Passages through India

Report on a consultancy for Mines, Minerals and People

prepared for Christian Aid and mm&P

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Setting the scene

The three main aims of this 3-month field trip were agreed after discussions in London with Christian Aid (Leo Bashym and Tom Palakudiyil), then with the working committee of mm&P in Hyderabad (February 16-18). **First and foremost**, I would assist staff of mm&P and associated groups in developing their strategies on mining issues, using experience gained in my role as founder and staff member of Minewatch; as Research Coordinator of Minewatch Asia-Pacific; with the campaigning group on Rio Tinto (Partizans); and as director of Nostromo Research, a consultancy set up by Partizans specifically to offer assistance to community-based and Indigenous organisations. I would provide insights into the structure of the global mining industry, and strategies likely to be employed by foreign companies which have shown an interest in the

exploitation of India's mineral resources: (including addressing the first National Convention of mm&P on these issues.). Wherever possible I would share technical information on the impacts of specific mining operations and processes and (where not available at the time) ensure that such information was made available later. (I have since been sending packages of information and e-mails to various members of mm&P and the secretariat/field offices).

The second objective was to prepare a mining assessment report based upon site inspection and discussions with mining-affected communities, workers and others, concentrating on the problems faced. **Third**, I was to critically assess the capacities and requirements of mm&P for the near future.

The following pages approach the first and third tasks in a narrative fashion. In the space of three months I obviously had many observations to make to mm&P and a fairly large number of recommendations to summarise now. *These are highlighted in **bold** throughout the report.* With regard to the second task, I have attempted a summary of the 200 or so pages of my notes (and other documentation collected on the trip): the meetings held; interviews conducted and as much as possible of the key evidence provided by the hundreds of people met; and conditions observed at the operations visited. I have particularly tried to "flesh out" those mining projects (e.g. Bihar copper, Neyveli lignite) or exploration sites (Gandhamardan iron ore) and minerals (cement, stone quarrying, asbestos, diamonds) which have generally not received as much critical reflection as they warrant. The text therefore refers to mines and mineral areas which I could not visit, but that hopefully will receive more critical attention in future.

I have not attempted to analyse the legal implications - specifically - of exploration and mining on Schedule Five and Six Tribal territory or the operations of the Forest Act and the Land Acquisition Act of 1894 - perhaps the one piece of Indian legislation most urgently in need of strengthening with the people's perspective: this will figure as a key priority in mm&P's developing work. Nor have I gone into detail on the complex provisions for "R and R" (Resettlement and Rehabilitation), which affect millions of people (DP - displaced persons, PAP - project affected persons), primarily from Scheduled Tribes and Scheduled Castes*. There are wide discrepancies in these provisions, between different states and companies (e.g. between Central Coalfields Ltd. and other coal operators, such as South Eastern Coalfields). Also, I regret not gaining a secure "handle" on the nature of the country's various, oft-quoted "mafias" - whether in coal, sand, cement, steel slag or scrap. It seemed to me that their ascribed activities in some cases differ little from (or are intimately connected with) small-scale, often tribal mines, leases or collection operations (such as "moonlighting" by villagers in north Karanpura, who gather coal when the mine

shuts at night, to sell to local middlemen). But they can also be associated with large-scale, financially corrupt and politically well-connected operators, constituting a veritable "shadow market" (similar, I imagine, to what I had discovered the previous year in the coalfields of Kalimantan). And woes betide whoever tries to stop them! While I was in Jharkhand a Marxist MLA was gunned down by alleged representatives of the coal mafiosi, whose illegal contracts he was said to have tried to expose. This was the latest in a long line of murders stretching back thirty years in the region [[1]]

[* Figures for the numbers of people "displaced" by mining (DP's) vary according to not only source, but also definition. The uppermost estimate I have seen - for all categories of displaced persons in India since independence - is a massive 50 million [N C Saxena, cited by Arundhati Roy, quoted in J John]. Resource and land acquisition for mining and mineral processing is generally acknowledged to come second only to big dam and hydroelectric infrastructure projects (and the two are often intrinsically connected). This suggests that at least 10 million people have been the casualties of the minerals industry in India. It seems a far cry from other educated estimates - for example Walter Fernandes' figure of 2,100,000 in late 1993 [Walter Fernandes " The price of Development" in Seminar, December 1993] of which more than half (1,200,000) are tribal, which itself differs significantly from the figure Fernandes gave a year later - of 2,550,000 [W Fernandes in Vikalp, November-December 1994]. The estimates also differ according to definition. Officially only those dubbed "displaced" or "project affected" are counted, but "displacement": embrace many in urban areas, and those affected by what has been called "secondary displacement", for example by the later acquisition of agricultural land as mining expands [J John op cit.]. People also suffer double or repeated displacement (e.g. from a dam site, then a mine). As pointed out by Dilip Simeon [Dilip Simeon "The Politics of Labour under late colonialism" in Manohar, no date, quoted in J John ibid.] "emplacement" follows "displacement", as skilled, semi-skilled or unskilled labourers and their families move into mineral enclaves, this is a "disordering", not a "(re)ordering" of social and cultural cohesion. As some big mining companies assisted by the World Bank inter alia, move towards "recognising" their responsibility for primary displacement, so they have begun setting up development projects for "sustainable" livelihoods purportedly in parallel with existing mining, and preparing the way for permanent resettlement on mined-out lands. But past experience in this regard has been extremely negative (for example in Canada, where the closed uranium townships of Elliot Lake have become familiar "ghost towns"). I am not aware of any rigorous study being carried out on what "sustainable post-mine development" will mean in practice.]

General comments on field trips

The biggest drawback was constraint of time; notwithstanding that the *yattras* (jatras) in which I participated, and my other field trips, covered around 16,000 km - not including visits to Sri Lanka (Colombo, Eppawala) and Bangladesh, for discussions with a further dozen unions, communities and NGO's. Overall, the ground for the field trips had been very carefully prepared by mm&P staff and members. Inevitably I paid visits to some locations already well covered by previous yattras, but these were far from superfluous. For example, during my visit to the Jaduguda tailings dams and surrounding area, I was able to offer on-the-spot comments on the disparity between this and other uranium mines, as well as inform workers, suffering from occupational diseases, about recent evidence from uranium sites in Africa, Canada and the US.

However, time pressure did mean that some sites I wished to visit (the Bailidila iron ore complex in MP, the coal mines at Singrauli, the Sterlite copper smelter in southern Tamil Nadu, or the steel pickling plants near Delhi [[2]] were missed out. So were some important categories of operation -chromite, phosphates, asbestos, sandstone and quartzite (five years ago I had been appalled at the recorded death toll among quartz miners working for the glass industry in Mahbubnagar, AP. An estimated 300 out of a workforce of 450 had died between closure of the mine in 1974 and 1995 [[3]]). I also wanted to visit Kerala, where resistance to monazite mining became internationalised in the 1980's and where - according to one recent commentator - there exists by far the highest degree of Adivasi land alienation of any state in the country [[4]].

A little time was lost in back-tracking, but my greater concern was the loss of opportunities to fully evaluate certain sites (such as the underground and tailings operations of Kolar Gold Fields) due to delays or lack of adequate pre-planning. I pointed to this problem in a mid-term report presented to mm&P staff (in March). Here I urged that the alliance should **prepare a comprehensive map of mineral-rich areas, informed by industry, as well as community data**. The lack of such a map meant that for some weeks I was under the illusion that the Gandhamadan bauxite deposit and the Gandhamardan iron ore mines were co-terminous; fortunately just before I left for Orissa, I established that they are several hundred kilometres apart - and chose the right one. I was more than happy with the awesome automotive organisation of Ravi Rebbapragada and his Samata team. But hours and energy could have been saved by initially travelling to target areas on plane or train, then hiring a vehicle for the detailed field missions. These points were readily accepted by mm&P: a number of groups attending the National Convention came with well-researched and laid out maps of their own areas, and the second half of my field trip was more efficiently organised.

Focusing on the issues: privatisation and foreign investors

It is a myth that India, since independence, has been a "fortress state" shielded from foreign influence and external financial speculation in its minerals sector. (For example Russian technicians effectively engineered construction of the Jaduguda uranium complex and, it seems, have never departed). But, from 1993 there has been an explicit policy of opening-up Indian markets and resources to overseas companies and, in some sectors, increasing the proportion of imports of raw materials. {Clearly this is a vital topic for discussion and campaigning by all member organisations in mm&P (and it was one of the key "triggers" for this consultancy). The issue has become even more vital since the RSS (Shiv Sena)

vociferously "set out its stall" in opposition to foreign investment, seeking to conflate it with the politics of communalism [[5]] under the pretext of a return to "*swadeshi*" [[6]].} Unremarked by most commentators outside India, the ruling BJP also expressed itself as less than enamoured with foreign investment in mining, soon after coming to power last year.

Privatisation - bad news

The BJP-led Union government has promoted privatisation as its key strategy to lessen India's debt, increase growth and tax revenues, lower high interest rates [[7]] - and reduce the financial power concentrated in "baronial" ministries [[8]]. For many countries, privatisation and foreign investment are virtually synonymous in the case of their extractive industries, although no country has sold off its mineral assets, lock stock and barrel.

To date, the privatisations process has been notably erratic and uncertain in India, compared with (say) Zambia, Peru, or Bolivia. The Union government recently announced it will speed up the selling-off of at least some of the 246 public sector companies, including mining enterprises [[9]] - even though heated debate continues with the BJP-cabinet over the wisdom of doing so [[10]]. It does appear that Indian players and - importantly - NRI (Non Resident Indian) capitalists - are now making greater play for state-owned mining assets, than they were between 1994 and 1998. Take India's aluminium industry. NALCO (in Orissa), already partly privatised, continues to be the country's biggest bauxite producer [[11]]. But Hindalco this year (2000) acquired nearly three-quarters of Indal (most of which was owned by the Canadian company, Alcan). Meanwhile Anil Agarwal's "flagship" Sterlite Industries has been competing with Indal/Hindalco for dominance in the aluminium extrusion business (foils and rods) [[12]]

{In mid-2000 the Indian government offered to market a 51% stake in state-owned Bharat Aluminium (Balco).} However, this company's capacity is well below that of Nalco and Hindalco, and it had already been prevented from exploiting the Gandhamardan bauxite deposits in the Western Ghats [[13]]. A parliamentary committee has urged the merger of Nalco and Balco, in order to "face (sic) multinational units in the aluminium industry": if Balco were privatised, it would clearly be at a premium to the buyer [[14]]. But this proposal has been resisted by the Union government which claimed that Balco's efficiency is "absolutely at the borderline", since it depends on very old technology and a large part of its profits come from interest earned on a fixed deposit [[15]]

{It is obviously important that mm&P - like the NAPM and other

Indian organisations - should not allow the moral "high ground" of opposition to neo-liberalisation to be seized by the RSS or any other morally dubious agents. **One strategy could be a comparative study of experiences of mine privatisation and foreign investment in other countries** (see also below)**.}** A 1999 study by Michael Mortimer, head of the Investment and Business Strategies Unit of the UN Economic Commission for Latin America and the Caribbean (ECLAC), revealed growing disparity between FDI (Foreign Direct Investment) and GDP in several countries. He attributed this partly to the concentration of foreign investment in the purchase of existing assets, rather than creating new sources of production. Instead of using funds gained from privatisation of state assets for people-oriented development, they are employed instead to cover the country's balance of payments deficit (a detrimental strategy, says Mortimer, although one strongly supported by the ruling BJP in India) Significantly, the Peruvian government recently admitted it had been losing revenues from mining in private hands. Peru has now re-introduced mine tax rules which were abandoned several year ago in order to woo overseas investors: the "re-investment incentive" has been abolished; no further tax stabilising agreements will be signed; and the annual exploration fee is to be increased [[16]]

The world's biggest iron ore producer, Brazil's CVRD (Companhia Vale do Rio Doce) is now owned mainly by a Brazilian bank and a large domestic investment fund. The third partner is the country's undisputed "steel mogul", Bernhard Steinbruch who recently tried to exit from CVRD by selling his stake to cover his own debts [[17]]. This move seems to confirm the prediction four years ago by a large number of Brazilians (especially trade unionists) that privatisation would devalue fixed assets and damage workers' employment prospects and pension and health benefits. Zambia's copper mining industry initially looked like it would fall into the hands of London-registered Anglo-American (AAC). It is now being parcelled out between AAC, the World Bank/IFC (International Finance Corporation), a British government parastatal and Glencore (see below). Although some of it will eventually pass back to the government of Zambia [[18]] international lenders, including the World Bank, have refused to relieve Zambia's grave internal debt, until privatisation is completed [[19]]. As of July 2000, the Zambian government had paid creditors of Zambian Copper Mines Ltd., the former state-owned company, nearly US$1 million [[20]].

On the road to Damascus..

In contrast, the first Indian battle against privatisation of a minerals concern. (SAIL/IISCO's Burnpur plant in West Bengal) was partly won by trade unions - one of whose strongest arguments was that, while workers had improved

production at the plant over the previous two years, the putative private operator, Mukund, would not be putting up any substantial new investment. This, it was claimed, would present the asset to Mukund's owner, Viren Shah (a leader of the BJP), "virtually on a platter" [[21]]. Three years before, well-known NRI, Swaraj Paul - owner of the British Caparo steel business - had already broached the subject of privatisation while looking for a cheaper supply of iron ore, but did not get far [[22]]. Now, stung by high interest rates and rising costs in Britain, Paul is reportedly "scouting" for cheaper opportunities in India, seeking to establish steel manufacturing units in the country and expand Caparo's vehicle parts line (it already has a partnership with Maruti Udyog, India's largest car maker) [[23]].

A point I made on several occasions was that **Indian "civil society" is better able than many others, to initiate and develop discussion on the pro's and cons of mineral asset divestment**, largely because other nation-states have gone further down the privatisation path, and their negative consequences can now be evaluated.

..or stuck in a ditch?

During the three years following promulgation of the new mineral code in 1993, the Union government relaxed its restrictions further (extending the period for prospecting to five years, increasing land entitlement and adding to the variety of exploitable minerals). However, early government optimism had distinctly paled: by mid-1998. Of the 36 prospecting licenses then issued, all but four were in Rajasthan [[24]]. Compare this with Peru after privatisation where more licenses, covering a larger area of the country, were issued between 1995 and 1997 than during the country's entire previous history. Or Indonesia - where some 131 Contracts of Work (COW's) were signed up to 1996, and another 65 the following year. Although nearly half the 72 COW's agreed in 1998 had not been implemented by 1999, more were signed that year than had been confirmed in India over the previous five years.

Some foreign ventures proudly flagged by the GOI (Government of India) in a publication from 1997 [[25]] have apparently sunk without trace: for instance, the coal washeries which "several Australian companies" were said to be interested in setting up and the 50% share of Central India Coal Ltd., which Rio Tinto was proposing to buy. The situation had hardly altered by early this year, when the Union government admitted that only around 4% of the funds, allocated by private investors for joint ventures in Indian mining since 1994, had actually been disbursed. This suggests that outsiders are having second thoughts about long-term commitment to the industry. The point was borne out by the Mining Journal's 1999 global survey of top mineral executives. Thirty per cent of

these men ranked India among the least attractive targets (coincidentally exactly the same number - though not necessarily people - who ranked Indonesia in the same category). In early 2000, sixty five prospecting licenses (including aerial ones) were granted by the GOI, covering 50,000-plus square miles. However, as Rita Verma, the minister for mines, admitted: "[W]e have lagged behind in the development and exploration operations and technology as demanded by modern requirements" [[26]]. Shortly afterwards the government announced a revival of the privatisation strategy for state owned coalmines [[27]].

The problem of assessing "Value"

"Adding value" to mined resources has long been a near-sacred tenet for Marxist -oriented and pro-nationalist economists (viz. Michael Tanzer, Faysal Yachir, Walter Rodney, Samir Amin) and third world statesmen (Michael Manley, Kwame Nkrumah and Cheddi Jagan - that's before he returned to power after twenty five years in the "wilderness" and discovered the illusory benefits of foreign funding for the disastrous Omai gold mine). The theory is that profits from the upgrading, processing, refining and sale of mineral based commodities should remain in, or return to, the state from which they are extracted. This does not mean that every mineral-rich country must therefore have its own fully-integrated mineral sectors. Whereas the post-1947 Union government, led by Jawaharlal Nehru, chose to implement such a strategy, Australian companies and governments have concentrated on exporting iron ore to Japanese steel smelters, rather than build up domestic manufacture. There is indeed a powerful argument that , for certain economies, vertical integration would spell unacceptable damage and impoverishment: the mind boggles at what the consequence would have been, had CRA/Rio Tinto established a copper smelter, as well as (then) the world's most destructive mine, in the fragile biosphere of Bougainville. (Partly driven by public consciousness about Bougainville, and fears for the pristine water resources in Wisconsin, the same company was forced in the 1980's to transport its high-grade copper ore for concentration and smelting in Canada; the lower grade ore remains on site, three years after the mine closed).

A nation with poor infrastructure, lacking both technical and negotiating skills, with heavy imposed debt and precariously over-reliant on foreign receipts from its citizens - such as Suriname and Guinea (two of the world's biggest sources of bauxite) - can be drawn inexorably into the vagaries of the international market, surrendering most of its nominal powers to fix prices and control supplies [[28]]. Northern governments now execrate Sierra Leone's RUF and other "terrorist factions" in Angola and both the Congo's, for bringing mayhem to West Africa and appropriating the diamond trade. But for decades all these countries have been victims of various forms of transfer pricing. In the early 1990's a UN

mission estimated that more than half the value of Sierra Leone's mineral production (bauxite, rutile, diamonds) had been appropriated by De Beers, Sierra Rutile (owned by Nord Resources of the US, a company dominated by adherents of Moral Re-Armament) and the bauxite company Sieromco [[29]]. We might inquire whether Zimbabwe's parlous position (mentioned above) may partly derive from its being a victim of massive transfer pricing. This was practised in Zimbabwe by India's two most-favoured foreign mining partners, Rio Tinto and Anglo American. During the 1980's they operated copper and nickel "toll refining" companies out of the shadowy Swiss township of Zug - where Rio Tinto had also established a subsidiary front company, to "launder" illegal Namibian uranium [[30]]

Even "developed" countries have found their more sophisticated taxation regimes subverted by companies which practise transfer pricing, as New Zealand and Australia have done in the case of bauxite-to-aluminium [[31]]. New Zealand, which doesn't possess bauxite and has no major extrusion industry, also found itself during most of the past three decades in pawn to Rio Tinto (backed by the US administration). The British-Australian company signed a secret deal for subsidised hydro-power (the exact terms of which were even kept from the New Zealand government). Electricity was delivered at a huge premium to all other users, including the country's own manufacturing industry [[32]]

It seems quite difficult to determine exactly what potential profits may be lost to the people of India by external processing of specific minerals. Or what additional value derives from importing ores and semi-finished minerals for upgrading and manufacture, and the import of metals which are then re-exported in a finished form. Potentially the biggest overseas market for Indian metals derives from aluminium. Imported metal is hit by high customs tariffs and freight costs, while exports carry with them "many incentives" including total income tax exemption on profits [[33]]. The power cost for refineries has allegedly gone down (by up to 10%) over the past few years, with the installation of stationery calciners [[34]]. This year's Hindalco-Indal deal gave the Indian company access to Alcan's global market in extruded (foils and sheets) [[35]]. On paper, it looks as if value is being retained in, or returned to, India - rather than lost overseas. But, in his valuable paper for mm&P's National Convention, J John estimated the value of all India's mineral-based commodities at only 5.33% of the nation's total "basket" (1995-96 figures) [[36]]. Future deals - such as the proposed Raytheon-Gujarat Mineral Development Co's US$600 million refinery in Kachch - threaten to drive further wedges through this position; as does the Orissa state government's intention to establish an SEZ at Paradeep port for the export of mineral products (see below).

Nearly eighty per cent (77.75% in 1995-96) of the value of ore and unfinished minerals retained in India derives from diamonds, cut and polished rather than rough [[37]]. We do not know the mark-up on these diamonds, once they depart from workshops in Surat, Bombay and Ahmedabad. But just about every impoverished Indian must be at least dimly aware of the country's diamond billionaires, with their lush apartments and offices in New York, Antwerp or - more worryingly - in tax havens such as Mauritius and the Cayman Islands. Alarmingly, in the two years between 1995 and 1997 - while India confirmed itself as the world's leading exporter of polished stones - the real value of these diamonds actually dropped. [[38]]. By comparison the official value of alumina, chromite, marble, manganese ore, precious and semi-precious stones (other than diamonds) and above all building materials, increased - in the case of building stone and monumental stones by 100%.

But there is limited point in rehearsing such statistics, they can be used (massaged?) to suit almost anyone's agenda. Rather, the questions are to whom the value goes at each stage of the process, and - critically - what other values are lost in it -cultural, land, fertility, bio-diversity, water resources, ambient air quality etc.?

The official number of Indian mines has been declining over the past sixteen or more years (down from 41,700 in 1983 to 34,900 in 1996). Whether this points to a "trend in the depletion of resources" [[39]] and therefore their "stored value", is debatable First, there are innumerable ":illegal" mines in operation at any time. To whom does the value go in these cases? Second, some industry gurus (led by the former chief economist of Rio Tinto, Philip Crowson whose paper "The infinitely finite" caused a stir at the 1992 UNCED conference in Rio de Janeiro) claim that modern exploration techniques will almost indefinitely continue to identify high grade lodes. In support of that view, they cite the extension of the Iberian copper belt during the 1990's, the location of potentially the world's richest nickel/copper/cobalt deposit five years ago in Labrador, and the recent opening of two world-class diamond mines in the North West Territories (NWT) of Canada. These and other finds have spurred a steady increase in the amount of global exploration funding provided by private funders, investment banks, brokerages, raised on stock exchanges or (to a much lesser extent) provided by "development" banks. The majority of this money has gone towards locating gold and copper, followed by base metals and diamonds [[40]]

Flying the flag

India became the subject of anti-dumping action taken by Canada against exports of steel (from SAIL) between July 1996 and June 1999. The Canadian government asserted that Indian subsidies under the EPCG scheme were

undercutting its own steel manufacturers. The Union government has retorted that WTO rules allow for drawback on indirect taxes imposed on Indian companies [[41]]. It has consistently argued (as it did before the G15 group of developing nations, prior to the notorious Seattle WTO meeting in 1999) that there is an unacceptable gap between continued lowering of tariffs in developed countries and the maintenance of high tariffs against products in which developing nations may have a commercial advantage [[42]]

Focussing on the corporations

As of early 2000, out of the 56 joint minerals ventures contracted under the Indian FIPB (Foreign Investment Promotion Board), ten were held with Australian foreign partners, 11 with US, 6 with British, 3 with Canadian, two each with Dutch, South African, Mauritian, Singaporean. Swedish and Malaysian; and one each with companies registered in Japan, Korea, Norway, Poland, Spain, France, Taiwan, Vietnam and Germany; there was also one joint Norwegian/Canadian venture listed (Utkal aluminium - see below).

However, this roll-call is somewhat misleading. For example, the two Mauritian-based companies are both subsidiaries of De Beers, itself part-controlled by Anglo American of South Africa (and registered in London). Ashton Mining is primarily owned (nearly 50%) by the state-owned Malaysian Mining Corporation, while Normandy Anglo Asian , though registered in Malaysia, is controlled by Australian shareholders. - as is Pasminco, which the FIPB lists as "Dutch".

CRA (whose "Indian" partner is actually a CRA subsidiary) is officially described as Australian, although it is nearly two-thirds owned and controlled by Rio Tinto of Britain. In short, the Ministry's database gives a distorted picture of both the number and the variety of countries which have made any commitment to inward investment. [[43]].

Most of the pre-1994 bilateral (government-to-government) mineral co-operation agreements appear to be still in place (the exception seems to be Australia, which withdrew after the Piparwar coal mine came on stream). {**But mm&P is concerned not only about the extent and nature of new investment (domestic and foreign) It is determined to track the records of specific companies and their institutional and private backers** (see box).} Some of the companies which signed joint venture mineral deals after 1994 have virtually no public history. But others - primarily foreign-owned - have a highly questionable reputation, notably Anglo De Beers, Rio Tinto (RTZ-CRA), BHP, Raytheon, and North. Nor are Alcan and Norsk Hydro. (bauxite-

aluminium) without their vociferous critics. Alcan has been the subject of a prolonged environmental and land rights law suit in Canada which finally went against it last year [[44]]. Norsk Hydro is the domestic company most criticised by the Norwegian watchdog group, Norwatch. One of the new entrants is in a class of its own: Glencore, the metals and coal trading conglomerate, was cloned from various shady enterprises associated with the disgraced Swiss trader and market price manipulator, Marc Rich (still wanted for questioning in several jurisdictions). Glencore is among the most opaque and publicly unaccountable companies in mining. **The growing influence of these metal traders should be closely watched.** This July, ENRON - massively opposed by peoples' organisations for its self-serving proposed power plant in Maharahstra - took control of MG, one of the biggest metal traders operating on the London Metal Exchange: the US conglomerate now plans to merge MG with its own global commodities' empire [[45]].

The cash behind the calamities

Investment in modern mining projects is primarily raised or underwritten by private banks and institutional investors, rather than multilateral agencies or governments [[46]]. The large majority of these financiers are based in Britain, North America and Japan. Simply targeting mining companies, without addressing the policies of the investment institutions and their lack of accountability in their home countries, is like mopping up the bathroom floor without turning off the gushing tap.

One of the world's biggest brokerages, J M Morgan Stanley, in 1999-2000 provided debt finance (to cover acquisition, rights and equity issues and disposal costs) totalling more than twenty five billion rupees (Rs 25, 525,000,000) to just three mining companies operating in India. These were ACC, Ambuja Cement and Alcan Aluminium (for sale of its majority stake in Indal).[[47]]

The illusion of quality

Representatives of the bigger companies (and some of their multilateral backers) have promised to bring to India a new sense of corporate responsibility (see Norsk Hydro below). They purport to be accountable to "stakeholders" (**) and to compel the lumbering, corrupt, older, state-dominated Indian enterprises into adopting better management, labour, fiscal and environmental practices. It would be churlish to declare that improvements have not already been introduced at a few levels, but extremely naive to believe that meaningful reform will become the common pattern. Clearly, in order to maintain credibility, the World Bank (through its Coal Sector Rehabilitation and ESMP projects) has been unable to endorse many of the practices of Coal India Ltd. and its subsidiaries.

However, one of the mines covered by this programme - at East Parej (see below) - clearly does not conform to WB guidelines on prior consent, rehabilitation packages and land reclamation. Other corporate "initiatives" introduced from outside India owe more to public relations hype than anything else: for example Gujarat Ambuja Cement's sponsoring of the wildlife magazine "Sanctuary", and Norsk Hydro's proud distribution of its annual environmental report - which trumpets the virtues of "green" aluminium, while ignoring the impacts of blasted bauxite (see below). Rio Tinto tells Northern critics that its code of business practise ("The Way we Work") is a *vade mecum* circulated to all its subsidiaries and employees. Even if copies were available in India (I didn't find one), the document's key principle that communities should be fully informed in advance of any company activity had been blatantly ignored in Orissa (see below).

[** The term "stakeholder" has crept into the lexicon of dialogue and combat between communities and companies over the past few years, and now seems widely accepted. Its origins are not clear but Rio Tinto was certainly among the first (if not the very first) to use it - and possibly it was coined by one of the management gurus who have advised the company for more than twenty years. My view is that the term is willfully fraudulent:. On the surface it promises recognition of the legitimacy of opponents, and readiness to share decision-making and even re-distribute wealth. But the reality is that control of the term itself is in the hands of the companies - by and large they continue to pre-define who is a stakeholder and who is not. More disturbingly, it proposes an implicit endorsement of corporate projects, even by those who totally reject them. They become "holders" (without being empowered or even asked) - of "stakes" (which are not even economic shares) - in enterprises that they believe will disempower and impoverish them.]

One question I was sometimes asked - though not as often as I'd expected - was whether foreign companies should be forced to observe in India the standards they are supposed to observe at home. This debate is inseparable from the larger one over the wisdom of promulgating codes of practice or conduct and how to enforce them. In my view, nothing should substitute for **a legal requirement that best (not merely best available) technology should be mandatory, and that all particulate and solids emissions must fall below the lowest limits set by the most stringent enforcement agency in the respective field.** In some cases this will be the USEPA (US Environmental Protection Agency), in other cases - for example water quality - the Ontario provincial government in Canada.

Increasingly, the problem with mining is that relatively untested extraction and waste disposal techniques are being introduced to replace practices which are falling into disrepute (for example the use of high pressure acid leaching instead of conventional milling, comminution, roasting, flotation and smelting of base metals). No code of conduct can "police" an industry which relies so heavily on technical fixes for operations which may last thirty or more years then close - still generating toxics or radioactivity on a massive scale, potentially over centuries. Emissions from mining and mineral processing constitute the biggest single category of toxic pollution in the USA [[48]]. Only a prohibition on all "point source" emissions could satisfy the requirement for a permanently safe

environment, but this would rule out many mines (copper and nickel for example) before they even left the drawing board.

Social and environmental consequences of mineral imports.

A number of Indian companies have started up mining ventures outside India - a predictable consequence of domestic liberalisation and export promotion. Sterlite (owned by Anil Agarwal's holding company TwinStar) has taken over the Australian Mt Lyell copper mine [[49]] and bought First Dynasty, controlled by the notorious Robert Friedland [[50]], a company whose main asset is a gold project in Armenia [[51]].

On the Road from Bombay to Burma - and Beijing (not just a Bollywood fantasy)

{Such developments, along with India's increasing reliance on the importation of several key minerals, should **encourage mm&P to focus on the social and ecological consequences of mining and processing overseas, as well as at home.**}This is particularly the case with diamonds and coal imported from China, coking or steaming coal purchased from other Asian countries, and copper which could soon arrive from Burma. (LNG from the Tangguh gas fields of Indonesian-militarised Papua [[52]] may also soon be imported, though this is not strictly an issue within mm&P's remit). China's Yunnan province already buys half a million tonnes of iron ore from India, while exporting to China around a million tonnes of phosphatic ore [[53]]. In the past few months, several major regional infrastructural projects have been proposed which could make India a crucial "crossroads" for mineral-related investment and output: notably the projected China-India highway, passing through Burma, which would facilitate Indian imports of coal, while easing diamond jewellery exports [[54]]. More worrying at present are putative India-Burmese mining ventures. In 1999 talks reportedly began between the Union government and the Burmese military regime on iron ore exploitation. At the mm&P National Convention, Cheko, a Naga delegate, said that copper mining was already underway in the "no go" zone between Burma and Nagaland and Manipur. Earlier this year the Far East Economic Review said that India was already supplying non-military aid to Burma in an attempt to offset the growing influence of China on SLORC - and on "dissident" movements in India's North East. An Indian capitalist, G I Goenka from Bombay, has been talking with the Burmese generals about constructing a natural gas pipeline between India and Burma, a possible joint hydro-electric project, and the mining of copper "near the Indian border" [[55]]. Stung by restrictions on foreign involvement by US companies in particular, the SLORC (deceitfully redubbed the SPDC - State

Council for the Protection of Democracy in Burma) has been courting new investment from Japan and China in particular [[56]]. Not much of this investment has specifically included mining projects, but recent Indian rapprochement with the world's most vilified regime (or at least some key people within it) has joint mineral(s) exploitation very much in mind.

From solidarity to solidity

{How, then, does mm&P support the struggles of workers and communities overseas, whose labour or land is exploited serving the pretended Indian "need" ; or who are suffering from the impacts of Indian mineral investment in their own territories? Are expressions of solidarity sufficient? No! In my view, **it is important that member organisations within mm&P should be actively enabled to participate in international and regional community conferences** on mining and investment (this might include industry-organised conferences, too, where information-gathering is the main aim). These meetings are also opportunities to solicit support for Indian domestic struggles against foreign companies. "Outreach" is already an mm&P priority, but some caution is called for in practicing it - an issue I discussed at some length with Ravi and Xavier. Key resource people within national organisations like mm&P can find themselves inveigled into becoming quasi-permanent overseas envoys, gradually abstracted (physically, intellectually and indeed emotionally) from the constituencies they serve. One way of averting this danger would be by rotating delegates to external meetings and conferences. Another would be to **strengthen capacities within India, so the country increasingly provides a forum for Asian-Pacific and international colloquia.** However, such events put enormous strains on national organisations, struggling to implement their own packed and demanding programmes. It must also be admitted that mining activists (the author included) in general have a poor record of following-up such events (The average period for publishing reports of meetings, for example is 6-9 months, and, of implementing objectives, one year to infinity!).}

A share in the action

For more than twenty years, groups of "dissident" shareholders have gathered

at the annual general meetings of Northern-based mining companies, to challenge their policy and practices: these include Rio Tinto, CRA, BHP, BP, Freeport McMoran, Newmont and Placer Dome. While few policies have been changed as a direct result, there is little doubt that companies have withdrawn from certain targeted areas, when public expressions of outrage also seize the attention of the press and institutional shareholders.

Getting share certificates or proxies is usually not a problem - raising fares and living expenses sometimes is. Several organisations have sponsored attendance at Northern mining company AGM's by community representatives from overseas, including the Interfaith Center for Corporate Responsibility in New York, the Methodist Division of Social Responsibility in London, Christian Aid, Oxfam, Project Underground from San Francisco and the International Chemical Energy and Mineworkers Union (ICEM) based in Brussels. People against Rio Tinto and Subsidiaries (Partizans) has enabled around 70 Indigenous delegates (including two from India) to attend the AGM's (in both London and Australia) of the world's most powerful mining company since 1980.

As a result of shareholder interventions, backed by longer-term campaigning, Rio Tinto has withdrawn from exploration projects in Ecuador, Honduras, Panama, Ireland and Wales.

Although no delegates from mm&P (or its member organisations in Orissa) were able to attend this May's Rio Tinto AGM, a Partizans supporter challenged the company's joint venture partnership with Orissa Mineral Corporation in the Gandhamardan base-metals mineral region. Adivasis located in and around the site had been given no opportunity to express their concerns about future exploitation. Rio Tinto's chair, Sir Robert Wilson, replied that his company was only at the exploration stage in Orissa, and "no decision to proceed with mining has been made". Wilson said he was aware of opposition to mining in the area and that Rio Tinto faced "many problems" if it were to go ahead.

{A cheaper and sometimes more constructive alternative is to **initiate a programme of exchanges: internships, mine-site visits, field trips examining technical issues**, like STD (submarine tailings disposal: a conference on which is in the pipeline for the Asia-Pacific region) and joint people-to-people study tours - what Filipinos prefer to call "fact finding missions". A clear priority would appear to be **a commission, drawn from Indigenous communities in (say) India, Philippines, Indonesia, Papua New Guinea, to compare state policies on R&R in their respective countries, along with royalty and tax regimes** (as

proposed earlier in this report). Such initiatives should narrow, rather than widen further, existing gaps in perceptions and experience between articulate academics, researchers or lawyers on the one hand and often geographically remote community leaders on the other, and correct any imbalance between women and men, younger and older people.}

Focussing on workers issues

The categories of labour employed in Indian mining are more varied - and socially complex - than almost anywhere else in the world. As J. John says, they include "permanent piece-wage and contract workers.. casual wage labourers in mine-related activities, families..[increased by] immigration from Orissa and Bihar of tribal and lower caste peasants.." [[57]] In addition, an unknown number of tribal and lower caste villagers work "illegally" or on smallscale operations, while the role of children is one that continues to require urgent investigation. Three million workers labour in Rajasthan's officially-estimated 7,000 sandstone, building stone, limestone and other mines. But, according to recent research by the Mine Labour Protection Campaign (MLPC), about the same number of quarries are operated illegally, although only half were operating at the time of the survey. Around 37% of mine labourers are women and 15% children under 14. While skilled men are paid Rs 70-100 daily, unskilled workers, women and children get only 20-40 rupees [[58]].

In a study of 200 mineworkers in Jodhpur-region sandstone mines, MLPC established that the owners take no responsibility for accident insurance or compensation in the case of injuries, and almost all workers (96.9%) become highly indebted. A skilled piece-rate worker will borrow from a contractor or leaseholder and then employ two or more semi- or un-skilled workers on a daily basis. Although the former theoretically earns more than his employees, he takes a greater financial risk - and all workers face severe health hazards (see below). When a mineworker becomes ill or too weak to continue, the owner will often insist that the workers' children and spouse continue labouring in order to repay the escalating debt. The Rajasthan State mineral policy, promulgated in 1994, declares that welfare amenities for mine labourers should be paid through rural development schemes, half of which should be within the mining lease. However, says MLPC, "no mention is made of the state government's responsibility for enforcement of labour laws and regulations…to ensure the safety and welfare of women and their families" [[59]]

Breaking the bonds

"A young lawyer in Uttar Pradesh thought he would have a quiet life when he was appointed to the state 'vigilance committee' ,monitoring slavery; after all the state had declared it had none. Led by local activists, he soon found whole villages in debt bondage, working in quarries, and so began a legal campaign for their recognition" [[60]] Over 16 years after the Supreme Court ordered the Union and state government in the case of Surajkund (Faridabad) to break the bonded status of quarry workers, guaranteeing minimum wages and proper housing, the key judgments have not been implemented [[61]]

Nonetheless, according to research carried out as part of the jatra for mm&P in Madhya Pradesh, some reform of the contract labour system had recently been secured by organisations like Chattisgarh Mines Sramik Sangh and Prabatisheel Cement Evam Khadan Sramil Sangh [[62]]

Retrenchment and Revival

The Union government has embarked on a reform of trade union law, which would ensure that at least 10% of the workforce must be represented by a given union. Left-wing unions have pointed out that the government's proposals could increase rather than limit, the management pressure on workers not to join certain unions: in a ballot at the Singareni collieries - currently represented by no less than 171 Unions - only four of them would secure support from more than 10% of the workers. [[63]]. {**It is probably neither necessary nor practicable for mm&P to become involved in debates on the new trade union proposals. However it is impossible for it not to address the consequences of "Voluntary Retirement Schemes" (VRS)** and the way that these victimise certain categories of workers.}

VRS are part and parcel of privatisation strategies the world over. As a new Indian media campaign has summarised its impacts for Indians: "VRS initially appears attractive to workers who are facing insecurity in their jobs. However the euphoria of the large sum of money wears off when [it] is eroded by paying off debt, marrying children, the costs of inflation and price rises in food transport and basic daily essentials. With competition from multinational corporations who have cut rate prices, many workers' dreams of starting a business and being self-sufficient, are betrayed" [[64]]

{mm&P is committed to the struggles at Kolar Goldfields and Moosabani Copper (see below) against VRS. In both these cases, the Unions are not simply reacting against the loss of jobs, but challenging the political and economic roots of their plight. **This aptly fits with mm&P's policy on workers' rights, but also places an**

onus on the alliance to help formulate practical, sustainable models for continued operations at specific mines, and post-mine social development alternatives.}

Focusing on gender and age

Women, "in general [do] not benefit from mining actives. Women seeking employment can find work as hand-miners in private firms, but they face competition from the labour market and are paid low wages" [[65]]

"The worst hit (by mining displacement) are women… The biggest shortcoming of rehabilitation policies is that they do not accept women as a separate entity… While each son more than 18 years is entitled to compensation as an individual DP (displaced person), unmarried daughters below 30 year of age will be clubbed with their father. Often one sees three to five daughters , along with old grandparents living off the compensation of one man, who never gets enough to marry them off, often reducing them to daily wage labour and even prostitution. This is often seen in mining areas where a woman is not preferred for the heavy labour required. Conversely tribal women, worst hit after displacement, are often the best off before it…They have a say in family matters" [[66]]

In many mining areas women suffer the double jeopardy of dispossession (of land, traditional work, labour, social and sometimes marital status) and discriminated against (through not being allowed to work for 'their own safety") - and in the very operations which usurped their territory and resources. The devastating impacts of World Bank-supported coalmines on women have been graphically described in the 1998 study "Displaced Development" [[67]]. Other studies [[68]] make it clear that women are usually assigned the most degrading and dangerous of tasks within smaller mine sites:

"Women are doomed to a shattered life, in terms of widowhood, rape, molestation, prostitution, destitution, exhaustion and silence. The majority of women working in the [Jodhpur quarries] are Dalits. They are engaged in tasks such as removing mine debris, breaking pebbles and loading them onto tractors. On average two to three women work in each mine…aged between 10 and 40 years, the most productive period of their lifetime…Almost one quarter are widows of mine labourers who have died of silicosis, tuberculosis and other respiratory diseases" [[69]]

However, as the well-researched "Displaced Development" points out, the advent of the new mines has not in all cases deprived all women socially or economically.

Women have also taken some (literally) striking actions to remedy their

situation. Contract workers - 40% of them female - at the SAIL iron ore operations in Singhbhum , led the fight against the company's refusal to implement provisions of the Union government's Contract Labour Regulation and Abolition Act of 1979 - which prohibits discrimination between contract wages and those paid by the principal employer, as well as other discriminatory practises [[70]]. Women quarry workers at Pudukottai (Salem) took over contracts from the mine owners in 1990-1992. Forty six villagers of Shankfarh Taluk, Allahabad (UP) also reportedly became owners of the quarries in which they worked and were thereby "freed" from debt bondage [[71]]

All that glitters...

Gold plays a highly contentious role in subverting the economic viability of poor families and in fuelling the appalling practice of "dowry killings" against women. Even though dowry itself has been illegal in India since 1956, such killings amount to at least 5,000 each year according to one report [[72]]. Gold rings and jewellery are also exchanged on numerous other occasions. However the biggest single driving force behind the acquisition of gold (as in many countries) appears to be to provide a hedge against inflation and a stock of value in times of uncertainty and strife. Some groups, inside and outside India, have urged a general boycott on gold production, for the sake of married women in particular [[73]]. Workers in the gold industry (especially in South Africa, but also India - see main text) as well as smallscale miners, have taken umbrage at proposals which may depress the price of gold even further than it slipped in 1998-1999.

{mm&P's National Convention had a women's workshop session. As well as "founder sister" Bhanumathi from Samata, there are several strong women closely associated with the organisation, one of whom attended the 1997 Women and Mining Conference in the Philippines. However the organisation has not formulated a specific women's programme. This may seem an anomaly, given that a large number of the most militant actions against mining projects have been initiated by women (for example at Kolar Goldfields). In fairness it should be said that most other national, mining-concerned, action groups haven't taken the step either. While this is partly a reflection of the aggressive masculine domination of the industry itself (not one major mining company has a woman in a key executive post) it is false to suggest that critics of mining are also guilty of disempowering women. There are women's groups which have sought to integrate mining issues into their core concerns (for example the British

Women's Environment Network and the international Wages for Housework Campaign). There are many more NGO's which have put mining and women's issues together on their agenda, perhaps sometimes on the naive assumption that one will carry the other ("mining hits the most vulnerable people, women are the most vulnerable, *ergo*…). But in my view there is no substitute for campaigns dedicated to identifying the long-term destructive, anti-social and anti-democratic aspects of all kinds of mining, while ensuring that women play an equal role in formulating the agenda and in resolving the problems. Yes, there is an overwhelming case for a specific global "Women and Mining" alliance But in a national context, the major challenge is to ensure the **full participation of women - along with tribal people - in all decision-making.}**

A "most vulnerable" campaign?

It was twenty seven year ago during my first youthful trip through northern India that I became aware of innumerable, small hunched bodies, staggering their way up steep and precarious stairways, to topple rocks from frail heads into blazing kilns. At first sight the procession was like a religious rite, bizarrely heightened by the ghostly dust which shrouded these girls and boys. It was not until I had much more experience of mining that I realised what the consequences were in terms of health (tuberculosis, asthma, respiratory tract diseases, malaria, eye disorders, and loss of limbs). For some years I dis-remembered the "kiln kids" of Bihar. Then, in 1992 I was struck by an overwhelming series of pictures of the "child labourers of Dhone" published by Frontline [[74]]. The use of young children (under 14) in quarrying, lime burning, diamond cutting (see below) in the aggregates industry, or in slate mines and factories and foundries [[75]] has been officially banned under the 1986 Child Labour Protection and Regulation Act. There can surely be no hesitation in condemning the conditions under which many ill-nurtured, developing bodies are still forced to labour for the smallest of pittances.

Yet, back in the eighties, I was nagged by the feeling that simple condemnation of "child labour" did not serve young peoples' best interests. More recently, others have dared to suggest that blanket condemnation - and its universal encoding in labour accords (such as that of the ILO) - may be motivated more by the desire to protect organised adult labour, than the needs of very poor families; while blithely substituting "education" for child work can be a massive assault on Indigenous Peoples' cultures and their integrity [[76]]. It is surely vital to abolish specific practices, with the fully-informed consent of those allegedly

victimised, rather than to impose an arbitrary age limit or to sing ever louder the mantra of schooling, without examining thoroughly its content (and intent). In particular "hazardous" labour - the official term - should be better defined than at present. [[77]]. Many mining practices are peculiarly hazardous to children, but others are not (such as sluicing alluvial gold, sorting small gemstones). And adults may be just as susceptible to some of the noxious emissions from mines and plants - indeed some radiation emissions from uranium affect pregnant and nursing women more profoundly than any other category of person (see below).

On a short visit I paid to the gem cutting and polishing shops in the Muslim quarter of Jaipur young people, one or two ostensibly under the age of 14, were to be found at lathes in workshops owned by a merchant who prides himself on running a long-standing family business. He delivers polished gems to customers all over the world (particularly Britain, Italy, Greece, Australia and the USA) - aquamarine, garnet, rubies, black star, spectrolite, kyanite, sapphire, blue stone and other stones, sourced from Australia, South Africa and Sri Lanka as well as India. These young workers were well-fed, clothed and apparently cared for, living in fairly comfortable accommodation in an extended family compound: my main concern was that they were not adequately protected (by masks) from the fine diamond dust glued to the lathes.

To combat the real abuses suffered by working children in the minerals industry, it is tempting to propose recourse to a campaign similar to the "carpet boycott" first mounted in the North some years ago - and since criticised within India. In practical terms, an international boycott could only apply to diamonds and gems: as pointed out below, building materials largely remain within their areas of origin, while marble - though exported - does not appear to depend on children's work in the mines or finishing sheds. Anglo-De Beers (the biggest purchaser of cut and polished diamonds from India) was recently confronted with overwhelming evidence that it is marketing diamonds which originate from African war zones. (In fact, some commentators were reporting the connections between De Beers' Central Selling Organisation and mercenary forces as early as 1996). De Beers now maintains that it can "label" stones (and even use lasers to affix its own logo) in order to identify them as "conflict free" or "ethical" (sic). If this is so (and strong doubt has been cast on the schemes) the company and others (Ashton and Rio Tinto, which Argyle Diamonds) could presumably also guarantee that the cutting shops from which they purchase stones in India are "child labour free".

I find the overall proposition inappropriate and potentially dangerous. It serves to reassure consumers on just one aspect of production of a commodity, or one link in a production chain, without considering the human rights implications of other parts in the total process - and especially at the mining stage. The diamond

industry is under the control of two of the world's most devastating and increasingly monopolistic mining corporations (Anglo American in late July bid for Ashton Mining [[78]], drawing their stones from several mines which violate Indigenous rights, or scar the landscape. And it doesn't need a cynic to point out that it is manifestly in the profit-making interests of De Beers to seize on "ethical marketing" as a promotional ploy, in the face of dwindling sales (down from more than 80% of global market ten years ago to around 70% today).

Does this mean that the big diamond suppliers - which include Russia's Alrosa, with nearly a fifth of the global market - should now be invited to extend their voluntary boycott of "conflict diamonds" to include all destructive mines and damaging workplaces? Those who answer "yes" would need to confront the huge logistical problem of regularly vetting each of thousands of cutting and polishing places in north-west India, as well as checking - and certifying - each of the mines which are sources for Indian shops. At best there would be huge short-term confusions and ample openings for corrupt dealing. At worst, the entire Indian diamond industry could be crippled, leading to hundreds of thousands being thrown out of work, with little prospect of alternative employment. Purchases of cut and polished stones from China - where conditions are reportedly worse than in India and wages even lower - would be bound to increase.

A case for nationalisation?

On the other hand, those who unequivocally reject a boycott must ask how, not only India's current workforce, but a potentially much larger one (if and when India's own new diamond mines come on stream) can be adequately protected. There is a third way. Until very recently, De Beers set the world price of polished diamonds by grabbing the lion's share of their production. This summer, the Central Selling Organisation - the De Beers cartel which handles all its output from securely-guarded offices in London - promised to abandon its "sight holders" system. This is the archaic ritual under which merchants - US, Dutch, Belgian, Israeli, Indian et al - buy pre-packaged cardboard boxes of stones, whatever their size or quality (they either accept or refuse all that is offered - customer selection is forbidden). In future, buyers will be able to select exactly which stones they want. This "freeing of the market" should help put India, as the world's biggest location of cutting and polishing, in a position to raise prices - and even establish its own sales system and brand. A minimum wage (itself a potential deterrent against exploiting cheap child labour), along with minimal working standards, could be legally established. A rough stone purchasing board could be set up whose responsibilities would include mine-source inspection - both at home and overseas, and directing output to the workshops. Although the problems of maintaining labour standards would remain, this effective

nationalisation of India's diamond sector should keep much more of its real value within the country's shores; in turn these revenues could be used for better regulatory enforcement. However, none of this is likely to work, until a strong independent diamond workers union is established, with full participation of all sectors of the current workforce, including the children.

Focusing on environmental issues

It is (and should be) increasingly difficult to separate human rights from ecological prerogatives, and nowhere is this more important than with mining. In the past decade, the environmental impacts of the industry have become a matter of global concern. At the same time Indigenous Peoples have succeeded against enormous odds in projecting their own self-determination as one of the most compelling human rights issue of the last two decades. And they have themselves identified mining as the biggest single industrial threat to indigenous livelihood and cultural survival. Nonetheless, it is important not to present the depredations caused by mining simply as a consequence of the denial of a particular set of economic or social rights. Small-scale gold mining may often serve the interests of millions of the Indigenous and peasant poor, but it has destroyed much life in large expanses of tropical river systems and forests.

Conversely, the preservation of a pristine environment is by no means an automatic guarantee that human livelihoods will be respected - as witness the implementation of forest protection legislation in several countries (including India) and increasing conflict between Indigenous communities and wildlife conservation organisations, backed by some governments, over the creation of national parks and "no go" areas for traditional communities.

However, significant mining projects have been halted through joint action by environmental groups and local communities and these provide important precedents for all campaigners. BHP withdrew from gold prospecting in the Dominican Republic and Rio Tinto pulled out of Ecuador three years ago, confronted by the hostility of local communities, national environmental organisations, and international lobbyists. In the early nineties the Puerto Rico government banned all open-pit mining, because the island was considered too small and ecologically precarious to risk a major operational failure. In 1998, after a hard-fought referendum in Montana by native Americans and mining critics, the state forbade all use of cyanide in gold extraction.

Indian communities have also halted damaging projects and these successes deserve better recognition by the rest of the world (a task for which mm&P is eminently suited). The overseas companies which have signed joint venture agreements to exploit Indian minerals over the past six years need to be made

vividly aware of such victories and their human/Indigenous rights implications. The victory over Birla Periclase (see below) is now well known within India, but I discovered other cases which were not. For example, in August 1988 the Supreme Court ordered a halt to all quarrying in the Doon Valley of UP, following a writ petition submitted by the Rural Litigation and Entitlement Kendra (Centre) in Dehra Dun. (see below) As one commentator later pointed out: "[T]his was the first time in India that the controversial subject of economic development versus ecological balance was subjected to detailed incisive legal scrutiny. No other public interest law suit has attracted such interest.." [[79]].

Is small more beautiful?

The vast size of many Indian mines (viz. Neyveli, Jaduguda, and Panchatpatmali) should not lead campaigners to ignore the cumulative impacts of numerous smaller operations, whose "clustering" may have more serious environmental (and health) consequences. Comparing the two, with the object of making targets and strategies, may seem like comparing chalk with cheese (or at any rate limestone with lignite, cement with coal, marble with manganese). The key questions ought to be: what is the carrying capacity of specific mine-affected areas (including fresh water and marine resources, even if these stretch for many kilometres outside the lease) and to what extent can these recover when the mines are closed? The bigger mines are not necessarily the most problematic. Rehabilitating sites in Rajasthan (where reviving soil fertility, revitalising aquifers and controlling dust are paramount) poses different challenges than reforestation in Orissa or Bihar. Returning an area to its pre-mine state - though rarely ever achieved - can be more feasible in desert areas [[80]]. As a study by the Tata Energy Research Institute has shown, theoretically it is also possible to recover forest zones, but the task demands careful preservation and preparation of soil, a long lead time on investment (before sustainable tree production and marketing is viable) and a judicious choice of species that can be practically managed by local people long after the mine has closed. "Afforestation of mining areas is increasingly becoming a favourite environmental management option in India" says the study, "[but] while environmental regulations are promoting improved environmental behaviour by mining companies, lack of supportive mining legislation and policy incentives are creating conditions for superficial responsibilities by companies and inhibiting a greater commitment to reclamation of mine sites" [[81]].

Dumping on Indians

At only a few mines visited, did I find any concerted attempt to conserve original topsoil or any equivalence between larger and smaller sites: some small private quarries had topsoil piled in discrete and manageable heaps; some much bigger

ones had not even made the attempt. Another basic component of any mine management plan should be to ensure that overburden and waste dumps are maintained below a 45 degree slopes, and kept out of locations where they are likely to be destabilised by winds, rains, seismic or earth movement. They should forthwith be sown with quick-growing grasses to prevent dust storming and deep-rooting bushes to maintain stability, especially during monsoons. All dumps should have ponds or gullies to collect liquid runoffs and recycling systems, while the mine is operating. Any dumps susceptible to acid drainage should be permanently covered and lined with "impermeable" sheeting (though some scientists believe there is no such thing). Such comprehensive management systems appeared virtually not to exist. For example, it was obvious to me that Neyveli lignite might never catch up with any meaningful site rehabilitation (it was too vast and expanding far too rapidly). The East Parej coal mine in Bihar - despite its inclusion in the World Bank remediation programme - was blighted with haphazard and unstable spoil heaps and excavations were continuing almost directly beneath grazing land and human habitations. Exceptionally, infilling and reseeding at Piparwar coal *was* being carried out alongside excavation. But this Australian-managed and credit-guaranteed mine - which in the early nineties had been subjected to clamorous international criticism - was the exception that proved the rule, at least in North Karanpura and Hazaribagh.

Focusing on minerals

Big and Bigger

While more attention is given to India's major mine production in the main text, it's important to register the country's contribution of other minerals. The country is the world's fourth biggest miner of chromite (the five principle mines being in Orissa , owned by TISCO). It is the sixth biggest producer of kaolin from mines in Gujarat, Rajasthan, Andhra Pradesh, West Bengal and above all Kerala. Here the most important mine is managed by English China Clays, whose main operations are in west England and the US - where they have been criticised by local communities for years because of land contamination and the silting of underground and offshore waters [[82]]. India is also the world's seventh biggest miner and processor of natural magnesite (though there has only been one proposal to develop magnesite from seawater or brines - the Birla Periclase project which was forced to a halt by citizens and court action - see main text). India used to be the world's biggest producer of sillimanite minerals (used for refractory purposes) but its reserves have been exhausted and sillimanite is now only a by-product of titanium bearing sands [[83]] (managed by Indian Rare Earths in Kerala). It is the world's fourth biggest producer of lower-grade manganese. The main mines are in Madhya Pradesh, Maharashtra and Karnataka; however the biggest state producer (1998 figures) is Orissa [[84]]. The market for

manganese is fading, as demand rises for high grade ores to serve the ferro-alloy industry. But Orissa could take up the slack if the Gandhamardan operations are expanded. India is the world's 10th biggest producer of gypsum [[85]] -- virtually all coming from five state mines in Rajasthan [[86]]. These have resources of an estimated 1,200 million tonnes and mineable reserves of 250 million tonnes [[87]]. While gypsum has mainly been used for plasterboard, and pharmaceuticals in "developed" nations, its main requirement in Asia is as a retarder for cement. Although sulphur production within India is quite small in global terms (mines are in Haryana, Punjab, TN, UP and West Bengal) the world market was significantly affected a year ago when India increased its spot prices by fifty per cent: this had a knock-on effect, with Middle East producers increasing their prices within India, and causing general contract prices to rise in the US [[88]]

Sea-bed mineral exploitation

The "first generation" mine site (FGMS) allocated to India by the UN Council for Law of the Sea, is located 2,000 km from the southern tip of the subcontinent and comprises an estimated Rs 1,000,000,000,000,000 (one billion crores) worth of metallic nodule reserves [[89]]. A working group was set up in 1998 to establish the capacities of sea-bed mining, and the rules under which it would take place [[90]]. To date little consideration appears to have been given to environmental aspects, in particular wastes disposal. The highly controversial and allegedly damaging practice of submarine tailings disposal (STD)[[91]] has not yet been employed officially in India, if only because most terrestrial mineral deposits are too far from the shoreline for this to be economic. But the location of mineral processing plants in new SEZ's and concerted marine mining could change this picture dramatically. {**Deep sea mining is therefore an issue on which mm&P might well maintain a close watching brief.**}

Discussion on Some Minerals & Metals

(NB. The lengthy discussion which follows places minerals and metals in alphabetical order, not order of importance)

Asbestos: the "killer deep in the fabric of society"

"*Asbestos is the leading known cause of occupational cancer all over the world*" [[92]]

The facts are startling: the vast majority of asbestos is used in cement (85-90% of total production) followed by other forms of construction (pipes, cladding and insulation) most of which have some direct contact with the public. Asbestos insulation is the biggest single contributor to disease and death - more than twice

that at some asbestos mines [[93]]. Although blue and brown asbestos have customarily been considered the most dangerous of its forms (a cause of mesothelioma, especially in mineworkers) there is now abundant evidence that white asbestos causes not only asbestosis - a wasting lung disease - but mesothelioma as well [[94]]. According to one estimate, no less than quarter of a million men will die in the next thirty years in western Europe alone from mesothelioma, and an equivalent number from asbestos-related lung cancer [[95]]. The implications of these figures for Indians becomes even more serious in light of the concerted campaign over the past 15 years to eliminate all asbestos from public buildings in most of Western Europe.

India has modest asbestos mining, (output of just under 22,000 tonnes in 1998, from four mines in Rajasthan and a smaller one in Andhra Pradesh - all private and employing just under 500 workers). However it imports six times as much, a third of which (in 1996-97) came from Canada, whose mines employ some 2,500 workers. Most campaigners (including health, safety and labour rights campaigners) whom I met in India seemed little aware of the major (and historic) campaigns waged by miners affected by asbestos diseases (especially the ex-workers at British company Cape's mines in South Africa) or against the use of this toxic material in Europe and Scandinavia. Nor was there much knowledge of extensive research showing the dangers of any type of asbestos extraction, processing and use (and its presence in quarries- see below). In a presentation to staff of the Centre for Education and Research in Delhi in May, I made several points: first, that it was trade unions, rather than "environmentalists", who first exposed the virulence of asbestos (thus belying any simplistic assumption that workforces will usually tend to support the industry on which they financially depend); second, that despite attempts by Canada, the world's major exporter [[96]] (and second biggest miner after Russia) to distinguish between the three main varieties of the material, many credible authorities now view all asbestos use as unacceptable; third, it wreaks a huge toll on lakhs of people's health (especially that of young people: in 1995 an historic British test case ruled that a woman who had played in asbestos dust - using it to make "snowballs" - more than forty years before, should receive 65,000 pounds compensation for contraction of mesothelioma [[97]]).

The European Commission has now banned the application of all asbestos on health and safety grounds (with the exception of chrysostile for electrolysis diaphragms used in chlorine manufacture). In 1998, retaliating against France's total ban on asbestos the year before, Canada took a case to the WTO claiming that its asbestos mining industry (worth US$160 million a year) was being discriminated against by the European Union [[98]]. The case was dismissed in an interim judgement in early summer 2000 [[99]], and later made official [[100]]. It marked the first time that the WTO had endorsed an exception to "fair trade"

rules, in order to allow measures "necessary to protect human, animal or plant life or health".

Bauxite-to-aluminium: the biggest mining threat to tribal peoples?

It scarcely a secret that the Indian government has targeted aluminium production for expansion, pointing out repeatedly that the country possesses 10-12% of world resources of bauxite of superior quality (very low silica and high alumna content), 60% of which is in Orissa. Yet the industry delivers only 5% of world production [[101]]. Integrated aluminium producers (companies which operate "captive" mines, refineries and smelters and manufacturing plant) have reflected this potential by investing modestly in India over the past seven years; notably Pechiney which has a joint venture with Hindalco, and Alcan, the world's second largest integrated producer, which invested in both Indal (Indian Aluminium) and the Utkal joint venture (along with Norsk Hydro) during 1996. Raytheon of the US wants to construct a refinery for export of alumina from Gujarat - a move which surprisingly seems to have attracted little opposition, despite Raytheon being one of the US "Defence" industry's biggest contractors, and the company responsible for manufacturing Tomahawk (Cruise) missiles.

Australian Capital Technologies was among the earliest foreign outfits to sign a joint venture agreement with an Indian company (Kandula Aluminium, in Andhra Pradesh) under the post-1994 "rules of engagement". Two years later VAM Ltd. (Britain) entered a deal with Oxide India Pvt. Ltd. to establish a manufacturing plant in West Bengal.

Hindalco (Aditya Birla group) has now taken over Indal, though both Alcan and Norsk Hydro hold on to their shares of Utkal. What India's aluminium producers obviously want is to maintain a cheap and reliable supply of feed for their own manufacturing sector, while benefiting from the advanced technology , additional capital (specifically debt finance) and international markets opened up for finished products. This was particularly the case with the Hindalco-Indal "fit" [[102]].

Nalco operates the largest aluminium smelter in Asia at Angul, [[103]]. In the past few years - and despite the expert assistance of French aluminium producer Pechiney - the plant has had a large number of technical problems [[104]]. Reportedly these difficulties have now been put behind it, after the company rebuilt its smelters during 1999 and expanded their capacity [[105]]. Nalco operates the Damanjodi refinery which has also been expanding (completion date is set for May 2001 [[106]]). The plant uses bauxite feedstock from the three huge deposits in the Panchatpatmali area, currently also being expanded from 2.4 million tonnes to 4.8 million tonnes per year [[107]]. Originally the

Panchatpatmali mine and refinery sequestered some 6,000 hectares of land, 58% of which is scheduled tribal [[108]]. According to Walter Fernandes, the Panchatpatmali plateau had also been the source of thatch for 70 villages in the Damanjodi area. The displaced persons ("oustees" is surely a more appropriate term) received only Rs2, 700 an acre, (in contrast those removed for the Angul smelter received nearly ten times as much - Rs 25,000 [[109]])

The Kashipur block of Rayagada district in Orissa, is at the heart of what could be the biggest new alumina "development" in India to date, that of the Utkal partnership (Norsk Hydro with 45%, Alcan (35%) and Indal/Hindalco (20%). The prospect is centred around deposits at Sigurmali and Kuturmali on the Baphlimali plateau. The majority of the bauxite will be exported, although Indal could retain part of the output for domestic smelting [[110]] The likely cost of production given at the end of 1999 was US$90/tonne compared with global average costs of nearly US$135/tonne. The reserves - at 200 million tonnes - are claimed to be comparable in both size and quality to those of Rio Tinto/Comalco's operations at Weipa in northern Queensland, Australia - the world's biggest bauxite mine [[111]]. A study team organised in 1994 by Agragamee, a regional NGO, claimed that 60,000 people could become "oustees" for this integrated mine, plant, hydro power project and "captive" port (at Visakhapatnam), though our contacts in Kochiepoddar said there were only half a dozen villages within the mine-designated area itself. To date resistance from local tribal people, gherao's of the company's initial forays and the intervention of other organisations (including Samata and Norwatch at a board meeting of Utkal in Delhi), along with depressed alumina price for much of this period, has held back exploitation of this huge resource.

Accompanied by elders from Kochiepoddar, our mm&P team visited Andrakand, the settlement at the start of the company's kacha road which leads to the bauxite plateau, and along which we intended to drive. There we were confronted with a notice board, erected by the villagers, forbidding any entrance to the roadway: up to that time, the company hadn't tried to break the prohibition.

Norsk Hydro boasts that its management guidelines for social issues, "related to industrial activities", already apply to Utkal, and it claims to be "developing its relations with the local communities on a set of guidelines based on international standards for human rights, respect and support of local culture and ambitions to achieve a sustainable development for the project affected people and their communities" [[112]]. Suffice it to say that the company has got the rhetoric right, but that just about everything else it claims is incorrect.

The third bauxite area we visited, threatened by exploitation, is situated east of

Paderu, NE Andhra Pradesh. There are 30 potentially affected villages with 600 families around the Galikonda, Rakthakonda and Chintapalli hills, where the deposits are well above the treeline, on steep, high slopes with a gradient up to 70 degrees. According to a report on this area, "once the stability of the plateau top is disturbed… the rate of erosion will be increased; local canals and carnivorous wildlife could also be adversely affected if mining is permitted, while construction of roads may lead to massive ground movement (collapse)". (Ironically, a World Bank supported reforestation programme operates in the same area as this prospective, destructive, strip mine, which would threaten irreversible destruction).

How green is my valley?

The minerals industry has long tried to distinguish aluminium from other metals, not only as *the* "green metal" (because of its recyclability - though in fact much more steel is recycled than aluminium) but also as a fuel saver for light weight aluminium cars and hence a contributor to greenhouse gas reduction. The two big integrated aluminium producers interested in expanding India's sector, Norsk Hydro and Alcan, have trained their powerful publicity guns on promoting such automobiles (though they've so far shown little sign of applying the technology to India). Norsk Hydro is a proud partner in the European-based "Aluminium for Future Generations" a PR programme designed to "promote the sustainability of aluminium use" (sic) [[113]].

This increasing focus on end-use serves to disguise the realities of bauxite strip mining, and the inordinate amounts of primary energy required for refining and smelting - a component which drives the companies towards the cheapest inputs of coal or hydro-electric power [[114]] Mined-out bauxite areas are vast (especially where stripping ratios are low) and have a very poor global record for "reclamation". Weipa in Australia (see above) employs "behind the stripper" in-filling, utilising saplings and other vegetation from a large purpose-built nursery, but Comalco (Rio Tinto) is unable to replicate the flora which existed before. The general surface level has fallen by several metres; nutrients have been lost from top soil although, to the untutored eye, the vegetation is as thick and varied (perhaps more so) than it was before mining began. At Panchatpatmali the purposefully rehabilitated land appeared to cover only 15 hectares, along with a relatively tiny, special "conservation" area at the entrance to the expansion zone. Though advertised as a "sisal plantation" it had virtually nothing to show for it.

Bauxite contains not only aluminium hydroxide, but also silica, iron oxide and titanium - heavy metals with major impacts on human and other species 'health, and quality of soil and water. Caustic soda is added at the refining stage (Bayer process) giving rise to massive amounts of super-saturated aluminate solution in

the form of a slurry, along with more solid residues of bauxite, commonly called "red mud" - up to 1.5 tonnes of which is produced for every tonne of aluminium delivered [[115]]. The latter is toxic, containing dangerous residues of the iron oxide, titanium oxide and sodium alumina-silicate in the original ore, and making it very difficult to seed or reclaim. It was clear from observation of the Damanjodi refinery, that hardly any attempt had been made at reclamation: some parts of the white ash "lagoon" were scantily grassed and open to cattle and other grazing animals. Meanwhile process waters poured down gullies in the hillsides surrounding the pond and flooded the approach road - so much for the ISO 14001 certification which Nalco proudly proclaims at the entrance to its plant! (While our mm&P party was tramping through this expansion zone, a family group walked past us and virtually into the dangerous loading bay for the conveyor, before being stopped by the site manager: so much for certified on-site safety!).

Cement/limestone/kankar/lime shell/shale/gypsum: the destructiveness of construction

Almost unnoticed by the majority of industry commentators (including many in India) the past three years has seen a massive "consolidation" in the global cement industry. This phenomenon is a direct result of liberalisation-globalisation, in which a reduction of the "entry price" to lesser-developed areas has played the major role. As costs of land acquisition, labour, and materials goes down so for the first time it becomes profitable to exploit Asian cement for overseas sales - notably in north America and Japan [[116]]. There has thus been an unprecedented rash of takeovers, with the emergence of four main companies now controlling the bulk of the global cement market.

Lafarge (which also owns part of Britain's Blue Circle) is the world's biggest cement producer, followed by Holderbank of Switzerland, Heidelberger of Germany and Cemex of Mexico [[117]]. As so often in mining this consolidation is triggered by market opportunities and in order to secure natural but allegedly "unproductive" assets, at a bottom price [[118]]. As a result there has been unprecedented encroachment on Indigenous territory in several countries, notably the Philippines, Indonesia and Taiwan [[119]].

Both Cemex and Lafarge have entered India (the latter by acquiring Tisco's cement operations) while, most recently, Birla (the world's tenth biggest producer of cement - but with only a seventh of the capacity of Lafarge-Blue Circle - has been in talks with Blue Circle [[120]] The exemption of sales tax has quickened foreign interest in the sector. On paper the pickings and the prospects look enormous: Indian cement consumption in 1999 was only 84 tonnes a year per head, compared with China's at 392 tonnes and a global average of 251

tonnes [[121]].

To date however, foreign companies have taken only a few concrete steps to acquire Indian cement resources, and there has been some resistance from domestic companies. ACC (which carried out prospecting for the Birla Periclase calcite mine - see below) became one of the first targets for outside investment following the 1994 Mineral Policy review, when it signed a joint venture deal with CRA (RTZ's Australian subsidiary now merged with Rio Tinto and known as Rio Tinto Ltd.). This was manifestly a ploy by the world's biggest mining company to gain a foothold in Indian exploration nation-wide. At the time, Rio Tinto said it would apply for title to diamond and gold leases in "a number of states" which it would jointly explore with ACC [[122]] The move clearly did not signify a rediscovered interest in cement (from which Rio Tinto had completely withdrawn in any case in the 1980's [[123]]). One of the reasons given for Gujarat Ambuja Cement's 7.2% acquisition in ACC, earlier this year (since raised to 11.2% [[124]]) was in order to pre-empt ("poison pill") a multinational take-over [[125]]. The predatory company (or companies) was not named, but it is highly unlikely to have included Rio Tinto.

In theory at least, cement is a good import substitute [[126]], especially where there are large reserves of limestone, captive power sources, readily-available cheap labour, and rising local demand. Also important is ready access to materials that must be added to kilns at the burning stage - shale, clay and gypsum (a 5% constituent of cement manufacture), marble, iron ore, dolomite and, in some plants, high alumina clays (a by-product of bauxite mining) - all of which are abundant in the country.

Indian companies began their own brand of "consolidation" in 1997-8, with Grasim (Aditya Birla) buying control of Shree Digvijay, Indian Cements taking over Raasi, and Gujarat Ambuja absorbing Modi. Now, at least on paper (if market capitalisation and share value are good markers) India's cement enterprises are among the best poised of mining companies, both to expand production and resist foreign take-overs. According to the Economic Times' list of "Top 500 Indian companies" Larsen and Toubro is better capitalised than any other company in the mineral extractive sector (Rs 4,591 crore in 1998), followed by Hindalco (aluminium), Tisco (iron, steel, coal), Hindustan Copper and Nalco.(aluminium) then ACC, Madras Cement, Raasi Cement, Indian Cement and Gujarat Ambuja. Larsen & Toubro was also the fourth most stable company in terms of shareholder funds, while Gujarat Ambuja came third in terms of assets [[127]].

Derring-do in Dehru Dun

It was resistance to limestone mining, specifically by local people in the Mussoorie Hills outside Dehra Dun (UP), which not only had considerable repercussions throughout the lower Himalayas, but also helped prompt India's first legal exercise in comprehensive environmental control. For years, those living in the valleys and the nomadic Van-Gujjars had vigorously complained about the depletion of water supplies and grazing and other lands. Many families were arbitrarily removed, and others fled in the face of the destructive operations of no less than 101 companies. In 1988 a case was taken at the Supreme Court [[128]] which was eventually won four years later. Although some mines were allowed to remain open for a period, the majority were forced to close. The court set up a monitoring committee, intended to oversee the huge task of "regreening" the valley which was undertaken by an "eco taskforce" - much of it comprised of school pupils [[129]].

From my own observations, the task had not been uniformly carried out: some of the higher slopes remain widely and deeply scarred - defiant against attempts (if attempts there have been) to reseed or stabilise them. Abandoned and rusting machinery has been left on site - these mines are thus officially "abandoned" rather than "closed" [[130]]. It is worth noting that the Van-Gujjars, whose nomadic (including water and grazing) rights had been jeopardised by limestone mining, have since had to fight against mounting discrimination by the GOI and the threat of a national park [[131]].

One of the most notable legal cases against mining in the past decade also related to limestone/calcite mining, in which Birla Periclase was the most prominent antagonist. The company's plan was to mine on 17 leases in Nimmalapadu, and around the famed Borra caves, in north-east Andhra Pradesh. and ship the product to a sea-water magnesite plant built on the coast [[132]]. As previously mentioned, this project was halted thanks to the interventions of local communities and NGO's, under the leadership of Samata: the well-publicised case is not being dealt with at length in this report.

Water everywhere - and not a drop to drink!

My first introduction to India's limestone mining, primarily for cement, came in Saurashtra (Gujarat). A sombre and troubling picture had already been painted for me by Ashok Shrimali in Hyderabad, when he told of displaced landowners being turned into contract labourers for landlords in cahoots with cement companies, but where increased mechanisation was now making many of these workers redundant. Each day, as limestone is excavated - down to thirty feet - so vast self-charging fresh water reservoirs of exceptional quality are put at risk while saline and brackish water flows unchecked onto productive land [[133]] at the rate of 500m - 1 km a year. It seems difficult to fully quantify the desalination

damage and properly evaluate the losses of sugar cane, banana plantations and other cropping systems [[134]]. At one limestone complex in Ghatwar, managed by Gujarat Ambuja Cement, local landowners graphically described for me the transformation of a previously fertile village, (mango, coconut, groundnut, sugarcane, banana chicu and sugar cane) into a desert, due to the exhaustion of aquifers from limestone exploitation. On a visit to the large Ambuja site at Nagir (Nagher) village in Sindhaj, Vadnagar, we discovered that topsoil was being stored for future rehabilitation. However (according to our local guide) the monsoons would wash most good intentions into a veritable mire in which :three children had recently drowned: there were no visible protective boundary fences or warning notices.

Although much of the limestone hacked out from this region remains in Gujarat, the majority of the clinker is exported (60%) since it attracts a lower tariff. The state boasts more than a thousand (1,155) quarry units (of which 958 are in Saurashtra and Kachch alone), working calcite, limestone, clay, bauxite, sand,. soda ash and other minerals. These threaten the quality, not only of agriculture but also fisheries (some of whose leases had been converted to mining) [[135]]. And they have begun to invade the world-renowned Sasan-Gir national forest. This is home to the remaining prides of the unique Asian lion (totalling nearly 300 beasts) as well as nearly 400 Maldhari and Sidi (African-origin tribal people) gathered in some 54 nesses (settlements) [[136]]. The indigenous dependants have protested, along with SETU, that their removal from the forest contravenes the World Bank's guidelines for its own eco-development project for the Sasan-Gir [[137]].

The short term impacts of removal and loss of vital inputs for agriculture have been recorded assiduously by a number of organisations (SETU's work is particularly impressive). As Ashok Shrimali and Vasha Ganguly of SETU pointed out in a paper presented to the mm&P inaugural workshop in May 1999, the combined effects of mining and industrialisation in Saurashtra have propelled a train of events whose cumulative impact is insidious and quite probably irreversible. "The farmer used to call the pastorals and livestock for natural manure and the pastoral in return used to get fodder for the fields. The farmer used to call the labourers from his village and the labourer used to get returns in cash and kind" Those who then sold their land in the early days became incorporated into the industrial sector, while the price of land escalated, putting it well beyond the purchasing power of poorer people This in turn has created discord and hierarchies in a society which was previously characterised as "stratified" but not segregated or in open conflict. In Saurashtra, according to SETU, 1,535 hectares of common land has now been acquired for mining, of which more than half is in the hands of Ambuja Cement. [[138]].

Socio-environmental impacts: some further observations

Limestone and aggregates quarrying rank second only to coal/lignite in terms of the amount of land appropriated, degraded and despoiled and the numbers of people forced from them. About 100 kms east of Nagpur, quarries have encircled the Tadoba National Park [[139]]. In the Sasan-Gir, 384 families were removed between 1972 and 1981 - now they even have to pay to re-enter the park for traditional marriage ceremonies. It is generally agreed that blasting and stripping limestone deposits are not only major causes of dust and noise pollution, but also prejudice the ability of the land to recover fertility and species variety. Recognising this, the industry has introduced machines which "rip" (the technical term) the topsoil along a width of 2.1 metres and to a depth of only 10-15 cm. However, as experience at Ramasamy Rajanagar, 65 km south of Madurai, Tamil Nadu, has shown, such ripping does in fact proceed to depths of 40 metres [[140]]. The promise to use similar machines at Narayan Sarovar sanctuary in eastern Kutch has not satisfied environmental lobbyists - nor the Supreme Court which imposed restrictions on mining in the area in early 2000 [[141]]

According to Dr Todsham Chendu, well known tribal leader and physician interviewed in Adilabad, Andhra Pradesh, the World Bank gave Rs 50 crore to renovate parts of the Orient Cement plant in Devapaur village, Kasipet Mandal, between 1991 and 2000, but " this still hasn't happened". Limestone mining had substantially contributed to the destruction of forest cover and this in turn led to a serious gastro-enteritis outbreak in 1998, attributed to rotting vegetation and stagnant water, exacerbated by sunstroke: 2,000 Rajgond tribal people died. Confirming the pattern outlined by Ashok Shrimali, Dr Chendu pointed out that Birla (owner of Orient Cement) had replaced local tribal workers with imported labourers, and limited employment to just one worker per family.

A burning problem

Cement kilns have ranked among the most hazardous of India's industrial plants for many decades. The "feed" will contain various quantities of sulphates, sulphides, pyrites and nitrogen; when burned these deliver massive amounts of sulphur dioxide and nitrous oxides. Installing the technology to reduce these toxics before burning (i.e. pre-calcination) and to capture airborne particulates (flue gas desulphurisation), is mandatory in "developed" countries although the elimination of nitrous oxides (NOx) has proved considerably more difficult and costly [[142]]. In Gujarat, south of Ahmedabad near Rajkot - and elsewhere along the Deccan plateau - I observed modern cement factories with stack emission control, releasing white smoke, as distinct from the grey-sulphurous pall of many older plants. But, by and large, workers and surrounding communities continue to suffer unacceptably from pneumoconiosis, cancers,

silicosis, silicotuberculosis, and tuberculosis. chronic bronchitis, asbestosis and upper tract respiratory tract infections [[143]]. In Gujarat, not a single case has been filed for silicosis compensation in ten years [[144]]. Yet - according to one recent survey of quarry workers near Jodhpur - one in three suffer from the disease, a figure which could be extrapolated to the 6,000 legally-registered quarries in the region [[145]].

In 1983 the Economic and Political weekly carried a report which lambasted ACC's cement factor at Jikpani (southern Bihar) in no uncertain terms:

"*..The trees look ghostly, the leaves hanging listless, heavy with cement dust. Cement dust fell continuously and relentlessly on everyone and everything…The grey countryside is [still] a nightmarish memory. Who can save a countryside from slow and inevitable death? What is going to happen to the hapless villagers [primarily Ho] so wrongly and cruelly deprived of their land?*" [[146]].

Since then, according to the Jesuit father at Jikpani mission, there have been some improvements. The plant now places its wastes "underground". The surrounding fields are no longer blanched and some fertility has returned to crops. Nonetheless local health care remains rudimentary - tuberculosis is a major concern. Ironically the road past the plant, which trundles over a denuded landscape towards Orissa, is one of the worst in the region (even for Bihar!) According to Father Clement (Koenjhar), only a quarter of the funds made available from the government for resurfacing actually goes to this purpose; the remainder ends up in the hands of the local construction "Mafia".

Coal and lignite: big blight with little light

India is not only the worlds fourth biggest producer of coal; it also holds an estimated 74,733 million tonnes of global reserves This puts it fifth, behind the US, Russian Federation. China and Australia, in the world coal stakes [[147]]. But whereas it is relatively low in lignite (brown coal), India is the world's second biggest possessor (after the US) of anthracite/bituminous coal (hard coal). Although the country hosts nearly two thirds as much hard coal as the US, it is actually currently mining less than a third of what the US mines. India is consuming only just over a quarter of what is consumed in the US.

Dying from the coal

Globally, coal mining claims more workers' lives and causes serious injuries - per value of product - than any other sector of the mineral industry except gold In proportion to employees, the least safe underground coal mines are found respectively in the US (sic), Ukraine, South Africa, Russia - then India [[148]].

CIL (Coal India Ltd.) recently lamented that the quality of the coal it mines, particularly from Singareni (the company's major coal field) is often much lower than required. Consequently imports had to be stepped up during 1999 - this despite new taxes being imposed on imports [[149]]. Power station demand fell during 1997-1998, and cutbacks were made to the less viable fields of Eastern Coal and Bharat Coking Coal [[150]]. Underground production has been falling as well. In 1999 Singareni announced that it would try to attract private investors, [[151]]. And, in order to stimulate expansion , CIL said in April this year that - after a gap of 27 years - it would offer 49% shares to private companies in two coal projects in the North Karanpura Coalfields (Amrapali and Magadh) in order to supply two new power stations, each of 1000MW capacity [[152]].

Tamil Nadu ranks second in terms of India's lignite resources (at some 1,400 million tonnes). But the stripping ratio is high, with excess saline in groundwater, and the environmental costs of large-scale strip mining are considerable [[153]] The state's Neyveli mines are the country's prime source of "brown coal"; all the product is sold to captive power stations close-by in southern India. Additionally Neyveli operates a large urea fertiliser plant, which runs on fuel oil, but is being decommissioned. Constructed as an icon of Nehru-led industrialisation, Neyveli has a large footprint in the past. Its 21,000 house township, with subsidised transport, food halls, hospital, 34 schools and a college, epitomise what has become known as "enclave mining". The company also has an eye to the future - notably in its "rejuvenation" programme for lumbering old equipment and the purchase of newer German-built wheel bucket excavators, the world's biggest land-based vehicles. According to one worker (who has lived here all his life) 3,000 families were removed to make way for this "model town" - some of them strongly resisted before the bulldozers demolished their homes, and another 2,000 were ousted for the mine-site. The company is now excavating a third deep pit

I noted several major environmental, health and safety (HSE) dereliction's at Neyveli. The few trees remaining on the edge of the open pits were clad with thick dust around their boles; little if any water appeared to be sprayed on the approach roads; there was no protective fencing at top levels and at least one deep drill hole was left dangerously open and unsecured. Overburden was being distributed only over the much older diggings; there was no methodical conservation of topsoil or vegetation and there is a major environmental problem associated with the upwelling of underground waters when mining reaches below the water table.

Neyveli is not without its attractions: travelling from the pits to the showpiece rehabilitation area site is rather like shuffling from Moonwalk to Neverland. The

latter, with its boating pond, mini-zoo and grazing deer, is an irrelevance. For some years, Neyveli has carried out field trials of paddy rice over a small area, fed by fly ash (see below), press mud, gypsum, and humic acid, as well as biofertiliser. These initiatives are insignificant considering the massive challenge of rehabilitating the entire Neyveli site. Nonetheless, since it is likely these operations will continue for many more years, I found it difficult to resist the conclusion that - if there has to be a south Indian energy "sacrifice area" (***) for the "greater good" - then it might as well be here, under this solid, state-owned enterprise (which also boasts an impressive public relations rotunda containing around two dozen rooms). RWE, the world's biggest lignite exploiter, has certainly wreaked as much damage on German rural landscapes and property last century. For many years its operations were greeted with dismay and hostility by farming communities. Today, after generous compensation packages and the return of mined-out areas to productive farmland, the mining meets little resistance.

*** The term "national sacrifice area" was used in the 1970's by the US National Academy of Sciences, to describe the reality of the conglomeration of uranium and coal mines, conveyors and power plants which have blighted the largely Dine (Navajo) territory of the US South West.

Taking action against lignite in Gujarat

Rajpardi's PSS (Pariavaran Suraksha Samiti) is a network of activists from Bharuch, Baroda, Surat and Valsad district in Gujarat, which took me to visit the lignite operations of the Gujarat Industrial Power Corporation. The 250 MW captive power station is planned to expand to 635 MW, with a demand for 5 million tonnes a year of lignite. PSS believes that 81 villages would be destroyed or adversely affected. comprising well over 100,000 people (most in the buffer zone). In early 1999 the Gujarat Mineral Development Corporation (GMDC) announced that the lignite reserves at Rajpardi were drying up (a wry misnomer in the light of frequent flooding - see box) but further deposits were to be found in a 20km corridor between Rajpardi and Mangol, including parts of Bharuch district and Surat district [[154]]. New markets would also be sought for the silica sands and ball clay reserves associated with the lignite [[155]].

I was specifically asked to inspect the fly ash pond at the plant, the arrangements for overburden and other waste disposal, and the effects of the power plant on the nearby villages of Vastan and Surali. The large overburden dumps are badly engineered, allowed to overflow, and clearly inadequate to contain acid runoff (local people have reported typical effects of AMD from using the affected waters, such as skin irritation). Streams are heavily silted. Typically, none of the roads used by heavy machinery seemed to be regularly watered (if at all), nor topsoil conserved. The conveyor to the power plant was not adequately guarded: indeed the fact that I could gain access to the entire site (except the power plant

itself) without any let or hindrance ,spoke ill of general security and safety.

The ash that doesn't fly

Some 60,000 tonnes of flyash are created each day in India posing a "terrible environmental hazard" [[156]]. It is often dumped - sometimes up to 10 or more metres high - on "prime agricultural land" [[157]]. Flyash contains a dangerous cocktail of heavy metals (cobalt, nickel, arsenic, lead, copper, iron, mercury, chromium, manganese and tin) characteristic of its chemical composition. While some of these materials are burned off at the plant, the majority is disposed of in collection ponds. According to a case presented by PSS (Rajpardi) in February 1999 at the Indian Peoples' Tribunal on Environmental and Human Rights (IPEHR), no adequate testing of heavy metals has been made in the feedstock at the Vastan plant, nor tests on water resources or for ambient air quality [[158]]. Similar impacts have been noted in other studies of flyash impacts [[159]].

Measures to limit the potential for fly ash include coal washing and clean coal technology (such as gasification). But the introduction of these has been extremely slow. The negative effects of coal washing are visible from White Industries mine at Piparwar in north Karanpura coal fields. Here slimes have been dumped about a kilometre from the main pit, into the river, creating a major and dirty diversion of the water flow as well as severe siltation.

Officially - under the Fly Ash Mission set up in 1994 - all fly ash should now be used in the manufacture of building materials and bricks [[160]]. Gujarat-based SETU says that brick manufacturers in Gujarat are now being forced to buy fly-ash contaminated bricks, which are radioactive. However, strong reservations have been made about the safety of such bricks, especially when they come into contact with water [[161]], as well as the dangers of radiation when they become eroded [[162]].

Fires down below - and floods up above

The Jharia Coalfields cover nearly 200 square kilometres, and the land is occupied by one million people. Coal combusts easily underground, leading to massive loss of resources, airborne pollution, ground subsidence and danger to human and animal life. Despite some steps taken to douse existing fires, it has been estimated that - even if every single one were sprayed with water and underground airvents were blocked with sand - it would take *86 years* to cool them sufficiently for safety's sake [[163]]. The World Bank-funded project to control these fires has effectively fizzled out. But it is not only the coalfields of Bihar-West Bengal which are subject to this endemic crisis. At the lignite operations of GIPCOL in Rajpardi, Gujarat (see main text) 400 tonnes of lignite burned out on the surface in late 1999, and there have been many

underground fires. One large surface area collapsed by a hundred feet after the monsoons, jeopardising a village which would have washed away had the ground sunk just another twenty feet.

Copper: a problem in more than one sense

In 1998 India's refined consumption of copper was 180 ,000 tonnes (compared with

Taiwan's of 561,000, or Britain's of 374, 000 and Japan's of 1,255, 000 - the

US naturally wore the copper crown with consumption of 2,883,000 tonnes [[164]]). Later that year, the Secretary to the Ministry of Steel & Mines, BB Tandon, lamented the fact that more than 7,500 jobs had been lost in three state-owned copper mining companies during the previous decade [[165]], arguing that this illustrated the need for state companies to be "gradually" exposed to international competition, by the removal of tariffs. In fact Mr. Tandon was gravely conservative in his estimate of lost jobs. At one company alone, Hindustan Copper Ltd. (HCL), the workforce was slashed by 85 per cent (14,000 down to 2,200) between 1990 and 2000 [[166]]. Annual capacity at HCL's Khetri smelter, which was to have expanded from 31,000 tonnes/yr. to 100,000 tonnes/year by mid-1999 had been limited to 45,000 tonnes/year [[167]]. Due to the low grade of copper at Kolihar, its main mine, HCL has been importing copper concentrate from Chile. The government also wants to disinvest its share in the company and - while running down the older pits completely - open up two new deposits, at Chapdi (where drilling has already started) and Siddeshwar, to foreign companies.

Close by the original ICC mine at Moosabani is a mill which continues to separate by-product uranium from copper ore, and the mine's tailings pond. The latter is one of the worst such facilities I have ever seen. (In fact, since my visit I have been trying to come up with a worse one - and can't). There has been no attempt whatsoever at dam wall engineering; no boundary fence; a complete absence of effluent recycling - simply a massive, dirty black, brackish sludge, pouring continuously through decrepit pipes onto collapsed terraces. The stinking wastes run out onto nearby fields, and then directly to a tributary of the Subaranekha river. Copper is among the most toxic of all metals in the environment (and the most toxic of all to fresh water fish). At Moosabani, the management seems totally oblivious to the deadly consequences.

The Union is fighting hard to retain jobs and some of the existing workings which it maintains (in defiance of the company's figures) are still viable: an almost exact parallel to the situation at Kolar (see below). Once again the

question has to be asked: if a foreign company were to take an interest in the Moosabani complex, how far would it be prepared to re-capitalise any of the existing operations and clean up the current appalling mess - rather than exploit the greenfield sites which are apparently on offer?

The workforce may be able to count on support for its opposition to retrenchment and closure, from an unexpected authority. Martin Thorpe, a consultant to Rio Tinto (which, apart from anything else, is also one of the world's biggest copper producers) last year concluded that "..in some cases the cost of closure [of copper mines] may be even greater than the costs of continuing to operate" [[168]]. Meanwhile, several companies appear to have been mooted as investors in exploitation of the Singbhum greenfield deposits for example Phelps Dodge. This large US copper miner recently made severe cutbacks and closures in the US, Venezuela, Ecuador and the Philippines - and it threw 1,650 people out of work during 1999 [[169]].

Diamonds: at the cutting edge

There are two glaring anomalies about Indian diamonds. The first is that, though they represent well over two thirds in value of all the country's mineral exports [[170]] diamond production within the country is currently minimal. The second is that - although the Union government is wedded to the belief that "export led growth" is the pathway to national prosperity [[171]] it is not only apparently happy to see key diamond profits being accrued outside India but also - as of this year - allowed the importation of polished stones. Some of these will undoubtedly come from even cheaper sweat shop labour in China, now the world's second biggest cutting and polishing bazaar.

In 1995, one analyst bemoaned "bureaucratic delays and red tape" for putting curbs on mining for diamonds and gold - both of which, he claimed, were highly prospective in India [[172]]. As if to confirm Mr. Tyrrwhitt's misgivings, in 1998 the state government of Madhya Pradesh - putative location of the most lucrative of India's diamond deposits (especially the Raipur field) and the nation's only two existing commercial diamond mines (in Panna district) - discontinued discussions with foreign bidders for diamond exploration, on grounds that the state would be ripped off [[173]].

Nonetheless De Beers, the world's biggest exploiter of these stones - also the marketer of 70% of global gem and industrial diamond output - has set up several Indian joint ventures. Initially these were brokered by the company's subsidiary in the tax haven of Mauritius. Last year the company said it was investing Rs1.26 billion in exploration for diamonds, mainly in Andhra Pradesh [[174]] And this June, the government of Karnataka invited both De Beers and

Rio Tinto to prospect for diamonds, gold and other minerals throughout the state [[175]].

Whose best friend?

One of the most notable aspects of India's diamonds is that, whereas the biggest bets are currently being put on discovering new kimberlite pipes and constructing large-scale mines, in fact traditionally the major output has been sustained from alluvial sources [[176]]. Alluvial diamonds are particularly suited to small-scale extraction, using modest capital. In several countries they are collected by co-operatives, who sell their output to a government purchasing board - if private merchants don't get there first..

The most damaging health impacts of diamond are encountered at the cutting and polishing stage, where India is the world leader, serving more than half the global market in terms of weight, and even more in terms of number of stones [[177]]. Men, children and women, using dangerous grinders and lathes, work in often cramped and unsanitary conditions, performing a highly skilled task for low pay. The degree to which children (under 14) are involved is a matter of some dispute. A number of studies done in recent years confirm that children continue to be employed, primarily in Surat, but suggest that numbers have fallen in the past ten years. The two main industry suppliers (and purchasers) of gems, De Beers and Argyle (the joint venture between Rio Tinto and Ashton) vehemently deny allegations that they are even indirectly responsible for the abuse of children. Rio Tinto in 1997 persuaded the ILO (International Labour Organisation) to withdraw an allegation that it was buying stones from shops employing under-legal age cutters. However, one young graduate I met in Surat, was skeptical that the extent of exploitation had substantially decreased since he was himself a child "polisher" in the district. He promised to take me to check on the degree to which children are still exploited. Unfortunately shortage of time precluded the visit.

{To my knowledge, no group within the mm&P alliance has made a comprehensive on-site investigation of diamond cutting and polishing, a major priority (with the possible exception of a researcher for the Center for Education and Communication - again lack of time prevented me from checking this further). In my view **it would be a great pity if diamond cutting within India were regarded as more properly the province of "labour interests" than of mm&P per se**, simply because diamond mining in India is currently not a major concern.} Diamond cutting is not primarily an urban-industrial process (much of its workforce is anyway bussed in from rural areas)

but - as with stone and marble dressing - a critical intermediate step between exploitation of the raw material and onward manufacture and markets.

Does India have its own "blood diamonds" ?

A great deal of political attention has been focused in recent months on so-called "blood" or "conflict" diamonds The terms denote stones mined in areas controlled by "rebels;" so far exclusively in Africa - Sierra Leone, Angola and DR Congo. India recently joined those countries which have pledged to ban their import [[178]], De Beers has responded to this campaign - initially generated by the small British NGO, Global Witness - by promising not to purchase any such diamonds in future, and indeed to guarantee the "integrity' (morality?) of its other sources [[179]]. However, some experienced observers of the company (for example Jani Roberts, author of a major film and book on the diamond trade) are highly skeptical of this apparent corporate change of heart. They point out that De Beers has for some years seen its control of world market prices eroded by other producers (notably Rio Tinto, Ashton and some emerging smaller companies) while much of its current costs now go on competitive "brand marketing". Any strategy to boost its image (especially if governments and International agencies help do it for the company) was bound to be welcomed. Better still, De Beers would secure an international embargo on those mines whose output it does not control and which were beginning to flood the market, further threatening its key position [[180]].

The foundation of a new International Diamond Council to create a "chain of warranty' from mine to consumer, seems to have resolved the main issues raised by Global Witness [[181]]. However, this strategy raises new problems, and severe doubts about the wisdom of distinguishing between specific mines and the conflicts they generate. Why is UNITA in Angola to be ostracised, while BHP and Rio Tinto - in a different form of conflict with the Dene of Canada's NWT - get implicitly stamped with approval?. How can we so naively allow "ethics" to be equated with a business product whose very production carries a legacy of blood (especially in South Africa) , and whose further exploitation - in India at least - is bound to create new groups of displaced and disinherited people?

Gold: stripping Kolar bare

India has become the world's biggest single consumer of gold - gobbling no less than a fifth of all the world's new production [[182]] Demand has been increasing for six years, the vast majority of which is met by imports. The Union government, in an attempt to reduce this dependency (and its macro economic consequences, especially negative balance of payments) has introduced a buy-back scheme (certificates exchanged for gold) and exempted such deposits from

taxes on interest accrued, as well as wealth and capital gains.[[183]]. The banks enlisted in this scheme, as well as many consumers, appear to be lukewarm about it: the former because of loss of profit when melting jewellery and manufacturing into coins or bars; the latter because much of the gold is technically "illegally" obtained and they fear declaring it. Nonetheless, in March 2000 South Africa's Rand Refinery Ltd. announced it was considering a JV with one or more Indian companies (MMTC and State Trading Corp have been cited) to "take advantage of the business opportunities provided by moves to liberalise the country's gold sector" [[184]].

Virtually all of India's current gold production derives from Karnataka [[185]], and in particular the Kolar (Bharat Goldfields) mine which has been in operation for well over a century. Since 1980, more than 4,000 Kolar workers have lost their lives in the service of gold, and another 5,800 sacrificed parts of their bodies; around 11,000 have suffered from silicosis. Until recently, the mine was controlled by some 17 unions with internecine political connections - until the election of the Bharat Workers Union. This, according to the union leadership, is supported by 60% of the workforce [[186]]

Following this, the Union government made it clear that Kolar was on its closure hitlist, as it was proving unproductive and uneconomic. Our field trip *was* productive, but frustrating (as already pointed out), we hadn't provided time to visit either the remaining underground workings or the large tailings area whose "re working" ("retreatment" as the industry terms it) offers the most immediate prospect of eking profit from the mine (A relatively unknown Australian company Narvo, has expressed interest in this possibility). The Union offered to provide me with figures backing prospects for economic regeneration (including expanding their wagon construction, constructing their own Carbon-in Pulp processing plant at much less than the cost estimated by ICICI and providing alternative work) as well as a report made by ICICI, which the Union said backed these prospects in detail (I did not receive them). The assertion is that 40 tonnes of gold is still extractable from the tailings (22 lakh tonnes grading a very high 5g/tonne - it was also said that the current cut-off grade was a highly wasteful 2.7 g/tonne).

{I offered to try to interest the international mineworkers union in Brussels, the ICEM (with whom Partizans has co-operated since 1997) in offering non-financial assistance to the Union, and to contact companies offering technology which could cut costs and reduce further environmental degradation.} The consequences of closure will be the loss of 4,300 jobs (already the retrenchment programme has threatened to cut this to 3,000), the jeopardising of a range of ancillary enterprises (including an

engineering and repair workshop which services other mines in the region), and the abandonment of a potentially large workable lode of gold. Saving one part of the undertaking - the tailings dumps - for a private enterprise could salvage some jobs, but in itself would hardly subsidise, the other undertakings of Kolar (I suspect any private company would want to employ cyanide heap leaching, whose recent environmental record is alarming, and which can squander considerably more productive land than conventional milling and flotation). **The challenge of Kolar is not simply to save a possibly viable operation managed by a more democratic union than may exits elsewhere; it is also to provide for the social and environmental impacts of closure** on its inhabitants and dependants, whether or not the mine can continue for another 10-20 years (the upper figure seems very over-optimistic). The Union has registered in Karnataka as a co-operative, in order to help establish cottage industries on rehabilitated land. But a skilled and comprehensive assessment is needed of the viability of such longer-term options (a prospect the Union warmly welcomed). It is worth noting that, in the case of another soon-to-be closed gold mine (Kelian in Kalimantan, Indonesia's biggest dedicated gold producer), the operating company, Rio Tinto, has already admitted that territory it originally undertook to return to the displaced Dayak community had been rendered too acidic to sustain viable agriculture [[187]].

Iron ore and manganese: raising the portcullis to the invader

I chose to visit iron ore mines at Gandhamardan, Koenjhar district, on the Orissa side of the border with Bihar, located in the vast Singhbhum mineral province. This was largely because Rio Tinto already has a major exploration project here, in joint venture with the Orissa Mining Corporation. Also this region has huge reserves of other deposits, such as manganese. Gandhamardan could become the biggest base metals venture of its kind in the country - no mean achievement considering that India is already the world's fifth biggest iron ore producer (with about 30% of the output of China, the world's largest). India during 1998-199 also became the world's second most important user of DRI technology (the direct reduction of iron ore for electric arc furnaces, as opposed to conventional smelters) - a methodology which cuts power and transport costs and can markedly reduce the output of greenhouse gases and SO2.(The biggest employer of DRI is BHP of Australia which, as already noted, has an important JV with Hindustan Zinc in Rajasthan).

Father Clement, a staff member of the (Jesuit) Xavier Institute of Management in Bhubaneshwar took me to Gandhamardan and - since it was Sunday - we were able to access the site, through the OMC workers and management compound, without hindrance. Here there are a number of smallscale diggings which, though scarcely more than an acre in extent, appear not to conform to any

environmental regulation: topsoil and vegetation had been bulldozed into the valley, underground springs were flushing wastes and ore down the hillside. While I could not approach the bigger mine sites of OMC, my companion and myself met with a dozen villagers in one of the affected villages of Bansapal block, who complained that iron fines and dusts blanketed their farmland, causing siltation of their water. The most articulate village elder - who had recently been laid-off from the Angul smelter - identified Rio Tinto personnel as recent visitors to the area and responsible for a number of overflights, though no one had been directly contacted by the company. I asked whether there had been any meeting to discuss the implication of expansion, but no one recalled one. The following day in Bhubaneshwar, when meeting with Manus Jena, the founder and director of OMAPAN (Orissa Mineral Areas Peoples Action Network), I learned that this NGO had, only the month before (March 17-18) organised a two day "orientation camp" in the area, along with Janavikas Kendra, and participants from Dhenkanal and Jeypore. The aim was " To orient the village youth and local social activists to ensure livelihood securities for the people affected by mining and other developmental projects". The main complaints emerging from this camp comprised the familiar litany of profligate use of stream water, deforestation, and loss of agricultural land. {OMAPAN was intending to organise another workshop in Bansapal to identify the landless families, forest areas and undemarcated villages, followed by a block level meeting.}

India's biggest iron ore complex is at Kudremukh, Karnataka, followed by the Bailadila deposits in Bastar, MP (operated by National Mineral Development Corp, NMDC), Tisco's operations in Noamandi (Bihar), and SAIL/IISCO's in Maghatanburur, Singhbhum [Statistical profiles op cit.]. These (as of 1998) contributed 35% to total Indian production, with Kudremukh having established itself over the past decade as an important exporter to China, Taiwan, Indonesia, Turkey Iran [[188]] and above all Japan. For some years there has been an important three-cornered struggle between conservationists and Tribal communities, the state (Karnataka) and mining companies (primarily Kudremukh Iron Ore company ltd.) [[189]]

It was announced in 1999 that 49% of Kudremukh would soon be offered to private bidders [[190]]. At present nearly half India's production comes from private mines, of which the most important are in Goa. During an interview with B R Venkatesh, a lawyer in Bangalore, I was shown details of a pending court case in which the defendants are the Union government, the Karnataka government, servants thereof, and Thungabhadra Minerals Ltd., a subsidiary of the Salgoankar company whose other major operations are located in Goa. The case was initiated in the Karnataka High Court in 1999 by the Karnataka Rajya

Raitha Sangha, on behalf of villagers of Sandur Taluk, Bellary District. It cites destruction of crops, depletion of forest cover, exhaustion and contamination of water sources, and an increase in damaging airborne particulates of iron, lead, phosphorous manganese, over an area of 10,000 hectares. The company is alleged to have secured farmers' signatures on blank papers, then used these to intimidate and torture them when they tried to resist the traffic through their fields. Like other similar cases, this one is stalled through lack of money. Unfortunately, as already mentioned, neither mm&P nor myself were able to arrange a field trip to the state before the National Convention.

India in 1997-98 exported about 30% of its total iron ore production. But in 1999, as the global slump in steel consumption began to bite, demand fell, particularly in Goa. Production from Sesa Goa, the state's largest producer, fell by 20%, made worse - according to the investment brokers Macquarie Equities - by "infrastructural bottlenecks" and "recalcitrant unions" [[191]] By mid-2000 demand appeared to be picking up, although it was mainly being met from increased production in Brazil, China and Australia [[192]].

Lead and zinc: where safety doesn't come first

The Indian government has predicted a substantial growth in lead and zinc demand in the near future, to serve rising demand from the automotive industry [[193]]. To meet the need, Hindustan Zinc (already partly de-nationalised) is commissioning a new 100,000 tonne a year smelter in Rajasthan, and expanding two others in the same state, as well as one in Visakhapatnam (AP). Current lead production of 85,000 tonne/year lags behind domestic demand of 145,000 tonnes. The government intends to meet the shortfall by raising the five year old ban on importing lead scrap (currently classified as a hazardous material) in order to stimulate secondary production within India.

In 1998 the huge Australian mining conglomerate, BHP got approval from the FIPB to form a JV with Hindustan Zinc and prospect for base metal deposits in Rajasthan [[194]]. This was confirmed during my visit to the HZL mine at Zawarmala in February. However, since then BHP has been among the most "troubled" of large mining companies, forced to dispose of a large number of its non-core assets (including its US copper operations) as well as - in an unprecedented move - declaring that its vast OK Tedi copper-gold mine in Papua New Guinea was environmentally untenable and should be closed. At the present time it is difficult to see that BHP will want to invest heavily in India [[195]], and certainly not in any mines which may put it at the centre of new controversy.

Zawar mines has four pits; HZL itself has six mine sites and seven milling and

refining units). From our two hour underground visit to the Zawar main mine, it is clear that - though there has recently been new investment in machinery, attention to health and safety has not kept pace. There were high dust levels underground and little water sprinkling; apart from one front-loader operator, I saw no worker with an effective particulate mask (most wore just a strip of ineffectual yellow cloth). (Our party was stuck at the 335 m level underground for an hour and a half, waiting for the cage to the surface. The delay prompted one miner to ask:" What will the foreign visitor think of us?" To which another replied "That we're working!" Chuckles all around - but it made me think that a foreign contractor would not be so amused). Waste rock underground is dumped into a "valley" which we could not inspect. Nor could we visit the tailings dam at 8km distance (However I did notice what appeared to be casual labourers scooping up ore in baskets - without any personal protection (hard hats, masks) then transferring by hand to lorries). Mr. Firod, the mine superior acknowledged that blasting had led to deafness (though I saw only one worker with ear mufflers) and that the dust did cause tuberculosis - "possibly silicosis" Although the offices at the pithead were decked out with safety notices, none of these referred to the specific dangers of mining : it seemed that falling over a bucket was accounted more hazardous than contracting a fatal lung disease. If the official ore grade (6% pb/zn) and cut-off grade (3%) are accurate assessments, then existing deposits would be attractive to a new investor, such as BHP. However, the current working environment would probably not.

Marble and other stone quarrying: where safety comes last

Teams of elephants (white elephants?) hauled the purest marble in the world from the pits of Makrana, to build the world's most famous sarcophagus at Agra. In this township; driven to extraction, there is white marble, pink marble, grey, blue, green, black yellow, and brown marble (nine colours in all - a dozen different "ranges"), hewn and pulled, sliced and trimmed ("dressed") for both local and export markets [[196]]. Last year there were more than 4,500 mining and quarrying licences for marble and serpentine in the Makrana area, and a thousand licensed cutting and polishing shops. In 1998 the state licensed another 20,000 sandstone and granite mines (bringing the total in 1999 to 26,000 [[197]]. These excavations have plundered outwards to a 20 km radius and they reach depths of 350 feet, thus well below the water table (although the water is supposedly piped to a reservoir). Subsidence is blatantly obvious, as the mines have encroached within the borders of the town. Part of the railway line hangs tangled and suspended without any foundations, over one of the pits.

Makrana itself has a population of 70,000 and almost half (30,000), in one way or another, are involved in the marble business [[198]]. Two hundred and fifty trucks carrying ten tonnes of the heroic stuff on each load daily depart from 1,000

mines (177 "illegal") and thunder through the narrow streets, churning up suffocating dust fines which mix with vehicle exhaust. The MLPC has taken on Makrana as a key issue - quite rightly.- supporting the Makrana Marble Union which draws its strength from some thirty villages and 5,000 labourers in the area (Another 15,00- 20,000 are employed in, or dependent upon, the "downstream" industry). Each month there is one recorded fatality - usually from rockfalls - and several accidents each day. Suffering the customary absence of bonus payments, pensions funds, and the loss of their original lands, workers have no immediate access to emergency or community health support.

The parlous situation was graphically illustrated at one small mine visited in Dungri which has a workforce varying between 5 and 10 people ("big" mines employ twenty or more) and whose excavations had reached 300 feet in depth, already 60 feet below the water-table. Workers winched their way, with no protection apart from an ineffectual hard hat, down the mine walls, suspended by ropes cranked from free-standing mobile cranes. The employees then blasted within feet of where they stood, harnessed the rock to the same winch, and clambered an to another site, before being hauled to the surface. The parallels (albeit on a smaller scale) with Brazil's Serra Pelada - the garimpeiro gold pit immortalised in the 1980's images of Sebastiao Delgado - were striking.

According to the subcontractor (name withheld), most mines receive a government- granted 10-year lease, but these are passed from father to son, so most owners have "come up through the ranks" There is no fixed rate for labour (some of which is drawn from Barmer in Rajasthan, and apparently undercuts earnings of some longer-term employees from the area [[199]], nor any fixed compensation in the case of accidents. Such sums are "negotiated" by the owner when the victim lands in hospital: it is understood that the incident would go no further. While this subcontractor's mine had not experienced a death, no record was kept of injuries and pneumoconiosis (though the name was not used) and tuberculosis were rife.

I came away from Makrana, convinced that these were among the worst - if not the worst - mining operations I had seen: the following two and a half months of field trips did not alter my opinion. If one person dies on average per month in the area, then a dozen will die each year - about one third of the total national figure of acknowledged fatalities. Quarrying in itself must be the most dangerous single sector within the India's extractive industry. One survey, consisting of newspaper reports by the CEC Delhi ,showed that 36 out of 51 people killed in mining accidents during 1999 were working rock and clay or in similar quarries). Another study carried out by the Jodhpur Medical College in 1999, confirmed that a highly alarming one third of all workers in quarries probably have silicosis, and a staggering 43/75% are suffering from Z-class pneumoconiosis [

[200]].

Silicosis scandals

Not one case for silicosis compensation had been filed in the past ten years in Saurashtra [SETU-Ahmedabad]. In 1996 the Supreme Court ordered one lakh rupees to be paid to each of the heirs of 16 workers who died of silicosis, contracted while working at a stone-crushing unit in Midnapore, West Bengal. Known as the "Ganga matters case", the ruling established the important principle that companies could be sued for environmental damage caused outside their premises, if it simultaneously affected the health of those working inside [[201]]. As of May 2000, however, not one of these heirs had received the promised compensation [[202]].

As J John has pointed out [[203]], the 1983-revised Mines Act, which supposedly covers the protection of labour in the industry, covers neither prospecting, nor small quarries engaged in the mining of kankar, murrum, laterite, boulder, gravel, shingle, clay, building stone, limestone and some other aggregates: "This leaves out a very large segment of the workers employed in small private mines…"

Phosphates: fertile expansion in pipeline

The recent news that a Colombo (Sri Lanka) court has upheld a petition to halt advancement of the Eppawala phosphates project [[204]] has heartened members of mm&P. However, it heightens speculation that India's own phosphates may now receive unwarranted attention from foreign companies - in particular from IMC-Agrico, the world's biggest producer, which has been targeting Sri Lanka in its search for new global reserves. India is only a minor producer of phosphates (just over 1% of world production in 1998, which is only about a sixth that of China). But demand is increasing: in 1999 Oswal Chemicals and Fertilizers Ltd. built a 3 million tonne/year fertiliser plant which is projected to take nearly 10% of the phosphate rock trade (1998 figures) [[205]]. In May the Union government announced that it would put the Paradeep Phosphates complex - the largest diammonium phosphate plant in Asia - up for divestment of 74% of its equity, to a foreign or domestic private buyer. The strategic partner will be given complete control of the plant after the plant has been "freed of losses and debts" [[206]]. Entry stage right for IMC?

Salt and soda ash

Our team observed one solar salt plant - on the outskirts of Diu, the Union territory in Saurashtra, to which richer Gujaratis regularly take themselves for its bracing air and the equally bracing alcohol (Gujarat is a "dry" state) Despite the

indelible association between salt and India's struggle for independence from colonial domination (viz. Gandhi's salt marches)- or perhaps partly because of it? - the commercial exploitation of this mineral is not commonly regarded as hazardous. Nonetheless it carries environmental and social consequences (in particular the adverse effects on community health from salt dust [[207]]. The processing of salt into chlor-alkali chemicals (caustic soda and chlorine) has other serious implication. Demand for the latter is driven by the manufacture of PVC - itself now viewed as a hazardous product [[208]].

The availability of sea salt depends largely on climatic conditions There are thousands of solar salt operations in India, but only one rock salt mine per se, in Mandi district, Himachal Pradesh [[209]]. The country lost no less than 1,290 solar operations in 1998 alone, due to cyclones. Nonetheless, expansions are underway in Tuticorin and elsewhere in Tamil Nadu as well as Gujarat, while Gujarat Heavy Chemicals has been investigating setting up plants in the Gulf region (Oman, Saudi Arabia and UAE).

As with many other industrial minerals, salt is suited to smallscale, localised production and control. However the sector is being targeted by large companies, with at least a partial eye to exports. Rio Tinto (yet again!) operates the world's largest solar salt plant at the port of Dampier, Western Australia (with full production of 5.5 million tonnes a year, some 2% of global capacity [[210]]. IMC Global, the world's biggest phosphates producer, is now also its third biggest salt producer, after the recent purchase of plant in the US [[211]] As already pointed out, these are two companies actively seeking opportunities in the Indian subcontinent.

A by-product of salt pan production, soda ash has a modest market within India although Birla (Birla VXL) of late has considered steps to "demerge" its production. The country in 1998 produced 1.63 million tonnes - more than Africa and the Middle East combined, but only a sixth of production from Asia and Oceania [[212]]. Significantly, in 1998, Indian producers tried to get a ban on imports from US and China, taking out suits against Ansac and Sinocheem respectively, claiming they were "cartelistic" in nature [[213]]. Soda ash manufacture can be a destructive and polluting business, as witnessed by the impacts recorded in the Okhamandal (Dwarka) area of Gujarat, where a local factory has absorbed some 32,000 acres of land, caused ingress of saline water, destroyed "sweet" water sources and emitted toxic gases and particulates to the surrounding villages [[214]].

Uranium: a radiated land

I had wanted - and planned - to visit the West Khasi hills of Meghalaya (96% of

whose territory is tribal), where drilling and bulk sampling of uranium has taken place over more than ten years. Protests had already been mounted by local people. In 1992 the World Uranium Congress in Salzburg was attended by Hopingstone Lyndoh and have continued since [[215]]. Unfortunately Dino Lympep of the Meghalaya Peoples' Human Rights Council (MPHRC) was not available when I was free to travel to the North East but I had discussions with B Lyngdoh during the NC. In particular I discussed with him the need to raise the uranium mining issue with communities over the border in Sylhet, Bangladesh - who could be severely impacted by radiation, run-off, waste disposal, dust, and other hazards from mining in Meghalaya ("rathole" gemstone and coal mining in the state is well-served by Bangladeshi labourers). My visit to Bangladesh in early May put me in touch with several NGO's which showed an interest in taking up mining issues. A direct approach by MPHRC to the Bangladesh government had yielded no response. However, I passed on the concerns of the Council to Atiq Rahman, director of the Bangladesh Centre for Advanced Studies, met in Dhaka and with whom I briefly discussed joint India-Bangladesh mining concerns.

Although the uranium in Meghalaya is said to be of a very much higher grade, and much more easily accessible (suited to open-pit mining) than in Jaduguda, so far only 640 tonnes of U308 has been extracted from the deposit. Nonetheless local people complain of various ailments which might be connected with both the mining and waste disposal [[216]]. In addition the Council has complained of environmental and health impacts from clan-based coal mining in the Jaintia hills.

My one-day field trip to Jaduguda (Jadugora) was supplemented by a useful discussion with Professor Upadhaya a day later. While access to the underground mines was not sought (nor would it have been granted in any event), under the guidance of Xavier Dias I was able to visit the three tailings containment areas, and three of the fifteen villages (population 30,000) from which some of the workforce is drawn.

The tailings area comprises three "ponds" (Dungridih, Tilaiyatand, Chatikocha) and is now well over 100 acres in extent, graphically illustrating almost every "what not to do" in the case of such an operation. The dams are unlined, the discontinued areas have no clay covering, and there is neither permanent watering during the dry season, nor the means to siphon off and recycle liquid wastes during the rainy seasons. I understand that the dams regularly overflow into local creeks and rivers (where they are supposedly recycled to the treatment plant but only through open drains which themselves then overflow). During the dry season, villagers graze their cattle on toxic grassy patches on the wastes, while children play football and scramble among them. Apart from one

desultory warning notice, no attempt has been made to prevent access to these sites, and I was appalled to find that one of the tailings pipelines crossed a busy public road in the middle of Jaduguda village, after being transported over the rooftops of local dwellings.

It is impossible to evaluate the environmental impacts of such a huge (and in parts inaccessible) operation in just one day. Ghanshyam Biruli, president of JOAR, who hosted us in the area (and whom I had met earlier in Delhi before a press conference to launch the recently made film on the impacts of uranium mining in Jaduguda: "Ragi Kana: Ko Bongo Buru: Buddha weeps in Jaduguda") reported that local animals had virtually disappeared from the mining concession area, while kendu fruits were growing without their characteristic seed pattern (Ghanshyam demonstrated this by splitting a few in our presence). The most serious accusations are that children have been born with grotesque deformities, and that there is a hugely abnormal rate of spontaneous abortions, miscarriages along with disruptions to menstrual cycles. We visited one of these villages which, I understand, had not been surveyed before.

Children with bone marrow disorders, encephalitis, skin disease and other congenital malformities were brought before us. These were consistent with abnormalities recorded among victims of low-level radiation - e.g. in the mines of New Mexico, studied by the US Public Health Service from the 1970s onwards). But it was impossible to conclude that radiation - as opposed to other genetic or dietary factors - was responsible. JOAR/BIRSA"s own 1998 study of these disorders has certainly yielded sufficient evidence to warrant the full socio-medical-environmental interdisciplinary study for which it has been calling. Whether such a team could be marshalled within India was a question I raised with a number of people. including Professor Upadhaya. There are obviously problems attached to even proposing that a team be brought into India from outside (one official precedent for this is the 1995 IAEA investigation of Union and other allegations made against Namibia's Rossing Uranium - yet another Rio Tinto gift to humankind). I felt - and still feel - it would be invaluable for residents from Jadugora to visit other uranium mine sites of a similar age, extent and modus operandi, and meet with workers and local residents.

There seems to be far less ambiguity about the impacts of radiation on the tribal and contract workers at Jaduguda, some of whom we met on site. They had been diagnosed as suffering from tuberculosis - an unfortunate " catch all" for the disease can be both a result of even more serious and damaging exposure to inhaled particles, and a "screen" against the existence of radiation-induced lung disorders and cancer. What was so disturbing - and damning - about the medical reports shown to me by two of these workers (at my request) was that no baseline medical examinations at all had been carried out by UCIL when the

workers joined the labour force which should have identified tuberculosis (or cancer) before they set one foot in the mine. Whether or not this was intentional, it was undoubtedly severely reprehensible.

mines, minerals and People - the future

mm&P had an initial launch in 1999, when its working committee was set up with a prime task of organising a National Convention. This would be the opportunity - for the first time in India - to enable community/peoples organisations and NGO's to share experiences, problems, hopefully some strategic solutions; and to identify priorities for a future national organisation [[217]].

The National Convention proved equal to the daunting task of providing space for communications between a robust number of individuals and organisations. Those social groups most adversely affected by mining and exploration have been clearly identified (tribal/Indigenous, women and children, Dalit, bonded contractual and low-paid workers, those at risk of retrenchment,). This helped avoid the problem of prioritising specific states or regions, though it also poses a considerable challenge to the new alliance in at least two respects: first, how to service under-resourced groups (I was approached by two individual delegates at the NC concerned that they were too small or inexperienced to merit much input from mm&P); second, how best to include in the alliance, those who were unable to attend this first NC. West Bengal, Goa,/Konkan Coast Kerala and Assam were not represented) (A contact of mm&P in Calcutta arranged for me to meet a group of mining unionists from the West Bengal coalfields, with the prospect that one or more could attend the NC. Unfortunately, due to a 24-hour flight delay, the meeting had to be cancelled. To meet these needs, it is clear that **further yattras must be undertaken (some are in the pipeline) and I recommend the appointment of a field officer, primarily to cover the south of India,** at least for a short period (say six months)

mm&P as a locus for international networking

The organisers of the National Convention made noteworthy efforts to involve delegates from non-Indian organisations, as observers and workshop participants. Unfortunately only one was able to attend - Bong Corpuz, director of Minewatch Asia-Pacific from Baguio, the Philippines). This experienced activist (a former mining engineer) gave an impressive address on campaign experience in his country. During a side-trip (not funded by CA or mm&P) which I made to Sri Lanka in March, in order to advise groups opposing expanded mining of Eppawala (see above) I had identified a lawyer who wanted to attend the NC but, due to lack of funding, was unable to show. Lack of funds -

and time to organise - was also why no delegate was able to participate from Bangladesh. Unfortunately no one responded from JATAM, the new national coalition of Indonesian groups: there is clear common ground between this NGO and mm&P which hopefully can be consolidated. The expected delegate from Third World Network (TWN) Africa was stymied from attending because he told the Indian embassy in Accra that he was going to a meeting. Ghana is another country where a new initiative on mining has started. and activists want urgently to share their experiences and concerns with other NGO's. No Northern-based NGO's were represented at the NC, except for Partizans/Nostromo Research; an Oslo-based Norwatch staff member was intending to come, but fell ill.

mm&P: Organising the documentation

Many groups and individuals within mm&P have built up impressive libraries on mining issues, such as SETU-Ahmedabad, Matthew Areeparampil (Chaibasa), Center for Mountain Environics and RLEK (Dehra Dun), PSS (Rajpardi), Prerana Resource Centre (Hazaribagh), Centre for Education and Communication (Delhi), OMAPAN (Bhubaneshwar) - I mention only those I was able to peruse.

Samata has an exhaustive documentation base on the Birla -Periclase case (see section on cement this report), along with other substantial materials on limestone/cement and bauxite. MMP North, based in Jamshedpur, has an impressive library of materials on uranium mining and workers/tribal peoples' issues, stretching back to the 1970's. Both centres are rapidly accumulating further hardcopy data and sought my advice as to the most appropriate way to file and index it. In addition, I brought with me from England (or couriered, via a friend) various materials.

However, neither mm&P in Hyderabad nor mm&P North has a photocopier and it can take several hours (or even a weekend) before vital articles are copied, either for cross-reference purposes in the office (essential and unavoidable) or to send to member groups in the alliance, and journalists.

Most material gathered at mm&P North consisted of news articles which had been indexed chronologically, along with substantive key documents. In Minewatch's and Partizans/Nostromo's experience, this could involve unnecessary labour in locating important sources (for example on specific companies or metals/minerals). I therefore suggested **both centres should rely on box files, grouped according to companies and minerals:** new material added to the front of each file would automatically be arranged in chronological order. Slim documents could be located here, while bigger documents (for example EIA's) should be shelved separately. A written index inside each box file

would give immediate pointers to the most important source articles and documents, along with the location of the latter if held on open shelves. Adapting to this system would be relatively easy and also enable volunteers, even with little experience of filing, to access and update on a daily basis.

Some key articles would need to be copied (for example where an analytical article on cement referred to several different companies with their own files) Since this should be done on the spot (to avoid confusions and ensure proper dating), **a photocopier in each location is an essential item of equipment** at both locations (and in Delhi once a relay has been set up there).

At present, neither MM&P/Samata in Hyderabad, nor MMP North, have adequate technical archives, Indian geophysical studies or maps. Some documentation is available in Dehradun (with Ramamurty Sreedhar), but at the time had not been copied or shared with the other centres. (For example, I located one of the most important documents of my field trip, tucked away in Dehra Dun - the 1997 "India means Business" published by the Ministry of External Affairs. This contained specific references to joint ventures between Indian and foreign companies which were not widely known) There is also a paucity of corporate material (annual reports and reviews, HSE studies) which should be publicly available - some but not all on the internet (EIA/SIA's and their supporting studies seem more difficult to access). Some World Bank materials were available but (for example) the key documents on Indigenous Peoples and Mining were not on file. On the eve of my departure from Hyderabad, the mm&P working committee was discussing a better arrangement and access for these materials.

In my view, **a central documentation base, divided into four main areas (companies, metals/minerals, technical studies , government policy and Bureau of Mines materials) should be established as a priority.** The physical location is less important than availability of workers to monitor and search materials, and at least one skilled worker (librarian or research coordinator) to ensure cross-referencing. There should be at least one subscription to the Mining Journal (which includes the weekly Journal, monthly technically-oriented magazine, and the Mining Annual Review), as well a free emailed version of the Journal which can be downloaded the day it is published in London).The research director/librarian should also be responsible for soliciting materials from Indian governmental and industry sources.

A regular relay needs to be established with Minewatch Asia-Pacific, JATAM, Third World Network, Project Underground, the MPC, the MPI, Miningwatch Canada, and other international and national organisations in order to obtain copies of foreign company annual reports and statements, key documents

published by the industry (such as Control Risks Reports on India, the World Coal Report, MJ publications on the aluminium industry, World Bank and Asian Development Bank reports and critical appraisals - some of these can be downloaded at a price from the internet). **I recommend that all member groups of mm&P be urged to submit maps of mining and exploration operations** (along with the names of major companies responsible) for their areas of concern, along with grids showing (where known) scheduled tribal areas and forest reserves, with the aim of producing a nationwide summary chart.

Final comments

mm&P and its alliance members are confronted with an explicit government policy favouring increased foreign investment, and relying significantly on the exploitation of domestic mineral resources for export. There are manifest contradictions in this policy (for example between the insistence by the Union government that it wishes to enhance "value added" from mineral production, while at the same time encouraging more EPZs or special economic zones). Some states (like Andhra Pradesh, Rajasthan ,Gujarat, Karnataka and Orissa) appear bent on promoting mineral exploitation, with little regard to the people-sensitive location of the deposits, the appalling (and in some cases anti-constitutional) nature of exploitation and the final destination of the products (the US arms industry in the case of Raytheon's projected alumina plant in Kachch). These are sea changes in previous policy which demand not only national debate but international attention, and mm&P has the capacity to seize the intellectual space required to challenge these developments.

This poses considerable challenges: in particular resolving the apparent contradictions between resistance to creeping "foreign interference" and further destruction of labour forces on the one hand - and the manifest requirement for many Indian operations (not least the many thousands of aggregates mines owned by private individuals) to mechanise and follow best possible standards labour and environmental standards, on the other hand. The trap is to believe that *only* foreign investment and influences can achieve this goal. The official regulations governing rights of tribal peoples and workers, as well as those imposing environmental standards, are not as lax and ineffectual as many observers have been led to believe. Nonetheless they differ widely from state to state. I have compared key tax legislation in India's minerals sector with that in other nations in the Asia-Pacific region. While not exemplary - and in some respects quite unsatisfactory - by and large existing royalty and tariff rules are more "protectionist" in India than elsewhere. Environmental precepts not previously laid down (for example the separate storage of topsoil, continuous back-filling ,and recycling of process waters) are now mandatory [[218]]. Although the post-liberalisation policy remains hedged with qualifications

("where possible", "as far as possible" "keeping the discharge of toxic effluents to a minimum" - is this partly a reflection of the fear of putting off overseas companies?) no-one should presume that debate within India about the social, economic and ecological impacts of mining lags behind that in other countries.

On the contrary, because of the dedicated research and growing activism of numerous groups and lobbies, Indians have many lessons to teach the rest of us.

Roger Moody, Nostromo Research, London, August 2000.

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[* Figures for the numbers of people "displaced" by mining (DP's) vary according to not only source, but also definition. The uppermost estimate I have seen - for all categories of displaced persons in India since independence - is a massive 50 million [N C Saxena, cited by Arundhati Roy, quoted in J John]. Resource and land acquisition for mining and mineral processing is generally acknowledged to come second only to big dam and hydroelectric infrastructure projects (and the two are often intrinsically connected). This suggests that at least 10 million people have been the casualties of the minerals industry in India. It seems a far cry from other educated estimates - for example Walter Fernandes' figure of 2,100,000 in late 1993 [Walter Fernandes " The price of Development" in Seminar, December 1993] of which more than half (1,200,000) are tribal, which itself differs significantly from the figure Fernandes gave a year later - of 2,550,000 [W Fernandes in Vikalp, November-December 1994]. The estimates also differ according to definition. Officially only those dubbed "displaced" or "project affected" are counted, but "displacement": embrace many in urban areas, and those affected by what has been called "secondary displacement", for example by the later acquisition of agricultural land as mining expands [J John op cit.]. People also suffer double or repeated displacement (e.g. from a dam site, then a mine). As pointed out by Dilip Simeon [Dilip Simeon "The Politics of Labour under late colonialism" in Manohar, no date, quoted in J John ibid.] "emplacement" follows "displacement", as skilled, semi-skilled or unskilled labourers and their families move into mineral enclaves, this is a "disordering", not a "(re)ordering" of social and cultural cohesion. As some big mining companies assisted by the World Bank inter alia, move towards "recognising" their responsibility for primary displacement, so they have begun setting up development projects for "sustainable" livelihoods purportedly in parallel with existing mining, and preparing the way for permanent resettlement on mined-out lands. But past experience in this regard has been extremely negative (for example in Canada, where the closed uranium townships of Elliot Lake have become familiar "ghost towns"). I am not aware of any rigorous study being carried out on what "sustainable post-mine development" will mean in practice.]

** The term "stakeholder" has crept into the lexicon of dialogue and combat between communities and companies over the past few years, and now seems widely accepted. Its origins are not clear but Rio Tinto was certainly among the first (if not the very first) to use it - and possibly it was coined by one of the management gurus who have advised the company for more than twenty years. My view is that the term is willfully fraudulent:. On the surface it promises recognition of the legitimacy of opponents, and readiness to share decision-making and even re-distribute wealth. But the reality is that control of the term itself is in the hands of the companies - by and large they continue to pre-define who is a stakeholder and who is not. More disturbingly, it proposes an implicit endorsement of corporate projects, even by those who totally reject them. They become "holders" (without being empowered or even asked) - of "stakes" (which are not

even economic shares) - in enterprises that they believe will disempower and impoverish them.

*** The term "national sacrifice area" was used in the 1970's by the US National Academy of Sciences, to describe the reality of the conglomeration of uranium and coal mines, conveyors and power plants which have blighted the largely Dine (Navajo) territory of the US South West.

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