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# *GRAVE DIGGERS*

A REPORT ON MINING IN BURMA



**BY ROGER MOODY**

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Cover: Workers at Hpakant Gem Mine, Kachin State (Photo: Burma Centrum Nederland)

# Abbreviations

ASE – Alberta Stock Exchange

DGSE - Department of Geological Survey and Mineral Exploration (Burma)

ISO14001 – International Standards Organization Industrial Operating Standard

LME – London Metal Exchange

ME1 – Mining Enterprise No. 1 (Burma State Mining Company)

ME2 – Mining Enterprise No. 2 (Burma State Mining Company)

ME3 – Mining Enterprise No. 3 (Burma State Mining Company)

MGE – Myanmar Gems Enterprises (Burma State Gem Company)

JV – Joint Venture

SLORC – State Law and Order Restoration Council (The official name of the military regime in Burma; its name changed in November 1997 to State Peace and Development Council)

SE-EW – Solvent Extraction and Electro-winning Technique

TSE – Toronto Stock Exchange

VSE – Vancouver Stock Exchange

*Note: All source dates are abbreviated using the non-US system, with day preceding month and year, e.g. December 10th 1997 is 10/12/97.*



MAP OF SOUTHEAST ASIA  
(Courtesy: Map Library, The University of Texas at Austin)

# Acknowledgments

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# Author's foreword

As I write, the press is announcing that a waste dam at a gold mine in Eastern Europe has overflowed, sending thousands of gallons of cyanide contaminated slurry cascading into Romanian waterways. The somewhat naive shock which has greeted this announcement is a sobering reminder that the majority of people – even those deeply concerned about other industrial hazards – know little about the world's fifth most important industrial sector. What safety measures were in place at this facility? Who was responsible for management? What are likely to be the long-term impacts on workers and communities? How will those affected be compensated for any resulting damage? These questions may take months, even years, to be satisfactorily answered. Or may never be.

When Guyana's biggest gold mine suffered a similar disaster in 1995, this too seized headlines across the world. A national commission of inquiry was set up but, even before its report could be properly debated, the government allowed the mine to re-open. None of those responsible for its design or management have yet been brought to court, while thousands of potential claims for damage have yet to be properly investigated.

Romania and Guyana are democracies; access to the countries is reasonably open, if not unrestricted. Moreover, the companies operating these two mines were apparently respectable outfits, hailing from countries boasting high standards of monitoring and control (Australia in the case of Romania, and Canada in the case of Guyana). How much more dangerous are such projects likely to be if located in states where the people cannot bring their grievances to any responsive authority; where independent investigations are nigh impossible; and where mines are run by local enterprises and foreign companies which do not answer publicly to shareholders, or follow any internationally accepted standards?

In 1998, I was asked to do a report on these issues by a consortium of Burma pro-democracy groups based in North America, Thailand and Europe. In the course of my research, several salient facts emerged. First, the number of mining companies invited into Burma by the military regime, the State Law and Order Restoration Council (SLORC), is greater than we previously suspected. In Chapter Three, more than sixty of these are listed. Second, despite a high-profile and persistent international campaign to bar all foreign investment in Burma, some major corporations, not just "juniors", have invested in mineral exploration and exploitation. Third, the most important single operator in the country is a multi-millionaire, backed by several of the world's biggest corporations, who owns critical stakes in other mines, not only in the Asia-Pacific but also in Africa. Fourth, despite the extreme difficulty, and dangers to "whistle blowers", of gaining direct evidence of conditions at Burma's mines, disturbing accounts of pollution, the use of forced labour, and violations of human rights, have emerged. Lastly, the laws under which miners operate under the regime appear lax or ambiguous, and provide virtually no protection to the communities most affected.

In the course of my research, I was sometimes asked the highly pertinent question: to what extent does mining provide a cover for drug profiteering in, or indeed outside, Burma? It is relevant that, four years ago, Colombia's minister of mines ordered an investigation into all emerald export contracts following revelations that at least one mine had registered grossly inflated sales in the US, in order to justify sending millions of dollars from cocaine trafficking back into the country.<sup>1</sup> Unfortunately, this is one Burmese issue about which rumour is rife, but hard evidence seems almost totally lacking. What has been recently documented is an epidemic of HIV/AIDS among jade miners in Hpakant in Kachin State, northwest of the township of Myitkyina. These are mostly young male drug addicts who inject heroin while working at the minesite and then transfer it back to wives and partners when they return home.<sup>2</sup>

The report is divided into three chapters and five appendices. The first chapter deals with the history, and current (post-1994) state of mining and mineral-related legislation in Burma. The second and third chapters examine in some detail the operations of specific companies, including the large number of exploration projects which may, or may not become working mines. The fourth chapter examines the "Friedland empire", a brace of enterprises which includes the Monywa copper mine. This mine is not only the biggest of its kind in Burma, but is also mine promoter Robert Friedland's most important single investment. Appendix I briefly summarizes the impacts of copper mining and, in particular, the processing method used at Monywa. Appendix II looks at the consequences to social conditions of mineral development. Appendix III examines the heroin epidemic and the spread of AIDS/HIV in mining towns. Appendix IV is an interview with a former mining engineer. Appendix V summarises additional observations gleaned from discussions with Burmese miners.

I have set out here only a few of my own thoughts on the nature and timing of a pro-active Burma mining campaign. My prime aim has been to ensure that the campaign is well-informed, broad-based, and relevant to pro-Burma activists who otherwise may not regard mining as a priority issue. I hope the report will also be of use to democratic and ethnic organizations in Burma, as they look forward to the time when their territory is freed of the influences of the SLORC. Of major challenge for them will be determining the degree and the manner in which Burma should exploit its minerals; while establishing the rights of its citizens to do so without jeopardizing community values, other natural resources, and the biosphere.

The author gratefully acknowledges the help of David Arnott in providing documents and other material on which this research is based. The author is very grateful to Aaron James from the Canada Asia Pacific Resource Network for his comments and suggestions. Many thanks also to the Trade Union Research Bureau for invaluable assistance. The author is indebted to Eric Snider for assistance in providing corporate and other information on many of the companies cited in the index of companies in active in mining activities in Burma. The author takes full responsibility for any statement or opinion expressed in this report.

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# Chapter One

## Burma's Mining at the Crossroads



Vertical cuts, Hpakant gem mine, Kachin State (Photo: Images Asia)

*This chapter summarises the history of mining in Burma, the current availability of minerals, prospects for mining and the role of state enterprises and foreign companies. In particular it examines in detail the 1994 Mineral Law and its implications for current and future “good” social and environmental practice. It concludes that the Law is deficient in numerous respects.*

### **A brief history of mineral discovery**

Lead, silver, zinc, tin, tungsten and gems have been mined in Burma since the fifteenth century. These, and other minerals, are widely distributed throughout the country. In 1997 four areas of alluvial gem-quality diamonds were identified by the regime: Mohauk, in the Momeik area of the north east, Htantabin, east of Toungoo in east central Burma, and Kyaukmedaung (near Tavoy) and Theindaw in the south.<sup>3</sup> Sagaing Division (hosting copper, coal, gold, tin, tungsten and scheelite) is the location of the biggest state owned gold mine.<sup>4</sup>

**By mid 1998 oil and gas constituted the regime's biggest legal revenue earner - rivaled only by the lucrative illegal trade in heroin and other narcotics.**

Mandalay Division hosts rubies, sapphires, (especially in Mogok) other gemstones, gold, iron and barite. The Mogok area also produces a wide variety of industrial minerals and gems, including spinel, garnet, aquamarine, amethyst, citrine, zircon, moonstone and limestone.<sup>5</sup> Tenasserim (Tanintharyi) Division is the traditional tin-producing area of the country with tungsten, scheelite and alluvial diamonds also found at Theindaw.<sup>6</sup> Tin is also located offshore of the Gulf of Martaban. There is a high-grade manganese oxide deposit near Keng Tung, Shan State,<sup>7</sup> and the country's biggest antimony deposit lies near the Thai-Burma border around the Thabyu mine.<sup>8</sup> Kachin State is the site of a recently-located large iron ore deposit (at Kathaing Taung, near Hpakant) grading 50.54%.<sup>9</sup> The state hosts jade and coal and is also the site of an earlier lateritic nickel deposit, near Tagaung Taung mountain, along the Irrawaddy (Ayeyarwady) River 200 kilometres north of Mandalay.<sup>10</sup> Platinum has been discovered in the Indawgyi area.

Shan State has rubies, sapphires, lead, zinc, silver, copper, gold (in the Kalaw area) and coal. Barite is found in the Western Shan plateau, north of Pyinoolwin as well as in the southern Shan State south of Heho. Southern Shan is also the location of a zinc deposit at Long Keng, near the Thai border. The Department of Geological Survey and Mineral Exploration (DGSE) has defined a high-grade gypsum deposit in the area, recently upgraded.<sup>11</sup> Copper is mined in the north of Shan State, where at Namtu high quality gems are to be found. Recently, the world's largest ruby (weighing 21,450 carats) was located in Block 12 within the Mogok Stone Tract in May 1996.<sup>12</sup> Copper is also mined in Salingya township and coal in Salingyi and Kalewa in the Sagaing Division. Chin State has a nickel deposit near the Indian border.

## **Burma's mining potential and foreign interest**

The mining potential of Burma is difficult to assess. In 1990, less than 1 per cent of the country's GDP came from the mining sector, while agriculture accounted for more than 40%.<sup>13</sup> Within the next seven years, the regime certainly tried to boost the value of mineral production and,<sup>14</sup> according to the International Labour Organisation (ILO), by mid 1998 oil and gas constituted the regime's biggest legal revenue earner – rivaled only by the lucrative illegal trade in heroin and other narcotics.<sup>15</sup> During the last "Four Year Plan" (1992-1996), a claimed 21.1% increase in earnings was attributed to fees and charges on mining leases and rights, along with royalties and other taxes paid by mining companies.<sup>16</sup> Although 1997/98 showed modest increases over the previous two years in the output of silver and manganese dioxide, output fell in the case of every other mineral or metal; and plummeted with official diamond production, tin concentrates, wolfram concentrates and lead.<sup>17</sup> The advisor to the DGSE, M Than Htay, in 1998 concluded that the country's energy sector was operating only "fairly well" and production could not even meet internal fuel demand. Coal output remains relatively insignificant and actually dropped considerably in 1997/98.<sup>18</sup>

The administration still relies a great deal on antiquated geological data, much of it prepared by geologists who have now fled the country,<sup>19</sup> or on data which may not have been efficiently updated. In early 1998, for example, reserves at Monywa were estimated at 154.7 million tonnes grading 0.47% at a 0.15% cut-off. This was based on a "pit optimization" at Sebetaung, where ore reserve estimates were expanded by 60% after data gathered from a failed venture from the 1980s was considered.<sup>20</sup>

According to the Burmese military authorities, only just over half of the country (57%) had been geologically mapped on a one-inch-

to-the-mile basis by 1995. The following year the DGSE set out to “systematically” map mineral occurrences in four states: Kachin, Karen (Kayin), Kayah and Shan.<sup>21</sup> For fairly obvious reasons, it has been difficult to apply some of the newer techniques of prospecting and ore evaluation, not simply because of sensitivity to overflying and landing in remote areas, but also because the country has been at war with its own people. Consequently, many mineral-rich areas could not be investigated.<sup>22</sup> A significant proportion of the budget which might be available for prospecting and improvement of mine-related infrastructure is taken up by military expenditures.<sup>23</sup> The Asian Development Bank has also specifically noted Burma’s defectiveness in infrastructure – ports, utilities and in transport – all critical areas for large-scale mineral extraction, beneficiation and export.<sup>24</sup> It is only in the past three years that these specific problems seem to have been addressed: for example, in 1996, agreements concluded between Burma, Malaysia and Thailand on international gas pipe line projects,<sup>25</sup> and, in mid-1998, an agreement was reached with a Chinese company to supply equipment for the Paung Laung hydro power plant, aimed at increasing Burma’s total generating capacity by 30%.<sup>26</sup>

## Sanctions

Shortage of foreign exchange, combined with recent externally-imposed sanctions, by the state of Massachusetts, for example – has resulted in a severe limitation in the amount of machinery and spare parts imported for existing mines.<sup>27</sup> Private investment, though modestly increasing, is still very limited and centered on the “proving up” of deposits in zones already broadly favorable to, or located near existing mines (e.g. Monywa). Partly because of sanctions, but also because of industry perceptions of Burma as politically high-risk, with high levels of corruption and inad-

equated infrastructure and administrative capability, even the “neo-liberal” 1994 mining legislation (discussed later) failed to attract much major interest from outside. There have been three rounds of bidding from mining contracts, or blocks, since then (see table and maps at the end of this chapter.) The first round in 1994 was rated fairly successful by the regime, but the second round in 1996 resulted in only 13 overseas companies participating. Five firms were awarded a total of nine exploration blocks, for platinum group metals, copper, gold, and other base metals. There were no bidders for Block 5 (nickel and chromite) or Block 8 (lead-zinc).<sup>28</sup>

By the beginning of 1999, only nine foreign companies from seven countries allegedly had major investments in Burma, amounting to US\$30 million. A major US mining company, Newmont, pulled out of the country altogether following the US embargo on investment in Burma after it had signed a JV agreement with the regime in mid-1996 for the Kyaukpahto Area, Upper Burma. Only a sixth of this investment (US \$5 million) was in the mining sector, in the hands of four foreign companies.<sup>29</sup> However, the situation did improve slightly for the regime during last year: while some exploration projects were put on hold or relinquished, others were resumed, for example by East Asia Gold Corp of Spokane, Washington State, USA.

Although comparisons with other countries are approximate and speculative, it seems as if the state of mining activity in Burma at present stands somewhere between Venezuela and Malaysia. A country of considerable mineral potential, including oil, Venezuela has limited commercial mining, ambivalent mining legislation, important unofficial small-scale operations, and problems in the sell-off of state-owned concerns. By comparison, Ma-

**It has been difficult to apply some of the newer techniques of prospecting and ore evaluation, not simply because of sensitivity to overflying and landing in remote areas, but also because the country has been at war with its own people.**

laysia has a very wide range of prospective minerals, a national mineral policy, some fifty major exploration ventures, a well-established state mining company and few ambiguities regarding foreign participation.<sup>30</sup> This is not to say that Burma is lacking in realizable mineral potential; on the contrary, its overall geology and location in the Pacific Ring of Fire has long been considered highly favorable. Nor is it to deny that the Burmese regime has, since 1988, worked hard to attract capital, equipment and expertise from abroad.

### Perilous strategy

However, economic mineral potential must partly be assessed by comparison with the opportunity costs of similar enterprises elsewhere, particularly in neighbouring countries, as well as with available markets. It is significant that, at least until very recently, a large part of investment in the country's mineral enterprises has come from neighbouring countries – notably Thailand and China, which have compatible industries of their own to promote and expand. At first (and second) sight, it seems a perilous economic strategy on the part of the military regime (SLORC) to rely on putative competitors for critical new investment, or to become a cheap raw materials supplier to downstream processors located outside their own sphere of national interest where there is potential for transfer-pricing malpractice, misappropriation, and consequent loss of revenues. China has deepened its involvement with the SLORC, in particular, by financing a railway extension that relies on prison labour to improve roads and bridges,<sup>31</sup> and by committing US\$250 million to help build the country's biggest hydro power plant at Paung Laung.<sup>32</sup> While Beijing does not appear to have directly invested in mineral exploration or mining, the Chinese leadership is undoubtedly waiting for an opportunity to secure minerals from Burma, fol-

lowing its announcement in late 1997 that China's mineral (and energy) requirements would more than double by 2020.<sup>33</sup>

### The Japanese factor: rising or setting sun?

Nor should we underestimate the importance of Japanese investment – the only country which provides investors in Burma with political risk insurance against the possibilities of expropriation and currency inconvertibility.<sup>34</sup> It would however be simplistic to view Japanese markets as some kind of a saving grace for Burmese mining. Since the collapse of most domestic mines over the past twenty years (not unrelated to stricter environmental legislation),<sup>35</sup> Japanese industry has cast a very wide net over the Asia-Pacific region. All copper is imported, along with the vast majority of lead (94%) and zinc (83%).

Until the 1990s, Japanese sogo shoshas (trading companies) took hefty shares in huge overseas mines as captive sources of raw materials for the country's smelting and refining plants; Japan became the world's biggest single market for upstream production in the major minerals. However, vertical integration among some of the world's biggest mining enterprises has squeezed these opportunities for direct access to unprocessed raw materials. For many years, the largest Japanese investments were in "safe" countries with stable exchange rates and a well-established mining tradition (notably Chile, Australia and Canada).<sup>36</sup> Recent years have seen geographical diversification. On the one hand, this has spurred opportunistic involvement in some lesser developed countries as in Indonesia, or at Monywa in Burma. On the other hand, this diversification has stimulated increased Japanese recycling of metals and – especially under the whiplash of the recent domestic debt crisis – cost cutting, labour layoffs and plant

**Until very recently, a large part of inward investment in the country's mineral enterprises has come from neighbouring countries... which have compatible industries of their own to promote and expand.**

centralisation at home. It is conceivable that there will be no new major Japanese investment within Burma.

In a survey of 4,500 Japanese companies carried out in the middle of 1998, it was revealed that overseas investment would be slashed by 57% in fiscal year 1998, with only China seeing increased levels (18% as opposed to 17% in 1997).<sup>37</sup> Even if Burma were to consider establishing its own copper smelting industry, it would be competing directly with large new projects in the region, to which the Japanese are already committed – notably in Indonesia at Gresik, where a joint venture partner is Freeport; and in India, Australia, Canada and China.<sup>38</sup>

### The administration of mining in Burma

Despite the 1994 legislation, mining law in Burma is, practically-speaking, among the least developed, or sound, of any in the world. It still retains some of the elements of the post-World War II nationalisation policy, in which political control and state-oriented exploitation took precedence over most other factors (environmental, social justice, local ownership, regional economic cooperation), while now also attempting to win the hearts and pockets of overseas investors. For example, the State Economic Enterprises Law tries to preserve the fiction that certain precious metals and stones can only be mined and marketed through state-owned enterprises. But, under the new law, the government may also permit joint ventures with “any other person or economic organisation” if it chooses.<sup>39</sup>

There has undoubtedly been a marked shift away from reliance on state investment in mining, although it is difficult to detect what criteria are being used to assess this class of investment. In 1990, government investment supposedly stood at between 5.6 and 8.6% of

total annual budgetary expenditure. The discrepancy was attributed to “statistical differences” within the regime.<sup>40</sup> By 1996-97, it came to just over US \$11 million.<sup>41</sup> A year later, state investment in mining was virtually the same, US \$12.5 million. In comparison, some 37 foreign mining concerns had supposedly invested around US \$388 million by October 1998.<sup>42</sup>

### Expropriation

Following independence in 1948, the Burmese government set up three mineral regulatory bodies: *the Geological Department* (responsible for geological mapping); *the Mines and Explosives Department* (responsible for establishing mining laws and taxation policies); and *the Mineral Resources Development Corporation* (responsible for further exploitation of the country’s minerals). Joint venture companies were then established between the state and British companies to exploit or re-open mines at Namtu, Bawdwin, Mawchi, Heinda and Mogok.<sup>43</sup> After nationalization and the expropriation of foreign assets in 1962, separate corporations were formed to take charge of specific groups of minerals. These were:

No. 1 MINING ENTERPRISE (ME1), with oversight of non-ferrous metals (lead, zinc, copper, silver), and by-products, including antimonial lead, copper matte and nickel speiss.

No. 2 MINING ENTERPRISE (ME2), responsible for 21 items, including refined tin, wolfram concentrates, tin-wolfram-scheelite and tin-wolfram mixed concentrates, gold and other by-products associated with tin and tungsten minerals; also the exploration and production of tin-tungsten and gold. ME2 was also made responsible for the importation of machinery and equipment for these activities.<sup>44</sup>

**Mining law in Burma is, practically-speaking, among the least developed, or sound, of anywhere in the world.**

**Local communities must be able to determine what is likely to happen well in advance of any development.**

No.3 MINING ENTERPRISE (ME3), in charge of production of industrial minerals (barytes, gypsum, limestone, fire clay, talc powder, graphite, manganese dioxide, bentonite, calcium carbonate, red and yellow ochres, iron ore, sponge iron, pig iron, steel billets and coal), also the importation of coal and coke.

MYANMA GEMS ENTERPRISE (MGE), responsible for the mining of gems and jade, as well as processing and manufacturing finished gems, jade, pearls, silver and gold and merchandising them.

In addition, the Myanma Pearl Enterprise and Myanma Salt and Marine Chemical Enterprise corporations were established.

Although these enterprises exist today, the military regime soon turned its back on the state centralisation which they epitomised. Now its avowed policy is to “offer virgin lands for grass-roots exploration” and boost existing production, by attracting foreign investment.<sup>45</sup> In 1988, Burma’s mining legislation was changed to allow foreign ventures or individuals up to a 100% share in mining projects.<sup>46</sup> However, this arrangement was limited to exploration, exploitation, production and marketing of non-metallic industrial minerals, such as coal, limestone, gypsum, and marble.<sup>47</sup> The following year, joint ventures were allowed on a 49/51% basis. A barite mine joint venture between ME3 and ECI Minerals of Singapore was one of the first such arrangements.<sup>48</sup> Conflicting messages were being sent to foreign investors – hardly aided by the fact that the 1988 law was ambiguous in many instances,<sup>49</sup> with powers being redefined if they were “deemed in the best interest of the State”.<sup>50</sup>

## **UN complicity**

It seems quite extraordinary that the United Nations Center on Transnational Corporations (UNCTC) – effectively disbanded after the 1992 Rio Conference on the Environment, thanks to multinational pressures – should have helped draft Burma’s 1994 Mining Law. For, despite long-standing accusations that the UNCTC was actually a center to promote transnationals rather than to curb them, the United Nations has a reasonable though not unblemished reputation for assisting Southern governments to defend their corners against foreign enterprises. Twenty years ago, UN advisor Stephen Zorn helped draft Papua New Guinea’s mining code with its then-revolutionary concept of a resource rent tax, which put a flea in the ear of the world’s biggest mining conglomerate, RTZ (now Rio Tinto).<sup>51</sup> Not even a shadow of this concept can be found in Burma’s mining law. In fact, the discerning observer will find virtually little of substance in the legislation. For a start, the law is riven with vague definitions and loose distinctions. In particular, prospecting, exploration and production are ill-defined (in the space of only six lines); more important, the distinction between these activities is blurred by the fact that an “integrated permit can be issued covering all three stages”.<sup>52</sup>

However, it is extremely important to be able to distinguish between these stages of mineral exploitation, both from the point of view of regulation (taxation and permits), and for the communities involved. Local communities must be able to determine what is likely to happen well in advance of any development. The mining industry in general has a deplorable record of using prospecting permits to carry out exploration, and exploration permits to do what, effectively, is mining.<sup>53</sup> “Deep trenching” is an example of what can be a highly disruptive and ecologically damaging form of extraction, masquerading as exploration.



Work scene, Hpakant Mining District, Kachin State 1997  
(Photo: Burma Centrum Nederland)

The failure to firmly legislate these stages is mirrored in the very lax, indeed virtually meaningless, legal distinction made between large scale and small scale production. The first, we are told, “means commercial production of minerals which requires substantial investment and expenditure or special technical know-how and methods” while the latter means “commercial production of minerals which does not require etc...”.<sup>54</sup> The generally accepted cut-off between medium and small-scale production is yearly extraction of 50,000 tonnes of ore which at least has the merit of defining the practical and environmental implications of the operations. Trying to distinguish between small and large scale mining simply on the grounds of size of investment is like trying to tell the difference between a cat and the dog by virtue of the amount of food they eat. In fact, if we look at Chapter III

of the new Law (see below) not surprisingly we find a blatant tautology:

The Ministry shall determine the classification of large scale production, small scale production or subsistence production as defined in sub-section (k), (l) (m) of section 2.

The Red Queen told Alice in Wonderland that “a word means what I want it to mean”. She would have been at home on the bureaucratic benches in Rangoon!

### **Contradictory**

The avowed objectives of the Law also leave a great deal to be desired. While Paragraph (n) of Chapter I (Title and Definitions) recognises the value of upgrading or beneficiation of specific minerals (milled ores), Chapter II (Objec-

tives) doesn't; it simply refers to "an increase [in] export (*sic*) by producing more mineral products". Among the Objectives are also the curious behests:

"to carry out the development of, conservation (*sic*), utilisation and research works (*sic*), of mineral resources",<sup>55</sup> and "...to protect the environmental conservation works (*sic*) that may have detrimental effects (*sic*) due to mining operation (*sic*)".<sup>56</sup>

**As one of the more recent apologists for the regime has expressed it: "There are still no environmental laws in Myanmar."**

It is possible to infer what this might mean, namely that mining companies must not "high grade" deposits, or, in other words – cream off the higher value ore at the expense of generating a steady income and employment over a more substantial period of time; and that companies will be held responsible for failure to stabilise workings, site reclamation (seed overburden and waste piles), and rehabilitation of closed mines. However, this is not what the letter of the law says, and thus appears contradictory.<sup>57</sup>

Chapter III covers the application for and granting of permits. This section is simply an invitation to apply for a permit and little else. There is no reference to any kind of environmental/reclamation bond being posted by the mining company, or to a programme to independently monitor and audit social and environmental impacts (and publicly disseminate such regular reports) in either the mining or the post-closure phase of operations.

### Claims

As for "Duties" (Chapter IV), these cover – but only briefly – the payment of "dead rent" for land occupation and use, a security deposit or advance payment against fulfillment of the contract, and royalties to be paid in either local or foreign currency. The permit holder is then enjoined to observe "the rules prescribed under this Law" in respect of such matters as employment, working days, safety, welfare,

health, sanitation discipline, environmental conservation works and inspection by the Chief Inspector of Mines. However, some of the matters included in this inventory are actually not dealt with (so far as can be seen) in other rules or laws set out by the Mines authorities. For example, there seems to be no proper "prescribing of... wages, salaries and other fees (for workers)" nor the fixing of working days or safety, health, and welfare plans per se. It is as if a company is being encouraged to make their own prescriptions on these matters. One day the government may get around to devising its own – by which time considerable exploitation of workers will have already taken place and legal redress may be impossible i.e. by entertaining compensation claims within Burma by the workforce or its dependents. As well, changing existing contracts to favour real community returns and protection may prove extremely difficult.<sup>58</sup>

### And the environment?

No duty is imposed on the holder of the permit to carry out an environmental and social impact study or report, let alone is there any procedure laid down for the independent assessment of such reports, or their filing for public scrutiny or public hearings. As one of the more recent apologists for the regime has expressed it: "There are still no environmental laws in Myanmar". The regime has decided that operations will "prevent, or where prevention is not reasonably practical, mitigate and wherever possible remedy consequences adverse to the environment or to the health of the people directly effected (*sic*) by mining operations".<sup>59</sup>

Contracts signed between the government and mining companies simply replicate the rhetoric, without imposing any restrictions. For example, a model "Production Sharing Agreement" (PSA) between the Ministry of Mines, ME2, and a foreign partner intent on dredging for tin simply counsels to follow:



View of Hpakant gem mine and tailings pond, Kachin State (Photo: Images Asia)

“internationally accepted mining standards and engineering practice and... [taking] necessary precautions for protection of navigation, fishing and prevent avoidable and unnecessary pollution of the sea and river.”

Almost laughably, it includes the injunction:

“Contractor shall...clean bed rocks sufficiently and try not to leave tin ores behind”.<sup>60</sup>

### **Appropriation**

Chapter V covers the utilisation of land and water for mineral production. Once again, the term “production” is assumed to include exploration. Since this is not spelled out, it provides a glaring loophole for a company in-

involved in exploration to excuse any encroachment on communal or privately held land. Production is supposed to be carried out only after “agreement from the individual or organisation having the right of cultivation, right of possession, right of use and occupancy, beneficial enjoyment, right of succession or transfer of the said land”. In any case, if the state so decides, the land can be appropriated “in accordance with the existing law”, while public water (again it is not clear what the definition of “public” means) can also be sequestered by “permission” (presumably from the government) for company purposes, if its use is “really necessary”. Such false syllogisms would definitely delight the Red Queen – or mine operators who may feel themselves excused from introducing water recycling and flow control methods when the state hands out the aquatic resources of the nation.

However, regulations are evaded by the practice of the military regime which commonly confiscates land for commercial purposes without consent and in often brutal fashion.<sup>61</sup> The regime in turn compels these villagers to work as unpaid forced labour on the projects or extracts from them a quota of their output. Sometimes, lands are acquired through extortion of peasants who wish to avoid forced labour.<sup>62</sup> The regime defends this deplorable practice on the basis of “tradition” and two colonial era laws.<sup>63</sup>

Chapter VI deals with the royalty rates on different groups of minerals and metals and exemptions which may be applied at various times to “promote” production. This chapter is not exceptional.

The following chapter, number VII, is concerned with the designation of a Mineral Reserve Area. This provides the opportunity to affirm that the State owns all subsoil rights, including the continental shelf, thus nullifying the promise to observe the “rights of public (ownership and use) in Mineral Reserve Areas. Chapter VIII outlines the duties of the Chief Inspector of Mines, and allows her to assign the powers of inspector to any “suitable officer” in the Department, or delegate her own powers to the inspectors. While this may be standard procedure in certain circumstances, it seems to open the way for inexperienced, untrained, personnel (or those seeking a sinecure or bribe) to investigate major breaches of procedure or threats to people and the environment. There is no reference to any division of responsibility between the central government and the states, nor any duties of the inspectors to ensure that pollution prevention or other remedial works are carried out as agreed. The rest of the law relates to administrative action to secure compliance with the legislation, and penalties for violations.

There is nothing particular to note about these two chapters except that the penalties of up to seven years imprisonment for prospecting without a permit, for example, could be considered draconian, especially when applied against small-scale miners (so-called subsistence miners) who may be unaware of an existing corporate permit in their area of traditional exploitation. Indeed, the potential conflict between local and corporate miners, and disputes over prior ownership, seems scarcely recognised by those who drafted the 1994 Mining Law.

### **Small is beautiful?**

What is known about conditions at some small-scale “cooperative” run mines in Burma gives cause for concern; in particular where gem rushes have precipitated a form of ethnic cleansing of indigenous inhabitants, such as is reported to have recently occurred in the Mong Hsu area of Shan State.<sup>64</sup>

Burma’s most socially useful project could be in the methodical development of gem and jewelry manufacture. But, the problems posed by large-scale smuggling are entrenched. Attempts to centralise the financing and purchase of gem products elsewhere in Southeast Asia have recently depended upon drastic, if not draconian, measures such that when attempted in neighbouring countries (*viz.* Indonesia, Vietnam, Cambodia) they have only deepened inter-ethnic or regional conflicts. In 1997, the regime complained that although there was an alleged tremendous increase in gold, jade and gemstone production from small enterprises – only a small fraction of this actually found its way to the emporia sponsored by the Myanmar Gem Enterprise (MGE).<sup>65</sup> Indeed, MGE’s identified production actually plummeted. Nonetheless, there is now substantial improved practice in small-scale mineral extraction elsewhere, notably Zimbabwe;

several agencies, including those of the UN, offer advice and financing in developing the small-scale sector.

### **After 1994**

Following enactment of the new Mining Law, the regime instituted the first of three rounds of bids for prospecting and exploration for the various blocks in November 1994. Bidders are required to submit reports of their experience within similar areas of mining and mining activities over the preceding four years. Reports must also contain the financial and technical information of the company and a “minimum expenditure commitment” in US dollars per square kilometer for each stage of the cooperation.<sup>66</sup> Companies also have to promise to employ Burmese Institute of Mines personnel, at all stages of the operations “wherever possible” and “give particulars regarding their training”, an undertaking clearly falling short of a commitment to training. Under Annexure C, the general terms and conditions applied to the contractor, provision is made for prospecting to be completed within two years (previously one year) and at least 25% of the contracted area to be relinquished before the company proceeds to exploration; previously this was 50%. Within the next year, the company may withdraw altogether or conduct a feasibility study over one year, with a possible one-year extension. Again, there has to be relinquishment of a minimum of 25% of the contracted area within the following year.

On the signing of a joint venture agreement, the government (not the state per se) takes up not less than 50% of the share capital. However, in the case of the state-owned tin-tungsten joint ventures at Mawchi, Heinda, Kanbank, Hermyigy, Kyaukmedaung and Nanthilari (near Tavoy), the government’s share has recently dropped to 35%, with pri-

vate Burmese companies taking the remainder. Companies can apply for up to 25% of revenues per quarter in any year for cost recovery of previous expenditures. The development and production period for a mine is set at 15 years, in the case of joint ventures. All gold mined must be first offered to the government, based on a London Metal Exchange (LME) selling price. If the government does not offer to buy – the gold can then be sold on the market. The government has entitled itself to a minimum 15% free carried equity in the joint ventures, with the remainder of its share to be fully paid up by the company or paid by arrangement. If the operations proceed without the government having paid its agreed share, it shall still be entitled to full profits “as if it had paid up in full.” Income tax is set at 30%, with a three-year exemption from the commencement of production. The bidder is able to propose the rate of dead rent (minimum US \$15 per square kilometre at prospecting stage) while other license fees, and presumably taxes, are to be decided “by existing laws”.

In particular, it is the Union of Myanmar Foreign Investment Law of November 30, 1988 (MFIL) which defines “numerous incentives” for overseas participation, although, apart from the three-year tax break, these are all discretionary. Were they to be awarded all at once, such discretionary incentives would indeed make Burma one of the most attractive targets for investment, since they include the right to deduct Research and Development expenditures from assessable income; the right to carry forward losses for up to three years from the year the loss is sustained; exemption (or relief) from customs duty and other internal taxes on imported machinery, spare parts, etc.; and a 50% relief from income tax on profits accrued from exports; commercial tax on exports can also be exempted. The MFIL gives an “irrevocable guarantee” that enterprises will

**Were they to be awarded all at once, such discretionary incentives would indeed make Burma one of the most attractive targets for investment.**

not be nationalised during the permit period, and that profits can be repatriated after payment of the agreed domestic taxes.

### Seeking good practice

The new Mining Law and its annexures are extremely short on standards of good mining practice; procedures to ensure their implementation; or avenues for any public or individual recourse should practices fail. While prospective bidders are supposed to submit accounts of their previous experience and past performance of “similar work”, the work itself is not defined. So, it might be possible for a company with an apparently unblemished record in quarrying in Europe or Thailand to submit a bid for an iron ore project – without any experience of hard rock metallic mining. In any case, it seems clear that the regulations are not intended to identify companies with poor social or environmental records elsewhere, only to guarantee that they will keep to the narrow margins of their technical and financial undertaking. The concept of a “bad actor law” such as exists in several states in the USA – seems to have no place in current thinking within the Burmese regime. Under the 1994 regulations no attempt was made to define obligations during prospecting and exploration. This defect has been partially remedied in the current regulations.<sup>67</sup> However, the language is once again vague to the point of being worthless. References to “observing good prospecting and exploration practices” mean little while the demand to “compensate legitimate land uses (*sic*) for any disturbance or damage” rests on variable definitions of “legitimate”, “users”, “disturbance” and “damage”. At the same time, procedures for claiming compensation, or evaluating claims, are not to be found.

### Deplorable failure

In summary, the updated 1994 regulations and the Mining Law itself reveal a deplorable failure of the regime and its advisors in the following respects:

- to espouse existing good (let alone best) mining practices
- to take account of the potential or actual conflict between other land use (and users or claimants) and the demands of mining
- to consider and legislate for the liabilities which mining companies should bear in the event of failure or disaster (including the posting of environmental bonds adequate to cover worst case scenarios, in escrow and in fully convertible currency).

The Mining Law and its annexures appear not to have been properly proofread, despite the supposed input of the United Nations. There is, for example, a risible typographical error in Chapter VII of the Law in paragraph 23, where we are told that:

“all naturally occurring minerals found...under the oil (*sic*) shall be deemed to be owned by the state”.

To date, attempts to equitably promote, protect, democratise and make safer the overall mining environment in Burma have not been seriously been made.

**It seems clear that the regulations are not intended to identify companies with poor social or environmental records elsewhere.**

**Table 1: Bidding Rounds for Exploration Rights in Burma, 1994, 1996, and 1997**

Block Number	Location	Company
<b>First Round</b>		
1	Indawgyi	Not Taken
2	Wuntho	Myanmar First Dynasty
3-5	Wuntho	Ivanhoe Myanmar
6	Monywa-Kazi	Ivanhoe Myanmar
7	Monywa-Salingyi	Ivanhoe Myanmar
8	Pupa	Pacific Arc
9	Pyismans	Panorama Resources
10-11	Mandalay-Kyaukse	Myanmar First Dynasty
12	Kwinthones	Not Taken
13	Kwinthones	Pacific Arc
14	Thabeikkyin	East Asia Gold Corp.
15	Mabein	Sun Cheong Exploration
16	Mabein (North)	Not Taken
<b>Second Round</b>		
1	Indawgyi	Antina Time Square (taken over by Leeward Tiger Co.)
2	Shwegu	East Asia Gold
3	Sinchan	East Asia Gold
4	Mabein (North)	East Asia Gold
5	Chin (Mwe Taung)	Not Taken
6	Yadanatheingyi	Mandalay Mining
7	Kyaukse	Mandalay Mining
8	Lawksawk	Not Taken
9	Pindaya	Asia Investment Ltd
10	Paung Daw	Ivanhoe Myanmar Holdings
11	Leymyetha	Antina Time Square (taken over by Leeward Tiger Co.)
<b>Third Round</b>		
1	Kyaukse-Mansi	Not Taken
2	Namra-Kangen	Not Taken
3	Katha-Indaw	Not Taken
4	Namsen	Not Taken
5	Natunlaung	Not Taken
6	Sinbo Nankesar	Linnong Jin Di Ltd
7	Bhamo-Myothat	Yunnan Construction Co
8	Mabein (North)	Not Taken
9	Chin (Mwe Taung)	Not Taken
10	Kanpetet	Not Taken
11	Lawksawk	Not Taken
12	Myasty Taung	Ivanhoe Myanmar Holdings
13	Meyongyi Meyongale	Palmer Resources Ltd.

Source: Mining Journal, 06/8/99

## Location of small & large scale mines in Burma

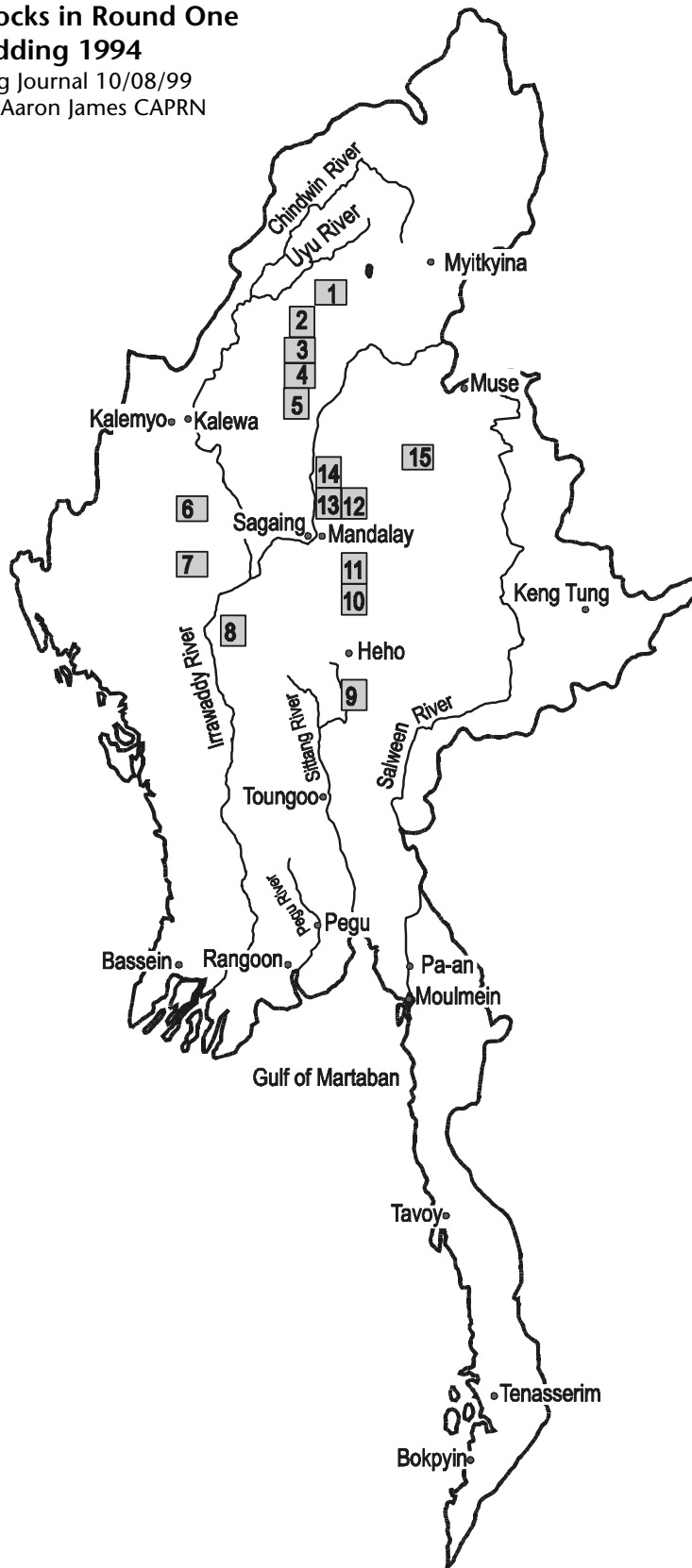
Source: Report Text, UN ESCAP 1996. Atlas of Mineral Resources of the ESCAP Region, Vol. 12 New York. UN. and various other sources.

Map produced by Aaron James CAPRN.



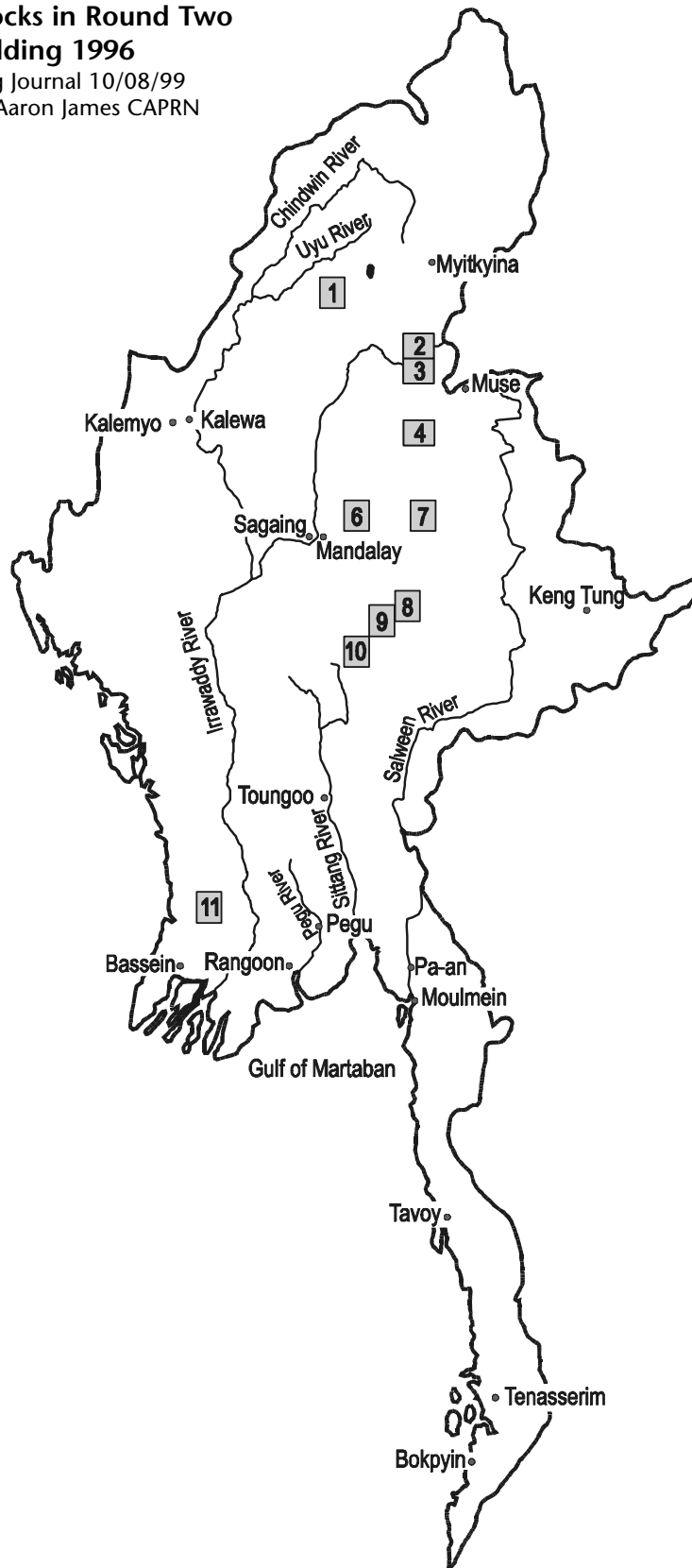
# Exploration Blocks in Round One of Contract Bidding 1994

Source: The Mining Journal 10/08/99  
Map produced by Aaron James CAPRN



## Exploration Blocks in Round Two of Contract Bidding 1996

Source: The Mining Journal 10/08/99  
Map produced by Aaron James CAPRN



# Chapter Two

## Summary Evaluation of Mining Companies in Burma

*“When we own any financial instrument what we basically own is an opinion. That opinion is a price. Think of the stock market as an endless Gallup poll.”<sup>68</sup>*

Each working day, in packed halls at the centre of a growing number of cities, men (rarely women) can be found shouting curt messages and pointing frantically at each other, their words and gestures appearing incomprehensible to the rest of humanity. Combinations of dizzying digits, displayed on screens and boards, change with bewildering rapidity as these participants in the “Great Game” stand to gain or lose fortunes in seconds. These are players on the Stock Exchange.

In order to bankroll new mines or expansion projects, big mining companies rely largely on cash flow and debt financing (loans) provided by banks and investment institutions, or through share issues to existing stockholders.<sup>69</sup> In 1997, nearly six billion dollars worth of capital was raised in this fashion, plus another US \$930 million on the international bond market.<sup>70</sup>

However, the past decade has also seen an eruption of venture capital generated both “across the counter”,<sup>71</sup> and on virtually unregulated stock exchanges by “juniors”. This in turn has significantly determined the nature and location of mineral exploration in the South, as well as raising crucial questions about its impacts. Burma is no exception. Although several mining companies currently operating in the country are from within the region (notably Thailand), the most important

foreign interest has been shown by Canadian and Australian juniors. At the head of these is a small brace of outfits controlled by Robert Friedland: his holding company Ivanhoe Capital Corporation (ICC) and two companies interlocked with ICC, Indochina Goldfields Ltd (IGL – now Ivanhoe Mining Ltd.) and First Dynasty.

Friedland occupies a privileged, if controversial, space between investment banks which are normally only attracted to well-established, listed companies, and the private investors and mutual funds which have powered the rise of the junior companies. In the case of the Monywa project, he not only managed to attract the interest of high-profile product purchasing partners Sumitomo and Marubeni, but also a range of brokerage and venture capital funds, including First Marathon and Nesbitt Burns, as well as a public flotation which secured enormous windfalls.<sup>72</sup>

Beyond the venture capital stage, the key mechanisms for this remarkable movement of monies are Canadian stock exchanges. Even if Robert Friedland were not around,<sup>73</sup> Burma may well be the recipient of more approaches by Canadian juniors in the near future. This chapter therefore looks at the phenomenon more closely and asks whether recent avowed attempts to improve regulation on Canada’s stock exchanges, specifically Toronto’s, will actually improve the accountability of such companies – not only to investors and governments, but most importantly to local communities. The conclusion is “No”.

The following chapter profiles the main companies with current or recent involvement in Burma's mining and exploration. The information is sometimes sparse, largely because adequate objective information on many of these players just doesn't exist. This lack of information is one of the worst aspects of the junior venture phenomenon. More data is available on the well-established investors, primarily Japanese, and some of this is provided here.<sup>74</sup>

### Codes of (Mis) Conduct

In 1997, the world's most powerful mining company, Britain's Rio Tinto, announced that it would not invest in Burma on "human rights" grounds: a position, so it maintains, which shows that it bases its investment and operational decisions on specific principles. Yet, this same company continues to rake in large profits from its joint venture with the US company Freeport McMoran in Papua (formerly West Papua or Irian Jaya). The production-sharing contract Rio Tinto signed with Freeport in early 1995 directly benefited the Suharto regime in Indonesia – an oligarchical administration that bears comparison in several respects (militarisation, corruption, and nepotism) with the Burmese military regime. Further, Rio Tinto committed itself to expanding a copper and gold complex which had, for more than twenty years, trespassed on and violated the land and resources of West Papua's indigenous communities. Rio Tinto's "code of practice" appears to be applied in variable ways.<sup>75</sup>

In the past four years, an increasing amount of faith has been invested by some NGOs in the drawing-up of "codes of conduct" for "natural resource extraction" companies. These range from a simple one-page statement emanating from the Asia-Pacific Mining Conference, held in 1996 in Canada – to a docu-

ment of principles drafted by various Australian NGOs in 1998, which rather perplexingly states from the outset that it is *not* a code of conduct.

There is growing skepticism about whether such codes are either relevant in many situations, or enforceable in states such as Burma which are being encouraged to change their old (usually protectionist) mining investment rules. These states are essentially responding not to better environmental, human rights and social/labour standards set elsewhere – but to the need for foreign investment, and to meet structural adjustment criteria set by multilateral institutions. Where infrastructure and power supply is poor, social/ethnic conflicts with government are endemic and small-scale, and localised mineral output stands in competition to the claims of bigger companies – the tendency in any administration will be to favour privatisation and increased investment over protection of its own internal trade or local community interests.

This author maintains that there is little evidence that even the larger, publicly well-exposed multinational companies are really intent on improving standards across the board. As Australian experience has shown, mining companies will often try for as long as possible to fence off their critics by coming up with their own limited criteria and system of auditing, rather than submit to being overseen by an empowered national or international body.<sup>76</sup> It is therefore naive to expect that junior companies, which are at the forefront of mineral-related exploitation of Burma, will take more notice of increasingly stringent standards which may be set elsewhere, let alone have the capacity to introduce innovations which reduce resource consumption or pollution.<sup>77</sup>



Heavy duty equipment working at Hpakant gem mine, Kachin State  
(Credit: Images Asia)

What these juniors will take notice of are restrictions laid down by strong administrations, thorough monitoring by mine inspectors, and local communities empowered to do their own impact monitoring. In this respect, these companies are more susceptible to pressure than the multinationals. It is precisely because these factors do not operate in many countries, such as Burma, that many of these junior outfits locate there in the first place.

### **Where the money blows: Canada's central role**

In 1997, 40% of all global mine finance was raised on Canadian stock exchanges, of which the Toronto Stock Exchange (TSE) accounted for more than one third of the world total (Cdn \$4 billion). Funds were also raised in over-the-counter, or unlisted, deals for which the Canadian Dealing Network required no "prop-

erty standard" (i.e. three-dimensional evaluation of a given deposit) whatsoever.<sup>78</sup> For our purposes, it is the dealings on the stock exchanges which are most significant.

Over 300 of the 1,450 TSE listed companies are mining outfits, trading more than Cdn \$69 billion all-told in 1997. By 1993, companies listed on the TSE represented more than half the global equity market capitalisation in gold – a total of US \$50,000 million.<sup>79</sup> Since 1973, Canada's share of world mining equities (shareholdings) has climbed from 16% to 25%.<sup>80</sup> Moreover, Canadian companies with more than Cdn \$3 million in their annual exploration budgets are estimated to control 35% of exploration expenditures world-wide. In 1998, just over half of global mining finance was raised on Canada's stock exchanges, about 80% of this on the TSE alone.<sup>81</sup>

The Vancouver Stock Exchange (VSE) is proportionately even more heavily loaded with mining equities with 60% of its total, comprising 861 corporate listings at the end of 1997. A fifth of all global mining exploration capital was being raised on the VSE by 1997 – primarily for Latin America, but with South East Asia coming a close second.<sup>82</sup> Alberta's Stock Exchange (ASE) also had a significant 17% of its total registry in mining.

For the past ten years, criticism of the activities of Canadian stock exchanges has escalated from rumbles of discontent to clamors for radical change. The VSE has come in for particular condemnation: in 1994, one business commentator dubbed it “the Sodom and Gomorrah of modern day financial markets.”<sup>83</sup> Then, in the spring of 1997 came the “Bre-X scandal”. A junior company called Bre-X had built up an extraordinary equity position, first on the ASE and then the TSE, after boasting discovery of the world's biggest untapped gold deposit in East Kalimantan, Indonesia. When its drilling results were proven to have been massively faked,<sup>84</sup> Bre-X spectacularly crashed, amid claims that some directors and Canadian investment houses had walked off with huge gains while more pedestrian investors lost their entire investments en masse. Confidence in junior companies was severely shaken as public demands for proper corroboration of corporate claims began to grow.

In 1998, an official Canadian Mining Standards Taskforce made numerous recommendations to improve operating standards of the country's stock exchanges.<sup>85</sup> The Toronto Stock Exchange became Canada's senior stock exchange, and the ASE and VSE were merged into a new national exchange for junior companies.<sup>86</sup> Minor tightening of VSE rules occurred in the eighteen months after the release of the Taskforce's report, but most criticism was focused on the TSE. After all, this exchange is

considered the graduate school for juniors making the grade out of the VSE, and it is the biggest single source of mineral and exploration finance capital in North America. It is therefore worrying that between January 1996 and mid-1998 only 26 mining companies actually did make it from the VSE to the TSE.

## Cosmetics

In mid-1998, in response to the aftershock of Bre-X, the Toronto Stock Exchange introduced a new set of rules – supposedly to curb such crimes and excesses as seen with the Bre-X debacle. According to *The Toronto Globe and Mail* columnist Andrew Willis, the changes were “pretty weak tea on first reading”.<sup>87</sup> Following this minor reform, a company must have a minimum working capital of \$3-million, up from a previous floor of \$2-million, and assets of \$4-million. No threshold on assets had existed in the past. In addition, a company must file detailed plans on how it will fund the development of projects over the succeeding 18 months. Ironically, these new standards would not have halted Bre-X.<sup>88</sup>

The new TSE rules do increase the responsibilities of those who bring junior mining companies to market – usually the investment dealers. Underwriters now have to sign both the junior company's 18-month projections and its press releases. Dealers also have to back property agreements and the management's technical expertise, and sponsors will be expected to have visited the mine prospect itself. However, said Willis: “These rules won't stifle activity in one of the few market segments where Canada can claim global leadership. That's a fair trade for the TSE”.<sup>89</sup> The following year, the chair of the TSE itself made the disturbing observation that around 800 of the exchange's 1,400 listed companies “would not meet the listing requirements of Nasdaq or the New York Stock Exchange”.<sup>90</sup>

## Why Canada?

Canada's unique position in mining investment derives from several factors:

1) Canada has played an historical role as a source of mining expertise and finance. Around 100 professional mining analysts are based in the country, by far, the greatest agglomeration of such analysts in the world. They boost the fortunes of Canada's mining companies and, in so doing, often boost their own fortunes too. This has often been done without proper analysis of technical data, let alone any recognition of potential human rights or environmental abuses. The boost to Robert Friedland's Indochina Goldfields from 1994 onwards was certainly assisted by hype which the company obtained from numerous "professional" industry newsletters. Three editors of these, James Blanchard, Bob Bishop and Adrian Day, allegedly got cheap stock in IGL in a 1994 private placement, the value of which quickly rose twelve-fold.<sup>91</sup>

While new rules may curb the most excessive and unfounded speculation about a company's reserves or financial viability, they remain silent on the compelling need for thorough investigation of a company's social and environmental impacts.

Although national papers like *The Toronto Globe and Mail* and Canadian TV programmes like *The Fifth Estate* critically covered the Omai mine disaster in Guyana in 1995 when a tailings dam broke its banks, sending millions of gallons of contaminating wastes into the country's main river, the Essequibo, much of this coverage was too little and came too late.<sup>92</sup> Almost with a single voice, the Quebec press rushed to defend Omai's operating company, Cambior, which was listed on the Montreal Stock Exchange (MSE), and downplayed critical comment on the activities of Quebec-based juniors. In 1997, as human rights groups in

the Philippines accused another Canadian TSE-listed junior, TVI, of torturing Subanen villagers in Mindanao, the Canadian press remained silent.<sup>93</sup>

2) Although the juniors are largely unable to raise capital from the big investment banks, they have been spectacularly successful in tapping venture capital and pension, mutual and insurance funds.<sup>94</sup> The country's three largest pension plans accounted for Cdn \$136 billion in assets at the end of 1997. A large proportion of Canadians, around 37% of the adult population that year, invest in equities directly through brokerage firms, a substantial amount of which goes into mining.

3) There are more mining company head offices, both junior and senior, in Toronto than anywhere else in the world. Their personnel are drawn from the ranks of geologists, engineers, and executives looking for jobs as bigger companies reduced their undertakings or merged during the 1970's and 1980's.<sup>95</sup> A roster of these junior boards reads like the guest-list at the Canadian Mining Association's Annual Ball.

Until the Omai disaster in 1995, few conscientious Canadians were aware of the lack of control exercised over these companies. But, as the legal threat by Guyanese citizens to sue Cambior on Canadian soil seemed to recede into the distance during 1996 (this suit was finally dismissed in 1999), so did criticisms of Canada's role as a vast and often dirty laundry for venture capital.

It is not hard to see why Canada's stock exchanges may never be able to regulate the industry on which they themselves are so dependent. Any code of conduct based on moral or human rights criteria would sound a knell of doom. Any expectation that bigger companies, ostensibly more responsive to institutional shareholders and public opinion, will

**Until the Omai disaster in 1995, few conscientious Canadians were aware of the lack of control exercised over these companies.**

somehow curb the excesses of their junior colleagues is naive. It is, in many instances, precisely the majors who encourage and court the juniors as outfits that can deliver what – or where – they cannot, sometimes for political reasons. An obvious illustration of this is the fact that Canadian-financed companies operate – and are now expanding – with impunity in Burma, despite mild Canadian embargoes on government investment,<sup>96</sup> or demands from the ILO and other human rights organisations. Meanwhile higher-profile “natural resource” companies like Newmont and Arco have been forced to withdraw, or been discouraged from investing, for the time being.

### **Tailings between our legs**

It is a glaring fact that no less than three of the four most serious mine tailing dam catastrophes in the past five years can be laid at the door of Canadian companies.<sup>97</sup> It is also sobering to realise that all but one of these companies (Golden Star) were actually juniors: they were all held to be well-established companies with responsible management.

So, despite the gloss, Canada today still constitutes a kind of wild north – comparable to that of the mining camps of its past – except that the reach of these companies is now global, and the consequences of failure and disaster can be much more serious.

### **Australia**

As the index which follows in the next chapter demonstrates – the junior phenomenon is not restricted to Canada. Almost as many such companies recently involved in Burma are registered in Australia, a country which has also had its fair share of stock exchange scandals – in particular the “salting” of mineral samples revealed in the 1980s.<sup>98</sup>

# Chapter Three

## Index of Mining Corporations



Campsite at Hpakant gem mine, Kachin State  
(Photo: Burma Centrum Nederland)

The following companies listed in this index were active in Burma at some point between 1995 and the present, judged on data from the Burma Ministry of Mines and contemporary mining industry sources.

Several Burmese national or state (provincial) registered companies are included, but the activities of the state-owned mining enterprises (ME1, ME2, and ME3) and Myanmar Gem Enterprises (MGE) are mentioned primarily in the context of their joint ventures (JVs) with overseas firms.<sup>99</sup> All outsider applications to explore or mine in Burma have to be made through these Mining Enterprises (ME's): to

ME1 for lead, zinc and copper; to ME2 for gold and tin-tungsten; to ME3 for coal and industrial minerals; and, for jade and gemstones, to MGE.

Some of these companies have ostensibly withdrawn from the country, and others have suspended operations. The reasons for this are usually the fact of disappointing drilling and assay results, but also in some cases, a lack of external capital to carry work forward. At least one outfit, Tiger International Resources, pulled out in late 1997 because it had encountered "increasing political...problems in Burma". Along with Newmont, which also

withdrew soon afterwards, Tiger is one of the few US mining companies to have demonstrated a readiness to enter Burma, under the auspices of the regime.

Whether recent or current, it is important both to note such corporate complicity with the SLORC regime, and that most companies listed here retain a commitment to exploiting Burma's resources. Hopefully, such data will be of use to a future democratically-elected government, when it comes to deciding what reliance to place on specific foreign (and domestic) companies which may bid for exploration or mining concessions. The legal concept of refusing government contracts to a "bad actor" (a corporate body which has been proven responsible for unacceptable past practices) is so far current primarily in the US. Nonetheless, other governments have placed prohibitions on specific companies for their misdeeds; India, in the case of Union Carbide, after the 1985 Bhopal holocaust, for example. Following the Marcopper "blow out" in 1996, the Philippine government threatened Placer Dome that it would not be granted further concessions in the country, although it later went back on this decree.

## Ratings

To assist the "vetting" of companies recently active in Burma, these profiles include summaries of corporate social and environmental records (where information is available) and a corresponding rating, created by the author:

- \* company has a fair reputation for its social and environmental practices
- \*\* gives some cause for concern
- \*\*\* gives special cause for concern
- \*\*\*\* company has a very poor record or reputation for its social and environmental practices
- no symbols – author unable to comment due to lack of data

## Mining Companies Active in Burma

AMALG RESOURCES NL (Australia)

In 1997 this company was discussing a possible junior venture with ME 2 for the Phayuang Taung gold mine (*see Sum Cheung*)

AMDAHL CORP

*See Diversified Mineral Resources*

\*\*\*ANGLO AMERICAN CORPORATION  
(Britain and South Africa)

*See Minorco Services and LMJV*

ASIA INVESTMENT [1995] CO

In some sources, it is called Asia Investors. This is a joint venture between City Realty and Thailand's Padaeng Industry Co (holding 20%) which signed an agreement with the Burma Ministry of Mines in September 1996 to explore 1,400 square kilometres of northern Burma for zinc and copper (Block 9, second round) in order to feed the Thai company's Tak smelter in the country's north-east.<sup>100</sup> However, in July 1997 Padaeng announced that it would cease its own exploration in Burma, Laos and Vietnam after forming a strategic alliance with Western Metals of Australia, which may itself include Burma.<sup>101</sup>

ATINA TIME SQUARE (Thailand)

Like Ivanhoe Myanmar Holdings, ATS, previously misnamed by some sources as Asian Times Square, won blocks in the first and second round (blocks 1 and 11) of Burma's contract bidding. It bid for Block 10 in the 1997 third round of bidding (3/10), but did not sign on.<sup>102</sup> It also appears to have transferred Block 11 to Minorco (q.v.).

AUSTRALIAN KIMBERLEY DIAMONDS  
(Australia)

Although trying to acquire prospects in 1997,<sup>103</sup> it does not appear to have proceeded further and by 1999 had no known interests in Burma.

AUSTRALIA-MYANMAR GROUP PTY LTD  
(Perth, Australia)

Reportedly interested in 1997 in exploring for diamonds in the Thiendaw area.<sup>104</sup>

AYEYAWADY MYITPHYA CO. (China)

This Chinese company, registered in Burma, signed an agreement last November with ME3 to study the Lweje coal deposit at Momauk township in southern Kachin state, near the Chinese border.<sup>105</sup>

\*\*\* BROKEN HILL PROPRIETARY (Australia)

Historically, Broken Hill Proprietary (BHP) has been Australia's largest mining conglomerate. Broken Hill has received criticism for allegedly disregarding aboriginal rights at home,<sup>106</sup> and elsewhere, for example, through its DiaMet diamond joint venture in Canada's North West Territories.<sup>107</sup> In the late '80s and early '90s it became the target of criticism, both inside and outside Australia, for its connections with the two most notorious regimes in the Asia-Pacific region: Indonesia, where it was the chief beneficiary of the Timor Gap treaty on oil and gas reserves in the Timor sea, signed between Australia and the Suharto clique; and Burma. In 1999, as profits fell, it announced the abandonment of its interests in the Timor Gap. In 1998, the company had leased out its stake in the Tennaserim (Tanintharyi) coalfield in Burma, to PT Austindo (q.v.), perhaps because of flak from pro-democracy activists.

Broken Hill recently confronted the impacts of its biggest single mine project, Ok Tedi copper-gold, in the highlands of Papua New Guinea. Following a 1996 settlement of a damages action brought by landowners living downstream of the mine, the company commissioned a survey of options for dealing with the massive contamination, caused by millions of tonnes of tailings dumped directly into the Ok Tedi-Fly river system. BHP has reportedly admitted that its mining operation caused serious damage in this instance.<sup>108</sup>

\*\*CHIYODA (Japan)

A leading Japanese engineering construction company which is also a shareholder in Tomen Corp (Sushiki Kaisha Tomen), Chiyoda is one of the country's leading sogo shoshas, which has major interests in mineral mining and imports, especially coal and iron. Chiyoda Corporation first announced an intention to explore in Burma in early 1996.<sup>109</sup> It was brought on board in 1997 by Friedland, along with Marubeni (q.v.) to design and construct the ore crushing, conveying and heap-leach facilities at Monywa (see Ivanhoe Myanmar Holdings below), as well as construct the mine's SE-EW plant. Two years later, the company contributed financing to the exploitation of the Letpadaung Taung reserves at Monywa.<sup>110</sup> See also Ivanhoe Myanmar (below).

CITY REALTY

*See Asia Investments*

\* CMPS&F (Australia)

This Brisbane, Australia-based engineering firm was commissioned by Indochina Goldfields to construct the initial phase of the Monywa Copper project (the Sabetaung-Kyisintaung deposits). In 1994, CMPS&F received the major Award of Merit in the (Australian) Awards of Engineering Excellence for its construction of an SE-EW plant in New South Wales.<sup>111</sup>

CORNERSTONE RESOURCES (Australia)

According to *The New Light of Burma*, the official organ of the Burmese military regime, in October 1999 this junior signed a profit-sharing contract with ME1 to produce zinc metal from Shan State's Long Keng region.<sup>112</sup>

CSA (Ireland)

Consultants to International Panorama Resources Corp. of Vancouver (q.v.) during that company's abortive exploration of the Shan Scarpo fault (Pyinana region) in 1995-6.

\*\*\*DAEWOO (South Korea)

For many years, Henry Kissinger, the former US Secretary of State, has acted as a consultant for Freeport-McMoran, the huge US mining and oil company – of which he is also a director. In the late 1980's, following the 1988 SLORC crushing of Burmese democracy, Kissinger tried to put together a deal between Freeport and Daewoo to exploit Burma's natural resources, but it failed to materialise.<sup>113</sup>

Daewoo had to wait another few years before it gained a foothold in Burma, when it became a finance provider for the Monywa copper project.<sup>114</sup> However, the company faced collapse in late 1999, after major discrepancies were discovered between its official debt position and actual cash transactions. In December 1999, South Korean financial regulators opened an enquiry into the operations of an alleged US \$7.3 billion secret fund, based in London, which supported Daewoo's overseas operations over an eighteen-month period, and possibly included the Monywa mine.<sup>115</sup> At the end of January 2000, the company's domestic creditors took over the company, and were negotiating an agreement with foreign debtors (which includes Chase Manhattan Bank, HSBC Holdings and the Bank of Tokyo-Mitsubishi) after about 60% of Daewoo's debts had been written off.<sup>116</sup>

DIVERSIFIED MINERAL RESOURCES LTD (DMR) (Sydney, Australia)

A subsidiary of Amdahl Corporation of the USA and, in 1996, a 50% owner of Mandalay Mining Company, NL (q.v.).

\*\*EAST ASIA GOLD CORP (EAGC) (Spokane, USA)

Based in Spokane, Washington, USA, this company announced in March 1998 that it had discovered a "new gold target" on its Block 14 concession at Subok Taung, in western Shan State, located seven kilometres south-west of its Bawdwin copper project. The Block 14 con-

cession has "significant" gold in nine streams, draining the chiefly rhyolite deposit.<sup>117</sup> Its initial contract for this prospect situated at Thabeikkyin township had been signed in 1995,<sup>118</sup> with a duration of three years and a possible two-year extension.<sup>119</sup> A year later EAGC claimed that fieldwork had identified the so-called Shante Gold Belt,<sup>120</sup> with more than one million ounces of gold in just one target area, at Taungkantlant.<sup>121</sup> During that year, the company also signed up for Blocks 2 and 3 in Kachin State (gold and copper) and Block 4 in Northern Shan State.

The company said in 1998 that results from Blocks 1/12, 2/2, 2/3 and 2/4 were unspectacular. Although it was continuing investigation, especially at Bwettaw and Wetthe, EAGC relinquished Blocks 2/2 and 2/3 in March 1998, but announced further exploration in Block 2/4 in the Yanbo-Kandaw area, which it considered most prospective. Like Pacific Arc Exploration (q.v.), it also asked for permission to stop work for six months in Blocks 1/14 and 2/4 after April 1st that year.

In 1999, after a six-month suspension of operations (until March that year), EAGC decided to resume exploration on Block 1/14, since it had located three copper porphyry deposits at Sadwin, Kodan and Saladokhta. As well, its Block 2/4 (Mabein north area) had yielded possible gold and copper deposits in a 50 km<sup>2</sup> zone.<sup>122</sup> EAGC also acquired interests in two mineral prospects in Katanga province, Democratic Republic of Congo, in late 1998.<sup>123</sup>

FIRST DYNASTY MINES LTD (Singapore and Vancouver)

*See Myanmar First Dynasty*

\*\*\*\* FREEPORT-McMORAN (USA)

In 1995 Freeport-McMoran became part-owned (14%) by Rio Tinto. Together the two companies control the Grasberg mine in Papua (formerly West Papua/Irian Jaya), the largest gold and third largest copper producer on earth. This mine is one of the most criticised

of any in the world, having exploited the land and rivers and gained a reputation of disregard for human rights in allegedly risking the lives and health of indigenous Papuans for a quarter of a century. It dumps some 220,000 tonnes of untreated tailings per day into the Ajkwa river system.<sup>124</sup> Until the fall of Suharto in 1998, this region comprised (after East Timor) the second most heavily militarised area under Indonesian military hegemony.

Freeport has also been condemned for its pollutive operations on home ground in Louisiana. During 1999, it was the subject of widespread village protests in north-central Sri Lanka, where it is attempting to open up a huge phosphate deposit at Eppawala.<sup>125</sup>

In the late 1980's, guided by Henry Kissinger (a Freeport director), the company tried to negotiate entry into Burma, along with Daewoo (q.v.).

#### HAW SENG MINING (Burma)

A Burmese company, Haw Seng signed a 1996 JV agreement with ME1 for lead-zinc mining in Nam Lo/Nam Hmwe area in Muse township and Kohmann, Kutkhai township, northeast Burma.<sup>126</sup>

#### HOLY S PIN CO LTD (Kachin State, Burma)

Also a Burmese company, Holy S Pin signed a profit-sharing contract with ME2 in January 1997 to produce gold from the confluence of the Malikha and Maykha rivers in Kachin State, 64 kilometres north of Myitkyina.<sup>127</sup>

#### \*\* HOMESTAKE MINING (USA)

This is the legendary US gold producer whose fortunes were aided in part through the takeover of Lakota (Sioux) land and gold from the Black Hills (the sacred Paha Sapa) of Dakota in the nineteenth century.<sup>128</sup> It owns Homestake Canada, which in turn controls around 51% of the share capital of Prime Resources Group Inc (q.v.).

#### \*\*\*INDOCHINA GOLDFIELDS

(Vancouver, Canada)

Robert Friedland formed Indochina Goldfields, Ltd. (IGL on the VSE) in 1993 to “develop an early dominant position in gold mining in Indochina and Southeast Asia”. Its first explorations were in Vietnam – where it quickly became the country's largest foreign mining company – followed by forays into Indonesia and Burma.<sup>129</sup>

In mid-1996, when IGL announced its nearly US \$100 million floatation to exploit properties and prospects in Asia, eight underwriters were employed to boast and boost Friedland's Asian fortunes. *The Canadian Financial Post* dubbed the group “a road show”. Among these were representatives of leading brokerage firms First Marathon and Nesbitt Burns, and major investment bankers Deutsche Bank Morgan Grenfell and HSBC-James Capel Canada, Inc.

The role of First Marathon in the deal, one of the leading Canadian brokerage companies with involvement in mining ventures, has been questioned. According to William Green, writing in *Forbes Magazine*, by the time IGL went public, players connected to First Marathon had made millions of dollars in personal gains.<sup>130</sup> Canadian securities and mutual fund companies Deans Knight Capital Management, Altamira, and AGE, plus the chairman of Haywood Securities, an investment manager for San Francisco-based Robertson Stephens & Company, and several mining journalists apparently also got in on cheap stock offerings.<sup>131</sup>

Nesbitt Burns, which had handled Friedland's sale to Inco at Voisey's Bay,<sup>132</sup> was named as one of the stockbroking firms promoting the Bre-X gold prospect. Class action suits, started in early 1998 by shareholders in this investment venture, maintained that Nesbitt Burns and others should have researched their claims before recommending that their customers buy shares in the company.<sup>133</sup>

IGL and its JV partner ME1 signed contracts with a number of companies in 1997 to finance and develop Monywa.<sup>134</sup> At the same time, Friedland's company confirmed its "commitment" to Burma, despite the Canadian government's imposition of selective economic sanctions against the regime.<sup>135</sup>

Outside of Burma, IGL's most advanced projects are at Sekatak and Jelai-Mewat in Kalimantan, Indonesia. It started a drilling programme last year on the Gasado Island gold prospect backed by a grant from the government of South Korea.<sup>136</sup>

**\*\* INTERNATIONAL PANORAMA RESOURCES CORP (IPRC) (Vancouver, Canada)**

This Canadian company, which manages a portfolio of mineral properties in the US and Canada, signed a first round prospecting agreement covering old resources in Burma's Block 9 in the Pinyin region, Central Burma, in 1995.<sup>137</sup> Later the company abandoned the Thayatkhon and Thayarwhan prospects, although its consultant geologists, CSA of Ireland, claimed that the area was favourable for gold.<sup>138</sup>

IPRC was among a number of companies which, in 1997, signed a deal with the Zairean state company Gecamines, to exploit the Kabove/Kakanda copper-cobalt deposits as war raged in Zaire (now the Democratic Republic of Congo).<sup>139</sup> An SE-EW plant, similar to that at Monywa, was planned, but the opening was delayed due to the renewed outbreak of violence in mid-1998.<sup>140</sup>

**\*\*\*\* IVANHOE CAPITAL CORP (Singapore)**

The holding company for all of Robert Friedland's Asian interests, including Ivanhoe Myanmar Holdings, Myanmar First Dynasty, and Indochina Goldfields, and the powerhouse behind Friedland's global reach.

**\*\*\*\* IVANHOE MINES LTD (Singapore)**

The name coined in 1999 by Robert Friedland to replace that of Indochina Goldfields (IGL), which saw the company's shares move to the Toronto and Australian stock exchanges.

**\*\*\* IVANHOE MYANMAR HOLDINGS LTD (IMH) (British Virgin Islands)**

*See also Myanmar Ivanhoe Copper Co. Ltd.*

In September 1996, this company stated it would place 5.88 million special warrants (at Cdn \$4.25 each) to finance, in particular, the Sembajkung oil field and general exploration in Burma.<sup>141</sup>

Technically, the joint venture owner of the Monywa copper mine, Ivanhoe Myanmar Holdings, is officially registered in the British Virgin Islands and actually is a subsidiary of Singapore-based Ivanhoe Capital Corporation. Initial financing for the project was obtained by Friedland's Indochina Goldfields along with ME1.<sup>142</sup>

IMH gained blocks 3, 4, 5, 6, 6A and 7 under the regime's first round of bidding, but appears to have been consistently exploring only blocks 3, 4 and 5, then, in the second round block 10. The results from these blocks were all reported to be "disappointing".<sup>143</sup> In 1998, a ground magnetic survey was conducted over part of the Yebu area under block 2/10, allegedly intercepting some high grades along a fairly small strike. It seems Block 10 was initially contracted to Myanmar First Dynasty Mines (q.v.).<sup>144</sup> The apparent switch to IMH illustrates the interchangeability of Friedland's interests in Burma in order to maximise profit potential.

In 1999, IMH surrendered blocks 1/3, 1/4, 1/5, 1/6, 1/6A and 1/7, but continued work on Block 3/12 (the Myezedaung area in Pegu (Bago) division). In Block 2/10 (Shweminbon-Lehyin area) drilling in old workings and new audits revealed high gold values.<sup>145</sup> This area was reported last year to have been "overrun" with small-scale miners.<sup>146</sup>

Monywa is Burma's biggest copper deposit (or set of deposits) located to date. The feasibility study agreement between Ivanhoe Myanmar Holdings and Burma's Number One Mining Enterprise (ME1) was signed in March 1994.

Friedland's company undertook to explore and then exploit the very substantial copper in the Sabetaung, Sabetaung South, Kyisintaung and Letpandaung Taung deposits of the Monywa area, described by Friedland as "a bit like Nevada" due (presumably) to its topography and climate.<sup>147</sup> The site had already seen limited production, using conventional methods of flotation and smelting in a pilot plant, by the Yugoslav state Invest Import Company in the early 1970's, but this was later abandoned due to lack of finance and plant disrepair.<sup>148</sup>

By late 1996, the Monywa project was well advanced. IMH announced that first production from Sabetaung and Kyisintaung would commence in 1998, six months ahead of schedule, at a production rate of 25,000 tonnes a year of refined copper. The mine was formally opened in January 1999. Corporate projections were that output could reach 125,000-128,000 tonnes of copper cathode a year,<sup>149</sup> provided investments of an estimated US\$ 300 million were forthcoming.<sup>150</sup> Drilling also started on the Swebontha prospect one kilometre north-west of Letpadaung, and at Kyaukmyet, a supposedly high-grade gold and silver deposit two kilometres from Sabetaung.<sup>151</sup>

After payment of a first installment to Marubeni and Nissho Iwai of US \$12 million on their debt finance in 1999, Ivanhoe was able to proceed with expansion of current output and consider exploiting the Letpadaung reserves. One of its supposed partners in this could be Chiyoda (q.v.), which met with the military regime's investment head Maung Maung Khin in the 1999 to discuss this possibility.<sup>152</sup>

JAMES CAPEL

*See Sea-Sun Star below*

JV TECHNOLOGIES (Denver, USA)

It was employed as a consultant to Mandalay Mining Company (q.v.) in its 1996 investigation of slag dumps at Namtu.<sup>153</sup>

\*\*KILBORN-SNC LAVELIN (Canada)

A long-established Canadian engineering company with a great deal of experience in all aspects of mine design and construction, including several in the south Pacific and Indonesia,<sup>154</sup> it was contracted to construct phase one of the Monywa copper project.<sup>155</sup>

LEEWARD CAPITAL CORP (Calgary, Canada)

*See also Mindoro Resources Ltd.*

Originally Leeward held two blocks in Kachin and Arakan (Rakhine) States, where it was exploring for gold.<sup>156</sup> In May 1998, Leeward reported positive results from Block 2/1 in Kachin State, where it had located occurrences of gold at U Kyi, and Nam Pan North and gold-platinum at Thein Sat. It gave up this concession in October 1998,<sup>157</sup> and more recently was reported to have begun exploiting the market for Burmese amber (Burmite). According to *The Burma Courier*, Leeward claims to have been granted rights to purchase and export amber by the DGSE, together with an unnamed Canadian geologist resident in Burma, who would purchase the amber, and a retired "economic and mineral exploration geologist professor" Roger Morton, who operates two diamond and gemstone cutting and marketing companies.<sup>158</sup>

LEEWARD TIGER (Canada)

*See also Tiger International Resources and Leeward Capital Corporation*

Leeward Tiger relinquished its Block 2/1 in 1998.<sup>159</sup>

LIAONING JIN DI CONSTRUCTION  
CONSORTIUM (China)

A wholly-owned subsidiary of Liaoning Provincial Construction, in 1998 this company acquired rights to Blocks 3/6 (Sinbo-Nankesan, Waingmaw township in the Myitkyina district, Kachin State) and 3/7 (Bhamo-Myathit also in Kachin State), but by 1999 had not started work on either block.<sup>160</sup>

LMJV (England)

Wholly owned subsidiary of Minorco Services (q.v.) and in turn owned by the Anglo-American Corporation of South Africa, now based in London England.

LYON LAKE MINES (Canada)

*See Palmer Resources*

\*\*\*MANDALAY MINING CO NL  
(Formerly MM Co Associates) (Australia)

A 50%-owned subsidiary of Diversified Minerals NL (q.v.) which in 1996 mounted a joint venture with the Burma Ministry of Mines to explore for lead, zinc and silver, and two JVs with ME1 (Blocks 6 and 7, second round). The first contract was to carry out a feasibility study on the Namtu/Bawdwin prospect, which has estimated reserves of around 14 million tonnes of lead, zinc and gold at low-to-medium grades, along with slag recovery from the Namtu smelter, which has lower, but potentially economically recoverable, grade.<sup>161</sup> Its second contract was to explore for base metals and gold in the Mohochaung area to the north east of Bawdwin.

According to one trained observer, a former senior mining engineer – the Namtu-Bawdwin mining complex carries with it a devastating history of both environmental destruction and deleterious impact on the health of workers and local residents.<sup>162</sup>

The main shaft reaches more than 1,500 feet below ground, and has plunged below the water table. Constant pumping is required at lower levels. Locals have reported an entire

absence of fish in the severely silted river Namtu Chaung, which receives all the tailings. Villagers have to use water brought by pipeline from elsewhere. The workforce, which includes women in the milling area, is alleged to have an average life-span of only 50 years.

In March 1997, the company announced that it had largely completed the mine and plant studies on the Namtu/Bawdwin project, which was then producing about 2,000 tonnes a year of refined lead, along with zinc, silver and smaller amounts of other metals. However, the company said the mine was operating well below capacity and required significant inputs of technology, power and capital, for which it was negotiating a deal with Silver Standard of Canada (q.v.).<sup>163</sup>

An earlier proposal to construct an electric plasma furnace with JV Technologies of Denver, USA seems to have been shelved, partly because of lack of cheaply available electric power.<sup>164</sup>

In early 1998, some 8,000 workers and family members from the 3,000 strong Namtu silver mines workforce staged a strike, demanding subsidised rice, higher wages for underground workers, full pay and medical assistance in the case of illness, and other benefits.<sup>165</sup> Inflation and low wages made basic goods, including rice, unaffordable. Although their demands for subsidised rice were met, leaders of the strike fled to avoid severe punishment from the military regime which has made independent trade unions illegal.<sup>166</sup>

\*\*\*MARUBENI CORP (Japan)

Marubeni, in 1995, offered the regime a minor boost in its attempts to legitimise itself and maintain control over Burma's human and natural resources. It signed an agreement with the regime to "develop" both its infrastructure and market economy. Not only did the agreement pledge the Japanese corporation's assistance in promoting specific joint ventures (including oil and mining), but also offered help to develop "a master plan to

attract foreign investments through efforts such as the development of industrial parks".<sup>167</sup> The company justified its support for the regime of Burma with the words:

"Any country has risks, so unless you take that risk it is impossible to do anything. We believe the [Burmese] government is a stable one and we expect to see a lot of foreign interest in the country."<sup>168</sup>

It is thus not surprising that, two years later, along with Nissho Iwai Corporation and Chiyoda, Marubeni was lined up by Robert Friedland to provide US \$90 million debt financing for the first phase of the Monywa SE-EW project.<sup>169</sup> Marubeni also pledged to purchase the first seven years of copper production (1998 - 2005) at a rate of 25,000 tonnes a year. By early 1998, the company had begun drawing down its loan, as the Monywa project moved to construction and production.<sup>170</sup>

Marubeni prides itself on being the leading "open" or liberal sogo shosha in Japan. Its president, Tohru Tosuji, in his Millennium message promised "integrated environmental standards", in conformity with ISO14001 (industrial operating standards).<sup>171</sup> The company has come under scrutiny for possible connections to activities during the 1970's and early 80's where uranium supplies were routed from Rio Tinto's Rossing Uranium mine in Namibia to Japanese utilities.<sup>172</sup> Marubeni has been the leading company prompting Japan's nuclear programme and allegedly arranging uranium supplies from South Africa during apartheid. It has links to the Fuji Bank (Fuyo Group), a former joint venture in Papua New Guinea (with CRA), and smelting interests in the Philippines at the PASAR copper smelter. In 1998, it was declared "Tropical Forest Destroyer #1" by Japanese Friends of the Earth (JATAN); in that year Marubeni entered a joint venture with an Indonesian logging company to harvest forests in West Papua, at Bintuni Bay, to produce woodchips.<sup>173</sup>

#### MAYFLOWER MINING

*see Myanmar Mayflower Bank*

#### MINDORO RESOURCES LTD

(Edmonton, Canada)

In 1998, this company held a 50% ownership interest in block 2/11, a copper exploration JV with SLORC in southern Burma.<sup>174</sup> Twenty percent of this concession had previously been owned by Leeward Capital (q.v.), which held on to 5% net profits royalty interest. By October 1998, however, drilling results indicated that the concession was "too restricted to be of economic interest",<sup>175</sup> and in the following June, Mindoro announced that it had no plans for further work, while holding on to "key areas". The company also operates in the Philippines, where it has four gold prospects at Pan de Azucar.

#### \*\*\*MINORCO SERVICES (Singapore)

Minorco has historically been the overseas vehicle for the huge South African mining company Anglo-American Corporation (AAC) as it sought to diversify overseas under apartheid.<sup>176</sup> In 1998, Minorco merged with AAC and relocated to London.<sup>177</sup> Along with AAC, Rio Tinto, Sudelektra and Glencore, it has been involved in vast expansion of the Cerrejon coal deposits on Wayuu territory in Colombia.<sup>178</sup>

Minorco operates in Burma through its wholly-owned subsidiary LMJV, which took over copper-gold prospects in block 2/11 (previously held by Atina Time Square) and in the process changed the emphasis from concentrating on copper to gold, as the price of copper declined.<sup>179</sup> As of early 1998, some 540 km<sup>2</sup> had been aerially surveyed, identifying more than 30 geological anomalies which could prove viable for ground drilling to define deposits. LMJV stated in 1999 that copper reserves on Block 2/11 (Dkhta Chaung) were, at only 150,000 tonnes with an average 1-2% grade cu, "far short" of its requirements.<sup>180</sup>

**\*\*MINPROC (Australia)**

One of Australia's leading mine engineering companies, Minproc provides a "complete range of services" from plant design to final product delivery.<sup>181</sup> Currently expanding in Chile and West Africa, Minproc completed a feasibility study in 1997 for phase two of the Monywa project on the Letpadaung ore body. Minproc estimated production capacity to be 63,500 tonnes of copper cathode a year (more than twice that from the initial phase one) with a capacity of up to 128,000 tonnes a year.

In 1990, Minproc came under heavy fire from environmental groups in Australia when it entered a joint partnership with Kerr-McGee of the US to construct a potentially radioactive mineral sands processing plant in Western Australia. The partners were forced to abandon the project.<sup>182</sup> Controversy continues over its involvement in the Laverton Gold JV in Sulawesi, Indonesia.<sup>183</sup> Its other engineering projects include the Mount Kasi gold mine in Fiji,<sup>184</sup> the Macraes gold mine in Aotearoa/New Zealand, the Bogosu gold mine in Ghana,<sup>185</sup> and the Dindiki mine of Climax. In the Philippines, it was one of the first companies to be granted a Foreign Technical Assistance Agreement (FTAA) under the 1995 Mining Act.<sup>186</sup>

**\*\*\*MYANMAR FIRST DYNASTY MINES LTD (Singapore)**

Another of Robert Friedland's major vehicles, Myanmar First Dynasty Mines (MFDM) was originally a subsidiary of First Dynasty, then of Indochina Goldfields Ltd, the latter now renamed Ivanhoe Mines Ltd. MFDM obtained Blocks 2, 10, and 11 in the first round of contract bidding. It claims to have located interesting anomalies for gold in the Wuntho Massif region, in particular on the Naungpat Ridge,<sup>187</sup> but drilling results the following year were disappointing, while the Naungpat and Koko Taung areas remained to be explored.

In order to cut costs, widespread core drilling was replaced by augur drilling and geo-

chemical analysis of the samples.<sup>188</sup> Nonetheless, on Block 1/2, Tonbon and Namma area in Kachin State, the company in 1998 "categorically" claimed it had delineated a large tract with a "very high potential for multiple bulk mineable gold and gold-copper deposits",<sup>189</sup> although it apparently took only three drill holes to make the discovery. Despite this optimism (or perhaps because of it, in the wake of Bre-X), the company could not muster sufficient exploration funds to continue drilling beyond June that year, and it suspended operations until the end of 1999.<sup>190</sup>

MFDM sold its interests in the Sembajkung oil field in 1997 partly in order that First Dynasty itself could maintain its gold interests in Armenia and repay a loan from holding company, Ivanhoe Capital Finance.<sup>191</sup>

**MYANMAR GOLDEN POINT FAMILY CO (Burma)**

This national company has a production-sharing agreement with ME2 at the small Phayaung Taung gold mine in Patheingyi township, Mandalay Division.<sup>192</sup>

**MYANMAR IVANHOE COPPER COMPANY LTD (MICCL)**

This is the joint venture set up to exploit the Monywa copper deposits (see Ivanhoe Myanmar Co. Ltd), and which technically owns it. In the first quarter of 1999, revenues were put at US \$9.2 million and sales are made through Marubeni (q.v.) at prevailing London Metal Exchange (LME) rates. The first quarter product was shipped to Japan, Hong Kong, Thailand, Saudi Arabia, Malaysia, Korea and Pakistan. The JV agreement provides for 10% of production to be made available for national consumption, if called for. By the end of August 1999, the mine had produced approximately 45.5 million pounds of copper at a reported minegate cost of US .27 cents a pound (including a 4% royalty paid to SLORC), making it one of the world's lowest-cost producers.<sup>193</sup>

#### MYANMAR MAYFLOWER BANK (Burma)

The Mayflower group operates twenty banks, a land development and construction company and other enterprises. It also has a 49% interest in Yangon Airlines, one of two private air carriers in Burma.<sup>194</sup> It has recently been trying to “lure” foreign interests to participate in national mining projects, so far with virtually no success.<sup>195</sup>

In December 1999 however, Mayflower Mining did sign a production sharing agreement with ME1 to operate antimony mines in Mandalay division and Shan and Kayah States, with a smelter at Kalaw township, at the confluence of the three states.<sup>196</sup>

#### \*\*\*NEWMONT MINERAL EXPLORATION BV (USA)

*See also Swedala*

This is a subsidiary of the large Newmont Mining Company, one of North America’s three biggest gold producers, with interests in the US, Indonesia, the Philippines, and elsewhere.<sup>197</sup> Although forced since to withdraw from Burma through external political pressures, in July 1996 it had signed an agreement with ME2 to prospect and produce gold in Upper Burma, in two areas which include the Kyaukpahto mine – the country’s largest state-owned project of its kind with alleged reserves of 6 million tonnes at a high 3g/te grade of gold.<sup>198</sup>

#### NISSHO IWAI (Japan)

This leading Japanese conglomerate was brought in by Ivanhoe Myanmar and ME1 to co-finance the Monywa copper project. It also has a 10% share of the Bullmoose coal mine in British Columbia, operated by Friedland’s corporate partner Teck, and owns 25% of Stratcor, the US vanadium producer.<sup>199</sup>

#### PACARC NL (Australia)

Formerly Pacific Arc Exploration, the company has considerable experience exploring for gold in Malaysia, Fiji, Papua New Guinea and

Australia. It signed its first deal with the Burmese Ministry of Mines in 1995,<sup>200</sup> and a year later, professed to have located gold at Taungyi (Block 1/8), Donwe (or Doe Nwe), in Shan State,<sup>201</sup> and thirteen other gold areas in the northern part of Kwinthones, near Mandalay, including Nyaung Kaya and Yebu (Block 1/13).<sup>202</sup> However, in April 1998, it asked permission of the regime to cease work on its Block 1/8 in Popa, and Block 1/13 in the Kwinthones area for six months, apparently because it had run out of money.<sup>203</sup>

#### PADAENG (Thailand)

The leading Thai tin mining company, Padaeng withdrew from exploration in Burma on its own account in mid-1997 after forming a JV with Western Metals of Australia, which then acquired 45% of Padaeng.<sup>204</sup> However, a year later, in October 1998, Padaeng announced that it had cleared “infrastructural problems” relating to zinc exploration in Burma, and would soon be concentrating on Mawkhi (or Mawchi, a town opposite Thailand’s Tak province, where Padaeng operates a zinc mine). The regime had “guaranteed” the safety of Padaeng’s exploration team and, if a decision were made to mine, it would be in JV with Burma’s Mayflower Bank which holds the concession.<sup>205</sup> No decision has as yet been taken.

#### \*\*PALMER RESOURCES (Vancouver, Canada)

This junior first came to notice in 1997 when it started exploring for copper in the An Chau basin of Vietnam, through its Vietnamese subsidiary Canexco.<sup>206</sup> The following year it acquired Block 3/13, 180 kilometres east-northeast of Rangoon, in Kyaikto district of Mon State. It is one of only four companies apparently to have held on to any of these concessions during 1999.<sup>207</sup> It claims to have identified five prospects in Block 3/13 of Meyongyi-Meyonglaya area in Mon and Karen (Kayin) States, though it suspended operations for a period in early 1999.<sup>208</sup>

That year it merged with another Canadian company, Lyon Lake Mines, to take over Placer Dome's Cerro Crucitas project, which has been the subject of much condemnation by environmentalists and indigenous organisations within Costa Rica.<sup>209</sup>

Palmer has also purchased 200,000 shares in Ridell Resources, also listed in Vancouver which has acquired an oil project in the Minbu basin of central Burma, for which Palmer did a due diligence survey.<sup>210</sup>

#### PRIME RESOURCES GROUP INC (Vancouver, Canada)

This company's subsidiary, Prime Resources Management, was the only bidder for Block 3/9, located at Mwetaung, Chin State, (nickel, chromite and associated mineral), but it did not sign the contract.<sup>211</sup> Prime Resources is a subsidiary of the huge US gold mining company, Homestake, and owns the Eskay Creek Mine, the world's fifth biggest gold producer, and Snip Mines in British Colombia.<sup>212</sup>

#### PT AUSTINDO NUSANTARA ENERGI (Indonesia/Australia)

A member of the Austindo Group of Indonesia, and a wholly-owned subsidiary of PT Austindo Nusantara Jaya of Indonesia, this company holds interests in Kalimantan, and in turn is the biggest shareholder in Australia's Austindo Resources Corp. In July 1998, Austindo Nusantara Energi signed a prospecting, exploration and feasibility study with DGSE to develop thermal coal deposits in the Tenasserim (Tanintharyi) Division of southern Burma, covering two separate areas.<sup>213</sup>

The Australian parent company, Austindo Mining Corporation, has a joint venture with the major Australian mining company Meekatharra Minerals in southern Sumatra, Indonesia.<sup>214</sup>

#### RESOURCES SERVICES GROUP (RSG) (Australia)

An Australian mining consultant, in 1996/97 RSG assessed the resources of the Bawdwin mine for MMC (q.v.).<sup>215</sup>

#### ROONG SIAM MINING (Thailand)

In 1993, Roong Siam signed a production-sharing agreement with the regime's ME2 for offshore tin exploration in the Gulf of Martaban and the Tenassarim Coast. This was the fourth such agreement between Burma and Thai companies, the first three of which were abrogated.<sup>216</sup>

#### SAMPU RESERVE CO (Burma)

In December 1998, Sampu Reserve signed a production-sharing agreement with ME3 to exploit coal reserves at the Lweje deposit in Momauk township, Kachin State, close to the border with China. The aim is to sell coal to local industrial plants until sufficient output justifies sales to China.<sup>217</sup>

#### SEA-SUN-STAR CO LTD / JAMES CAPEL CANADA

In 1997, this company formed a joint venture with ME2 and Kachin Nationals to prospect for gold along the Ayeyawady in Mankheim, Mynkyinaq Township.<sup>218</sup> James Capel also was major investor in Indochina Goldfields (q.v.).

#### SILVER STANDARD RESOURCES INC (Canada)

An associate company of the big Canadian minerals producer Teck, Silver Standard is based in British Columbia, Canada, with recent exploration activities in Australia, Bolivia and Mexico's Santa Cruz province,<sup>219</sup> as well as Burma. The company says it is interested in resources with a "minimum threshold of 20-50 million ounces" (of silver).<sup>220</sup>

SUM CHEUNG EXPLORATION LTD (Singapore)

It relinquished its entire exploration concession in the Mabein area in 1996 (1/15), although this is an available small-scale placer mining area (particularly in the Kaukkho and Lawa prospects).<sup>221</sup> The regime that year also rejected a request from the company for exploration rights near the Phayaung Taung gold mine in the Patheingyi township, Mandalay Division.<sup>222</sup>

\*\*\*SUMITOMO METAL MINING COMPANY (SMMC) (Japan)<sup>223</sup>

In 1996, SMMC took an “equity position” in the Monywa copper venture.<sup>224</sup> One of the major Japanese mining, smelting, refining and marketing groups, Sumitomo owns Japan’s largest gold mine and has been a copper producer for over a hundred years. Indeed, until its recent trading “scandal” (see below), it was the world’s biggest single trader in the metal. Comprising 78 subsidiaries and 16 affiliates, SMMC in 1997 declared its intention to “attain a leading position over other mining companies in Japan in the field of overseas mineral resources development”.<sup>225</sup>

Sumitomo now obtains all its copper supplies from overseas, following the collapse of much of Japan’s domestic mining industry.<sup>226</sup> In order to acquire a reliable and cheap source of raw materials, 40% of Sumitomo’s copper needs are met by mines in which it has acquired a direct interest: these are Morenci in the USA, La Candelaria in Chile (both JVs with Phelps Dodge the US copper miner), and the Northparkes mine in Australia (JV with North Ltd).

In 1995, the company joined Newmont on its huge Batu Hijau copper-gold porphyry prospect in Sumbawa, Indonesia. This copper project has dismayed local people and environmental groups in the country.<sup>227</sup>

Its nickel needs are also met by similar joint ventures. It has a 20% stake of PT Inco in In-

donesia, which supplies some 40% of its requirements from the Soroako mine.<sup>228</sup> The mine has come under heavy fire from community and environmental groups.<sup>229</sup> Sumitomo also recently purchased a small stake (but with substantial voting rights of 31.8%) in the Canadian Teck Corporation.<sup>230</sup>

Its advances into China are noteworthy. In April 1997, its JV smelter with China’s Jinong Copper Company came on-stream. With a capacity of 100,000 tonnes/year, it is one of the biggest in the country with plans to supply processed metal to customers in both China and the Pacific Rim.

The company was also awarded a contract in 1990 to supply turbines for the widely condemned Narmada River Dam project in India.<sup>231</sup> That same year, it had to pay about US \$1.5 million to nine people suffering from arsenic poisoning and the families of nine others who had died from poisoning as a result of the operations of one of its mines in Japan’s Myazaki province.<sup>232</sup>

In June 1996, Sumitomo revealed that, for a period of ten years, its chief copper trader Yasuo Hamananka had been engaged in unauthorised (and therefore illegal) copper trades. Hamananka received an eight year jail sentence in March 1998; copper markets were widely disrupted. Between 1994 and 1996, this man had apparently tried to buy nearly 1.2 million tonnes of copper based on a minimum preferential market price, which enabled him and an unnamed New York trader to cream off vast profits. Although these trades were ostensibly made to satisfy demand, in fact half of the contracted copper was immediately resold to the US merchant’s own supplier and never delivered to Sumitomo. Although the end result of the investigation was that Sumitomo had to pay the USA Futures Commodity Trading Commission US \$125 million and an unprecedented US \$8 million to the UK’s Financial Services Agency – the identity of the US merchant and other parties benefit-

ting from the scam have not been revealed. Nonetheless, a current related US lawsuit names brokerage firms Global Mineral & Metals Corporation, Merrill Lynch and Company, and Morgan Stanley as engaged in improper conduct.

The revelation of this massive deception shattered the copper market in 1996 – causing the price to collapse from US \$2,900 a tonne to less than US \$2,000 a tonne. The market is still recovering.

SWEDALA INDUSTRI (Malmo, Sweden)

*See also Newmont*

In 1996, this engineering company provided and installed linings for the ball mill at ME2's Kyaukpahto gold mine.<sup>233</sup>

TASAKI CO (Japan)

In JV with the Ministry of Mines, Tasaki has a pearl exploration and production project in Burma.<sup>234</sup>

\*\*TECK CORP (Canada)

One of Canada's largest and most diversified mining mineral companies, and also the major shareholder in Cominco (the base metals exploration, mining and refining company), Teck has had a long relationship with Robert Friedland's companies (q.v.).

TERRACE GOLD NL (Australia)

A subsidiary of Australian Kimberley Mines, this company signed a contract with the DGSE in early 1997 to explore and, if feasible, develop gold potential in the Malaw area of Shan State. This is adjacent to Ivanhoe Myanmar's block 2/10, but half the normal block size and reportedly granted outside the formal second round of bidding.<sup>235</sup>

TIGER INTERNATIONAL RESOURCES (USA)

This California-based company originally held a 25% share in block 2/1 in Kachin State and block 2/11 in the Irrawaddy (Ayeyarwady) Division in JV with Leeward Capital. However, in December 1997, the company informed Leeward that "due to increasing political and economic problems being encountered" in Burma, it was withdrawing from the joint venture, and from the country.<sup>236</sup> Leeward later abandoned the concession.<sup>237</sup>

# Chapter Four

## The Man with the Golden Arm

Ivanhoe  
Capital  
Corp.'s  
Robert  
Friedland  
(Photo:  
CP Picture  
Archive,  
Richard  
Lautens)



In 1994, Robert Friedland set his sights on Asia. If most other mining entrepreneurs had done the same, few observers would have taken much note, and even fewer alarm bells would have rung. When the world's biggest mining company Rio Tinto (formerly RTZ) announced two years later that it was doing the same,<sup>238</sup> only a few eyebrows were raised. However, Friedland has not been known for having a great depth of experience with the mining industry, although he owns controlling stakes in several mining ventures. He is not simply a mine promoter (financier), though he has provided hundreds of millions of dollars of other peoples' money, boosting the fortunes of his own speculative projects. While he wheels and deals in millions of shares – he isn't known for playing the derivatives or futures markets.

In a word, this man is a phenomenon – although this is a term which disguises much more than it can possibly reveal. This 49-year-old Canadian of US parentage has escaped unscathed from situations which would have driven most others into the ground. He has not faced charges in American courts to account for any part of the Summitville environmental disaster in Colorado. Until recently, he seemed well on the road to acquiring more bargaining power than any other person on the planet in one of its most important and profitable industries.<sup>239</sup>

### The birth of an enigma

In 1981, Friedland launched his first minerals venture, the ill-fated Galactic Resources.<sup>240</sup> Galactic started basically as a shell company, registered on Vancouver's "wild west" stock exchange, a modest opportunity waiting for a highly-motivated opportunist. Over the next few years, Friedland took Galactic into various joint ventures (JVs), including the Ivanhoe JV along the fabled Carlin gold belt in Nevada, and a stake in the Far South-East Gold Resources (FSGR) project in the indigenous Philippine Cordillera, where it was partnered with the domestic mining company Lepanto Consolidated, known for its anti-union bias.<sup>241</sup>

But the company's showpiece was Summitville, a cyanide heap-leach gold project in the State of Colorado. Built half-way up a mountain during winter and opened in record time in 1985, the enterprise appeared about as safe as ice lollies made with water drawn from a Rangoon sewer. The liners on which

**...the company's showpiece was Summitville... the enterprise appeared about as safe as ice lollies made with water drawn from a Rangoon sewer.**

the ore was heaped began stretching and collapsing almost immediately. Cyanide solution, sprayed in thousands of gallons over the heaps, began leaking from the pads – which then overflowed. Worse, acidic wastes, laced with heavy metals from ore and rock, began forming the deadly cocktail known as acid mine drainage.

Although temporarily closed in 1989 by order of the Colorado state government, the site was reopened the following year. Mining was halted in 1991, but further heap-leaching continued until 1992, at which point the US Environmental Protection Agency (USEPA) belatedly showed its teeth. Summitville, the operating company, was declared bankrupt that year. Its parent, Galactic, followed suit in 1993.<sup>242</sup> It had already sold its stake in FSGR to RTZ/CRA, the world's biggest mining company.<sup>243</sup>

The USEPA has had to pay around US \$50,000 a day at Summitville, just containing the cocktail of heavy metals and cyanide wastes, while final clean-up costs will almost certainly exceed US \$100 million, mostly of US taxpayer's money.<sup>244</sup> Friedland quit all his posts at Galactic in 1990.<sup>245</sup> In 1996, trustees for the bankrupt Summitville company pleaded guilty to no less than 40 felony counts – for which they were fined the maximum US \$20 million penalty. In November 1996, the Ontario Court's General Division (now the Ontario Superior Court) lifted a freeze imposed on Friedland's \$500 million worth of shares in Inco, as requested by the US government. Friedland also counter-sued the USEPA and Justice Department in a hubristic claim for "damages for conspiracy, abuse of process, libel, breach of disclosure duties, loss of business opportunities and damage to reputation".<sup>246</sup> This ploy appeared to come to grief in early 2000 when the Ontario Court of Appeal ruled that the two US state agencies re-

tained their sovereign immunity from prosecution.<sup>247</sup>

Dubbed the "Exxon Valdez of the mining industry",<sup>248</sup> Summitville was the earliest display of Friedland's tactics in dealing with problematic mining practices.<sup>249</sup> Although the mine polluted surrounding land and waterways for a period of six years, the state of Colorado acted late to try to stop the pollution. Not only had Friedland's charismatic style of presentation boosted Galactic's share price from an initial Cdn 50-cents to Cdn \$18 a share within four years, but he had lured the Bank of America into providing debt financing, and sold shares in Galactic to Homestake – one of the biggest gold mining companies in North America, with powerful friends in the American Southwest.

### **Omai, Omai!**

By 1990, Friedland was looking for golden opportunities further south. His early ventures into eastern Venezuela, through Vengold, soon came up against knotty problems of land ownership, and indifferent drilling results. He later withdrew most of his investment. By then, however, he had struck it rich in Guyana. Junior Canadian company Golden Star Resources (GSR) had been eyeing the country's biggest gold deposit at Omai on the Essequibo river. Friedland's strategy with GSR resembled that of Galactic. Using shares in a company called South American Goldfields Inc., he bought his reverse way into GSR at a bargain price. Soon, GSR sealed a deal with Quebec company Cambior, and the Guyana government, as well as the World Bank and the Canadian Export Development Corporation.

According to GSR, Friedland sold all his shares in the company in 1994. However, his brother Eric continued in an executive role. Friedland's withdrawal from the company was well-timed. For, in mid-1995, the tailings dam at the Omai mine collapsed completely, shoot-

ing several million cubic metres of diluted cyanide and heavy metals cascading into the Essequibo, Guyana's main river and its freshwater lifeline. It was one of the worst environmental disasters of its kind ever in South America.<sup>250</sup> Once again, Friedland escaped any legal sanctions. Indeed, it is now unlikely that Cambior or partner GSR will ever have to pay out adequate compensation to families and communities along the Essequibo river.

### **Diamond Fields comes up trumps**

Ironically, just a year after the Omai debacle, one of Friedland's other mining vehicles, Diamond Fields Resources (DFR), struck it rich in Voisey's Bay, Labrador, Canada, with the discovery – not of diamonds – but of a huge base metals (mainly nickel) deposit on the territory of the Innu and Inuit. The Voisey's Bay find has been described as the biggest of its kind anywhere in the world. Whether or not Friedland was ever seriously tempted himself to put together a consortium to exploit the deposit, it was clear from early on that DFR required the backing of one or other of Canada's major companies. After flirting with the nickel miner Falconbridge, Friedland eventually arranged a takeover of DFR by Inco.

The deal cost the Canadian company US \$4.3 billion, but Friedland personally gained Inco shares and other benefits, worth more than US \$5 million.<sup>251</sup> With the stroke of a pen, Friedland had become the biggest single shareholder in the world's largest nickel producer.<sup>252</sup> Diamond Fields International is now concentrating on its offshore concession near Ludertiz, Namibia, where it completed its initial sampling programme in 1999.<sup>253</sup>

### **In the company of...**

Friedland's partner in the establishment of DFR in 1993 was the soft-spoken Jean-Raymond Boule, an ex-manager in Africa for the world's most lucrative minerals cartel

Anglo-De Beers (diamonds). In 1997 Boule dramatically entered the chaotic stamping-ground of Zaire (now the Democratic Republic of Congo) where he reportedly lent support to Laurent Kabila, pretender to the throne of the notoriously-corrupt President Mobutu. In exchange, Boule received rights to vast mineral deposits.<sup>254</sup> Although Boule and Friedland parted ways that year, by then the Canadian had established ties in West Africa.<sup>255</sup>

Largely in order to restructure his interests in DFR following the Inco takeover, Friedland had created a company called DiamondWorks. This was yet another corporate revamping, this time of a semi-dormant Friedland outfit called Carson Gold. Although it has diamond projects in war-devastated Angola,<sup>256</sup> DiamondWorks' main interest has become two potentially valuable diamond fields in Sierra Leone. Originally acquired by Friedland in 1994, this deposit was later overrun by anti-government forces. In early 1996, the notorious South African private army Executive Outcomes teamed up with another company called Branch Energy in an apparent move to recapture Koidu and hand it over to DiamondWorks.

There appears to be little doubt over the corporate links between Friedland's DiamondWorks and Branch Energy.<sup>257</sup> Branch Energy also reportedly made links with another mercenary group, the Sandline.<sup>258</sup> The abortive role of the Sandline in trying to seize from Bougainville nationalists the copper mine of Rio Tinto was one of the subjects investigated in an inquiry held by the Papua New Guinean government in 1997.<sup>259</sup>

However, memories appear short in mining; the industry seems afflicted by collective amnesia. The Voisey's Bay success was enough to wipe away any bad odour from Omai and Summitville still lingering over Friedland at the time. Indeed, his ability to survive the

**...the tailings dam at the Omai mine collapsed completely, shooting several million cubic metres of diluted cyanide and heavy metals cascading into the Essequibo, Guyana's main river and its freshwater lifeline.**

Summitville and Omai disasters may even be regarded in some quarters as evidence he can weather any scandal.

### **Asia, here I come!**

During the eighties, Galactic had acquired a share in the Far South East gold project (FSGR) on Igorot land in the northern Philippines, then sold it to Rio Tinto in 1990 as Galactic descended into the mire of Summitville and eventual bankruptcy.<sup>260</sup> It was not until 1994 that Friedland set his sights seriously on the Asia-Pacific again. He targeted first Kazakhstan, Indonesia, and West Papua, then Vietnam, China, Mongolia, and Burma.<sup>261</sup> His financial vehicles were First Dynasty, Indochina Goldfields (IGL), and Ivanhoe Capital Corp (ICC).

### **Ivanhoe rides on**

ICC is the privately-owned venture capital corporation that Friedland had used throughout the late eighties, both to fund his exploits and to secure personal financial coups. Indeed, when he resigned from Galactic in November 1990, “removing himself from any hand in management of the precious metals company”,<sup>262</sup> Friedland declared he would now “devote all my time to Ivanhoe”. It is not common knowledge that Ivanhoe entered an agreement with the discredited Galactic at the same time, under which the latter had first right to participate with either Ivanhoe or Friedland personally in any future joint venture anywhere in the world.<sup>263</sup>

Friedland moved Ivanhoe from Vancouver to Singapore in 1996. Two years earlier, his entry into Burma had been facilitated by the Vancouver-based Burmese businessman, Reggie Tun Maung, who became the senior vice-president of Ivanhoe Myanmar Holdings, a wholly-owned subsidiary of ICC. Maung’s son had married the daughter of the Burmese military regime’s deputy prime minister, Vice

Admiral Maung Khin. Reggie Tun Maung was also the president of the Vancouver Buddhist Society to which Friedland had once donated around US \$75,000.<sup>264</sup> It was Ivanhoe Myanmar Holdings which in early 1994 was to seal a compact with the Burmese regime’s Mining Enterprise No. 1, in order to exploit the Monywa copper deposit.<sup>265</sup> The financing would later be bequeathed to Friedland’s Indochina Goldfields (IGL).<sup>266</sup> In mid-1999, Indochina Goldfields Ltd. changed its name to Ivanhoe Mines Ltd. – reflecting the origins of the company (the Ivanhoe property formerly owned by Galactic Resources),<sup>267</sup> and the central role of Ivanhoe Capital Corp. in Friedland’s corporate empire.<sup>268</sup>

Ivanhoe now holds 100% of three mineral concessions (Contracts of Work or COWs) in east Kalimantan (Indonesia Borneo), covering nearly three million hectares, of which the “most prospective” sites are situated at Seruyung Sekatak, Jelai-Mewet and Long Laai.<sup>269</sup> Friedland’s access to these COWs was allegedly assisted by his partnership with Bambang, a brother of then-president of Indonesia, Suharto. In 1997, émigré Indonesian academic George Aditjondro commented: “It is not unlikely that Bambang is a ‘silent partner’ in Ivanhoe Myanmar Holdings as well”.<sup>270</sup> Ivanhoe holds 18% of the Emperor Gold Mine in Fiji, a prospect on Gasado Island in South Korea, and the Khao Wong “property” in Thailand.<sup>271</sup> It also has oil interests in China at Dagang, 200 kilometres southeast of Beijing,<sup>272</sup> and in the southern San Joaquin Valley, California.<sup>273</sup>

### **Savage River**

Meanwhile, a subsidiary of ICC was taking over the Savage River mine in Tasmania, Australia, a year after it was officially closed in 1995, bequeathing to both community and environment some serious acid mine drainage problems. Technically, the mine is now

owned by Australian Bulk Minerals (ABM), a subsidiary of Goldamere Pty. Ltd. – itself owned by ICC. Friedland promised not only to revive the mine, extending its life by thirty years and employing 260 people, but also to carry out a feasibility study on situating a pig iron plant to replace the old pelletising plant. However, closer scrutiny of the small print in his company's agreement with the Tasmanian government (the Goldamere Pty Ltd. Agreement Act 1996) reveals that Friedland engineered "indemnity without limitation" in regard to "any liability for past pollution or site degradation or any future pollution generated as a result of past activities" (author's italics).<sup>274</sup>

The state government then promptly waived regulatory standards on the grounds that it was impossible to distinguish between past and current pollution. ABM was simply to uphold "Best Practice in Environmental Management" (BPEM).<sup>275</sup>

The Tasmanian Greens (Green Party), briefed on Friedland's history by Australia's Mineral Policy Institute and others, tried to get the agreement annulled. Defending ABM, Gordon Toll (an ex-Rio Tinto mining executive who appears to have been important in lending credibility to Friedland as he penetrated the Asia-Pacific region) claimed the company had never tried to hide from the state government facts about Friedland's past, or his experience with the Summitville mine. Had the Tasmanian Department of the Environment relied solely on Toll's briefing, it may not have gotten the full story.<sup>276</sup>

### **Bull shopping Indochina**

During the period 1996-97, Friedland, profiting from the DFR takeover by Inco, was busy turning his other holding company, Indochina Goldfields (IGL), into another conduit for private speculation in the region. IGL's preliminary prospectus promised the company would "...identify and establish an early presence in

those countries...that combine the potential for significant ore deposits with limited exploration and development by foreign mining companies, due to past economic or political constraints".<sup>277</sup>

By mid-1996, Friedland directly owned 38.2% of IGL, after its first public flotation and registration on the Toronto Stock Exchange.<sup>278</sup> He had also attracted investment from two industry heavyweights, the Canadian mining company Teck, and Japan's huge Sumitomo, the world's largest copper trader.<sup>279</sup> IGL's 1996 public offering was underwritten by a raft of leading Canadian banks and brokerage firms, including First Marathon Securities.

Friedland's genius for drawing financiers into his projects was aptly demonstrated when, in the two years before the offering, five employees of First Marathon were invited to participate in a series of private placements, enabling them to secure IGL stock at heavily discounted prices. Allegedly, one broker, Robert Hartkinson, invested over \$1.25-million in the deal at up to Cdn \$5 a share.<sup>280</sup> When IGL went public, with shares issued at three times this value (Cdn \$15 per share), Hartkinson and his colleagues made millions. This wasn't all. Friedland himself loaned Cdn \$3 million to IGL in February 1994 for "general corporate purposes". Later that year, he was repaid with 16.78 million shares in the company, valued then at only Cdn 25-cents a share. In 1996, the quoted value of IGL shot up to nearly Cdn \$186 million – a paper profit for Friedland of more than \$180-million.

The dealing continued. That year, IGL secured its 50% stake in the Monywa copper project in Burma in joint venture with the Burmese military regime.<sup>281</sup> Ostensibly, Friedland purchased the half-share in this mine, but he also profited from the deal. Ivanhoe Capital's expenditure of Cdn \$4.36 million on the prop-

erty was paid for with 5 million IGL shares, whose worth later climbed more than tenfold.

Indochina Goldfields' interests also include a 17% stake in Fiji's Emperor Gold Mines.<sup>282</sup> Emperor had been targeted by Friedland in a classic manoeuvre to "turn around" the ailing enterprise. He bought nearly 14% of the company's stock from Emperor's chair, George Drysdale, at Australian \$1.85 apiece. Another 10% of the equity ended up in the hands of leading Malaysian entrepreneur, Tan Sri Azmi Wan Hamzah, who joined the board, along with Friedland nominees Edward Flood and Gordon Toll (the apologist for Summitville) who became, respectively, the president and chief operating officer of IGL.<sup>283</sup>

### **Third arm, First dynasty**

There was yet another aspect to Friedland's astonishing reach. In 1995, he had dined with Indonesian tycoon Johannes Kotjo, one of Indonesia's ten richest businessmen. Out of this meeting came Friedland's decision to move his business empire from Denver to Singapore (with an operating office in Jakarta) and to lodge himself for half the year in a luxury villa on Sydney, Australia's waterfront.<sup>284</sup> He would use a company called First Dynasty.

First Dynasty had been formed in 1994 following another Friedland "reverse takeover" (like that of Golden Star Resources); this time of Starmin Mining by his company Ivanhoe Goldfields.<sup>285</sup> Ivanhoe was set up by Friedland in 1993 to "develop an early dominant position in gold mining in Indonesia and south-east Asia".<sup>286</sup> First Dynasty's Denver-based executives resigned in 1996, promptly to take up similar positions in Ivanhoe Goldfields. Marcus Randolph, yet another recruit from the Rio Tinto stable, where he had been head of metals/mining, became First Dynasty's president, and Johannes Kotjo its chair.<sup>287</sup>

Although focused primarily on Indonesia and West Papua, the initial product of this fruitful arrangement was that First Dynasty became ensconced in the highly-promising Bakyrchik gold joint venture, at Vasilkovskoye in Kazakhstan. Teck, an investor in IGL, also became a partner in Bakyrchik.<sup>288</sup> A disagreement over financing arrangements between Friedland's Central Asia Mining Ltd (CAML) and the Kazakhstan government appeared to have finally been resolved in 1999, reducing CAML's financial obligation and giving the central Asian government a 30% stake in the venture.<sup>289</sup>

In the interim, Kotjo had enabled Friedland to gain a stake in the promising Montagu Mimika exploration COW in West Papua, of which the Indonesian tycoon owned the majority stake. There seemed no regard for the fact that West Papua is a territory appropriated by Indonesia in 1967 under a fraudulent "act of free choice" that was really its antithesis.<sup>290</sup> Much of Montagu Mimika's COW is adjacent to the vast Freeport/Rio Tinto second COW, which the two companies claim to be the most prospective terrain on earth for copper and gold.

Friedland's sights in Indonesia were then set beyond the mountainous indigenous territory of West Papua. He forged a firm relationship with one of Indonesia's biggest mining companies, the nickel and gold miner PT Aneka Tambang (ANTAM), which began to be privatised in 1996. Under an agreement reached that year, First Dynasty was to gain control of the active Gunung Pongkor gold/silver mine and all of that company's related mineral concessions in West Java, while PT Aneka Tambang received shares worth US \$120-US \$145 million in First Dynasty and the right to appoint two directors to its board.<sup>291</sup>

ANTAM seemed delighted with the arrangement: “We (have gained) the opportunity of working with First Dynasty and internationally recognised experts in evaluating innovative approaches to the privatisation of government-owned assets,” the company declared.<sup>292</sup> Through the tie-in with ANTAM, Friedland sealed a deal with yet another leading Indonesian, this time one of President Suharto’s sons, Bambang Trihatmodjo.<sup>293</sup>

However, ANTAM’s reputation has not improved in its three year association with the Canadian financial wizard. Five miners on a night shift died at Gunung Ponkgor in October 1997 when a shaft collapsed. Villagers living on the island of Haruku in central Indonesia have filed numerous complaints about the pollution of the Wai Ira River and the adverse effects on all their lives of ANTAM’s joint venture with Ingold (a subsidiary of Inco).<sup>294</sup>

First Dynasty has also benefited from investment by the Sterlite Group of India, a copper and aluminium smelter and refiner, through the latter’s holding company Twin Star. Under an arrangement made in late 1998, Twin Star acquired US \$7.5 million shares (about 43% of the equity) in Friedland’s company, and became entitled to appoint three directors to First Dynasty’s board. In return, First Dynasty gained capital to expand its modest gold tailings treatment plant at Ararat, and open a gold mine at Zod, both in Armenia, a country facing economic collapse and civil unrest after a failed government-administered “pyramid” money-making scheme.<sup>295</sup>

## A wide reach

The conditions surrounding such ventures in the mining field over the past decade have included: the erosion of multilateral government investments in mining; severe post-1980 market losses experienced by big private min-

ing companies in the west (in particular the withdrawal of the world’s biggest oil companies from almost all mining ventures); and, not least, the World Bank/IMF’s Structural Adjustment programmes (SAPs). The latter have enforced a dangerous weakening of state regulation of the mining industry in many vulnerable debt-laden, yet mineral-prospective countries.

However, Friedland didn’t just take advantage of these changes, he appears to have had a hand in creating some of the new conditions. It is quite likely that the junior venture capital phenomenon would be a different, certainly lesser beast, without his stock promotions activities during the late 80’s.<sup>296</sup> His negotiations with Inco over Voisey’s Bay can be regarded as part of a strategy similar to that used by the legendary Texas oilman, T. Boone Pickens, though far more opaque; namely, to purge the lumbering, old-style mining companies of their penchant for lengthy board meetings and interminable rounds with conventional institutional investors.<sup>297</sup> He has proliferated and diversified his corporate operations so as to take advantage of the opportunities provided by diminishing state oversight, more flexible operations in the field, while he has cultivated connections with business and political leaders of dubious reputation among the “Asian Tigers”.

Friedland stands out for his readiness, indeed eagerness, to play a critical role, directly or indirectly, in territories where battles for control over resources, abetted by foreign intervention, are at their worst: Indonesia, West Papua, Bougainville, Sierra Leone, Burma. In the case of Bakyrchik, he was willing to stand in keen competition with some well-established mining outfits. He has also spread his nets further afield.<sup>298</sup>

Friedland has acquired some eminently workable deposits and selected metals (particularly gold) which historically have turned a quick and hefty profit. He has chosen financial partners with political clout and ready capital, and, crucially, registered his companies in tax havens (Isle of Man, the British Virgin Islands) or on stock exchanges in states (Canada and Singapore) where stringent regulatory oversight often takes second-place to so-called “business as usual, and more of it”. He has apparently been able to count on complicity not only from private backers, but also several governments. This is well-illustrated through his exploits in Burma and the protection afforded his operations there by the Canadian government.

## Burma

When the Burmese military regime, the SLORC, began offering large stakes in the country’s mineral resources to outside interests in 1995, Canadian venturers were first off the block. Two-thirds of the initial sixteen mineral concessions were taken by Canadian juniors, of which no less than eight were controlled by Friedland’s Ivanhoe Myanmar Holdings. By late 1998, six such juniors – Pacarc, East Asia Gold Corporation, Palmer Resources, Leeward Capital Corp., Mindoro Resources and International Panorama Resources – were still actively pursuing their “interests” in the country.<sup>299</sup> In mid-1999, Friedland renamed Indochina Goldfields to Ivanhoe Mines. It is the Monywa project that is now at the heart of Friedland’s empire. Output from the Monywa copper mine was running slightly ahead of schedule by early 1999, allegedly with some of the lowest operating costs of any such mine, anywhere.<sup>300</sup> At mid-year, an optimistic Friedland announced that Monywa would soon expand to 35,000 tonnes a year.<sup>301</sup>

By this point, local people were reporting the effects, such as skin irritation, of possible contamination from mining discharges into Monywa area waters.<sup>302</sup> Before the mine officially came on-stream and was still the responsibility of the Ministry of Mines, one expatriate visitor declared the site “a safety hazard”, describing how local villagers were not prevented from “running all over...even during blasting”. Said this witness,

“The [drillers] were too lazy to drill to the required depth and so were making up for it by packing the holes full of far too much power-gel. Every time they blew a shot, there were huge blowouts and rock fragments sprayed everywhere like shrapnel.”

Some of these fragments hit the truck in which the witness was traveling. Local people had been scooping copper-sulphate contaminated water from the river adjacent to the mine-site in order to evaporate and sell the copper sulphate to the government, and the waters were running “bright blue”.<sup>303</sup>

This mine appears to lend more credibility to Burma’s infamous current regime, which is a 50% partner in Monywa, than any other mineral project in the country. Ivanhoe pays a 2-4% royalty directly to the military and is destined to be one of the country’s biggest single foreign exchange earners. The SLORC has already benefited from selling Friedland further extensive mineral rights in Burma.<sup>304</sup> Friedland has boasted that his operations could generate at least an extra 100,000 tonnes of copper a year – to add to what is currently being sold to the mine partners Marubeni and Sumitomo in Japan, and to customers in Hong Kong, Thailand, Saudi Arabia, Malaysia, Korea and Pakistan.<sup>305</sup>

In September 1998, Burmese pro-democracy campaigners in Canada challenged Friedland, by phone, about his promotion of the Monywa mine. Claiming that he had entered into negotiations over the project as long ago as 1990, Friedland stated that he had resisted requests for bribes (signature bonus), and was channeling the mine profits into various good works within the country, to wit: "I put out more for medical care [in Burma] than the government."

According to Friedland, Burma's generals were not corrupt and were pursuing enlightened forestry policies; while the way to "gain their approval" was by recognising that "they love their country." Friedland's only concession was to remark that "if they [the military] start killing students en masse, we would have to re-evaluate our involvement in Myanmar [Burma]."<sup>306</sup>

### Canadian oversight

The Monywa mine appears to be a likely candidate for the category of Burmese investments projects currently condemned by the International Labour Organization. Were it operated by a US company, it would likely be subject to human rights legal action in America.<sup>307</sup> However, the Canadian Government did nothing to prevent IGL's initial entry into Burma. Indeed, in 1997 Friedland boasted that "in 1996, representatives of the company met with officials of the Canadian government in Ottawa [and] at no time did the government advise us against investing in Myanmar [Burma] or attempt to dissuade us from doing business in the country".<sup>308</sup> Equally important, Canadian authorities allowed Friedland to relocate to Singapore without any investigation of the deals which permitted IGL and its investment partners to extend their reach throughout the Asia-Pacific region.

Nearly a decade after the Summitville debacle, the world's most prominent environmental protection agency, the USEPA, had finally commenced legal proceedings against Friedland. The Supreme Court of British Columbia temporarily froze US \$152 million worth of Friedland's newly-acquired shares in Inco, in order to pay towards the Summitville mine's clean-up.<sup>309</sup> An outraged Friedland claimed he had already offered a "substantial" financial contribution to mitigate the disaster, while he needed the Inco shares to finance "business opportunities" and support the lines of credit he had with the Bank of Montreal.<sup>310</sup> Friedland attempted a counter-suit for damages against the US government, which, as already pointed out, was dismissed in early 2000.

The prices reached for copper, gold and diamonds have become highly volatile in the past two years under the impact of commodity scandals, price collapses, and the shaking of entire economies in precisely the region on which Friedland has come most to depend both for resource extraction and marketing. Moreover, the stock market shocks of mid-1998, by revealing most shares to be woefully overpriced, could already have dented prospects for some of Friedland's putative ventures.

Finally, as global consciousness grows about both indigenous peoples' struggles for self-determination and the negative consequences of mining in bio-diverse regions, this mining impresario will likely face mounting resistance on several fronts.

In 1997, the World Wide Fund for Nature (WWF) compiled a dossier on Friedland's exploits, based on material supplied by Nostromo Research, and presented it to the Indonesian authorities in support of an appli-

cation for the Lorentz reserve in West Papua to be protected from all mining.

A few months after Indonesian leader Suharto fell from power in 1998, the Ministry of the Environment in Jakarta promised that Lorentz would indeed be designated as a National Park from which mining, including activities by Friedland's company Montagu Mimika, would be banned.

When democratic rule is established in Burma... well, the reader is invited to fill in the conclusion for themselves.



# Appendix I

## The Problems with Copper

This appendix takes a broad view of the problems associated with copper mining and the methods employed at the Monywa mine in particular solvent exchange–electro-winning (SE-EW). The author believes that the Burmese authorities have ignored the potential dangers.

### Copper options

The mining of copper has historically produced the largest volume of uncontrolled and dangerous wastes in the mining industry. It does so still today. For example, the Clark Fork Complex is the biggest Environmental Protection Agency Superfund cleanup site in the USA, and one of the largest dumping grounds for metallic wastes in the world. By the early '90s, this contained an estimated 90,000 tonnes of copper in its tailings slurry ponds.<sup>311</sup>

The Bougainville mine, until the cessation of its activities in 1989 due to armed rebellion, was estimated to have released over 600 million tonnes of copper-rich tailings directly into the Kawerong and Jaba rivers and the Empress Augusta Bay, 30 kilometres downstream. A third of the sediment was deposited in the flood plains and the delta.<sup>312</sup>

A 1998 study of Peru's biggest copper operation, Southern Peru Copper (SPC), revealed that tailings containing iron, aluminium, copper, manganese, zinc, lead, arsenic, chrome and cadmium had been deposited in the Locumba river, and from thence into the Moquegua river basin from 1960 until 1995, when they reached a discharge level of 107,000 tonnes a day. The river contained so much

metal that "more than one billion cars could be constructed from the iron...discharged." The value of the copper, if sold at 1998 market prices, could reach US \$45 billion!<sup>313</sup> Farm land had been virtually annihilated by copper deposition, and a toxic blanket had formed over the narrow continental shelf, with the beach line being extended into the sea at the rate of 40 to 60 metres a year.<sup>314</sup> One small sea limpet was found with copper concentrations no less than 46 times the UN Food and Agriculture Organisation (FAO) guidelines. Although SPC constructed a tailings dam in 1995, effluents continued to flow from this facility into the Locumba.<sup>315</sup>

### Smelting

The smelting of copper from concentrate has also resulted in vast pollution worldwide, with copper constituting a large proportion of the estimated 3.7 billion tonnes of airborne particulates emitted globally each year. Particulate emissions from the Sudbury complex, operated by Inco in Ontario, are alone estimated to have contaminated more than one hundred square kilometres of surrounding land.<sup>316</sup> At the Ilo smelter operations in Peru, the concentrate is judged to contain 29% iron, an equal percentage of copper and 33% of sulphur by weight. Although the company continues to reduce the amount of sulphur dioxide (SO<sub>2</sub>) emissions, its daily output from the plant during 1998 was still estimated at around four times the total for the Netherlands. Levels of 14mg/m<sup>3</sup> of SO<sub>2</sub> have been measured in the urban areas of Ilo district itself at 28 times the World Health Organisation (WHO) guidelines for short-term exposure.<sup>317</sup>

## Toxicity in water

Acidic mine drainage from tailings and rock, or overburden, is generally acknowledged to be the greatest single pollution hazard from mining. It poses enormous and continuing problems, for without effective neutralisation of the drainage and heavy metal components in water sources, toxic uptake will continue indefinitely. Unlike organic contaminants which change form, metal pollutants usually cannot be dissociated into other elemental components; toxicity potential is governed by the bio-availability of the metal. Copper, for example, when widely available in soluble form, makes complexes with other metals present in water.

Neutralisation may consist of the addition of lime, at best a temporary measure with its own problems;<sup>318</sup> the planting of marshland species which “eat up” heavy metals;<sup>319</sup> and the addition of organic matter to specially-constructed containment facilities in order to maintain pH near neutral and establish anaerobic conditions. Ultimately, as was recognised by the US Federal government twenty years ago in the context of uranium mining, the only fail-safe way of containing tailings is to dry them out and store them in a permanent stable site, which may mean transport to other ground. This is a method of disposal only gradually being introduced by the industry, and only in North America at present. The prospect of heavy metal contamination of waters many miles from the source or discharge point is very real and has already been demonstrated by studies carried out at Clark Fork, in the Philippines, and elsewhere. For example, a reservoir more than 200 kilometres from the Butte and Anaconda mines at Clark Fork was discovered to retain 13,000 tonnes of copper, along with almost twice as much zinc, and significant amounts of arsenic, cadmium and lead.<sup>320</sup>

Such well-documented examples of toxicity from copper mining are general indications of what might result from inadequate or faulty construction, cost-cutting technical measures, or failure to rehabilitate mined-out sites. However, the degree of damage is relative to a number of different factors including climate and rainfall, seismicity, elevation of the mine and tailings outflow, river flows, background levels of heavy metals, and composition (temperature and acidity) of the water.

## End of copper?

The proposition that widespread use of copper should be phased out on toxicological grounds has been current for some years. In 1993, the European Union (EU) extended its classification of eco-toxicological substances, raising the possibility that copper would be included in the *Risk Assessment and Risk Reduction* phases of the EU *Existing Substances Programme*, while the Organisation of European Cooperation and Development (OECD), and the United Nations' harmonisation programmes might similarly include copper in the future.<sup>321</sup> Equally important, several recent cases receiving global publicity have focused on the hazards of copper wastes disposal – notably from the Rio Tinto-owned Bougainville mine (officially closed in 1989), the Grasberg gold-copper mine in Papua,<sup>322</sup> and the Ok Tedi mine run by BHP of Australia in the highlands of Papua New Guinea. The latter was subject to a landowners' compensation suit commenced in 1994 and settled out of court in 1996. As part of the settlement, the company promised to carry out technical studies on the best possible method of tailings deposition. On completion of those corporate studies in mid-1999, BHP declared that none of the four main options considered were compatible with its “environmental values”.<sup>323</sup> It recommended that the government of Papua New Guinea close the Ok Tedi mine. But even if this were to occur, 300 km<sup>2</sup> along

the river Ok Tedi is already dead or dying, while one authority has suggested that the “cascading effect” of tailings swept downstream could eventually result in a “die back” of more than 3,000 km<sup>2</sup>.<sup>324</sup>

Partly in response to the outcry at disposal methods used by these mines, the industry has moved towards so-called submarine tailings disposal (STD) of copper, gold and other tailings, sometimes untreated. STD is not employed and arguably not permitted in several northern countries, notably the US.<sup>325</sup> Essentially the practice is only applicable where mines are close to coasts, or sufficiently elevated to permit gravity flow discharge. In theory, wastes could be pumped into the sea from inland mines, using large quantities of seawater to carry the slurry, but the further the mine from the disposal point, then the more prohibitive the expense would become. BHP, in its studies for the Ok Tedi mine, estimated that the costs of a pipeline from the mine to a lowland dam would be several hundred million dollars.<sup>326</sup>

### **What copper does to the environment?**

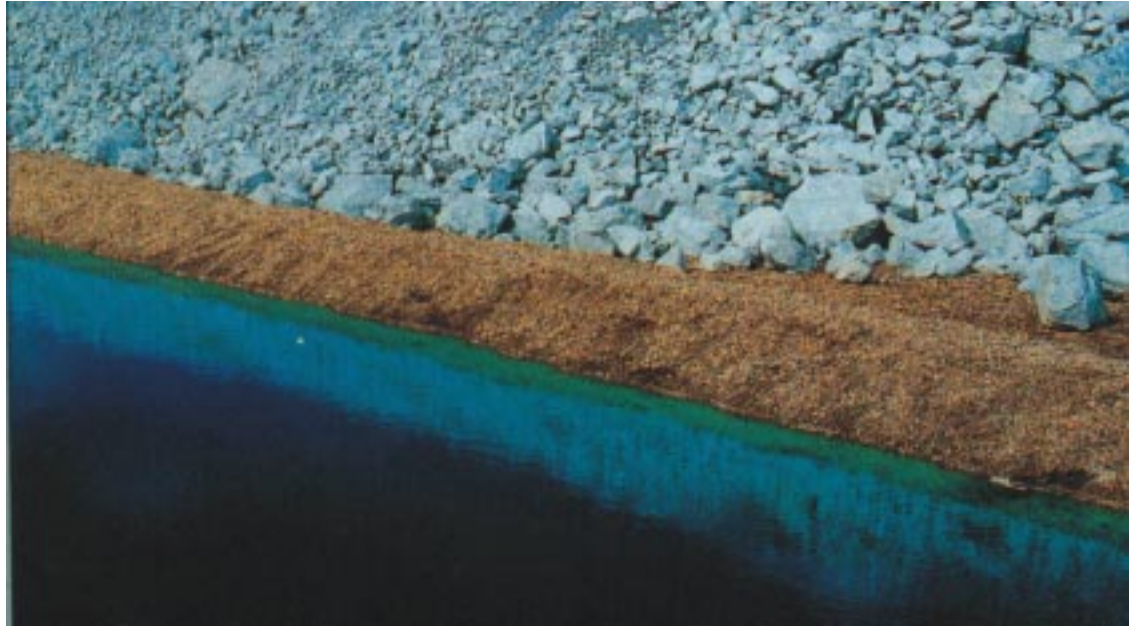
An estimated 325,000 tonnes of copper a year goes into the marine environment from natural erosion. But more than twenty times this amount gets transferred by human activities, including mines and as secondary scrap. It is generally accepted that copper is the most toxic metal for marine life after mercury and silver, even though its ability to move through the food chain, and into humans, is more limited than either of these.<sup>327</sup> According to one world authority on the impacts of copper in mine wastes, the metal’s pollutive and toxicological effects can persist almost indefinitely. In the case of Ok Tedi, “it may take centuries until copper in sedimented deposits are sealed by an unpolluted sediment cover.”<sup>328</sup> The biota most sensitive to dissolved copper are juvenile fish and aquatic invertebrates.<sup>329</sup> Crusta-

ceans and, in particular, planktons of the genus *Daphnia* are the most susceptible to copper poisoning in fresh water. It is generally acknowledged that, though salmonid and non-salmonid species evince different reactions to other heavy metals in such an environment, with copper the distinction does not exist – both are equally susceptible.<sup>330</sup> While salinity generally reduces vulnerability, larval fish prove much more susceptible than adult fish, and on a similar scale to crustaceans. Toxicity increases with higher water temperatures.<sup>331</sup>

### **Sulphide mining**

Although the geology of mineral deposits can vary enormously, porphyry deposits, characteristic of the Pacific Rim countries including those at Monywa, typically contain an oxidised upper zone and a sulphide lower zone. They are also often associated with high gold values.<sup>332</sup> Depending on the degree of weathering of the oxide zone, the sulphide deposit may be accessed and mined earlier rather than later in any project development.

Specific problems are associated with sulphide mining. Essentially, exposure to air and water of the deposit or tailings can lead to massive acid rock or mine drainage. For this reason, activists in the US have campaigned to ban sulphide mining, unless and until it can be shown that these problems are absolutely avoidable. In early 1998, groups in Wisconsin finally got the State Senate to pass a Mining Moratorium Bill. This stipulates that no new sulphide ore-based mine should be opened until the company demonstrates that a similar mine has operated for at least ten years, and been closed for a similar period, without “damaging the environment”.<sup>333</sup> One important aspect of this legislation, believed so far to be unique, is that it was passed by a state legislature which has long been supportive of the mining industry; indeed, it permitted the Flambeau copper mine, managed by Rio Tinto,



Heap leach pad at Ivanhoe's Monywa mine  
(Photo: Mining Environmental Management)

to come on stream six years ago in the face of unprecedented opposition from a coalition of environmentalists, farmers, sports-people and Anishinabe native bands.<sup>334</sup> The US Environmental Protection Agency (EPA) in August 1998 issued a document confirming the dangers of sulphide mining and concluding that there were no current technical fixes which adequately guarded against them.

### **Role of SE-EW (hydrometallurgical processing)**

Monywa is claimed to be Asia's largest SE-EW project, with estimated reserves of two billion tonnes of ore and a project life of thirty years. With initial financing secured and the grade of its cathode rated at LME-standard (i.e. acceptable in trades on the London Metal Exchange), it seems to be, to quote another SE-EW producer, "an incredibly lovely process".<sup>335</sup>

Estimates by *Mining Journal* Research Services in 1997 were that, by the year 2000, 43% of world copper production would be recovered by this method and costs per pound could go as low as 50c/lb.<sup>336</sup> This would put SE-EW in the lowest quartile of copper costs, though still higher than the magic 40c/lb aimed at by many conventional producers, and which has been claimed as the unit cost at the El Abra mine managed by Cyprus Amax, the world's largest single employer of the process, with current production ten times that originally envisaged at Monywa during phase 1.<sup>337</sup> Last year, Ivanhoe Myanmar claimed that its minegate costs at Monywa were as low as US27c/lb,<sup>338</sup> though until the company produces fully and independently audited accounts, this figure should be treated with some suspicion. Crucial to the long-term Monywa scenario is Japanese demand for copper, and to a lesser extent that of South Korea. Japan's

refining capacity was, at the beginning of 1998, scheduled to increase to 1.34 million tonnes per year by 1999, but the Asian economic crisis swiftly threw a spanner into the works, as a bear market took hold, and copper demand took a downward swing.

Conventional methods of copper production are loosely described as pyro-metallurgical. After mining, the ore is crushed and rolled into a fine pulp, which is then concentrated by flotation using chemical reagents. An estimated 80% of all newly-mined copper is shipped in concentrate form to be smelted and refined, often offshore. Indeed, the growing trend is for smelters to be constructed and their output marketed separately from mines.<sup>339</sup> Among this new generation of custom smelters is one operated since 1995 by Sterlite Industries in India. In late 1998, Sterlite arranged a major equity investment in Friedland's company, First Dynasty.<sup>340</sup> A year ago the smelter was closed for a period, by order of an Indian court, following petitions by environmental groups and local politicians.<sup>341</sup>

The smelting and refining process (with some variations) has been criticised over many years, first because of the impurities – primarily toxic metals – in the waste, second because of the pollutive potential of the chemical reagents, and thirdly, for the vast amounts of SO<sub>2</sub> produced from sulphide ores and not dealt with Environmental Protection Agency. For example, the copper and nickel ores customarily processed by Inco in Canada contain 4.5 tonnes of sulphur for every 1 tonne of copper and nickel available, which are capable of themselves producing an estimated 9 tonnes of SO<sub>2</sub>.<sup>342</sup> Despite considerable improvements over the past decade, Inco's nickel and copper smelters are still the biggest single source of SO<sub>2</sub> emissions in North America.

In contrast, the hydrometallurgical route, such as the solvent extraction–electro-winning (SE-EW) method employed at Monywa, consists of leaching either by bacterial methods or sulphuric acid, followed by concentration of solvent through ion exchange and electrolysis to deliver a high-grade copper cathode. Since its origins in the 1960s, advocates have often claimed that hydrometallurgy is a cleaner, more environmentally sound way of producing copper.<sup>343</sup> It is also considerably cheaper, avoiding not only the expense of building costly plant and transporting concentrate to smelters, but also it is capable of conforming to more stringent controls on gaseous emissions, adapting to different scales of ore feed, and often ending up with sulphur residues of an economic value. In contrast, it has been estimated that the cost to copper smelters of conforming to the US Clean Air Act is no less than 26% of total operating expenses, a figure based on data from seven smelters in 1987.<sup>344</sup>

The SE-EW method cannot be applied to all ores. It is primarily used for low-grade oxidised ores, although it can and is being used for sulphide ores as well, primarily those containing chalcocite and covellite. Those ores which are higher in sulphides can be enhanced by the addition of the micro-organism, *thiobacillus ferrooxidans*, at the leaching stage. This consumes carbon dioxide, and oxidises ferrous iron and sulphides, thus converting copper sulphide to copper sulphate. Some mines, such as Cerro Colorado in Chile, use both solvent and bacteria at the heap-leaching stage, in the treatment of both oxide and sulphide ores.<sup>345</sup>

Although slow, the SE-EW process not only enables companies to exploit deposits which may have been considered uneconomic some years ago, but to retrieve copper commercially

from “dumps”, which might otherwise be abandoned and could themselves be a source of continuing contamination. The Canadian mining weekly *The Northern Miner* a few years ago candidly attributed “SE-EW’s impressive gains [as having] everything to do with affordability”. Indeed, the journal estimated that savings could be as high as 40% over pyrometallurgical methods.

There are several stages in SE-EW: the acid leaching of the ores, either in existing dumps or newly constructed heaps; solvent extraction (sometimes in more than one stage) of the resulting copper sulphate leach solution with an organic immiscible solution; and electro-winning after the addition of acid to precipitate the copper, ending in the production of copper cathodes.

Although the ore can also be leached *in situ* (i.e. usually underground), this is potentially a highly hazardous operation, except where thorough research shows that underground aquifers, springs and other water sources could not possibly be affected. *In situ* leaching has in general been frowned upon by environmental authorities, with several mine proposals for the US and Australia having been refused permits as a result.<sup>36</sup>

### **Non-polluting? Nonsense!**

However, claims that SE-EW is non-polluting are questionable. In fact, the method shifts pollution upstream from the downstream smelter; usually from more populated to less populated areas. According to Gavin Bridge of the Mining and Environment Research Network (England), this is a key feature of attempts by the copper industry to maintain or increase profits

In the SE-EW method, ore must be crushed and prepared in heaps on purportedly impermeable pads. It is arguable whether there is such a thing as “impermeable pads”. Tropical conditions, seismic shifts, flash flooding, and overloading contribute to the rupturing of liners, sometimes disastrously, as at Summitville (see Chapter 4).

After the electro-winning stage, vast amounts of liquids and sludge containing undissolved acids and heavy metals need to be disposed. When dumped into waterways, this results in siltation, acid drainage, heavy metal toxicity and contamination of underground aquifers. Bridge studied the SE-EW model, as prepared by the US EPA, at a site in New Mexico and found pH levels in groundwater in the vicinity of the leach dumps dropped from 7 (alkalinity) to around 3-4 (abnormally high acidity), while sulphate and total dissolved solids were elevated. In some places, groundwater quality was “virtually undiluted leach solution”.

It is possible to reduce or contain contaminants emanating from the leach pads, but this presupposes the installation of a self-contained carefully managed, leak-proof system, well away from all groundwater and flowing water, with an extensive network of pump-back wells, where groundwater is sent to the SE-EW plant for metal to be recovered. Vat leaching can also reduce some problems. Nonetheless, there will remain the huge challenge of permanently disposing of the acidic solid residues.

## Appendix II

### Stripping Rubyland: The social conditions of mineral development in Monghsu, Shan State

Located in central Shan State lies the town of Monghsu.<sup>347</sup> The tragic story of Monghsu captures a picture of mining development under military rule in Burma. Once a sleepy, remote town set among farming villages which had little outside traffic, Monghsu was drastically transformed with the discovery of rubies in the surrounding hills. Reckless mining and corresponding build up of militarism created tremendous upheaval, which resulted in the disintegration of social life and the village economy.

Monghsu was named after a fable of an old wife and her husband which, as legend has it, became the twin hills of Loi Song Tao, or “Mount of the old couple”. In the story, a restless man left his home to explore the end of the earth. In his journey, he encountered a spinster who was as restless as he and also set off from her home to find what lied beyond the horizon. Understanding each other and sharing the same feelings, they became married and settled at that place of meeting at Monghsu, which in Shan translates as “meeting with contentment”.

Native villagers of the area, mostly ethnic Thai, sustained themselves through farming and managed to export crops such as tea, soybeans, peanuts and fruit to towns and cities in the country. They were unaware that the red sands underneath their farm paddies and in the surrounding hills contained precious gems.

News got out in the early 1990s about Loi Seng, the “gem hills” twenty-nine kilometres southeast of Monghsu. With this arrived scores

of young internal migrant workers from all quarters of the country, reminiscent of the gold rushes of the past. Still, direct access to the hills proved difficult. Before the boom, convoys only reached the town every month or two, and no direct road reached the Loi Seng from Monghsu, requiring that itinerant miners rely on human labour or beast of burden to carry mining gear and supplies up to the hills.

Most itinerant miners were inexperienced and unprepared for mining, and therefore did it poorly.<sup>348</sup> However, some were adept and made quick fortunes, and this was enough to keep migrants arriving.

Native villagers remained for the most part uninvolved with the mining activity. Some peddled basic goods such as rice, cooking oil and vegetables, and others hired themselves to clear jungles for fuel and construction materials and access to ruby deposits. Breaks from harvesting crops brought out the occasional farmer trying his or her hand at digging for gems.

By 1992, Monghsu became overcrowded with merchants, gem traders, and other activities – prostitution, gambling and drug dealing – connected with the lifestyle of young miners. Natives could scarcely afford the rising costs of living. Schools, once full of students, became half-empty, and the students, seeing the wealth of those in town who now had money, showed less interest in learning.

Ethnic militias who had signed cease-fire arrangements with the Burmese military junta

began extorting money from people entering the district, charging peddlers extra for their cargo. Native villagers with little money were not spared from extortion either.

Towards the end of 1992, the junta took control over the gem trade in the area. Lands around Loi Seng that were being excavated by itinerant miners were divided into large plots and handed out to those with capital, including companies, cooperatives, and other financiers. Indigenous villagers were not permitted compensation for confiscated ancestral homelands. The best plots, or “sop sur” meaning “tiger’s mouth”, were reserved for the heads of the junta, and developed by soldiers from the Eastern Command. Jobs were given to cheap migrant workers brought in from southern Burma. Mining camps, along with the belongings of itinerant miners, were burned. The few that returned were charged with trespassing and were either shot or flogged then jailed. Before being taken to prison, many were tied up until their limbs strangulated.

The situation worsened a year later. Forests were being depleted at an alarming rate as larger plots were cleared for excavation. Mine tailings created during the washing process of gem extraction were dumped directly into the Nam Ngaa river that past through the district, blackening the water.

Social problems associated with illicit drug use (heroin, amphetamines, and opium), and prostitution, and poverty became aggravated. A growing number of miners developed drug additions and, with needle sharing and prostitution, came an outbreak of HIV/AIDS.

Helpless in preventing the rush of miners who invaded their fields with the discovery of rubies, farmers joined the growing population of jobless and landless, who were turn-

ing more and more to begging and thievery to survive.<sup>349</sup> The junta soon took control of the farm paddies, and then sectioned them into plots and sold them off for excavation. Farmers who, once could amply provide for their families, were not compensated either and ended up destitute.

The military began to take up local people as compulsory, unpaid workers. Soldiers rounded up villagers and used them as military porters, to carry their equipment and supplies into frontline battles with insurgent militias. On the frontlines, porters were used as human shields and minesweepers. Sentry duty became common for elderly and children in particular, who had to watch over roadsides and alert the soldiers to disturbances or insurgency. The roadsides and highways from Lai Kha to Monghsu, Nam Sarung to Kung Hing and elsewhere in Shan State were soon lined with sentries, who had to beg for food to carry on. At first, travelers were sympathetic and gave them food, though later they ignored the sentries.

The hasty and ruthless development of ruby mining by the junta in Monghsu led to the progressive breakdown of village economies and communities in the area. In the rush to retrieve the precious stones, the regime showed complete disregard for the impact on the environment, and rights of the existing communities over their lands and way of life. Lands and homes were confiscated, possessions removed, people were displaced and used as forced labour. Even the camps of small-scale miners were destroyed. While the benefits of mining are tightly controlled, the long term social consequences of heroin addiction, landlessness, HIV/AIDS, prostitution and poverty, and the severe environmental degradation make the chance of rebuilding the previous community structure and village economy difficult, if not impossible to envisage.

# Appendix III

## HIV/AIDS, Heroin and Mining in Burma

Under the military regime, the link between the mining industry, the illicit heroin industry and the spread of HIV/AIDS has become a growing problem in Burma. At the heart of the matter are the policies of the military regime, and their involvement in the heroin industry.

In signing cease-fire agreements with drug lords and their private armies in 1989 (Wa and Kokang, for instance, both in the northern states where gem mining is found), the regime has become involved in protecting, profiting and encouraging the production and trafficking of heroin. Heroin production increased dramatically in the decade after the cease-fire agreements were signed. The regime currently shelters heroin and drug producers, principally for the capital they bring to the nation's largely undeveloped economy. Moreover, the regime has created legislation which helps launder the proceeds of illegal drug sales.<sup>350</sup>

One of the main areas of investment of laundered drug revenue appears to be in mining ventures. Gem, gold and silver mines at Mongyawn and Monghsu in Shan State, for example, have been opened by the United Wa Army, an insurgent militia which has entered into a cease-fire arrangement with the regime.<sup>351</sup>

The military's lack of enforcement against heroin trafficking, and intravenous drug use within the country, has contributed to the spread of AIDS.<sup>352</sup> Infection rates among the half million IV drug users are among the highest in the world, according to the World Health Organization (WHO).<sup>353</sup> Epidemiologist Dr. Chris Beyrer explains that with the ubiquity

of heroin and "tea shop" shooting galleries, the country's short supply of syringes, and paraphernalia laws that make carrying needles without a medical licence a crime, needle sharing is common.<sup>354</sup>

Mining districts, some controlled by so-called cease-fire groups, are key areas for dissemination of the virus within the country. Among the groups most affected by AIDS and IV drug use are the young internal migrant workers who flood the gem and ruby mining districts in the mountainous northern states of Kachin and Shan.<sup>355</sup> When the monsoon rains cease, thousands of migrant workers descend on the gem hills to earn extra income. The ubiquitous presence of heroin dealers and brothels in mining boom towns precipitates the spread of AIDS. Many young migrants become infected with the virus and carry it throughout the country when they return to their homes.

No small factor in the creation of the epidemic is the role of the military regime whose policies and practices have generated a dangerous mix of insecurity, poverty, conflict, and lack of basic health facilities. Burma's economy has deteriorated to such an extent that it now ranks among United Nations' list of least developed countries. The rate of infant mortality is 81 per 1000 live births, compared with neighbouring Thailand's rate of 31 per 1000 live births.<sup>356</sup> Military expenditures constitute at least half of all state spending, while health budgets have fallen throughout the 1990s to reach 0.2% of budgetary expenditures by 2000.<sup>357</sup> The WHO 2000 World Health Report ranks Burma at 190 out of 191 countries.<sup>358</sup>

Inadequate health care and deteriorating economic conditions, together with the failure of the Burmese regime to deal effectively with the production and widespread use of illicit drugs bodes ill for their ability to cope with the HIV/AIDS problem.<sup>359</sup>

# Appendix IV

## Interview with a former mining engineer on mining conditions in Burma

*Note: These interview notes are based on four days of interviews done 28/6/99 to 1/7/99. The notes have been reordered and edited for clarity and concision. At the time of interview, the Mawchi tin-tungsten mine, in Kayah State, was a government-owned mine. For his safety, the identity of the man quoted here remains anonymous.*

*Q. Could you please tell us about your background in mining?*

In my last position, I was an engineer at a government mine and responsible for the “tributors”. These are people who operate private mining operations but sell ores they find to the government. While I had many responsibilities, I usually worked under a military-appointed mine manager. The mine managers are mostly army officers, usually of captain rank.

*Q. What were some examples of serious pollution you saw in your time?*

In one case, we dumped magnetite powder into the river at Mawchi during the summer of 1979. There was a lot of magnetite powder, used for the treatment of ores, imported during the time that the English were in joint venture with the Burmese. When the government took over the mine and the foreign reps left, no one knew how to use it.

Tins that stored magnetite were becoming old and rusty. We felt this was harmful to our milling plant because the dust escaping from the rusty tins would blow around in the wind. So, I asked the labourers to go and dump it in the river (Molo stream), which flows into the Salween river. Since it was shallow, it took a while for the magnetite to flow away. The whole river became black with that powder.

All the fish and the animals that came to drink or wallow in it died. Even the buffaloes died quickly. It took two months for all the powder to wash away.

The other significant cause of pollution occurred when we dressed the minerals – crushing the ore and washing away waste rock. We used a lot of water. The river was always dirty from the sand and dirt washed from the ores.

When dressing minerals, we use a flotation cell with many reagents such as frothers and activators. These included acids such as Zenthath, and pine oil as a frother and activator. After treating the ore, reagents were simply thrown or washed into the river.

We used a lot of acids to analyze samples, around one 20 to 30-litre bottle of the hydrochloric and sulphuric acid concentrate every three days. The acid concentrate, together with all the chemicals in the flotation cells and the tailings, were dumped into the water. Further, in the actual mining, all the waste rock and mud taken out of the mine got dumped down the mountain and into the river below. Molo stream is now heavily silted. While it is badly polluted in summer, mine wastes get washed away in the rainy season.

*Q. Was there ever any treatment of tailings?*

No, they just throw it away. I have never seen a mine-tailing pond. It is the same at the other mines in Burma, especially the hydraulic mines at Heinda and Kyaukmaedaung where strong water pressure breaks up the rock into sand and mud. Tailings and gravel spreads out and covers the land and kills the plants, even if only one to two feet deep. The valleys are covered in silt and mine tailings.

At these mines, there is a lot of arsenic and other heavy metals. After dredging you get heavy metals along with the tin concentrate. They also release the wastes into the river there in Tavoy.

We had no instruction to control pollution, and there are no rules or regulations about pollution. The government provided no information or training whatsoever, even up to 1990.

The main production at Bawdwin is lead and zinc. Lead is a poison and often radioactive. All the people who work in that mine area die when they are about the age of 50. Only a few get older. People there look very old at the age of 45 to 50. They look just as though they are 75 or 80. Because people are mostly ignorant, the mine workers don't know about the radioactivity.

With gold, people working in the gold mines handle mercury every day. They squeeze the mercury liquid to separate the gold from it. I must also have breathed in a lot of mercury gas.

We have to cut down so many trees when we mine. They need hard timber to use in the mines, especially the bigger tunnels. At the Bawdwin / Namtu mine, they use a technique called square set (digging block after block) to make great cavities, not tunnels. It uses a very large amount of timber. There is no timber growing nearby any more. The mountains are bare, and there are no fish in the river.

We would weaken the steep mountain when we would dig. Veins inside are close together and sharply sloped and it was in a critical state of collapse all the time. It is very dangerous, but people have no other work, so they take the risk, and many die.

The government has a safety policy, but as you know they have no time to enforce it. They said, "it is your choice to risk your live or not. You are the seller and we can't take responsibility for you. We are just the buyers. People will die one day, now or later. When

you die, it will be in due time. There are many people, some die, some will continue to live."

*Q. Did you see many die?*

In 1973, there was a great mountain collapse. Some were mining on the very steep face. On that day, I could see one rock fall, then another, then, on the point of collapse, we could see the whole area moving. There was about five minutes between the rock fall and slide, so people had some warning.

When the solid mountain broke away, a wave of rock came down the mountain from the very top. As it fell, the rockslide took 13 houses with it, and covered the whole valley 100 feet deep in rock. These were tributary houses, not under the responsibility of the government mine. To this day, those houses and the bodies of the people in them have never been recovered.

There was another huge collapse with many deaths around 1980-82, I am not sure of the date. There were more than 30 who were working in the mine.

These were the major collapses. Every year there are minor collapses with one or two deaths. Some collapses occur inside the mountain, some outside. Rocks are falling all the time because of the piles of loose rock that miners throw just outside the tunnels. The heavy monsoon rains adds to the risk of rockslide.

If a place has stayed untouched and there has been no rockslide for many years, people believe that it is basically safe. When people get a good place, they will often miscalculate the risk. Newcomers face higher risks. No more than 100 people per year die from the mine accidents.

People are used to it, as it is part of daily life. We all have to take care and get into the habit of looking for the places to hide as we go along. For myself, I also pack my heart up every time I go. If you are too afraid – it is shameful, people will laugh at you, call you a coward.



Campsite at Hpakant gem mine, Kachin State 1997 (Photo: Burma Centrum Nederland)

*Q. Does the government have safety policies?*

There is no government regulation. The government only makes laws for their own benefit. Since the miners are ethnic people, the government does not care what happens to them. Even if the government would say that it is too dangerous, people would laugh.

In the Mawchi area, the women and children, along with some men, make their living sifting through the waste rock at the base of the mountain. This is also dangerous because of rockfalls and collapses. Also, the women who dig on the mountainside bring it down onto themselves. The people working in these areas always have big rocks and other places picked out to hide behind for when the rocks fall. But when the big collapse happens – even the big rocks they hide behind are covered over. Every year some women and children die.

Many more die from malaria and while portering for the army. When mounting a military operation, the army often comes to take people from the mine area as porters. They just take them and disappear. People have no choice. Even workers in the government mine get seized as porters. The soldiers always say “the operation is the most important priority” and that “to serve the army is the duty of the government servants.”

It is actually dangerous to complain because they get suspicious of you. It is dangerous to complain because they will accuse you of stirring up trouble against the army.

The military have no human spirit. People taken as porters are not given enough food, they’re given no blankets, nor are they given time to collect their clothes or blankets before being taken away. They are tied up at night, tired, weak, cold and with no protection from

mosquitoes. In these conditions, it is easy to get ill. If they complain, they are beaten. If they are so ill they can't carry [their loads], and can't complain, many just prefer to die. Soldiers do not care if someone gets ill, and they never report the death to the relatives. People are so used to it that they don't even know that it is a violation of their human rights. They feel they don't have any rights.

*Q. What did you hear about the strike at Namtu-Bawdwin a few years ago?*

Actually, it is very hard to strike, so they must have had a very sound reason. It's hard simply because the government doesn't allow the people to get together to demand their rights. It must've really been the last straw for them to do it. It would've been a case of "If you don't strike you will die, and if you strike you may also die." They would have had to accept they would be arrested.

Even though my wife and I had top positions, we didn't have enough money to afford the travel costs to visit each other. My salary, even as a senior staff, was just enough for food. Her salary was the same, not enough for clothes or medicine. If any of us had got really sick it would be very difficult.

After 1988 up to 1990, my salary as a senior engineer in charge of a large dredging operation with 20 years of experience was only 1,500 Kyats per month (US \$33). The salary of unskilled day labourers was 600 Kyats a month (US \$13).

Even though I was the senior mining engineer I was still not in charge. They would bring in a young army captain who had never studied geology, never worked, didn't know engineering or mine management. They just give orders. If it doesn't work they put the blame on us, if it works they take the credit. In all the mines: Heinze, Heinda, Mawchi, Bawdwin – military officers were in charge. They have the authority to decide how to use the labour, the resources, etc.

The Burmese government prevents people from using machinery, making them only work by hand. If they use machines they will sue them and imprison them. The private miners are only allowed to use hand tools.

The ban against machinery was a law. The order was a Mining Department directive issued by the Minister in 1975. It came from the main office when I was working in the mines. The law was made to stop people getting the machines from Thailand.

# Appendix V

## Observations from discussions with Burmese miners

*This report was obtained first-hand from migrant Burmese workers who go to India to work from time to time. To protect the safety of these people, we cannot give source names.*

### Mount Chezin Mining Project

Sources state that over the past ten years 1000 acres of land has been confiscated from local people without compensation for this mining project. In exchange, the military authorities have allowed the people minimal opportunities to work at the mining project site. The enormous amounts of corruption involved in the hiring process have caused even more hardship for the people.

Apparently, the going rate of a bribe to get a job is between a 100,000 and 300,000 Kyats. In order to pay this price, people have been selling all their belongings as collateral for a loan. The job positions at the mine are very unstable. Once hired, people are often fired three to four months later to be replaced by employees from abroad, or members of the military.

Often the workers are fired before they have made enough money to pay off their loans. Also merchants who make a living by selling consumer goods at the mining site have lost considerable amounts of money from workers who paid on credit but lost their jobs and could not pay. Many people who have lost everything have suffered severely mentally and emotionally.

### The Letpantaung Mining Project

This project site is eight miles away from the Mount Chezin project. On June 6, 2000, Secretary 1 of the military regime, Major General Khin Nyunt visited the site and told the people that many of them would have to be relocated to make way for the project. Khin Nyunt said the following villages, totaling approximately 1000 acres of land, would have to be relocated immediately: Wathan, Zuasi, Letpantaung, Shwehle, Wethme, Phawngtaka, Kyuhphuithan, and Kyaw. The villages have since received official orders of land confiscation from the military regime.

When Major General Khin Nyunt visited Wethme village, he promised the villagers that the government would provide them with all the necessary tools to rebuild their homes at the new location. So far, nothing has been provided.

The area allocated for the project is under the control of the North West Command of the Burmese Light Infantry and has been fenced off with barbed wire. Major Aung Soe and Capt. Thein Thut are in charge of the NW Command and are responsible for the project. Apparently all the vegetables and other belongings that were fenced off with the land have been confiscated and sold off by the army. U Thaung Thun of Chinpih village was delegated to sell off the items for the army, but has since fled with the money and his whereabouts are unknown.

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54 Chapter II: Paragraphs k, l, m.

55 Paragraph e

56 Paragraph f

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managed by Boliden which was registered on the TSE and 41.85% controlled by Trelleborg of  
Sweden, see Forest People's Programme, et.al., op. cit.)  
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99 There are three types of Burmese owned mining companies: state-owned enterprises; those  
owned by former drug lords who once ran the Wa state armies, who entered silver and gold  
mining in Shan state as an alternate to the heroin trade after cease-fire arrangements with the

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 172 Moody, *The Gulliver File*, op.cit.  
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 175 statement from Mindoro, 10/98  
 176 Moody, *The Gulliver File*, op. cit.  
 177 *Mining Annual Review* 1999, op. cit.  
 178 *Mining Journal* 5/9/97

179 Htay, *Mining Journal Supplement*, 17/7/98  
180 *Mining Annual Review 1999*, op. cit.  
181 *Mining Journal* 8/5/98  
182 Roger Moody, *The Gulliver File*, op. cit.; also information from the author  
183 See *Down to Earth Newsletter*. Down to Earth. London. 1998; also *Mining Journal* 8/5/98  
184 *Mining Journal* 21/7/95  
185 See Forest Peoples Programme et al., op. cit.  
186 *Mining Journal* 7/8/98  
187 *Engineering and Mining Journal* 8/97  
188 Htay, 1998, op. cit.  
189 *Mining Annual Review 1999*, op. cit.  
190 *Mining Annual Review 1999*, op. cit.  
191 Canada News Wire, 19/8/97; see also entry for ICC  
192 *Mining Annual Review 1999*, op. cit.  
193 *The Burma Courier*, 25/6/99  
194 *The New Light of Myanmar*, 10/12/99  
195 *Mining Annual Review 1999*, op. cit.  
196 *The New Light Myanmar*, 10/12/99  
197 In Indonesia, it has two operating gold mines employing the much-criticized STD method of  
tailings disposal  
198 *Mining Annual Review 1997*, op. cit.  
199 *Mining Annual Review 1999*, op. cit.  
200 *Mining Journal*, 5/5/95  
201 not surprising - since this is a traditional alluvial mining area  
202 *Mining Journal*, 9/2/96; *Mining Journal*, 23/8/96 ; also *Mining Annual Review 1997*, op. cit.  
203 Htay, *Annual Mining Review 1998*, op. cit.; see also *Mining Magazine* 6/96 and *Mining Annual  
Review 1997*, op. cit.  
204 *Mining Journal* 26/7/98  
205 *Mining Journal* 9/10/98  
206 *Mining Annual Review 1997*, op. cit.  
207 *Mining Annual Review 1999*, op. cit.  
208 *Mining Annual Review 1999*, op. cit.  
209 *Mining Annual Review 1999*, op. cit.; see also Forest Peoples Programme, op.cit. 2000.  
210 Palmer website  
211 *Mining Annual Review 1999*, op. cit.  
212 *Mining Annual Review 1998*, op. cit.  
213 Area 1: Tenasserim (Tanintharyi) township; and area 2 at Lenya in Bokpyin township (M Than  
Htay, *Mining Annual Review 1999*, op. cit.)  
214 *Mining Annual Review 1998*, op. cit.  
215 *Mining Annual Review 1997*, op. cit.  
216 *Southeast Asia Mining Letter* 29/10/93  
217 *Mining Annual Review 1999*, op. cit.  
218 *The Burmanet News* 1/5/97  
219 *Mining Annual Review 1999*, op. cit.  
220 Advert in *Mining Journal Supplement* 17/7/98  
221 *Mining Annual Review 1997*, op. cit.

222 *Mining Annual Review 1997*, op. cit.

223 owned by Sumitomo Group, Japan; itself owned partly by Sumitomo Trust and Banking Co Ltd

224 *Mining Journal* 17/5/96

225 *Mining Journal* 12/12/97; Mark Payne. *Strategies of International Non-ferrous Metals Companies*.  
Mining Journal Books. London. 1998.

226 Japan's relatively stringent domestic environmental legislation has forced its own companies to  
go overseas: a strategy which has often been dubbed "exporting pollution" (see "House with  
out a toilet", op. cit.).

227 see various issues of *Down to Earth*, 1997-1999, and Forest Peoples Programme  
*Undermining the Forests*, op. cit.

228 *Financial Times* 1998

229 Minewatch Asia-Pacific. *Background briefing on Inco in Indonesia*. London. 1999

230 *Mining Journal* 5/6/97

231 *Seattle Times* 20/4/90

232 Philip Mattea. *World Class Business*. Henry Holt and Co. USA. 1992

233 *Mining Magazine* 8/96

234 *The BurmaNet News* 1/5/98

235 *Mining Annual Review 1997*, op. cit.

236 Information from Tiger Resources, 12/97

237 *Mining Annual Review 1999*, op. cit.

238 "Asian-Pacific profile boosted". *South-East Asia Mining Letter*. 17/1/96

239 Although this profile does not deal in any detail with Friedland's non-mining assets, it should  
be noted that he has interests in oilfields in Indonesia (including Kalimantan) and in the Dagang  
oilfield being developed along with China's National Petroleum Corporation.

240 *Forbes Magazine*, 10/2/97

241 Roger Moody, *Plunder!* op. cit.

242 *Mining Journal* 30/8/9

243 *Mining Journal* 25/1/91

244 Roger Moody. "The Mercenary Miner." *Multinational Monitor*. Washington, DC. June 1997

245 *Mining Journal* 9/11/90

246 *The Toronto Globe and Mail*, 5/1/2000

247 Ibid.

248 Thomas Hilliard, Mineral Policy Center, quoted in Moody, "The Mercenary Miner", op. cit.

249 "Hyping" in the context of the Galactic situation, could be a euphemism.

250 For further details, see *Five Minutes before Midnight, Minewatch Briefing on Omai*. Minewatch.  
London. 1995.

251 Moody, "The Mercenary Miner", op. cit.

252 He later sold most his holdings; the world's biggest mine royalties company, Franco-Nevada  
now has the biggest single stake in Voisey's Bay Nickel (VBN).

253 *Mining Magazine*, 4/99

254 see Moody, "Out of Africa: Mining in the Congo Basin/Le Bassin Congo, IUCN Netherlands.  
Amsterdam 1998

255 DFR had taken over Sunshine Mining's diamond interests in Sierra Leone in early 1994 (*Mining  
Journal* 8/4/94).

256 in particular the Camatchia kimberlite pipe at Luo (*Mining Journal* 26/6/98).

257 They were confirmed in 1998 after Branch Energy was shown to have violated UN arms  
sanctions against all parties in Sierra Leone.

258 see Roger Moody. "The diamond dogs of war". *New Internationalist*. Oxford. March 1998; Mary  
Louise O'Callaghan. *Enemies within: Papua New Guinea, Australia and the Sandline Crisis: The  
Inside Story*. Doubleday. New York. 1999; Abdel-Fatan Musah and J. Kayode Faymi. *Mercenaries*,  
Pluto Press. London. 1999; Ian Smillie, Lansana Gherie and Ralph Hazleton. *The Heart of the  
Matter: Sierra Leone, Diamonds and Human Security*. Partnership Africa-Canada. Ottawa. January  
2000.

259 see Mary Louise Callaghan, *Enemies Within*, op. cit.

260 This was the first apparent connection between Friedland and the world's biggest mining  
company, a link-up later to flourish when Vengold bought into the British company's huge Lihir  
Gold project in Papua New Guinea in 1995. Several key Friedland personnel have been recruited  
directly from Rio Tinto in the past six years, notably Marcus Randolph who became president of  
First Dynasty and Gordon Toll, formerly an RTZ group mining executive.

261 *The Canadian Financial Post* 11/6/95

262 "Galactic founder resigns". *American Metal Market*. vol. 98, no. 218. 1990.

263 Ibid.

264 *The Nation*, 13/12/96

265 *Mining Journal* 1/4/94

266 *Mining Journal* 22/8/95

267 *Mining Journal* 16/7/99

268 Canada NewsWire 21/6/99

269 Nationwide General News, Finance Wire, 22/7/99

270 *Green Left Weekly*, Sydney 2/7/97

271 Australian Associated Press Company News, 17/7/99

272 Through Ivanhoe Energy, formed in June 1999 after a merger between Sunwing Energy Ltd,  
and Black Sea Energy (Canada Newswire 21/7/99).

273 Canada Newswire, 18/8/99

274 The Goldamere Pty Ltd. Agreement Act. Hobart. 1996.

275 Ibid.

276 Gordon Toll interview with Annie Warburton. ABC Radio 7ZR. 7/4/97; see also *Mining Monitor*.  
Mineral Policy Institute. Sydney. June 1997

277 quoted in *The Canadian Financial Post*, 17/5/96

278 *The Canadian Financial Post*, Toronto, 14/6/96; *Forbes Magazine*, 10/2/97

279 *The Nation*, 13/12/96

280 David Baines, *The Vancouver Sun*, 11/6/96

281 *Mining Journal* 31/5/96

282 see Atu Emberson Bain. *Labour and Gold in Fiji*. Cambridge University Press. UK. 1994.

283 *Mining Journal* 22-29/12/95

284 *Mining Journal* 10/5/96

285 *Mining Journal* 7/6/96

286 Ivanhoe press release 1993

287 *Mining Journal* 10/5/95.

288 *Mining Journal* 7/6/96

289 Australian Associated Press 19/8/99

290 see Carmel Budiardjo and Liem Soei Long. *West Papua: Obliteration of a People (3rd edition)*.  
 TAPOL. London. 1988. West Papua was formerly called Irian Jaya and now officially "Papua".  
 291 *Mining Journal* 24/5/96  
 292 *Mining Journal* 22-29/12/95  
 293 Later ANTAM floated up to 35% of its shares on the Jakarta Stock Exchange (*The Nation* 13/12/  
 96).  
 294 "Dead Miners worked illegally", *Jakarta Post*, 21/10/97; "Hauruku Islanders reject mining", *Down  
 to Earth Newsletter*. Down to Earth. London. August 1997.; "Hauruku islanders object to gold  
 exploration", *Down to Earth Newsletter*. Down to Earth. London. February 1997.  
 295 *Mining Journal* 27/11/98  
 296 The flotation of Golden Star Resources, for example, was the most important single offering on  
 the Vancouver Stock Exchange in 1993, raking in more than C\$30 million.  
 297 see Roger Moody, *The Gulliver File*, op. cit.  
 298 Indonesia's Contract of Work system may be highly favourable to foreign miners, but Kazakhstan's  
 is more circumspect.  
 299 *Mining Annual Review 1999*, op. cit.  
 300 Reuters 18/5/99 and Press Release from Ivanhoe Mines 10/7/99  
 301 Associated Press 10/7/99  
 302 Private communication, December 1997.  
 303 Personal communication, November 1998.  
 304 Indochina Goldfields Ltd. Press Release; Canada Newswire 8/8/97  
 305 Ivanhoe press release 10/7/99.  
 306 Private communication, Vancouver, September 1998.  
 307 *Financial Times* 5/7/99  
 308 Canada Newswire 8/8/97  
 309 *Mining Journal* 30/8/96. *Macleans Magazine* 9/9/96. *Vancouver Sun* 29/8/96.  
 310 *Financial Times* 9/9/96  
 311 *Clementine*. Mineral Policy Center. Washington DC. Spring 1991; a useful summary of the  
 history of the Butte and Anaconda mines is contained in Jerome O Nriagu, "Part 1: Ecological  
 Cycling" *Copper in the environment* Jon Wiley, New York, 1979  
 312 G Pickup and R J Higgins. "Estimating sediment transport in a braided gravel channel: the  
 Kawerong River, Bougainville, Papua New Guinea". *Journal of Hydrology*. vol. 40. Amsterdam.  
 1979.  
 313 Ronald Boon, *Mining and the Environment: A Case study of Copper Mining in the south of Peru*.  
 Wageningen University. The Netherlands. 1998.  
 314 Association Civil Labor, 1993, quoted in Boon, op. cit.  
 315 Boon, op. cit.  
 316 *Clementine*, op. cit.  
 317 Boon, op. cit.  
 318 see study by Richard Compton, Keith Pritchard, Patrick Unwin, quoted in Jim Blagott  
 "Limestone is no remedy for acid lakes". *New Scientist*. 13/1/90.  
 319 see James Gusek, "Constructed Wetlands: Passive Treatment of Mine Drainage" in  
*Mining Journal Supplement*. 22/2/94  
 320 *Clementine*, op. cit.  
 321 *Mining Magazine*, 01/96  
 322 formerly West Papua/Irian Jaya

323 "Interview with Dr Stuart Kirsch". *Higher Values*. Minewatch. London. January 1999.

324 Kirsch, op. cit.

325 see Minewatch Asia-Pacific. *Discussion paper on Submarine Tailings Disposal*. London 2000.

326 Kirsch, op. cit.

327 R B Clarke. *Marine Pollution*. Clarendon. 1997. p.70.

328 Hettler and Lehmann. *Environmental Impact of Large-scale Mining in Papua New Guinea: Mining Residue Disposal by the Ok Tedi Copper-Gold Mine*. Berliner Geowissenschaftliche Abhandlungen and UNEP. Berlin. 1995. p. 49.

329 Hettler and Lehmann, op. cit.

330 Clarke, op. cit.

331 see Geoffrey M Mance. *Pollution threat of heavy metals in aquatic environments*. Pollution Monitoring series. UN. 1986.

332 Indeed one of the early controversies between the Papua New Guinea government and BHP centred on the company's intention to exhaust the gold cap at Ok Tedi without necessarily going on to mine the copper, thus boosting profits but shortening the economic life of the mine.

333 In this case Nicolet Minerals Co, a subsidiary of Rio Algom, which wants to open up a copper-zinc mine; see "Group asks Department of Natural Resources (DNR) to enforce mine law", *Wisconsin State Journal*, 16/7/98

334 see Roger Moody, *Plunder!*, op. cit.

335 Colin Macaulay, president of Rio Algom, quoted in *The Toronto Globe and Mail*, 25/3/94.

336 *Mining Journal Supplement*, 12/9/97; see also *Electrowan Copper: The Current Status*. CRU International, London. 1996.

337 *Mining Journal* 20/11/97

338 *The Burma Courier*, 25/6/99

339 *Mining Journal* 23/10/98

340 The company initially laid out US\$7.5 million for 32.2 million shares and equivalent share warrants. *Mining Journal* 27/11/98.

341 *Mining Journal* 27/11/98

342 *Mining Magazine*, November 1989

343 see for example *Engineering and Mining Journal*, February 1991

344 *Engineering and Mining Journal*, October 1989

345 *The Toronto Globe and Mail*, 1994, op. cit.

346 see Moody, *The Gulliver File*, op. cit.

347 This account is based on "Ruby Hill or Ruby Hell", a report by Ngao Seng, Mong Hseng (Rubyland) 23/11/99 in the SSA News, Shan State 26/11/99.

348 Beyrer, Chris. (1999). *War in the blood: Sex, politics and AIDS in Southeast Asia*. White Lotus Books. Bangkok.

349 Some villagers could count on labour intensive jobs, such as portering or logging. Once numerous, water-carriers lost their jobs with the arrival of water pumps.

350 Adrian Levy & Cathy Scott-Clark. (1998, May 10). Junta forces farmers to grow opium. *The Sunday Times of London*. Given that nothing in this tightly controlled country moves without the permission of the regime such a volume of production could not occur without its involvement. (personal communication, Federation of Trade Unions-Burma, April 2000). "The magnitude of the drug industry in Burma's Northern border areas would be impossible to maintain without the cooperation of the region's army units" (Desmond Ball. (1999). "Burma and drugs: The

regime's complicity in the global drug trade". *Asia-Pacific Magazine*. 14.). The Canadian Dept. of Foreign Affairs has stated that 80 per cent of the heroin sold in Canada comes from Burma (R. Pateyaseri, & K. Chongkittavorn. (1999 Aug. 1). "Canada engages Burma on drugs". (*The Nation*). Comparable data from the US estimate that around 60 percent of heroin entering the US is exported from Burma.

- <sup>351</sup> "Wa seeking alternative to drug trade". (2000 June 6). *Bangkok Post*. "Shan writers take a dim view of the loss of natural resources". (2000 May 12). Shan Herald Agency for News.
- <sup>352</sup> Chelala, C. & C. Beyrer. (1999 Sept 25). Drug use and HIV/AIDS in Burma. *The Lancet*
- <sup>352</sup> Chelala, & Beyrer, op. cit.
- <sup>354</sup> Beyrer, *War in the Blood*, op. cit.
- <sup>355</sup> Beyrer recounted meeting with a doctor who worked in the northern mining towns of Burma. The doctor said that most of his patients have three things in common: "they're young, they're addicts, and they've worked in the jade and ruby mines in Shan and Kachin States", Beyrer, C. (1999). *War in the Blood: Sex, Politics, and AIDS in Southeast Asia*. White Lotus Books. Bangkok.
- <sup>356</sup> UNICEF. (1999). *The State of the World's Children 1999*. Geneva. UNICEF.
- <sup>357</sup> Babson, Bradley (Senior Advisor, World Bank). (1999 Dec. 16). Myanmar: An Economic and Social Assessment, Talking points for Burma Roundtable at Human Rights Watch; "Extra Burmese budget big on army spending". (2000 March 21) *The Nation*. p. A7.
- <sup>358</sup> World Health Organization, June 2000. <http://www.who.int/asd/first.html>
- <sup>359</sup> With one of the highest HIV infection rates in the world, Burma is currently struggling with a serious AIDS epidemic. There are an estimated 530,000 people in the country living with the virus, according to UNAIDS executive director, Dr. Peter Piot, and the rate of adult infections is third highest in Asia, trailing close behind Cambodia and Thailand (Chelala & Beyrer, op. cit.)