

Mining, Gender, and the Environment in Burma

“People from China came and built a new factory at [xxx] mine but they were only concerned with the factory operations and did not care about workers’ health or the environment. Even when workers and people became very sick from the poisonous smoke, the Chinese businessmen and the Burmese government did not say anything. When people began to die because of the black smoke, they did not say or do anything. They do not care about us.”

(Male Miner, Shan State)¹

“The soil itself is not dangerous, but sometimes when I am digging up the soil, I inhale the chemicals and it makes me cough a lot and vomit. We believe that if we eat a lot of morning glory, or a kind of spinach, along with many bananas, they will weaken the impact of the sulfur and acid on our health... We found the disposed chemical waste from near the [xxx] mine site. At least ten of us went there to carry the waste and soil back to our village. The security guards at [xxx] saw us and they knew what we were doing, but they did not say anything or try to stop us. They understand our situation. We do this to earn money. It is difficult to earn an income in Burma and we need money to survive.”

(Female Miner, Sagaing Division)²

“The villagers had pooled their money to rent some basic mining equipment. The Karen National Union (KNU), however, did not want people working in this area, so members of the Karen National Liberation Army’s (KNLA) Third Brigade burned down all the huts. The villagers fled, but did not return to their home village since they feared for their lives. A SPDC patrol, LIB #57 commanded by Zaw Tun, later found two people hiding in the forest nearby and accused them of supporting the KNU. A woman, [xxx] was kidnapped by the battalion and later raped by one of them. She was released afterwards. [xxxx], a relative, filed a complaint with the battalion commander, who gave this person one bag of paddy and 10,000 Kyat as “hush money” not to tell the officials at the Township Office. [xxx] was so upset by the way the incident was handled that he went to the Township Office, but the official he spoke with was not interested in pursuing the matter further.

(Male Miner, Shwe Gin Division)³

Mining: Addressing the Gender Gap

Mining presents serious obstacles to policy makers, activists, and affected communities interested in mitigating the industry’s negative impacts around the world. Of all the obstacles, perhaps the most serious one is the gap that exists between 1) what these three different groups know; 2) how they conceptualize and talk about their respective concerns; and 3) what resources each group is able to mobilize to take action. This gap, which is a significant obstacle to long-lasting and successful forms of collaboration, is rarely recognized for a simple reason: each partner assumes that everyone else defines the problems in much the same way and, as a result,

desires the same solutions. These assumptions appear most forcefully around the question of gender.

Most campaigns to change destructive mining practices typically focus either on protecting the natural environment or the labor rights of workers. In both cases, gender is usually subsumed within one or both of these two broader categories, namely environmental rights and human rights. Gender concerns, in other words, tend to become invisible. As a consequence, proposed solutions to the problems generated by mining operations frequently fail to adequately address the needs of women, which are often quite different from those of men.

This omission is striking in two respects. Worldwide, between eighty and one hundred million people are directly and indirectly dependent upon non-industrial forms of mining for their livelihoods. Of these, an estimated thirty-percent are women.⁴ Additionally, mounting evidence now shows that women, due to gendered forms of socioeconomic discrimination, do not generally benefit from mining operations. Rather, women bear a much greater proportion of the negative impacts in nearly all cases. To address this persistent problem, gender concerns should be more fully taken into account when designing and implementing mining activities. Unfortunately, all too often they are not.⁵

A growing number of organizations around the world are attempting to correct this problem. EarthRights International (ERI), through its fact-finding research into the mining industry inside Burma, is participating in this important process. Mining is very widespread in Burma. In fact, mining arguably affects a larger number of people in Burma than the other extractive industries in the country (timber, natural gas, and hydroelectric power generation) *combined*. However, mining operations in Burma have received very little scrutiny to date. ERI is addressing this alarming oversight.

Women's groups and environmental groups have much to gain by collaborating with one another on mining in Burma. To this end, this article offers additional background information that will be of interest to groups concerned with either women's rights or the environment. Each section summarizes areas where these respective issues overlap.

Extractive Industries in Burma: Mining in Comparative Context

ERI's first report to address mining, *Capitalizing on Conflict* (2003), revealed that a significant percentage of the economic activity connected to this industry is never officially reported. Additionally, the royalties, taxes, protection fees, and other forms of rent creation connected with mines contribute not only to private wealth creation, but lead to earth rights abuses in many parts of Burma as well.⁶ Why, given this situation, does most of the attention continue to be focused on logging and energy companies? A brief comparison is revealing.

Logging concessions cover large tracts of land; they also require a substantial amount of capital and considerable equipment to transport timber to locations where value-added processing can occur. Energy projects, such as hydroelectric dams and natural gas pipelines, are even larger and typically require substantial international loans and other forms of technical assistance to complete. The sheer size and the involvement of international companies and financial

institutions in such energy projects make it somewhat easier to gather information. Additionally, most major logging concessions and energy development projects are either located in or traverse border regions, which makes fact-finding research, while still difficult, more feasible.

By contrast, most mines are generally small, located in very remote areas, and do not require technologically sophisticated equipment—although this is rapidly changing in many areas of Burma. Further, mining companies have a reputation for secrecy. This reputation is deserved. Most mining companies are still privately owned, so obtaining information about their shareholders and their activities in the field is extremely challenging. This is especially true in Burma where obtaining reliable figures on business activities is notoriously difficult, and most of the data that does exist around this particular industry is restricted to superficial information regarding foreign companies.⁷ Additionally, almost nothing is accurately known about the hundreds of official and unofficial mining concessions that the Ministry of Mines in Burma has granted since 1989 to local and Chinese companies, many of which are owned or maintain close ties with armed groups throughout the country. But there is at least one additional reason. Much of the mining that occurs in Burma defies easy categorization.

Challenges to Studying Mining in Burma

Most frequently, mining operations are divided by: 1) size (small, medium, or large); 2) relative formality (family-based, artisanal, registered company, multi-national corporations); and 3) regulatory status (legal or illegal).⁸ Alternatively, mining operations can be distinguished by the kinds of technologies that are used. Traditional methods for mining gem, gold, and other mineral deposits in Burma, for example, are labor-intensive, and use little more than picks, shovels, pans, and screens.⁹ By contrast, hydraulic mining and suction dredging, which are frequently used to extract gold from alluvial deposits, require significantly greater inputs of capital, materials, and labor to carry out. The heap-leach, solvent extraction-electrowinning (SX-EW) method used to extract copper in parts of Burma represents another level of technological sophistication altogether.¹⁰

The above categories are not terribly useful for studying mining in Burma, however. Our report, *Capitalizing on Conflict*, demonstrated that different kinds of mining operations, all using different kind of technologies, are almost always found side-by-side.¹¹ This situation reflects the fact that mining operations in Burma are overwhelmingly *ad hoc* ones. The weak regulatory environment in Burma makes it possible to open mines with no long-term plan for their development and little to no safety precautions to protect workers or the surrounding environment. This is especially true of artisanal mining, which, by definition, is characterized by rudimentary techniques that are often hazardous, labor-intensive, disorganized, and illegal.¹²

Additionally, the relationship between different types of mining and earth rights abuses is a close and often quite complicated one. In some instances, family-based and artisanal mining operations are permitted to find new deposits, especially gems and gold, which are then forcibly seized by larger companies. In other instances, armed groups openly fight one another in order to gain control of existing mining operations. In still other instances, the mining operations complement one another, and profits derived from mining concessions are used to purchase weapons and ammunitions used in conflict zones elsewhere in the country. But in all cases, civilian

populations, especially women, are forced to provide food, labor, and their very bodies to satisfy the needs of armed men.¹³

Previous studies on mining in Burma have generally tended to overlook these complex dynamics, especially the interconnections between these different types of mining operations and earth rights abuses. Instead, most studies have focused their attention to joint ventures involving foreign companies, e.g. Ivanhoe Mines Ltd. and The Leeward Capital Corporation.¹⁴ While more information on these companies is certainly needed, narrow attention to their operations risks overlooking other kinds of mining in the country, which are often more dangerous and destructive, especially to women. The sections that follow highlight these problems in greater detail.

International Women and Mining Conference

In early October (2004), over seventy women from nearly two dozen countries met in Visakhapatnam, India to discuss how mining activities have adversely affected their home communities, the ecosystems upon which their livelihoods depend, and the special problems they create for women. The gathering was called the International Women and Mining Conference; it was the third in a series of such conferences organized by the International Women and Mining Network, which is more commonly known by its Spanish acronym (RIMM).¹⁵

The conference covered a wide range of issues, with most addressing the different impacts mining has on women. Despite their different backgrounds, the conference participants additionally found that they shared many of the same problems. Mining companies, for example, typically enter into business agreements only with men, which further marginalizes women. Since women are normally excluded from such deals, they are forced to find other ways to participate in the cash-based economy created by the introduction of large mines. In most cases, women are forced deeper into poverty as traditional livelihoods are undermined or destroyed by the shift. Thus mining companies, the conference participants concluded, have a clear social responsibility to protect women and to take concrete steps to ensure their human rights are upheld. Given the considerable resources of most mining companies, they could play a significant role in enhancing economic development for women, which would improve rather than harm their rights as is currently often the case.

The conference also provided an international forum for “Christine”¹⁶ to present information on the impacts of gold mining in Kachin State, where she is originally from. Christine is an alumnus from the EarthRights School (ERS), and graduated in 2002. Christine was the only representative from Burma to attend the conference. The paper, which Christine presented at the conference, provided a general overview of large-scale gold mining concerns in Kachin State, but focused on the various impacts this industry has had upon women, especially the suffering it has caused them. The gendered impacts, which are distinct from the abuses that men face in Burma, fall into four main categories:

1) Food security

In Burma, women are primarily responsible for obtaining and for preparing food. Mines make

this task vastly more difficult because valuable farmland is frequently seized without any compensation. Additionally, mines create “deadzones,” where nothing will grow due to intensity of the mining operations and the toxic air and water pollution. Finally, mining operations force a rapid shift from a largely subsistence-based economy to one based on cash. This shift is accompanied by inflation, which makes it increasingly difficult for families to purchase the basic goods they need to survive: cooking oil, clean water, fuel, medicine, etc. Together, these changes often force women into the sex industry since they have no other way to provide for themselves and their families.

2) Children

Children represent the future. However, women involved in the mining industry often have to bring their children to sites where they are exposed to chemicals. Long-term exposure can result in a variety of chronic problems that will adversely affect their physical and mental development. Additionally, mining sites are very dangerous and children playing in and around them face additional risk of injury or death from accidents.

3) Violence

Increased physical and sexual violence against women are also closely associated with mining operations. First, women who work in mines often face physical violence at the hands of other miners and, especially, military personnel guarding the sites. Additionally, they are almost always paid less than men, even where they perform the same tasks. Second, a decrease in food security often produces an increase in levels of domestic violence at home. Third, the rapid immigration of men to mining sites also leads to increased demand for sexual services. Rape as well as institutionalized forms of sexual violence (e.g. brothels) rise as a result.

4) Health

Women, although they rarely perform the heavy labor associated with mining operations, often face greater long-term health risks. Women commonly transport ore, wash and then treat it with chemicals, and collect water needed for drinking, washing, and cooking. As a result, they are exposed to more toxic chemicals and for longer periods of time. Such exposure threatens their physical wellbeing, their babies (via breast milk), and future children due to damage to their reproductive health.

The key points of Christine’s presentation on the gendered impacts of gold mining in Kachin State are summarized below.

Case study: The Gendered Impacts of Gold Mining in Kachin State

In 1994, the Kachin Independence Organization (KIO) signed a cease-fire agreement with the State Law and Order Council (SLORC), the name of the military junta ruling Burma at the time. The agreement ended decades of violent conflict and made it possible for companies to enter into joint-venture agreements with the Ministry of Mines, located in Rangoon. While Kachin State is perhaps best known for its extremely large and valuable jade deposits, the mountainous region

located in northern Burma also contains economically viable amounts of gold, platinum, and coal.

In October 2002, the Ministry of Mines began taking bids on forty-two blocks of land across Burma it had previously identified as likely to contain gold. Twenty-three of these blocks are located in Kachin State.¹⁷

A number of companies have been granted mining concessions since 2002. The six most important companies include the Northern Star Trading Company, Seasun Star, the Buga Company, the Wa Company, the Kyatkhaing Yae Company, and the Thwe Company. Of these, Northern Star Trading Company operates the largest number of sites across Kachin State.

The Northern Star Trading Company is particularly successful due to its strong ties with the Burmese military and other Chinese mining companies. In fact, its ties are so strong that the military regime in Burma has granted the Northern Star Trading Company the power to determine which companies can and cannot obtain mining concessions in Kachin State, a responsibility that normally falls to the Ministry of Mines.¹⁸ This extremely unusual arrangement also extends to mining companies operated by the Kachin Independence Organization (KIO) and the New Democratic Army-Kachin (NDA-K). Unlike cease-fire groups elsewhere in Burma, especially those in Shan and Karen States, the KIO and the NDA-K have to directly negotiate concessions with a private company—the Northern Star Trading Company—rather than with the regime itself. The concessions are limited to one-year contracts.¹⁹

Gold concessions are primarily located along sections of the Malikka, Chindwin, Nmaiha, and Irrawaddy Rivers in Kachin State. Two major sites are located just outside the cities of Shingbwiayang and Shaduzup. Three other large sites are located in more remote areas west of the Ledo (Stilwell) Road, which links Shaduzup to Tanai. All of these sites fall outside of the current boundaries of the Hukawng Wildlife Sanctuary, which was established in 2001 with the assistance of Wildlife Conservation Society.

The Sanctuary was created with the intention of protecting important habitat for a number of threatened and endangered species: tiger, macaque, golden cat, elephant, Asiatic black bear, and clouded leopard. However, the State Peace and Development Council (SPDC) has taken no real steps to slow or to stop the clear-cutting of forests in the region.²⁰ Moreover, all of the mining sites, and the toxic waste they generate, will fall inside the new boundaries of the protected-zone if the Sanctuary is expanded as is currently planned.²¹ It remains unclear how the SPDC and the Wildlife Conservation Society intend to protect these species and the habitat they require if the expansion occurs.

These findings mirror those documents in the report published by ERI in 2003, *Capitalizing on Conflict*, which focused on logging and mining activities in several areas of central and eastern Burma. In both cases, the rapid shift to large-scale forms of intensive mining has displaced local communities that historically used artisanal forms of mining to supplement their incomes. The impacts on women in Kachin State as well as the environment have been particularly striking; they also echo the experiences of almost all of the participants attending the conference.²²

Domestic violence, rape, and prostitution have all increased tremendously according to the people Christine has been able to interview from Kachin State. To a significant extent, these social problems are connected to the growth of a cash-based economy. The rising cost of basic goods (e.g. food and medicine) have created immense pressure on women and young girls from desperately poor families to enter into the commercial sex industry, which serves the overwhelmingly male and transient labor force.

Heroin use, in addition to opium and alcohol, in the region is also widespread. Currently, HIV infection rates for intravenous drug users in Burma are among the highest in the world.²³ Furthermore, infection rates for sexually transmitted diseases (STDs) and HIV/AIDS have exploded, significantly harming women. The introduction of brothels and sex work has altered Kachin society for the worse. Because most of the employees at the mine sites are predominantly men, the demand for sex workers has increased.

Artisanal mining also exacts a heavy burden on the environment and the people involved in various stages of processing gold, copper, and other minerals. The damage it causes, intentional or otherwise, is a threat to basic rights: to health and to life.²⁴ Three key problems, according to Christine's paper, serve to undermine these rights.

First, many people who engage in artisanal mining are not fully aware of its dangers. Currently, access to reliable information is extremely limited in Burma. As a result, it is not unusual to encounter opinions like these:

“Some miners swallowed mercury because they heard that it helps one recover from diarrhea. But I haven't seen this myself. I just overheard it from other miners.”²⁵

“As soon as someone died, you must pour mercury into the corpse's mouth so that it does not decay. I also heard that if you stole gold, your boss would force you to drink mercury because it extracts gold in the womb, and then the gold and mercury would come out with your waste.”²⁶

Efforts to limit pollution are also inadequate. In part, a general lack of environmental awareness contributes to this problem. But in many cases, basic technology and safety precautions are insufficient.

“I was not sure I could keep all the mercury in the bottle again because a little amount of mercury leaks out into the water every single time. Sometimes all the mercury accidentally spills into the river.”²⁷

“I think the water was very clean before the mining came. But now all the miners are using the river water. It was used over and over, taken from the river and let go there again... The water has turned bad...”²⁸

The final reason is, of course, a lack of accountability, which includes the unwillingness of the SPDC to enforce existing laws on environmental protection much less to create new ones.²⁹

Summary of Health and Safety Issues for Burmese Women

In 1989, the mining industry began to change rapidly. Cease-fire agreements with armed opposition groups also allowed formal and informal companies to expand their logging and mining operations, particularly in remote border regions. Since then, the number of mining companies has expanded tremendously. These new arrangements have helped transform how mining activities are funded as well as what kinds of technologies are available for extraction and for processing. Regardless of the technologies used, all forms of mining are risky and produce toxic materials that pose considerable threats to the health of the environment and to people, especially women.

Again, Burma is not unusual in this regard. The International Labour Organization (ILO) estimates that non-fatal accident rates in artisanal mines globally are six to seven times higher than in large-scale, capital-intensive industrial operations with formal work practices, protective gear, and safety training.³⁰ Since mining companies, especially artisanal ones, fail to provide adequate medical services near mine sites, serious but treatable injuries often result in unnecessary deaths. This is especially true where underground mines are common, e.g. Bolivia and China. In such regions, gas poisoning, gas explosions, cave-ins, and flooding are tragically common and claim thousands of lives each year. In the vast majority of cases, men are killed, leaving women to raise families on their own, often with no formal assistance from the mining companies.

Additionally, gold mines rely heavily upon mercury and cyanide, while copper mines typically use sulfur, hydrochloric acid, and other toxic chemicals. Repeated exposure to toxic chemicals—especially common at artisanal mines—also dramatically increases the risk of injury and illness, both on site and, due to their cumulative impacts, years later. Such chemicals, for example, increase the statistical likelihood that subsequent children will have physical and/or mental abnormalities. Chemical spills and intentional dumping, again all too common in the mining industry, further pollute the environment, releasing toxins that cause a range of problems. The section below highlights some of the key negative impacts.

Mercury

Gold mining always produces mercury, which is widely recognized as being extremely toxic. Trace amounts of organic mercury, e.g. methylmercury, are released when the ore is exposed. This form of mercury is most commonly found in the air around a mining site, the water used as part of the mining process, and in tailings (ground ore or old waste rock). Methylmercury also tends to bio-accumulate. In other words, it tends to increase in concentration and toxicity as it moves upward through the food chain. Communities that rely heavily upon fish, for example, may be at risk for methylmercury poisoning, which can cause severe and irreversible neurological damage. For a variety of biological reasons, women and children are particularly vulnerable.³¹

Mercury vapor is also produced through an extractive process called “amalgam decomposition.” Small amounts of mercury are added to tailings or ore and then the mixture is “cooked” over a fire or on a kitchen stove. Estimates are that two to five grams of mercury are released for every

gram of gold that is recovered. Respiratory problems and dizziness are common side effects. Chronic, long-term exposure produces muscular tremors and a range of psycho-pathological symptoms, e.g. depression and exaggerated emotional responses, which are mistaken for other ailments. Acute exposure can lead to kidney failure, vomiting, and death.³²

Additionally, the extraction of gold accelerates “acid mine drainage” (AMD), which the industry officials as well as environmentalists agree is the most serious and dangerous by-product of mining. AMD is formed when minerals containing sulfide meet water with a high acidic content. The mixture slowly seeps out of tailings, overburden (piles of displaced surface rock and soils), and ore waiting to be processed. While special ponds, lined and covered with industrial-grade plastics, are intended to contain AMD, leaks and spills are inevitable. If not treated quickly, AMD and the heavy metals that often accompany it, will poison groundwater and, in some cases, entire watersheds—creating “deadzones” where little or nothing can survive. Since women are in many cultures responsible for gathering water, tending crops and animals, and so on, their exposure to AMD is often much higher than that of men.

Cyanide

Different kinds of cyanide compounds are commonly used to extract very small particles of gold. The most popular technique is called “cyanide-leaching,” which has replaced the “mercury amalgamation” process in many large-scale mines around the world. The process entails spraying a sodium cyanide solution over tailings. A chemical reaction causes the gold particles to form a water-soluble compound with the cyanide called “pregnant solution.” Activated carbon is then used to extract the gold from the solution. While the technique is extremely efficient, the resulting waste is highly toxic. To prevent contamination, the polluted water is usually placed in special holding ponds that are lined and covered to prevent contamination. Leaks, however, are common and the ponds collapse due to inclement weather or poor construction. While cyanide breaks down rapidly when exposed to sunlight, spills of even trace amounts can have dramatic effects. Short-term acute exposure (110 parts/million) can cause coma and/or death in less than an hour. Much lower levels can temporarily kill fish and other animals in a river where a spill occurs.³³

As is often the case elsewhere, poverty drives people to engage in activities that are detrimental to their health. In Burma, *Dohtar* offers an excellent example. *Dohtar* is a process in which small amounts of copper are extracted from materials previously discarded by mining companies as waste. It is a less technologically sophisticated version of the copper solvent extraction and electrowinning pilot plant built by Ivanhoe in Monywa and, due to the chemicals involved, quite dangerous. The waste is first placed in a small pool of water. Sulfur is added. Then, the mixture is boiled. Next, milk cans made of tin are added, which causes a chemical reaction to occur. The resulting acid released slowly dissolves the milk cans. The process takes approximately ten days and, when complete, leaves copper ore in a highly toxic pool of water. The ore is removed by hand, often without any safety precautions, and then sold to Chinese businessmen and companies.³⁴ Women frequently participate in the process to earn extra money for their families, a gesture that unwittingly places their own health and their family’s wellbeing at greater risk.

Recommendations / Areas for Future Research

The information presented in this article has highlighted some of the key challenges confronting groups interested in mitigating the negative impacts of mining in Burma. More research is needed to identify which areas should be prioritized.

ERI recognizes that action on them is extremely unlikely given the current political situation inside Burma. Nonetheless, ERI presents them here to highlight three key areas where improvements are urgently necessary. Additional research to further target these recommendations and to improve awareness concerning the dangers mining presents to human beings, especially women, and the environment is planned.

Gender

- The SPDC adhere to the United Nations “Convention on the Elimination of All Forms of Discrimination Against Women” (CEDAW), which it signed in 1997. As a state party, Burma has the obligation under international law to uphold all articles enshrined in CEDAW, including to stop any discrimination against women in the field of employment, health care and to take into account the particular problems faced by rural women.
- Mining companies, while not directly party to CEDAW, respect its principles and ensure that their policies do not discriminate against women in the workplace or result in the sexual exploitation of women.
- The SPDC create an independent agency to conduct future social impact assessments and environmental impact assessments taking into account gender analysis in order to avoid conflicts of interest.
- The Ministry of Women and the “Myanmar Women’s Affairs Federation,” a national membership controlled by the SPDC, take concrete steps to monitor and to protect the rights of women who work in and around mining sites.
- The Ministry of Health immediately improve its efforts to raise awareness regarding HIV/AIDS throughout Burma, particularly in rural areas near mining sites. HIV/AIDS infection rates in these areas indicate that past efforts to educate at-risk populations and to provide condoms to prevent the transmission of sexually transmitted diseases has been woefully inadequate.

General Environmental Regulations

- The SPDC replace outdated laws and replace ineffective environmental provisions to bring them into accordance with its 1994 Environmental Policy and the UN-supported national action plan for the environment known as “Myanmar Agenda 21.”
- The SPDC strengthen the National Commission for Environmental Affairs (NCEA) by empowering it to enforce existing laws and other regulations regarding environmental issues. Additionally, the NCEA should be provided with sufficient human and financial resources to accomplish this task.
- The SPDC reform the system for administering and enforcing environmental laws, which is currently organized along sectoral lines and is highly inefficient. In most cases, the

laws are concerned with licensing requirements (by ministry) and refer to environmental protection in vague terms where they are mentioned at all.

- The SPDC revise and enforce penalties for violating environmental laws. Fines and other deterrents should be adjusted to account for the differences in comparative wealth of individuals, Burmese companies, and foreign companies in order to avoid situations where it is more cost-effective to damage the environment instead of preventing the harm in the first place.
- The SPDC offer financial and other incentives to state-owned enterprises and private sector actors to manage the country's natural resources in a sustainable fashion.

Mining-Specific Regulations

- The SPDC ban and take immediate legal action against individuals and companies using ecologically damaging techniques, such as:
 - Hydraulic mining, a practice that has been outlawed throughout the world;
 - “Deep trenching,” which involves cutting deep trenches across the farmland; and
 - The indiscriminate use of mercury, cyanide, sulphuric acid, and other chemicals to leach precious metals and minerals from extracted ore.
- The SPDC enforce Section 12(a) of SLORC Law No. 8/95. This section contains language requiring that:
 - All applications to the Ministry of Mines conduct an environmental impact assessment (EIA) prior to receiving official approval to extract minerals, gems, and precious metals; and
 - The Myanmar Gems Trading Corporation investigate whether the environment, flora and fauna, highways, religious property, and/or items of cultural heritage would be negatively affected by mining activities. Laws and regulations in both these areas should be strengthened.
- The SPDC repeal the section of the SLORC Law No. 8/94 (Myanmar Mines Law of 1994) which states that no mining company is liable to prosecution or fines.
- The SPDC promulgate laws that permit citizens whose health and/or livelihoods are harmed by mining activities, including downstream pollution, to file lawsuits and receive adequate compensation for their injuries.
- The SPDC create specific laws for governing water pollution. The general provision in Section 3 of the Public Health Law of 1972 and the guidelines issued by the Myanmar Investment Commission in June 1994 are inadequate to address the pollution problems caused by mining operations and other heavy industries.
- The SPDC prepare and distribute information regarding the environmental and health risks connected to artisanal mining. Such information should be available in both oral and printed form and in the country's major ethnic languages.

End Notes:

¹ Interview #043(2004) on file with ERI.

² Interview #040 (2004) on file with ERI.

³ Field Document #5 (2003) on file with ERI.

⁴ The statistics were extrapolated by the International Labour Organization (ILO) in 1999. Cited in J. Hinton, M. Veiga, and C. Beinhoof. “Women and Artisanal Mining: Gender Roles and the Road Ahead.” In *The Socio-*

Economic Impacts of Artisanal Mining and Small-Scale Mining in Developing Countries, (ed.) J. Hinton (Netherlands: A.A. Balkema, Swets Publishers, 2003), 1. According to Oxfam, inattention to women's roles and rights in relation to the activities of the mining industry is widespread. See Ingrid Macdonald and Claire Rowland (eds.). *Tunnel Vision: Women, Mining and Communities* (Victoria, Australia: Oxfam Community Aid Abroad, 2002) available at <http://www.oxfam.org.au/campaigns/mining/women/tunnelvisionreport.pdf>.

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⁶ EarthRights International. *Capitalizing on Conflict* (Chiang Mai, Thailand: ERI, 2003). For a more theoretical discussion of this issue, see Jonathon DiJohn. *Mineral Resource Abundance and Violent Political Conflict: A Critical Assessment of the Rentier State Model* (London: Crisis States Programme, London School of Economics, December 2002); Mining, Minerals, and Sustainable Development Project. *Breaking New Ground: Mining, Minerals, and Sustainable Development* (London: Earthscan, 2002).

⁷ See, for example, M. Than Htay. "Myanmar," in *Mining Annual Review* (London: Mining Journal, Ltd., 2002) available in CD-ROM format; Yolanda Fong-Sam. "The Mineral Industry of Burma," in *U.S. Geological Survey Minerals Yearbook-2002* (Washington D.C.: USGS, 2003) available at <http://minerals.usgs.gov/minerals/pubs/country/2002/bmmyb02.pdf>; The Economic Intelligence Unit, *Country Profile 2002: Myanmar (Burma)* (London: The Economist, 2003), 15; David Steinberg. *Burma: The State of Myanmar* (Washington D.C.: Georgetown University Press, 2001), 146-147.

⁸ For further discussion, see Hilson, G. (ed). *The Socio-Economic Impacts of Artisanal and Small-Scale Mining in Developing Countries*. (Rotterdam: Taylor and Francis Publications, 2003; Hinton, J.J. and et al. "Clean Artisanal Gold Mining: A Utopian Approach?" *Journal of Cleaner Production* 2003 11(2): 99-115.

⁹ The description that follows is largely based on S. K. Samuels. *Burma Ruby: A History of Mogok's Rubies from Antiquity to the Present* (Tucson: SKS Enterprises, Inc., 2003), 127-135. See also R. Hughes. *Ruby and Sapphire* (Fallbrook, CA: RWH Publishing, 1997).

¹⁰ Myanmar Ivanhoe Cooper Co. Ltd. (MICCL), a joint venture, operates the Sabetaung and Kyisintaung Mines (S&K Mines) and the Letpadaung Mine, which is located a short distance away. Ivanhoe Myanmar Holding, Ltd. (IMHL), by contrast, is a subsidiary of Ivanhoe Mines, Ltd. of Canada. IMHL is presently exploring gold deposits in Mandalay Division and has the right to establish a joint venture to develop deposits at a future date. More information on Ivanhoe Mines in Burma is available at its official website: <http://www.ivanhoe-mines.com>.

¹¹ For further discussion of this issue, see C. Nordstrom. "Shadows and Sovereigns." *Theory, Culture, and Society* 17:4 (2000): 35-54.

¹² Artisanal mining is extremely widespread. In fact, according to the ILO, there are thirteen million artisanal miners in fifty-five countries (1999 figures), which is equivalent to the total global workforce of large-scale industrial mines. See Jennifer Hinton, "Women and Artisanal Mining: Gender Roles and the Road Ahead." In *The Socio-Economic Impacts of Artisanal and Small-Scale Mining in Developing Countries*, ed. G. Hilson. Netherlands: A.A. Balkema, Swets Publishers, 2003), 1.

¹³ A number of important studies have been conducted on this topic. See, for example, Betsy Apple, *School for Rape: The Burmese Military and Sexual Violence* (Washington D.C.: ERI, 1998); Shan Human Rights Foundation and the Shan Women's Action Network, *License to Rape: The Burmese Military Regime's Use of Sexual Violence in the Ongoing War in Shan State, Burma* (Chiang Mai: SHRF and SWAN, 2002); Betsy Apple and V. Martin, *No Safe Place: Burma's Army and the Rape of Ethnic Women* (Washington D.C.: Refugees International, 2003); Karen Women's Organization, *Shattering Silences* (Thailand: KWO, 2004).

¹⁴ Mines and Communities, "Drilling Starts in Myanmar" (23 March 2004) available at <http://www.minesandcommunities.org/Action/press303.htm>; Leeward Capital Corporation, "Set Ga Done Progress Report June 17, 2004"; Myanmar Ivanhoe Cooper Co. Ltd. (MICCL), a joint venture, operates the Sabetaung and Kyisintaung Mines (S&K Mines) and the Letpadaung Mine, which is located a short distance away. Ivanhoe Myanmar Holding, Ltd. (IMHL), by contrast, is a subsidiary of Ivanhoe Mines, Ltd. of Canada. IMHL is presently exploring gold deposits in Mandalay Division and has the right to establish a joint venture to develop deposits at a future date. More information on Ivanhoe Mines in Burma is available at its official website: <http://www.ivanhoe-mines.com>.

¹⁵ Further information, including electronic copies of some of the papers that were presented is available at <http://www.mmpindia.org/womenmining.htm>.

¹⁶ The full name of this person is not used here to protect her identity. In Burma, those who speak out against the

government must conceal their identities for fear of reprisals.

¹⁷ Myanmar Gems and Jewelry, "The Government of the Union of Myanmar Ministry Mines Fourth Round Invitation for Bids to Conduct Mineral Prospecting, Mineral Exploration, and Feasibility Study in Myanmar".

¹⁸ See also, "Myen hpyen du Malihka dut sha." *Kachin Post Newspaper*, Laika bap1, Hti Hkum 5 (September 2002, page 7).

¹⁹ Interviews BF (9/9/2002) and BH (2002) on file with ERI.

²⁰ Global Witness. *A Conflict of Interest* (London: GW, 2003), available at <http://www.globalwitness.org/reports/index.php?section=burma>.

²¹ Alan Rabinowitz. "Valley of Death," in *National Geographic* 2004 (April): 106.

²² For more details, see "Statement of the International Women and Mining Network Third International Women and Mining Conference," available at <http://www.mmpindia.org/womenminingstatement.htm>.

²³ United Nations Office on Drugs and Crime, "Injecting Drug Use (IDU) and HIV/AIDS," available at http://www.unodc.org/myanmar/en/report_2001-02-21_1_page006.html.

²⁴ For details, see the report prepared by Mrs. Fatma Zohra Ksentini for the UN Sub-Commission on the Prevention of Discrimination and the Protection of Minorities (E/CN.4/Sub.2/1994/9). In it, she argues that a clean environment is a basic human right.

²⁵ Interview BG (9/24/2002) on file with ERI.

²⁶ Interview BE (9/6/2002) on file with ERI.

²⁷ Interview BC (8/29/2002) on file with ERI.

²⁸ Interview BG (9/24/2002) on file with ERI.

²⁹ For an overview, although not somewhat dated, see R. Bryant. "The Greening of Burma: Political Rhetoric Or Sustainable Development?" *Pacific Affairs* 1996 69(3): 341-59.

³⁰ ILO. *Social and Labour Issues in Small-Scale Mines* (1999).

³¹ "Mercury: How Much is Safe?" *Rachel's Environment and Health Weekly* (7 May 1998), No. 587.

³² J. Hinton, M. Veiga, and C. Beinhoof. "Women and Artisanal Mining: Gender Roles and the Road Ahead." In *The Socio-Economic Impacts of Artisanal Mining and Small-Scale Mining in Developing Countries*, (ed.) G. Hilson (Netherlands: A.A. Balkema, Swets Publishers, 2003), 10.

³³ Project Underground. "The Gold Album," available at http://www.moles.org/ProjectUnderground/reports/goldpack/goldpack_i.html.

³⁴ ERI Interviews #037 (2004), #039 (2004) on file with ERI.