their concentration in the more manual job of loading baskets and carrying head loads. My observation is that most women in ASM are from indigenous and similarly marginal ethnic communities including the low castes (Lahiri-Dutt 2003b), that they work mostly in the more 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 small mines and quarries presented by Chattopadhyay (2002) for 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. Obviously, head loading of 20-30 kilograms is not considered to be unsuitable for women within the mine but this is one area that needs immediate policy intervention.

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). Lack of land ownership leads to the non-identification of women as legitimate 'miners' in many countries: Susapu and Crispin (2001: 14) noted this phenomenon in Papua New Guinea. In the absence of collateral, the lack of access to credit becomes a significant problem; even in South Africa (where women's mining associations have attempted to overcome barriers such as lack of collaterals for loans) poor education and negative attitudes of bankers towards women miners means that only 6 per cent 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. 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.

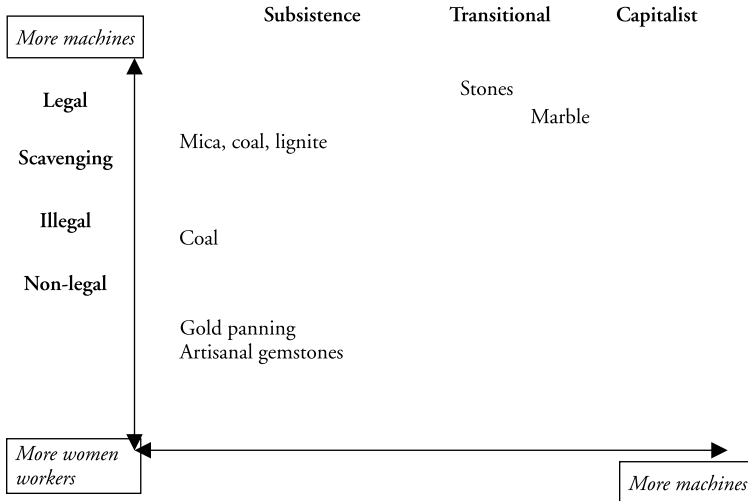
In ASM in South Asia, women are not owner-entrepreneurs, having no control over the land or the mineral resource contained therein; they are employed as casual workers usually by labour contractors, in low-technology, labour-intensive processes. This gives rise to high direct and indirect costs of ASM 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.

The range of ASM practices is illustrated in Diagram 1. 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. By pointing out the concentration of women in subsistence level, unmechanised and in non-legal mining practices, the diagram clearly illustrates the need for relating gender and development policies in the ASM sector.

#### GENDERED LIVELIHOODS IN ASM

Women working in small mines and quarries are often at the mercy of 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. Small mines and quarries are plagued with numerous problems including a high degree of health, safety and environmental risks and sometimes conflicts with large mining companies. The workers have only limited access to credit, equipment and appropriate technology. Although gender crosscuts each of these factors, it is not commonly recognised as such. Given below is a

DIAGRAM I  
*Placing Women in Small Mines and Quarries in South Asia*



**Source:** Author's estimation.

brief outline of the livelihood issues; if informal mining is to develop into a sustainable activity, these individual issues need to be examined through a gender lens.

#### WORKING CONDITIONS AND SAFETY

Women in ASM in South Asia are working in three different categories of jobs: (a) in the extractive process as diggers, sorters, panners, stone breakers and in crushing and preparing of minerals; (b) as transporters and carriers commonly working in head loading; and (c) as cleaners, and as suppliers of food and beverages, clerks and secretaries, peons and carers. In small mines and quarries, it is the first two groups that are the most common. These women are in most cases from extremely poor, from the *adivasi* (indigenous) or *dalit* (downtrodden/lower castes) communities, with low levels of literacy, usually in younger age categories (age groups 5–30 years). The working days are extremely long and tiresome. Parthasarathy (2004: 217–18) describes the life of a woman in an Indian quarry:

A typical day of a woman mineworker starts at 6 a.m.... 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.... 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.

Women tend to accept poorer working conditions: lower wages than 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. Major accidents mostly claim the lives of men as they are the ones present in the underground jobs. Minor accidents due to blasting or falls are common for both women and men. Simple safety gear such as shoes, masks and helmets is not supplied, nor is training in their use provided. Snake bites and inundations can also claim lives.

#### OCCUPATIONAL HEALTH RELATED ISSUES

Occupational diseases range from ill-health such as respiratory problems, silicosis, tuberculosis, leukaemia, arthritis, poor vision and deafness to reproductive tract problems. They occur due to constant exposure to dust and noise and poor water supply and sanitation. Occupational health issues arising out of poor working conditions lead to dust-related diseases of the respiratory tract such as tuberculosis and silicosis, which reduce the working ability and lifespan of the workers.<sup>10</sup> Surveys conducted by the Indian Council of Medical Research have reported incidence rates between 16 to 57 per cent of silicosis amongst stone quarry workers in different parts of the country. The incidence is high in Rajasthan, where mining and quarrying is second only to agriculture as a source of employment, according to another study conducted by the Department of Chest Diseases of the Medical College in Jodhpur, and the NGO Gramin Vikas Vigyan Samiti (GRAVIS n.d.). Radiological investigations showed that 56 per cent of mine workers in Rajasthan are affected with silicosis or silica-tuberculosis. If these numbers are indicative of the general incidence of such diseases, then at least 800,000 workers in 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 a 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 S.A. Azad, the Executive Director of Prasaar, at the time of taking up jobs in quarries, a worker is fully aware of the death trap lying ahead, but the lack of alternatives forces a person in his twenties to work in

the quarries (Azad 2006). In Azad's 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, most workers become ill and gradually are unable to work, eventually dying in their 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 to 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.

#### GENDER, BONDED LABOUR AND CHILD LABOUR

Women are at the bottom of the hierarchy of production. Although they play major roles in subsistence as well as commercialised small mining and quarrying, they generally have very low level of control over the products of their labour or to act as autonomous subjects.

Bondage, a contemporary form of slavery, is a widely used method of labour employment in ASM in South Asian countries.<sup>11</sup> 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: Bakshi 2002; Sreedharan and Muniyapa 2000: 6, 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 1995). 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 labourer, she also marries the conditions of his bondage. In case of a woman head of a household being in bondage, the consequences are forced work for long hours, often outside of usual quarry jobs, and complete disempowerment.

In Pakistan's small mines and quarries, Ahmad Saleem has shown the 'vicious circle' of bonded labour, where about 80–85 per cent of them came from only two districts, Swat and Shangla of the 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' (Dawn 2003). Ercelawn and Nauman (2001) described the conditions of both women and men bonded labourers in Pakistan. The Nepalese bonded labourers, called *kamaiyas*, belong mainly to the Tharu community (Sharma et al. 2001), and once indebted due to poverty, the borrower and his heirs become bonded to the landlord.

The relationship between women's labour and bondage is acknowledged, but the question of linkages between gender and child labour<sup>12</sup> in 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.<sup>13</sup> This often leads to a justification of protective legislation such as the prohibition of women's work in mines and quarries.<sup>14</sup> It is indeed true that women are accompanied by children into 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 are usually at a greater disadvantage than the boys because of their gender.<sup>15</sup> In spite of preventive laws such as India's Child Labour (Prohibition and Regulation) Act 1986, children continue to be engaged in mining and quarrying work in the entire South Asia as a more docile and cheaper form of labour. ILO's major programme, the International Programme for the Elimination of Child Labour (IPEC) has been operating in South Asia through governments, employers, workers, non-governmental organisations and teachers. Measures such as the National Child Labour Programme in India and the ILO's projects have been designed to release and rehabilitate children under the purview of the Act.

## VI POLICY IMPLICATIONS OF GENDER IN SOUTH ASIAN ASM

In prioritising policies, the 'high congruence between the informal economy and the poor and vulnerable' led the National Commission for Enterprises in the Unorganised Sector in India to examine the twin issues of conditions of work and promotion of livelihood. The first step towards addressing the magnitude of the problem was to 'create a social floor' below which nobody is allowed to fall (NCEUS 2007: 9). So far, policies in India have swung between complete control of illegal mining and complete opening up of the small mining sector as evident in the Mineral Policy of individual states such as Rajasthan. Other countries do not seem to have a well-developed policy at all.

The Commission also recognised that 'livelihood promotion is the only route' through which it is possible to deal with the issues of working conditions and related aspects of poverty and vulnerability (NCEUS 2007: 9). Although the Commission recognised that certain laws and regulations have negative impacts on livelihoods to create the foundations of decent work, no mention was made in this context on the legislation that affects women and their work in small mines and quarries.<sup>16</sup> This is not unusual; generally the mining industry and bureaucracy of South Asia have neglected to prioritise social issues, and have continued to focus on the improvement of techno-economic efficiency in all spheres from exploration to exploitation, including

management and control. The first policy implication, therefore, is to accept that small mines and quarries are here to stay, that they make important contributions and hence need to be integrated fully into their respective local economies, and that they pose an area of concentrated poverty that has yet remained relatively untouched either by the administration, NGOs or trade unions. It is also important to better understand small mines and quarries as an integral and legitimate aspect of the livelihoods of innumerable women and men in the South Asian informal sector. Improving 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. While some women are forced into small mines due to extreme poverty and thereby suffer a great deal of exploitation, it is evident that simply preventing them from working will not remove the primary cause of their vulnerability.

#### LIVELIHOOD ENHANCEMENT

What concrete policy steps could then be taken in promoting livelihoods in small mines and quarries in South Asia? There are broad guidelines, such as the Government of India's Mineral Policy (2006), which notes that small mines and quarries may fit in well with the existing social and production structures—particularly seasonal operation—in remote areas with little infrastructure, in a manner that is compatible with agricultural production in the same area. However, no definitive measures are either indicated or taken towards this direction. Enhancing the ability of small mines and quarries to generate employment, income and entrepreneurial skills can indeed reduce the push for outmigration to urban areas, but this would need to go hand in hand with enhancing the ability of the workers in this sector. For example, if they are locally owned and managed, small mines and quarries would provide a larger net gain to the community and to the national economy than do larger, centrally or foreign-owned mines. The first efforts, therefore, would be made to support the workers to earn decent wages and enable them to work in safe and healthy working conditions in small mines and quarries. 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.

#### MAINSTREAMING GENDER AT THE POLICY LEVEL

In developing livelihood enhancement strategies two important considerations are involved: *why* gender needs to be integrated, and *how* it is to be done. To answer the first, one needs to explore contemporary developmental approaches which have emphasised that gender equity is a core development issue, 'a development objective in its own right' (King and Mason 2001: xiii). Promoting gender equality as part of a development strategy in small mines and quarries should not mean continuing with or reinforcing the low status of women to men as well, but rather creating 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 aim is to enhance women's decision-making power within the mine, the mining community and the family as compared to men. This can be undertaken through gender mainstreaming in both worker-centric and community-centric projects. Empowering women mine workers has the potential to bring more tangible developmental outcomes than top-down interventions such as the regularisation of informal mines. Women working in small mines have limited opportunities in other non-farm activities due to their low levels of skills and education. This forces them to work in mines that are essentially low skill jobs. With greater use of technology in production, gender roles of workers in small mines might change, negatively impacting women's productive roles. Again, social and economic policies leading to local changes may also negatively impact upon women and there should therefore be an awareness to avoid such pitfalls.

To improve the lives of women in small mines and quarries, the immediate need is to eliminate gender bias and harassment and accept women's multiple and productive roles in the economy, in society and at home. This will enhance women's ability to ensure food security for the family and provide for children more effectively. For women to benefit from ASM, it is first of all 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 thereby neglected. Work is a part of any human being's life and women and men toiling in 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 law in an effort to protect them. Equal rights to work and consequent economic benefits from 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, to include 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. There is also a need 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 programmes—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.

Programmes such as those taken up by the ILO in South Asian quarries would benefit from adopting a gender focus. To do this, commitment to gender mainstreaming would need to begin at the international policy level and trickle down to the individual country's strategy level. The promotion of micro-credit programmes can provide financing for women in communities on mineral tracts. Gueirin and Palier (2005) 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 has been more effective in poverty eradication than providing credit to male heads of households. Elsewhere, there are examples of locally based non-governmental organisations that are making marginal improvements in women mine workers' lives and also in making their voices heard. The Mine Labour Protection Campaign (MLPC), based in Udaipur, has focused on mine labour issues in Rajasthan's marble and stone quarries (MLPC 2006). Similarly, the Mines Monitoring Centre of the Bindrai Institute for Research Study & Action (BIRSA), based in Ranchi, the Jharkhand Mines Area Coordination Committee (JMACC) and Jharkhandi Organisation for Human Rights (JOHAR) have an important presence in the *adivasi* communities that work Jharkhand's stone and limestone quarries (BIRSA 2003; JOHAR n.d.).

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 sorts within the mines and quarries. Another example is the use of technology; the ability to use technology or 'appropriate technology' is often seen by 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. Existing laws regarding 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 responsibilities of these corporations do not extend to ensuring gender

equity, a 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 in India, environmental degradation caused by the quarries has led to several public interest litigations and the rise of powerful civil society movements.

These considerations lead us to ask a critical question: will promoting women's work in the ASM sector in South Asia improve the quality of life for rural poor women of the countries involved? This question has great implications for developing pro-poor livelihood policies that are effective in three areas: (1) sustaining economic benefits for the states, for the families and for the individuals, in other words sustaining the development from mineral extraction; (2) 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 (3) raising the standards of living in meeting the Millennium Development Goals. The answer, if there is one at all, 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 policy makers.

#### END NOTES

1. Indeed, the International Labour Organisation (ILO 2002) observed that employment in the formal mining sector had been declining due to the increased use of machines in production. Although the recent mining boom throughout the world might have reversed this trend, jobs in formal mining have been shrinking generally due to mechanisation.
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. In my earlier works (Lahiri-Dutt 2003a, 2004) I have used the term informal as coterminous of ASM.
3. Gunson and Yue (2001) showed that the estimated 6 million or so artisanal miners in China produce at least 11 per cent of the world coal output, outproducing comfortably the entire coal industry of India or Australia.
4. Some of the material—including those done by our partners—from this research is now available at our website ([www.asmasiapacific.org](http://www.asmasiapacific.org))
5. 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 and Gilles 2001). The livelihood approach to understanding survival strategies of the poor people as well as development processes has received a spurt in the last decade.
6. According to Census of India, 'Marginal workers' were those who worked any time at all in the year preceding the enumeration but did not work for a major part of the year, i.e., those who worked for less than 183 days (or six months). They are often landless labourers or farmers engaged in various informal jobs during the non-cropping season. 'Main workers' were those who had worked for the major part of the year preceding the date of enumeration, i.e., those who were engaged in any economically productive activity for 183 days (or six months) or more during the year (Census of India 2001).

7. Illegal mining also occurred, and *Arthashastra* gave instructions on how to deal with it: '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).' However, in India, illegal mining needs to be placed within the broader context of the (lack of) environmental and social justice in mining areas, an issue that I have raised in a recent work (see Lahiri-Dutt 2007a).
8. 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 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.
9. Personal communication with Professor Shen Li, who is an authority on ASM in China and the head of CASM China network. See [http://www.casmsite.org/regional\\_CASM-China.htm](http://www.casmsite.org/regional_CASM-China.htm).
10. '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 cost of treatment by court orders in Rajasthan. Besides the fact that almost none of the mine workers 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' (*India Together* 2005).
11. 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 per cent of the bonded labourers were from the Schedules Castes (SC), or lower castes and 25 per cent were from the Scheduled Tribes (ST), or the indigenous peoples/*adivasis* (Marla 1981). The National Commission on Rural Labour (NCRL 1991) presented a clearer picture of bonded labour in India. It took note of 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 small mines and quarries and crushers (Ministry of Labour 1991). The United Nations Working Group on Contemporary Forms of Slavery estimated that 10 million of the 20 million slaves of the modern world live in India alone, of whom more than half are women and children (UN 1999). Human Rights Watch (1996) puts the figure at a higher level: 'Approximately fifteen million children work as bonded labourers in India.'
12. 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.
13. 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 of 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 as the primary role and responsibility of women. It is assumed that women will automatically benefit from improvements in the conditions of their families, with the benefits trickling down through the male head of households (Elson 1995). Changes are however 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.

14. 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 or enforced. 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 harsh working conditions, these measures usually work to act against women in the labour market.
15. 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.
16. These include protective bans on women's underground work and night work, but actually throw women into more vulnerability by taking away their legitimacy as workers in mines.

#### REFERENCES

- Agarwal, Bina. 1994. *A Field of One's Own: Gender and Land Rights in South Asia*. Cambridge: Cambridge University Press.
- Amarasinghe, S.W. 1999. 'Socio-Economic Study of Small-Scale Gemstone Mining in Sri Lanka (Draft)', Best Practice in Small-scale Gemstone Mining, DFID Knowledge and Research Project, UK Department for International Development (DFID), accessed from <http://www.practicalaction.org/docs/consulting/miners%20socio-economic%20study%20-%20sri%20lanka%20-%20draft.pdf> (on 20 June 2005).
- 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* 1 (2): 1–23.
- Appel, Peter W. Uitterdijk. 2005. 'Small-scale mining in Mongolia: A survey carried out in 2004', *Danmarks og Grønlands Geologiske Undersøgelse Rapport* 2005/4, accessed from [http://www.geus.dk/geuspagedk.htm?http://www.geus.dk/program-areas/common/int\\_mong-dk.htm](http://www.geus.dk/geuspagedk.htm?http://www.geus.dk/program-areas/common/int_mong-dk.htm) (on 2 July 2007).
- Argall, George Oates, Jr. 1978. *Future of small-scale mining—important for the future*. New York: UNITAR.
- Azad, S.A. 2006. Personal communication with Mr S.A. Azad, Executive Director, Prasaar, New Delhi.
- Bakshi, Roopa. 2002. 'Bonded Labour', *the-south-asian.com*, November, accessed from [http://www.the-south-asian.com/Nov2002/Bonded\\_labour.htm](http://www.the-south-asian.com/Nov2002/Bonded_labour.htm) (on 17 December 2005).
- Baluda, R.P. 2000. 'Small-scale gold mining in the Baguio mineral district, Philippines', in Satoshi Muraio, Victor Maglanbayan and Neoman De La Cruz (eds), *Small-Scale Mining in Asia: Observations Towards a Solution of the Issue*. London: Mining Journal Books, pp. 11–15.
- Bhanumathi, K. 2003. 'Labour and Women in Mining'. Background Paper by Mines, Minerals and People (MMP) for the Indian Women and Mining seminar, Delhi, April 2003, accessed from <http://www.minesandcommunities.org/article.php?a=858> (on 3 March 2008).
- Bindrai Institute for Research Study & Action (BIRSA). 2003. 'Mines Monitoring Centre', accessed from <http://www.birsa.org/mmc.htm> (on 17 December 2005).
- Blaikie, Piers, Terry Cannon, Ian Davis and Ben Wisner. 1994. *At Risk: Natural Hazards, People's Vulnerability and Disasters*. London: Routledge.
- Burke, Gill. 2006. 'Opportunities for environmental management in the mining sector in Asia', *The Journal of Environment and Development* 15 (2), June: 224–35.

- 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*. Aldershot: Ashgate, pp. 145–62.
- Carman, John. 1985. 'The contribution of small-scale mining to world mineral production', *Natural Resources Forum* 9 (2): 89–95.
- 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, 19–22 November, accessed from [http://www.un.org/esa/sustdev/tech\\_coop/documents/seminar\\_Yaounde/Session1\\_Carnegie.pdf](http://www.un.org/esa/sustdev/tech_coop/documents/seminar_Yaounde/Session1_Carnegie.pdf) (on 28 December 2007).
- Communities and Small Mines (CASM). 2002. 'Information on ASM, Communities and Small-scale Mining', The World Bank, Washington, DC, 16–17 June, accessed from [http://www.artisanalmining.org/userfiles/file/CASM\\_MDG\\_Report\\_8\\_19\\_05.pdf](http://www.artisanalmining.org/userfiles/file/CASM_MDG_Report_8_19_05.pdf) (on 27 November 2007).
- . 2004. 'Women and Children Workshop', Communities and Small-scale mining Annual General Meeting and Regional Learning Event, Colombo, Sri Lanka, 12 October.
- . 2005. 'The Millennium Development Goals and Small-scale Mining: A Conference for Forging Partnerships for Action: Workshop Report', Communities and Small-scale Mining, The World Bank, Washington, DC, 16–17 June, accessed from [http://www.artisanalmining.org/userfiles/file/CASM\\_MDG\\_Report\\_8\\_19\\_05.pdf](http://www.artisanalmining.org/userfiles/file/CASM_MDG_Report_8_19_05.pdf) (on 27 November 2007).
- Census of India. 2001. 'Work Participation Rate (2001 Census)', accessed from [www.censusindia.gov.in/Data\\_Products/Library/Post\\_Enumeration\\_link/eci6\\_page3.html](http://www.censusindia.gov.in/Data_Products/Library/Post_Enumeration_link/eci6_page3.html) (on 31 December 2007).
- Census of Industries. 2004. 'Listing of Industrial Establishment: Summary Table 2: Establishment and persons engaged by Industry, Sri Lanka—2003', accessed from <http://www.statistics.gov.lk/industry/tables-%20Listing%20Industrial.pdf> (on 7 January 2008).
- 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', *Mining, Minerals and Sustainable Development* 78, October, International Institute for Environment and Development (IIED) and World Business Council for Sustainable Development (WBCSD), accessed from [http://www.iied.org/mmsd/mmsd\\_pdfs/asm\\_india.pdf](http://www.iied.org/mmsd/mmsd_pdfs/asm_india.pdf) (on 31 December 2006).
- Chattopadhyay, M. 2002. 'Gender and Labour: A study of mica manufacturing industry of Giridih', Report Submitted to Sociological Research Unit, Indian Statistical Institute, Calcutta.
- Elson, Diane. 1995. 'Rethinking strategies for development: from male-biased to human-centred development', in Diane Elson (ed.), *Male Bias in the Development Process*. Manchester: Manchester University Press, pp. 1–28.
- Ercelawn, Aly and M. Nauman. 2001. 'Bonded Labour in Pakistan: An Overview', Declaration Working Paper 01/2001, Geneva: International Labour Office, accessed from [http://www.ilo.org/wcmsp5/groups/public—ed\\_norm—declaration/documents/publication/wcms\\_096991.pdf](http://www.ilo.org/wcmsp5/groups/public—ed_norm—declaration/documents/publication/wcms_096991.pdf) (on 21 October 2008).
- Ghose, A.K. 1986. 'Mineral Development in LDCs: Constraints and Challenges', in Ajoy K. Ghose (ed.), *Strategies for Exploitation of Mineral Resources in Developing Countries: Proceedings*. New Delhi: Oxford & IBH Publishing Co. pp. 49–58.
- . 1991. 'Towards an Integrated Plan for Socio-economic Development: The Small-scale Route', *Journal of Mines, Metals and Fuels* 39 (3), March: 7–10.
- . 1994. 'New configuration of small-scale mining for developing countries', in Ajoy K. Ghose (ed.), *Small-scale Mining: A Global Overview*. New Delhi: Oxford & IBH Publishing Co. pp. 29–42.
- Ghosh, A. 1996. *Small Scale Mining in India*. New Delhi: Oxford and IBH Publications.
- Government of India. 2006. *National Mineral Policy: Report of the High Level Committee*. New Delhi: Government of India, Planning Commission, accessed from [http://www.planningcommission.gov.in/reports/genrep/rep\\_nmp.pdf](http://www.planningcommission.gov.in/reports/genrep/rep_nmp.pdf) (on 20 June 2008).
- Government of Sri Lanka. 2003. *Population Results for Industrial Workers*. Colombo: Department of Census and Statistics.



- Goyal, Gagan. 2005. 'Role Rigmarole: Minor Miner', Paper presented at a workshop on 'Community and State Interests in Small-Scale Mining: Sharing Experiences from the Asia-Pacific Region', Baguio City, Manila, 7–12 June, accessed from <http://www.asmasiapacific.org/publications/18.pdf> (on 20 June 2008).
- 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*. Aldershot: Ashgate, pp. 289–305.
- Gravis. n.d. 'Gravis: activities: Health', accessed from <http://gravis.org.in/content/view/21/41/> (on 21 October 2008).
- Gueirin, Isabelle and Jane Palier (eds). 2005. *Microfinance Challenges: Empowerment or Disempowerment of the Poor?* Pondicherry: Institut Français de Pondichéry.
- Gunson, A.J. and Yue Jian. 2001. 'Artisanal Mining in The People's Republic of China', *Mining, Minerals and Sustainable Development* 74, September, International Institute for Environment and Development (IIED) and World Business Council for Sustainable Development (WBCSD), accessed from [http://www.iied.org/mmsd/mmsd\\_pdfs/asm\\_china.pdf](http://www.iied.org/mmsd/mmsd_pdfs/asm_china.pdf) (on 31 December 2006).
- Harriss-White, Barbara. 2003. *India Working*. Cambridge: Cambridge University Press.
- Heemskerk, Marieke. 2000. 'Gender and Gold Mining: The Case of the Maroons of Suriname', *Women and International Development Working Paper* 269, accessed from <http://www.wid.msu.edu/resources/papers/pdf/WP269.pdf> (on 31 December 2006).
- . 2003. 'Self-employment and Poverty Alleviation: Women's Work in Artisanal Gold Mines', *Human Organization* 62 (1), Spring: 62–73.
- . 2005. 'Collecting data in artisanal and small-scale mining communities: Measuring progress towards more sustainable livelihoods', *Natural Resources Forum* 29 (1), February: 82–87.
- Hentschel, Thomas, Felix Hruschka and Michael Priester. 2002. 'Global Report on Artisanal & Small-Scale Mining', *Mining, Minerals and Sustainable Development* 70, January, International Institute for Environment and Development (IIED) and World Business Council for Sustainable Development (WBCSD), accessed from [http://www.iied.org/mmsd/mmsd\\_pdfs/asm\\_global\\_report\\_draft\\_jan02.pdf](http://www.iied.org/mmsd/mmsd_pdfs/asm_global_report_draft_jan02.pdf) (on 20 December 2005).
- Herath, M.M.J.W. 2003. *Sri Lankan Minerals and Industries: Resources, Potentialities and Current Issues*. Colombo: Geological Survey and Mines Bureau.
- 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', *Mining, Minerals and Sustainable Development* 76, September, International Institute for Environment and Development (IIED) and World Business Council for Sustainable Development (WBCSD), accessed from [http://www.iied.org/mmsd/mmsd\\_pdfs/asm\\_ghana.pdf](http://www.iied.org/mmsd/mmsd_pdfs/asm_ghana.pdf) (on 31 December 2006).
- . 2002. 'Small-scale mining and its socioeconomic impact in developing countries', *Natural Resources Forum* 26 (1), February: 3–13.
- Hinton, Jennifer J., Marcello M. Veiga and Christian Beinhoff. 2003. 'Women and Artisanal Mining: Gender Roles and the Road ahead', in Gavin M. Hilson (ed.), *The Socio-Economic Impacts of Artisanal and Small-Scale Mining in Developing Countries*. Lisse: A.A. Balkema Publishers, pp. 161–204.
- Human Rights Watch. 1996. 'The small hands of slavery: Bonded child labour in India', accessed from <http://www.hrw.org/reports/1996/India3.htm> (on 20 December 2005).
- India Together*. 2005. 'Silicosis—a "dusty" tale in Rajasthan', 26 August, accessed from [www.indiatogether.org/2005/au/genv-lungdust.htm](http://www.indiatogether.org/2005/au/genv-lungdust.htm) (on 23 December 2005).
- International Labour Organisation (ILO). 1999. *Social and Labour Issues in Small-scale Mines*, Geneva: International Labour Organisation.
- . 2002. 'The evolution of employment, working time and the mining industry', Document TMMI/2002. Geneva: International Labour Organisation.

- International Labour Organisation (ILO). 2003. 'Nepal—Labour Force Participation Rate (KILM 1)', *Key Indicators of the Labour Market 2003–2004*. Geneva: International Labour Organisation, accessed from <http://www.ilo.org/public/english/employment/gems/eeol/download/nepal.pdf> (on 20 December 2006).
- 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: International Labour Office.
- JOHAR. n.d. 'Our Story', Jharkhandi Organisation for Human Rights, accessed from <http://www.johar.in/story.php> (on 17 December 2005).
- 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, Elizabeth M. and Andrew D. Mason. 2001. *Engendering Development: Through Gender Equality in Rights, Resources and Voice*. Washington, DC: The World Bank/New York: Oxford University Press.
- Krishnaraj, Maithreyi and Amita Shah. 2004. *State of the Indian Farmer: A Millennium Study: Volume 25: Women in Agriculture*. New Delhi: Government of India, Ministry of Agriculture and Academic Foundation.
- Labonne, Beatrice and Jonathan Gilman. 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', ILO, Geneva, 17–21 May, accessed from <http://www.natural-resources.org/minerals/cdl/docs/undesalssminingbl.pdf> (on 7 October 2007).
- Lahiri-Dutt, Kuntala. 2003a. 'Informal mining in eastern India: Evidence from the Raniganj coalbelt', *Natural Resources Forum* 28 (2), May: 128–32.
- . 2003b. 'Not a Small Job: Stone Quarrying and Women Workers in the Rajmahal Traps in Eastern India', in Gavin M. Hilson (ed.), *The Socio-Economic Impacts of Artisanal and Small-Scale Mining in Developing Countries*. Lisse: A.A. Balkema Publishers, pp. 425–48.
- . 2004. 'Informality in mineral resource management: Raising questions on community economies in Asia', *Natural Resources Forum* 28 (2), May: 128–32.
- . 2007a. 'Illegal coal mining in eastern India: Rethinking legitimacy and limits of justice', *Economic and Political Weekly* XLII (49), 8–14 December: 57–67.
- . 2007b. 'Livelihood Issues and Concerns of Women and Men in Small Mines and Quarries of South Asia', available at <http://www.asiapacific.org/publications/43.pdf>.
- Lahiri-Dutt, Kuntala and David Williams. 2005. 'The coal cycle: A small part of the illegal coal mining in eastern India', *Journal of Resource, Environment and Development* 2 (2), September: 93–105.
- Lerche, J. 1995. 'Is bonded labour a bound category? Reconceptualising agrarian conflict in India', *Economic and Political Weekly* 22 (3), April: 484–515.
- Marla, Sarma. 1981. *Bonded Labour in India: National Survey on the Incidence of Bonded Labour: Final Report, January, 1981*. New Delhi: Biblia Impex. [Sponsored by Gandhi Peace Foundation, New Delhi and Academy of Gandhian Studies, Hyderabad.]
- Mendelsohn, Oliver. 1991. 'Life and struggles in the stone quarries of India: A case-study', *Journal of Commonwealth Political Studies* 29 (1), March: 44–71.
- Ministry of Labour. 1991. *Report on Bonded Labour*. New Delhi: Government of India, Ministry of Labour.
- Mine Labour Protection Campaign (MLPC). 2006. 'MLPC Awarded by CBWE, Udaipur', Mine Labour Protection Campaign, Udaipur, 17 March, accessed from <http://www.minelabour.org/newsview.php?newsid=-16> (on 23 October 2007).
- Moretti, Daniele. 2005. 'The Shifting Gender of Gold: Assessing Female Participation in Artisanal and Small-Scale Mining among the Anga of Mount Kaindi, Papua New Guinea', Paper presented at a workshop on 'Community and State Interests in Small-Scale Mining: Sharing Experiences from the Asia-Pacific Region' Manila, 7–12 June, accessed from <http://www.asiapacific.org/publications/26.pdf> (on 27 November 2007).
- Murao, Satoshi, Victor Maglanbayan and Neoman De La Cruz (eds). 2000. *Small-Scale Mining in Asia: Observations towards a Solution of the Issue*. London: Mining Journal Books.

- National Commission for Enterprises in the Unorganised Sector (NCEUS). 2007. *Report on Conditions of Work and Promotion of Livelihoods in the Unorganised Sector*. New Delhi: Government of India.
- National Commission on Rural Labour (NCRL). 1991. *Report of the National Commission on Rural Labour*. New Delhi: Government of India.
- Noestaller, Richard. 1987. *Small-scale mining: A review of the issues* [World Bank Technical Paper 75, Industry and Finance Series]. Washington, DC: World Bank.
- . 1994. 'Small-scale mining: practices, policies, perspectives', in Ajoy K. Ghose (ed.), *Small-scale Mining: A Global Overview*. New Delhi: Oxford & IBH Publishing Co. pp. 3–10.
- 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: 1–25, accessed from <http://www.yorku.ca/jspot/2/wkolsenruramana.htm> (on 6 February 2006).
- Parthasarathy, Mahalakshmi. 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*. New Delhi: Sage Publications, pp. 214–25.
- Rao, Nitya. 2005. 'Displacement from Land: Case of Santhal Parganas', *Economic and Political Weekly* 40 (41) [Jharkhand Special Issue], 8–14 October: 4439–442.
- Rudra, A.K. 2002. 'Policies, statutes 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', Tata Iron and Steel Co. Ltd. (TISCO), Noamundi, 1–10 February.
- Shamasastri, R. 1956. *Kautilya's Arthashastra*. Mysore: Sri Raghuvir Printing Press.
- Sharma, Shiva, Bijendra Basnyat and Ganesh G.C. 2001. 'Nepal: Bonded Labour Among Child Workers of the Kamaiya System: A Rapid Assessment', *Investigating the Worst Forms of Child Labour* 5, Geneva: International Labour Organisation-International Programme on the Elimination of Child Labour (ILO-IPEC), accessed from <http://www.ilo.org/ipecinfo/product/> (on 14 October 2007).
- Sreedharan, Oruvingal and R. Muniyapa. 2000. 'The chained bonded labourers of Karnataka', Babasaheb Dr. B.R. Ambedkar Adhyayana Kendra, Bangalore, accessed from <http://www.ambedkar.org/books/bl.htm> (on 20 December 2005).
- Srivastava, Ravi S. 2005. 'Bonded labour in India: Its incidence and pattern', *Declaration Working Paper* 43/2005, Geneva: International Labour Office, accessed from [http://www.ilo.org/dyn/declaris/DECLARATIONWEB.DOWNLOAD\\_BLOB?Var\\_DocumentID=5071](http://www.ilo.org/dyn/declaris/DECLARATIONWEB.DOWNLOAD_BLOB?Var_DocumentID=5071) (on 21 October 2008).
- State Bank of Pakistan. 2005. *Handbook of Statistics on Pakistan Economy 2005*. Karachi: State Bank of Pakistan, accessed from [http://www.sbp.org.pk/departments/stats/PakEconomy\\_HandBook/](http://www.sbp.org.pk/departments/stats/PakEconomy_HandBook/) (on 2 March 2008).
- Susapu, Blasius and Geoff Crispin. 2001. 'Report on Small-scale Mining in Papua New Guinea', *Mining, Minerals and Sustainable Development* 81, October, International Institute for Environment and Development (IIED) and World Business Council for Sustainable Development (WBCSD), accessed from [http://www.iied.org/mmsd/mmsd\\_pdfs/asm\\_png.pdf](http://www.iied.org/mmsd/mmsd_pdfs/asm_png.pdf) (on 31 December 2006).
- The Dawn*. 2003. 'Mines industry—a hotbed for bonded, child labour: speakers', 15 July, accessed from <http://www.dawn.com/2003/07/15/nat1.htm> (on 9 January 2008).
- United Nations (UN). 1999. *Report of the Working Group on Contemporary Forms of Slavery*. New York: United Nations.
- UNESCAP. 2003. *Traders' Manual for Least Developed Countries: Nepal*. Bangkok, UNESCAP, 30 December, accessed from <http://www.unescap.org/tid/publication/t&ipub2311.pdf> (on 14 August 2007).
- UNIDO. n.d. 'Global Mercury Project—Home: GMP: Removal of Barriers to the Introduction of Cleaner Artisanal Gold Mining and Extraction Technologies', United Nations Industrial Development Organization, accessed from <http://www.unido.org/doc/44254> (on 4 March 2008).
- UNIFEM, 2005. *Women, Work and Poverty: Progress of the World's Women, 2005*. New York: UNIFEM.

- Vagholikar, Neeraj, Kaustabh A. Moghe and Ritwick Dutta. 2003. *Undermining India: Impacts of mining on ecologically sensitive areas*. New Delhi: Kalpavriksh.
- 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, Marcello M. 1997. 'Introducing New Technologies for Abatement of Global Mercury Pollution in Latin America', Rio de Janeiro: UNIDO/UBC/CETEM/CNPq, accessed from [http://www.facom.uqam.ca/pdf/veiga\\_01.pdf](http://www.facom.uqam.ca/pdf/veiga_01.pdf) (on 17 November 2007).
- WMMF. 2000. 'Mining Communities Workshop: Artisanal Mining', in *Proceedings of the 1st WMMF*, Toronto, Canada, 8–11 March, accessed from <http://www.wmmf.org/2000wmmf/2000proceedings.htm> (on 14 August 2007).
- Yakovleva, Natalia 2007. 'Perspectives on female participation in artisanal and small-scale mining: A case study of Birim North district of Ghana', *Resources Policy* 32 (1–2): 29–41.