Myanmar Centre for Responsible Business

5.4

Cumulative & Project-Level Impacts

Labour

Part 5.4

Labour

In this section:

A. National Context
- Myanmar regulatory framework on labour
- Occupational health impacts associated with limestone, gold and tin extraction and processing

B. Field Assessment Findings
- Health and safety
- Contracts and employment status
- Working hours, wages and leave
- Freedom of association, collective bargaining and labour grievances
- Workers' accommodation and restrictions on movement
- Women workers and child labour
- Discrimination and harassment
- Workers' benefits

C. Relevant International Standards, Guidance & Initiatives

A. National context

For 50 years, independent trade unions were prohibited, laws covering labour protection were antiquated and/or restrictive, forced labour of civilians by the military and civil authorities was common, and child labour was widespread. Myanmar labour laws are currently undergoing considerable reform. Many have recently been revised or rewritten (see below for an overview). However, there remains an overall lack of awareness by workers and employers of labour rights and safeguards. Enforcement of the new laws is piecemeal and inconsistent, and full-scale implementation of improved safeguards for workers will be a long-term process.

Informal labour

The economy in Myanmar is predominantly informal. A comprehensive national labour force survey undertaken in 2014-2015 by the then Ministry of Labour, Employment and Social Security (now the Ministry of Labour, Immigration and Population, MoLIP), with the support of the ILO, revealed that 75.6% of all employed persons operate in the informal sector.[347] According to statistics from the World Bank from 2011, 73% of the workforce can be classified as informal.[348] The OECD estimated that 83% of all businesses in Myanmar were informal in 2013.[349]

[347] Ministry of Labour, Employment and Social Security and Central Statistical Organisation, Myanmar labour force, child labour and school to work transition survey, 2015, p. 17
[348] World Bank, Myanmar: Ending poverty and boosting shared prosperity in a time of transition, 2011, p. 15
[349] OECD, Multi-dimensional Review of Myanmar, 2013, p. 104

Workers in the informal sector do not benefit from the protection of the labour laws and are therefore often at risk of discrimination, marginalisation and human rights abuses. Excessively long working hours, poor working conditions and low incomes are common problems amongst these workers. MCRB field research found that the majority of workers in the formal and informal mining sector are casual or daily workers. Casual workers make up a large part of the workforce even in the larger companies. Subcontracted mine sites only use casual workers. In subsistence mining, all labour is informal. There are, however, oral agreements between the mine owners or operators and workers about payment, working hours and other issues.

Forced labour

A major concern in Myanmar has been the widespread and systematic use of forced labour of civilians by the Myanmar army and the civilian administration for several decades, despite the Government's ratification of ILO Convention No. 29 against forced labour in 1955. Since 2011, many observers, including the ILO, have welcomed the decrease in forced labour, but note that the practice is still continuing in some areas.[350] A new Memorandum of Understanding for the elimination of forced labour was signed between the Government and the ILO in March 2012. A complaints mechanism has been put in place to allow victims of forced labour, with the assistance of the ILO Liaison Officer, to seek redress and remedies from government authorities.[351]

The ILO noted that while forced labour in Myanmar had generally been associated with the Government, complaints are now being received about the use of forced labour in the private sector.[352] Exploitative labour conditions – including in the mining sector – may in some cases amount to forced labour; where work is exacted from a person under the threat of a penalty or where the freedom of workers to leave their employer is restricted.

Myanmar regulatory framework on labour

Myanmar is a party to three of the eight fundamental ILO Conventions: the Forced Labour Convention (ratified March 1955); the Freedom of Association and Protection of the Right to Organise Convention (ratified March 1955); and the Worst Forms of Child Labour Convention (ratified December 2013).[353]

Freedom of association and the right to collective bargaining

Trade union activities were prohibited for several decades. However, the 2008 Constitution affirms the right of every citizen to form and participate in associations and organisations and the 2011 Labour Organisation Law permits the exercise of freedom of association. The 2012 Settlement of Labour Disputes Law provides for dispute resolution institutions and mechanisms. Since 2011, hundreds of enterprise-level trade unions have been formed and

[350] ILO Committee on the Application of Standards, Extract from Record of Proceedings, 18 June 2012, p7-10
[351] ILO, Forced Labour Complaint Mechanism
[352] ILO, Report on progress in the implementation of the Memorandum of Understanding and associated action plans for the elimination of forced labour in Myanmar, 13 June 2014, Article 7
[353] ILO, Ratifications for Myanmar

registered.[354] The Mining Workers Federation of Myanmar, said to have 4000 members, is one of the five registered trade union federations.[355]

Although Myanmar has been a party to ILO Convention No. 87 on Freedom of Association and Protection of the Right to Organise since 1955, gaps remain in protecting freedom of association in both the Constitution and labour laws. The current law sets a relatively high threshold for forming a union at company level[356] and makes it difficult for unions to establish themselves beyond this level. Moreover, the lack of protection for trade union members and leaders is a concern.[357] The ILO has recommended a number of amendments to the new laws on freedom of association to improve the way they function, including the creation of an obligation on parties to engage in collective bargaining in good faith, and to strengthen the enforceability of decisions of the labour arbitration bodies.[358]

The Settlement of Labour Disputes Law also prescribes that employers of more than 30 employees must form a Workplace Coordinating Committee (WCC). This must include representatives of both workers and the employer. The Committee is intended to promote a good relationship between the employer and the worker and/or their labour organisation, through negotiation and coordination on the terms conditions of employment, OSH, welfare, and productivity.[359] Most businesses are unaware of this requirement.

Details of legal provisions on contracts, minimum wage, working hours and leave are outlined in Box 16. The ILO's 2017 Guide to Myanmar Labour Law is also a useful reference, particularly where legal provisions are unclear. It has partly been used to draw up this table.[360]

Box 16: Legal Provisions on Contracts, Wages, Working Hours and Leave

Issue	Legal source(s)	Content
Contracts	2013 Skills and Development Law	■ A written contract should be drawn up within 30 days of the beginning of an employment relationship.
Leave	2013 Minimum Wage Act 1951 Factories Act	■ The number of public holidays is 14 days. ■ Earned paid leave is 10 days in a year. ■ Casual leave with wages is 6 days in a year.
Working Hours	1951 Factories Act, Amended 2016	■ 8 hours per day and 44 hours per week (maximum six days per week).

[354] ITUC, Myanmar: National Trade Union Centre Officially Registered, 28 July 2015
[355] Industriall Union, Myanmar mining unions set safety goal
[356] International Labour Conference, Observation (CEACR) – adopted 2014, published 104th session 2015
[357] ITUC, Foreign direct investment in Myanmar: What impact on human rights?, October 2015, p. 15
[358] ITUC, An ILO Commission of Inquiry on Freedom of Association in Burma (Myanmar), 2011
[359] 2012 Settlement of Disputes Labour Law, Chapter II (3)
[360] Guide to Myanmar Labour Law, ILO September 2017

	2018 Mines Rules[361]	■ Maximum five days per week, or no more than 8 hours a day (40 hours a week), and exceptionally 48 hours a week (Art 174a & b) ■ A one hour break should be given after 5 consecutive hours, which is counted as a part of working hours (Art 174c). ■ Moreover, the Rules state that no women are allowed to be employed in underground work sites of any mine, except for in health and social services (Rule 168).
Overtime	1951 Factories Act 2018 Mines Rules	■ Factory workers: no more than 20 hours per week for workers who engage in non-continuous work; no more than 12 hours per week for workers who engage in continuous work. ■ No more than 8 hours overtime per week. (Mines Rule 174d) ■ Overtime payment is twice the normal wage (Mines Rule 172a)
Minimum Wage	2013 Minimum Wage Act	■ Current minimum wage came into force on 1 September 2015, defined at MMK 3,600 per 8-hour working day, or MMK 450 per hour (Art 1e). A new minimum wage of 4,800 kyats was set in March 2018. ■ The law covers part-time work, hourly jobs and piecework [362] and provides that both women and men should receive the minimum wage without discrimination (Art 14h). ■ Newly hired workers engaged in a training/induction programme for up to a maximum of three months can receive 50% of the minimum wage, while during the probation period (2nd or 3rd month of employment), workers should receive at least 75% of the minimum. ■ There is predictably less protection for daily workers (often day labourers). However, if a worker in a daily wage job works less than the set hours per day not because of the worker, but because of the employer, the worker should still receive the full wage for the day (Art 14g).

[361] 2018 Mines Rules (held with MCRB)
[362] 2013 Minimum Wages Act

Occupational Safety and Health (OSH)

Some OSH provisions were included in the 1996 Rules which have been taken into the 2018 Rules and expanded on. Rule 176 of the 2018 Mines Rules contains some provisions on health and safety measures, as did the 1996 Rules. The permit-holder must provide all necessary measures for the safety in the mines, e.g. by ensuring the proper design, construction and electrical (communication) equipment needed. The Rules also require monitoring and regular inspection and maintenance of the working environment, tools and equipment in order to determine any potential dangers for workers. This includes adequate ventilation in all underground operations, fire prevention emergency rescue teams, and providing at least two (separate) emergency exits. All medical treatment of injured workers should be provided for free. The permit-holder is also required to appoint adequate supervisory personnel, and provide a system whereby the names and locations of persons entering underground work sites can be determined at any time, and to draw up and implement disaster prevention measures and keep safety records.[363] Rule 177 requires an emergency plan to be drawn up. Rule 178 requires the company to ensure all workers exposed to chemical or biological hazards are properly informed of the risks, to minimise the exposure to such hazards, and provide suitable personal protective equipment free of charge, and to arrange for free medical treatment, and treatment in accordance with the Social Security Law (see below).

There is a draft OSH Law, but it has not yet been adopted by Parliament.[364]

The 1951 Factories Act also includes provisions regarding workplace safety. The provisions of the Act include, inter alia: adequate ventilation and lighting of workplaces; removal of dust and fumes harmful to health; the avoidance of overcrowding; provision of safe drinking water; provision of adequate number of latrines for workers; and proper disposal of factory waste.[365] The welfare provisions include: first aid facilities; washing facilities; and places for taking meals. The Factories Act also provides that any accident inside or outside an industrial establishment above a threshold number of workers must be reported to the Factories and General Labour Laws Inspection Department (Art 53). According to the Factories Act, employers shall pay for medical treatment for workplace injuries caused by an employer's failure to keep OSH plans and protections. Employers must report deaths from workplace accidents or any injuries that prevent workers from working for 48 hours or more to the Factories Inspectorate of MoLIP (Art 53).

Social security

The 2012 Social Security Law[366] provides for: a health and social care insurance system; a family assistance insurance system; invalidity benefit, superannuation benefit and survivors' benefit insurance system; and an unemployment benefit insurance system from a social security fund, which both employers and workers pay into (Art 2(c) and (e)). Companies with five or more employees in the extractive industries (among others) are required to pay

[363] Ibid, Chapter XVII, Article 98 and 99
[364] An unofficial translation of the draft OSH Law is available on the MCRB website.
[365] 1951 Factories Act, Chapter III, Articles 14, 15, 16, 17, 18, and 21
[366] 2012 Social Security Law

social security (Art 11). Casual workers are not covered by the social security scheme. According to the 2012 Social Security Law, victims of workplace accidents are entitled to 12 months pay at 70% of their last four months' average salary (Art 55 and 56(a) and (c)). In case of permanent disability, the employee is entitled to the same cash benefits for five, seven or nine years depending on the severity of the injury (Art 58). In case of the death of a worker, her or his dependants are entitled to receive her/his invalidity or pension fund benefits for 36 months.

Discrimination

Article 348 of the 2008 Constitution prohibits discrimination by the Union against any citizen on grounds of race, birth, religion, official position, status, culture, sex and wealth.[367] However, the internationally recognised grounds of discrimination based on colour, language, political or other opinion, and national origin are not included in the Constitution, leaving significant gaps in protection against discrimination. There are also no provisions in the Constitution or laws prohibiting discrimination on the basis of sexuality. The 2013 Minimum Wage Act provides that both women and men should receive the minimum wage without discrimination, which is the first time that a labour law has prohibited discrimination on the basis of sex.[368]

Groups particularly at risk of being discriminated against include people with disabilities, women (see also Part 5.5: Women and Children), ethnic and religious minorities as well as lesbian, gay, bisexual and trans-gender (LGBT) people.

Occupational health impacts associated with limestone, gold and tin extraction and processing

In general, mining is considered to be one of the most hazardous industries, with a high rate of accidents and occupational diseases. There are a number of specific health risks associated with the commodities researched in this SWIA.

Health impacts associated with limestone mining

One of the main health hazards in limestone mining is the presence of limestone dust, containing free crystalline silica (SiO_2). With sufficient exposure, silica may cause silicosis, which is a pneumoconiosis that often develops progressively after years of exposure.[369] The chronic over-exposure to free crystalline silica dust is often associated with widespread occupational lung diseases, such as tuberculosis – also known as 'silico-tuberculosis'.[370] Although the direct link between exposure to silica and tuberculosis is sometimes contested, several scientific studies conducted in different regions of the world have documented the relationship between the exposure to silica dust in mining and developing tuberculosis.[371]

---

[367] 2008 Constitution, Chapter VIII, Article 348
[368] 2013 Minimum Wage Act, Chapter VIII, Article 14(h)
[369] ILO, Health Hazards of Mining and Quarrying, March 2011
[370] WHO, Hazard Preventions and Control in the Work Environment: Airborne Dust, 1999, p. 23
[371] Sanjay Basu et al, The production of consumption: addressing the impact of mineral mining on tuberculosis in southern Africa(2009) 5:11 *Globalization and health* pp. 1-8; David Stuckler et al, Mining and risk of tuberculosis in Sub-Saharan Africa(2011) 101:3 *American journal of public health* pp. 524-530; Aliakbar Yaramadhi et al, Correlation between silica exposure and risk of tuberculosis in Lorestan province of Iran(2013) 12:2 *Tanaffos* pp. 34-40; ILO, Clinical cases of silicosis in Thailand, 1997

Health impacts associated with gold mining

Mercury

As mentioned elsewhere, mercury is commonly used in gold processing in Myanmar. The effects of mercury on human health have been well documented. According to WHO, there are generally two susceptible sub-populations: those who are more sensitive to the effects of mercury, including foetuses, new-borns and children; and those who are exposed to higher levels of mercury. Once mercury has been released, it remains in the environment and has the ability to circulate between soil, water, air and sediments.[372] The substance may thus affect entire communities.[373]

Subsistence miners are generally the most directly exposed, by breathing the mercury vapour generated during the burning of the gold-mercury amalgam,[374] which in Myanmar takes place inside houses and without the use of retorts or ventilation systems.[375] The most common health problem observed in studies on artisanal gold miners are neurological effects, such as tremors, ataxia (movement disorders), memory problems and disorders affecting the eyes.[376] Other health problems include skin rashes, vision and respiratory problems, kidney failure, cardiovascular problems and even death.[377]

While the SWIA did not measure mercury contamination, previous studies in Myanmar report that mercury concentrations in the air close to artisanal gold mine sites to be as high as 60 µg/m^3.[378] According to WHO, tremors have been observed in workers exposed to 30 µg/m^3, and renal tubular effects and changes in plasma enzymes have been estimated to occur at 15 µg/m^3.[379] Consistent with findings in other areas of the world, the Myanmar study further observed that women in charge of heating the gold amalgam frequently do this in their indoor kitchen, filling the living area with mercury vapour. As a consequence, mercury concentrations in female miners may be higher than those in male miners. Infants, who are usually near their mothers, are also more at risk of exposure to mercury vapour than male miners.[380] MCRB field research also observed the use of acid to remove the last impurities from the gold recovered by the amalgamation process and noted that this practice was shared by subsistence gold miners in Bago, Sagaing and Kachin.[381]

Cyanide

Cyanide leaching, or cyanidation, is a common process used in gold extraction technology to dissolve and separate the gold from the ore. The use of cyanidation in mining is officially

[372] UNIDO, UNIDO & Mercury, 2013
[373] Herman Gibb and Keri G. O'Leary, Mercury Exposure and Health Impacts among Individuals in the Artisanal and Small-Scale Gold Mining Community: A Comprehensive Review (2014) 122:7 *Environmental Health Perspectives (Online)* pp. 667-672
[374] WHO, Guidance for Identifying Populations at Risk from Mercury Exposure, 2008.
[375] MCRB field research 2016
[376] Herman Gibb, Keri G. O'Leary, Mercury Exposure and Health Impacts among Individuals in the Artisanal and Small-Scale Gold Mining Community: A Comprehensive Review (2014) 122:7 *Environmental Health Perspectives (Online)* pp. 667-672
[377] UNIDO, UNIDO & Mercury, 2013
[378] Takahito Osawa and Yuichi Hatsukawa, Artisanal and small-scale gold mining in Myanmar: preliminary research for environmental mercury contamination (2015) *人間生活文化研究* pp. 221-230
[379] WHO, Air Quality Guidelines for Europe, 2000, p. 158
[380] Takahito Osawa and Yuichi Hatsukawa, Artisanal and small-scale gold mining in Myanmar: preliminary research for environmental mercury contamination (2015) *人間生活文化研究* pp. 221-230
[381] MCRB field research, 2016

banned in Myanmar, although the authorities sometimes grant exemptions. The field teams observed cyanide use in gold mining areas. Sodium cyanide is one of two 'Other chemicals' together with mercury, regulated as one of 29 Restricted Chemicals under section 5, sub-section (h) of the Prevention of Hazard from Chemical and Related Substances Law.[382]

While cyanide leaching may present a technical risk to miners, it generally does not pose environmental and health problems to the degree that mercury does. The toxins contained in cyanide will break down relatively quickly when exposed to air and sunlight. Thus it does not, as mercury, bio-accumulate in the natural environment.[383] Safe handling, storage and waste management is, however, essential. Even in favourable conditions, cyanide often will not naturally decompose into harmless elements quickly enough to prevent pollution.[384] Cyanide can persist in underground water systems. MCRB field research found community wells polluted with cyanide in sites near gold mining projects.[385] Field research also indicated that mines using cyanide in their gold recovery process did so in a manner which may threaten the health of staff.[386]

Occupational exposure often takes place via inhalation and skin absorption of cyanide. The general population may also be exposed to the substance via the air, drinking water and food.[387] Cyanide is an acutely toxic chemical and may be lethal if ingested, inhaled or absorbed through the skin in sufficient amounts.[388] Acute symptoms of cyanide toxicity can occur within seconds of inhalation of hydrogen cyanide, or within minutes of ingestion of cyanide salts.[389] Symptoms occurring within 14 days or less include skin and eye irritation, asphyxiation and mortality. Chronic health hazards occurring within a year or more, include carcinogenicity, effects on the reproductive system, effects on the nervous system, and effects on other organs.[390] Studies have shown that individuals with nutritional inadequacy are particularly at risk.

Health impacts associated with tin mining

Exposure to tin mineral has limited impacts on human health. The exposure to chemicals which makes gold mining very damaging to the natural environment and human health are not replicated in the country's tin sector.[391] In Myanmar, tin processing is carried out by gravity separation, a process which uses water and no chemicals to separate the mineral from the ore. Tin smelting operations are limited in Myanmar. As a result, tin fumes, which may have an adverse impact on human health, are not currently being produced in the domestic tin industry. Some studies have shown that there is a positive exposure-response relationship between exposure of tin miners to dust and the risk of developing silicosis[392]

---

[382] Ministry of Industry, Central Leading Board on Prevention of Hazard from Chemical and Related Substances Notification No: 2/2016 Issuing the List of Restricted Chemical, 30 June 2016
[383] Images Asia and Pan Kachin Development Society, At What Price, November 2004, p. 30
[384] Ibid
[385] MCRB field research, 2016
[386] MCRB field research, 2016
[387] WHO, Guidelines for Drinking-water Quality, 2004
[388] ICMM, The Management of Cyanide in Gold Extraction, 1999
[389] WHO, Cyanide in Drinking Water, 2007
[390] ICMM, The Management of Cyanide in Gold Extraction, 1999
[391] MCRB field research 2016; MCRB interviews, 2015
[392] Weihong Chen et al, Risk of Silicosis in Cohorts of Chinese Tin and Tungsten Miners, and Pottery Workers (I): An Epidemiological Study (2005) 48:1 *American Journal of Industrial Medicine* pp. 1-9

and lung cancer.[393] However, this is debated.[394] The development of silicosis in tin miners is thought to be related to the quartz content in the ore, released during extraction, processing and transportation, and not to the tin itself.

The Molo Women Mining Watch Network reported that many tin mine workers suffer from arthritis and that women collecting and washing tin nuggets often suffer from pain and numbness in their hands and legs.[395] This study indicates the poor conditions in which tin miners work, which were seen during the field work carried out by MCRB to be exacerbated by working in water.

Drug use in mining in Myanmar

There is limited independent data available on the number of drug users in Myanmar. According to the latest UN Office on Drugs and Crime Southeast Asia Opium Survey (2015), the prevalence of drug use among Myanmar's total adult population was: opium 0.9%; Ya-ba (a methamphetamine common in Southeast Asia) 0.7%; and heroin 0.1%.[396] Drug use is most prevalent in Shan State.

A number of recent studies have reported a high prevalence of drug use in relation to mining activities in Myanmar.[397] The harsh working conditions reportedly encourage drug use among many male miners. In the jade mining area in Kachin State, locals estimated that 90% of the workers in the Hpakant jade mine were using drugs.[398] Health workers in Hpakant reported that about 40% of injecting drug users in the area were HIV positive, twice the national average.[399] Some cases of mining companies handing out drugs in order to encourage miners to work longer hours have also been reported.[400]

B. Field assessment findings

Health and safety

Human Rights Implicated: Right to the highest attainable standard of physical and mental health; right to life, liberty and security of person

- **Adverse health impacts:** MCRB field teams gathered testimonies from mine workers, former workers and medical personal about health symptoms. These included:
  - Respiratory problems in limestone processing and tin mining;
  - Dizziness, headaches and body aches and pains in gold mining; and
  - Skin problems in tin and gold mining.

[393] Weihong Chen, Nested case-control study of lung cancer in four Chinese tin-mines (2002) 59:2 *Occupational and Environmental Medicine* pp. 113-118
[394] Agency for Toxic Substance and Disease Registry, Public Health Statement: Tin and Tin Compounds, 2005
[395] Molo Women Mining Watch Network, Lost Paradise: Damaging Impact of Mawchi Tin Mines in Burma's Karenni State, 11 December 2012, p. 12
[396] UN Office on Drugs and Crime, Southeast Asia Opium Survey 2015: Lao PDR, Myanmar, 2015, p. 70
[397] Kyi Htun, Sustainable Mining in Myanmar(2014) 36:1 *Applied Environmental Research* pp. 25-35; Reuters, Myanmar's Old Guard Runs a Jade Empire, 29 September 2013
[398] Kachin Women's Association Thailand, Silent Offensive: How Burma Army Strategies are fuelling the Kachin drug crisis, 2014, p. 6
[399] Reuters, Myanmar's Old Guard Runs a Jade Empire, 29 September 2013, p. 6
[400] All Kachin Students and Youth Union, Blood Jade: Burmese Gemstones and the Beijing Games, 2008

At one of the cement factories workers reported that they suffered from acute respiratory diseases or tuberculosis, which may be linked to their exposure to dust from limestone. Workers told the field teams that they felt sick; as they did not have access to proper medical care or a physician's diagnosis, they did not know the cause of their symptoms. Underground miners in small-scale gold mines reported that they suffered from headaches. The field teams also observed that the ventilation in the shafts was particularly poor, except in cases where there were two exits for each tunnel. Workers also complained about rashes from staying in water for many hours underground. In one village, community members told the team about several women involved in gold processing at a large-scale gold mine having had miscarriages or difficulties conceiving. In tin mining, workers staying in water all day were found to have skin diseases and infections, especially on their hands. Tin mining workers also reported acute respiratory problems.

- **Inadequate health and safety procedures and training:** Overall, the field research found that OSH training was ad hoc and insufficient. Only two of the large-scale mine sites visited had an OSH Policy and only one had dedicated OSH personnel. One mine had received ISO 9001 certification and OSH training was given to workers, including through their training centre. At one site supervisors had received OSH training, which they in turn were supposed to give to workers, but that did not in fact happen. At most of the small-scale sites, workers had received no OSH training at all. Several companies had procedures for using explosives, which were reportedly handled by experienced workers only. At a large-scale gold mine site management told field teams that only senior staff were allowed to handle cyanide, but the team observed differently. At several large-scale sites, workers were found to drink unfiltered water and sometimes dripping water in underground mines, mostly because of ignorance of the dangers or because the workers were not provided with enough clean drinking water.
- **Personal Protective Equipment (PPE) is not used systematically:** Overall, PPE provision and use was found to be better and more systematic at large-scale sites than at small-scale operations or in subsistence mining areas. That said, the team found problems at all sites. Employees at large-scale operations were usually provided with free PPE except in one instance. At two of these sites, rules and regulations for staff included the compulsory use of PPE and the field teams observed that staff were in fact wearing it, including daily workers. However, at three other large-scale sites workers reportedly did not always use PPE and management was found to be lax about requiring it. At one site, where top management and government authorities conducted checks on whether workers wear PPE, workers reported that they were usually told by their supervisor when those checks occurred so that they could prepare for them. Several problems were found with regard to the quality of PPE. At one site underground miners were found to have helmets but no uniforms, boots or masks, and the helmets were not replaced on a regular basis. At some small-scale sites and in subsistence mining areas, those processing gold were found to wear gloves but no mask, instead using a cloth to cover their nose and mouth while working. Similarly, at one large-scale gold mine site, workers processing gold were seen not to use any masks, while the field team found the smell to be intolerable. At most of the gold mine sites, whether large or small-scale, no specific arrangements were found in place for pregnant women working with mercury in gold processing.

- **Limited record keeping of Health, Safety and Environment (HSE) data and workplace accidents:** Although all mines have to report accidents and fatalities to MoNREC, only one company said that they had an incident registry in place. It is thus difficult if not impossible to assess the accident rate. The one registry revealed 30 serious accidents and three deaths recorded for the year 2015. At some of the large-scale mine sites, management claimed that there had been no serious accidents in their operations. However, they talked about frequent accidents in subcontracted mines on their site. Fatal accidents reported by workers included: falling rocks; accidents linked to improper use of explosives; tunnels collapsing on workers; electrocution; suffocation; and accidents during construction (e.g. pipe falling on and killing worker); and transportation. Other reported accidents included: injuries caused by falling rocks; fingers cut off by machines; and women's hair being caught in processing machines. At one site, a worker reported that after several accidents where fingers were cut off, the company established safety procedures. With regard to small-scale underground mines, it was reported that accidents occur because there are no systematic plans for building the shafts, which sometimes merge into one and may then collapse.
- **Subcontracted mine operators have very poor health and safety practices:** Subcontracted operators generally had to follow a set of rules and regulations imposed by the permit-holder. Some of these rules and regulations pertained to OSH, for example: regulating the use of explosives (which have to be bought from the permit-holder who has to be informed when blasting will occur); the way in which shafts are built and ventilated; and where waste can be disposed. Some subcontracted operators were found to provide PPE to workers for free or against a deduction on their salary; in other instances workers had to buy their own PPE. While the subcontracted mine operator might have received training, workers told the SWIA field research teams that they had never received any systematic OSH training. They often seemed not to follow the most basic safety instructions, for example exiting shafts when blasting occurs. The rate of accidents was reportedly high, in particular amongst inexperienced migrant workers from elsewhere in Myanmar. The field teams were told at one small-scale site that according to audits of subcontractors at the site 30-40 people were injured every year and 1-2 workers died each year. At another site, medical personnel said that accidents were much more frequent at subcontracted mines. According to rules and regulations imposed on subcontractors by permit-holders, subcontracted operators have to report accidents to the permit-holder. However, they sometimes admitted they did not do so regularly to avoid being closed down. Some permit-holders reportedly had an inspection team to inspect accidents at subcontracted mines.
- **Only a few companies pay social security for their employees:** Only four of the large-scale mines paid into the social security fund for their employees as required by the 2012 Social Security Law. Many of the large companies visited provided a medical centre within their compound with free treatment for employees. One company said that it did not pay the social security contribution because it had its own healthcare fund. At another site, workers reported that they could choose to participate in the social security scheme or not, but they chose not to because the social security hospital was located in another state. At another site, where workers were part of the social security scheme, they told the research team that they would have preferred a company-led scheme, as the public social security benefits were too low and the hospital too far away.

- **Companies cover some medical expenses:** At one site, the company would pay up to a certain amount of medical expenses per month depending on the position of the workers. The amount would vary between USD 8 for a basic worker and up to USD 340 for managers. At one site, workers were reportedly offered a yearly medical check; at another they received a medical check-up at the start of their employment. At other sites, workers only went to the medical facility if they were sick. At some sites, a medical doctor was present, whereas at others, a non-certified doctor or a nurse was in charge. In a few cases, the team observed that there was not enough medication and necessary medical supplies and workers sometimes had to pay for medication. The field research also indicated that contract workers and daily workers never had social security cards and usually had no access to the company-provided health facilities. In one case, contracted workers had their own welfare fund that they contributed to, to support medical treatment or funeral services. At another site, casual workers had access to health facilities of the company in case of an accident.
- **Compensation amounts for accidents and fatalities vary:** Large companies generally provided monetary compensation in cases of serious work-related injuries or death. However, the level of compensation was inconsistent and not transparent. At one site, where a worker died as a result of a pipe falling on him during the construction phase, the company paid for the funeral and compensated the family. Another large-scale company said that it had paid between 15 and 30 lakh compensation for deaths linked to mining activities and that it usually negotiated with families to avoid legal fees and the justice system. Another company said it had given 35 lakh to the family of a deceased worker and 45 lakh in another instance. Subcontracted mine operators also reported that they paid compensation to families in cases of workplace-related death, one company noting that it had paid 50 lakh for one incident.
- **Drug use and HIV:** Drug use amongst mine workers was common in certain regions, especially in gold mining regions. Miners in one small-scale gold mining area were reportedly using ya-ba and heroin. According to a local NGO, miners get tired because of the hard work and are thus more likely to use illegal stimulants such as methamphetamines. The fact that miners may have more cash than others in the community was also cited as a factor contributing to increased drug use. The prevalence of HIV/AIDS is reportedly very high in the area. The team could not establish with certainty in one subsistence gold-mining area whether prevalence of drug use was much higher amongst miners than in the general population. However, they may be more at risk of becoming drug users because they have the available cash and because their work is very demanding and difficult.

Box 17: Health and Safety in Subsistence Mining

Subsistence miners in Myanmar operate under particularly dangerous conditions. This is an overview of the most common issues identified by the field research.

- **Health and safety procedures and training are non-existent and there are no healthcare facilities:** Not even first aid equipment was available. Workers would generally have to go to the local village healthcare centre, which was often poorly equipped. At one limestone processing site, workers extracted the limestone with basic equipment, crushed it and burnt it in an artisanal oven

without any protection. The area where the oven was located was not fenced in, although it was close to a village. Workers and their families lived in small huts near the oven, without any sanitation.

- **Use of mercury and other dangerous products with no appropriate care:** Mercury – said to be imported from China or India – was being sold over the counter in shops in gold mining areas. In one area, women of all ages, including those who were pregnant, were panning for gold and were observed using mercury without any protection. Interviews with panners revealed that they were not aware of the adverse health impacts associated with mercury. Sometimes they chose to ignore the risks because they had no alternative livelihoods. At one site, miners thought that mercury would only be dangerous if ingested and would usually store mercury out of reach of children. At another site, processing with mercury was only done at the mine owners' house. In one subsistence gold mining area, village administrators claimed that they invited workers to a meeting once a year to inform them about mercury use and safe processing. However, no subsistence miners interviewed by the team were aware of such events. In subsistence shaft mining in one village, dynamite was stored in the houses and both mercury and cyanide were used without adequate protection.
- **Small children are present on the mine sites:** The field research teams observed that children, including small babies, were taken to the mine sites where their parents were working. In one area, the shafts were located in the village itself, under houses where families lived.
- **Adverse health impacts from mining:** Female gold panners complained about being in water all day and falling sick as a result. Some reported that they felt dizzy. Hands and fingernails were affected by the work and many also had cuts, abrasions, and contusions. A health officer said that headaches were common amongst gold miners and also reported that many underground miners had respiratory problems, with symptoms resembling tuberculosis. In several areas malaria was reported to be common amongst miners, as well as hepatitis B. Tin miners working in water were found to have skin diseases. There was often no proper sanitation in the subsistence mining areas. Older workers, estimated to be over 60, were panning, which meant remaining in water the entire day.
- **Accidents, with no systematic compensation:** One case was reported to the field team about a landslide at a mine site where 20 people were affected and one person died. No compensation was paid, but the EAO controlling the area shut down the site. In one gold mining area, it was reported that landslides had been frequent in the past. In one village it was reported that there were approximately 10 fatalities per year. Such accidents had significantly decreased since 2015 as mine owners now had access to excavators and could dig more systematically with large equipment. Several cases of accidents were reported because of the absence of rehabilitation of old pits, which are often located close to villages, without fencing or warning signs. In one case, a 17 year old boy had gone to an old mine site with his friends to collect ore but got caught in a landslide and was now disabled. No compensation was given, and the family did not know who the old pit owner was.

Contracts and employment status

Human Rights Implicated: Right to just and favourable conditions of work; right to equal pay for equal work

- **Only employees of larger companies have signed contracts:** At two large-scale mine sites all workers were directly employed by the company. At all of the other large-scale sites workers included employees, contract labour obtained through a third-party, and casual or daily workers. Most employees at large-scale mine sites had signed a written contract or an appointment letter specifying the salary, working hours, leave entitlements and sometimes other benefits. However, they did not have a copy of the contract, which was kept by the company. Only at one site did permanent staff report that they had a copy of their contract. In several cases the Labour Department had recently ordered companies to put in place contracts. The length of contracts was generally found to vary from six months to five years. At one site, workers from the local community reported they were hired as 'trainees' for 10 years without any salary but were compensated in-kind with diesel that they sold at the market before getting a 5-year contract. At smaller licensed operations, workers had no contracts but an oral understanding with the owner. At one small-scale mine site, the 300 permanent employees had no written contracts, only oral agreements which entailed a commitment that they would remain on the job for the first three months. The same pattern was observed at other small-scale mines in the same region. At several sites there were also problems with subcontracting. At one large-scale site, the permit-holder only employed eight people, with all mining operations subcontracted to other operators, which were hiring daily workers. At another large-scale mine with over 3000 workers, less than 5% were found to be directly employed by the main company, with 100 subcontracted mine operators recruiting daily workers to perform the actual mining work. No daily workers at any of the sites had contracts.

Working hours, wages and leave

Human Rights Implicated: Right to just and favourable conditions of work; right to an adequate standard of living

- **Long hours:** None of the sites visited fully respected labour law which prescribes a 44-hour week for general workers, and 40-hours a week with two days of consecutive rest for five days of work for mine workers (1996 Mines Rules). At most of the large-scale sites, workers worked six days a week, or about 48 hours, with one day of leave per week. At one small-scale mine site, underground miners would work six days a week and office workers seven days a week, with an additional MMK 3,000 for working on Sunday. At another small-scale site overtime work on Sundays was remunerated at double rate. At other sites, overtime work on a leave day or after normal working hours would not be compensated. At one small-scale mine, workers usually worked from 6am to 5pm with a one-hour break. At some small-scale mine sites, workers worked every day and had no leave except public holidays. Security guards generally had the longest shifts and were granted less leave, many working seven days a week (3 days casual and 10 days of annual leave at one site).

- **Wages:** Although employees at large-scale sites were reportedly paid the minimum wage or higher, which provides a higher income than farming, entry-level employees said that their salary only covered basic expenses and did not allow them to save. Security guards at one site received a salary significantly lower than the minimum wage. Delays in payments of up to 10 days were reported at several sites. None of the companies provided payslips to workers. Small-scale companies sometimes paid a wage according to a system of redistribution of revenues amongst workers. At one small-scale site, it was reported that workers received their share of the production only after having worked for six months.
- **Daily workers have an insecure income:** Daily workers, at both large- and small-scale mine sites, were engaged in cleaning, construction and packing work, among other tasks. They usually received a fixed payment per day. At one site, contract workers employed by a third-party were paid on a piecework basis, by the number of cement bags they carried per day. At a large tin mine site, the daily workers engaged in carrying ore to the surface and women washing ore were reportedly paid by the ton, whereas miners working underground extracting the ore had a fixed daily wage. Even at those locations where daily rates were the highest, daily workers reported that their income barely covered their basic needs.
- **Withholding of wages:** At several sites instances of the company withholding a part of the salary were reported. At one site, the company opened a bank account for each employee into which the company paid USD 20 from their salary each month; however, workers could only access this money after three years of employment. At one small-scale site, the company retained part of the salary, reportedly in agreement with the workers, to allow them to save some money. At one large-scale site, in order to keep workers with the company for a long time, workers had to compensate the company if they left within the first five years of employment. At another large-scale site, employees were requested to stay with the company for at least two years.
- **Leave:** Employees at large- and small-scale sites were generally given annual leave (10 days), as well as casual leave and maternity leave, as per the labour laws. Casual workers and subcontracted mine workers were not granted any formal leave. Some smaller companies reported that they had no policy for maternity leave as they had had no cases of women requiring it. At one site, management said that they recognised different public holidays for different religions.

Box 18: Working Conditions in Subsistence Mining

The field research found working conditions in subsistence mining areas to be particularly poor. Key findings are outlined in the points below.

- **Living conditions:** In one gold mining area, subsistence miners were mostly internal migrants who had settled with their families in the area to earn a living. Some would stay in the area for many years, while others would migrate seasonally to take part in mining for only part of the year. The settlements of subsistence miners were not registered with the Ministry of Home Affairs and were very poor, with no available healthcare or transportation. In another gold mining area, most migrant workers lived in huts close to the mine sites, while local miners would live in the village.

- **Working hours and daily wages:** Workers were usually recruited by a mine/pit-owner with whom they had an oral agreement about their terms and conditions. Conditions at nearby mine sites were found to be equivalent. In one gold mining area, workers reported that they usually worked 12 hours with a one-hour break. Male workers made a fixed daily amount (MMK 5,000) and a higher rate at night (MMK 8,000). Women, who often performed different functions than men, were paid around MMK 4,000 to 5,000 a day. Wages were paid every 10 days. Some workers, including female cooks, would sometimes be paid on a monthly basis (MMK 60-100,000). Workers usually received three meals per day and additional snacks for night-time work. In these areas there were no provisions for paid leave days, so when a worker was sick, s/he received no payment. In one area, it was reported that typically wages were not paid on time because of cash flow problems when gold production was low. In the same area, when the mine owner had to buy new machinery, workers had to work very long shifts (up to 24 hours at a time) to contribute to paying the cost of the equipment back to the mine owner. Some mine owners had a profit sharing agreement with workers. In one village where people were mining in shafts within the village itself, there was a production sharing system, where the 'owner' paid for the equipment etc. and then received 60% of whatever was mined, and workers shared the remaining amount among themselves.
- **Fees paid to mine owners:** Informal pit owners may allow individuals to pan on the site or collect ore from waste against a daily fee, e.g. MMK 5,000. Other pit owners do not allow such activity on their site and may call the army to chase these subsistence miners from the site. In one gold mining area, village leaders played the role of labour broker. This included organising accommodation for migrant workers on land which they owned, paying a fee to a pit owner to allow the community to mine there, bearing responsibility for the tools if they were lost or damaged, and possibly buying the gold from the workers. Large-scale or small-scale permit-holders could also authorize subsistence miners to operate in some designated places within the mine area. At one large-scale tin mine site, a village leader paid a fee to the mining company to get permission for villagers to pan in the creek, and villagers then had to sell back a part of their product to the villager leader who then sold it back to the company. At two large-scale tin mines, individuals had a card for which they paid a one-off fee, allowing them to collect ore in the waste area within the concession. Then they had to sell back the mineral to the permit-holder at less than market price. The income of individual panners or those collecting waste was insecure because it was entirely dependent on how much mineral they were able to recover and sell.
- **Grievance resolution in informal mining:** In one area, if there was a dispute between a worker and a mine owner about payment of wages the village administrator could act as a mediator. In one instance, the village administrator admitted to the field team that he felt awkward playing that role since the mines were illegal.
- **Discrimination:** As in formally licensed mines, women in subsistence mining areas were usually confined to certain functions (panning, cooking, carrying rocks, washing the ore, and not underground mining). They were not perceived as true

miners by male workers, and were generally paid less. No cases of sexual harassment were reported. Overall, workers, including young ones, felt that they were treated equally by the mine owners or their fellow workers and all of them shared their meals.

Freedom of association, collective bargaining and labour grievances

- **No independent representation of workers:** One site had two unions – one for casual workers employed through a recruitment committee and the other for workers recruited directly by the company. After the casual worker union had made demands for higher wages, three leaders were blacklisted and could not work for three months.
- **Dysfunctional grievance mechanisms:** No legally established Workplace Coordinating Committee existed at any of the sites visited. However, at two sites a committee to deal with labour problems and grievances had been established. However, no workers were represented on these committees and workers were not always aware of its existence or functions. At one site, the committee had reportedly been set up at the request of ME-2. At another site, the committee had never received any grievances. Suggestion boxes were found to exist at several sites but were reportedly not used because grievances were brought directly to managers by workers.
- **Local authorities or State-owned joint venture partner act as mediators in labour disputes:** At one large-scale mine site, after the take-over of a state-owned mine by a private company, local workers who had informally organised complained to local authorities about no longer having proper contracts and being paid below the minimum wage. As a result, the local labour department visited the site, mediated between the parties and supported the company to draw up the contracts, thereby meeting the demands of the workers. In another instance, the joint venture partner was called upon to intervene in a case of harassment by a foreign supervisor who was then dismissed as a result of the intervention.

Workers' accommodation and restrictions on movement

Human Rights Implicated: Right to an adequate standard of living; right to just and favourable conditions of work; right to non-discrimination; right to housing

- **Variable housing standards for employees:** Employees at large-scale sites were generally housed by the company on the mine site itself or nearby. Where worker accommodation was provided, it was divided into different categories depending on the status of the employees. Family accommodation was sometimes available for a fixed rent, e.g. MMK 10,000 which included electricity and water. At one site, the shared accommodation (two people per room in 12-room apartments) was spacious and of a good standard, with electricity, drinking water, sanitation, a hall for entertainment, and Wi-Fi at night. At other sites the standards were very poor. At one site during the dry season, water storage basins (storing water for workers) remained empty for 2-3 days at a time, which was not addressed in spite of complaints by workers. Sanitation facilities were also scarce at several sites, e.g. only 32 toilets for a workers camp with over 1500 people. Accommodation for security staff was particularly poor. At one large-

scale site, security guards did not even have a fixed place to live and usually slept at the different security posts where they were on duty. At another site, security guards stayed in a hut with leaking water and only two hours of electricity per night.

- **Restrictions on freedom of movement:** All worker accommodation sites (except one) were closed at night, usually between 7pm and 7am, with no one able to leave or enter the area during this time. At one of the sites, the housing area for female workers was fenced in separately, reportedly for their safety. Management at one site said that the area was closed at night to prevent disputes or violence between workers and local people, although there were no reports of this. At two small-scale mine sites original identity documents of workers were kept by the general manager to ensure workers did not leave without notice.
- **Poor accommodation for daily workers and subcontracted mine site workers:** At one site, migrant daily workers lived in two villages close to the mine site where they paid a monthly rent (MMK 1,000) for the land on which they had built their houses. The field research team observed overcrowded and dirty housing with poor sanitation. Villagers had some small livestock around their houses. According to residents living in that area, out of 20 migrant worker households, three had children suffering from TB. At another large-scale site, (migrant) daily workers were housed for free in houses outside the mine site. They reported that they did not feel safe in the house, which the field team observed looked close to collapse. The company sometimes provided water in the summer, but no electricity. Workers in subcontracted mines did not stay in the same place but moved around, usually in areas close to the shaft where they worked in poor conditions; with no sanitation, bad quality food and large quantities of dust.

Women workers and child labour

See part 5.5: Women and Children.

Discrimination and harassment

Human Rights Implicated: Right to non-discrimination; right to work; right to just and favourable conditions of work

- **Women daily workers are generally paid less than their male colleagues:** Women daily workers were found to generally receive less money, often below the legal minimum wage of MMK 3,600. In one mine, men received MMK 2,500 and women MMK 2,000. At another site the pay differential was MMK 4,000 for men and MMK 3,000 for women; and at another MMK 5,000 for men and MMK 3,500 for women. At another large-scale site, women in gold processing received a monthly salary of MMK 120,000, whereas men were paid MMK 150,000. Male daily workers in construction earned around MMK 6,000-7,000 a day while women would only earn MMK 4,000, supposedly because they had less work to do.
- **No anti-discrimination policies in place, some cases of discrimination reported:** None of the sites had anti-discrimination or harassment policies and procedures in place. At two sites the company reported that they had an unwritten policy of non-discrimination. However, it was unclear what this entailed or how it functioned. Both workers and management were generally not sensitised to the issues of discrimination and harassment. One case of discrimination was reported against labour union leaders

representing casual workers. After they had asked for an increase in salary, three union leaders were then not given any more work. At another site, dozens of workers who had joined the NLD in 2012 were not allowed to work anymore because the company they worked for was believed to be supporting the then ruling party, the Union Solidarity and Development Party. At yet another site, local communities from an ethnic nationality group told field teams that they had less employment opportunities than Bamar migrant workers. Myanmar workers at another site reported that they were subject to oral abuse by their foreign supervisors.

Workers' benefits

Human Rights Implicated: Right to an adequate standard of living; right to just and favourable conditions of work

- **Some benefits provided to workers as part of their employment terms and conditions:** Sometimes workers benefitted from free transportation from their accommodation to their workplace, although in one case, workers had to stand up on the truck beds and felt it was very dangerous. This transportation was only provided from one nearby village to the site. At one site, the company provided a childcare facility for workers for MMK 10,000/month. Most of the large- or small-scale companies provided three free meals a day to workers or a food allowance (MMK 1,500 for basic workers and MMK 3,000 for higher level employees). Different types of bonuses were given at some large-scale sites but not systematically. These included bonuses for working every day, bonuses for working during a religious festival, and bonuses for working on a leave day. Some employers also gave money for a wedding or a child being born. In two instances, the companies would encourage their staff, in particular young people, to study through granting a bonus or paid leave for exams. One company provided free transportation to the closest township for workers when they were on leave. At one site, the company provided loans to workers. According to the management these were interest-free; according to a worker, at a 10% interest rate.

C. Relevant International Standards, Guidance & Initiatives

Box 19: International Standards, Guidance & Initiatives on Labour Rights, Safety & Mining

International Standards:

Fundamental ILO Conventions
Those ratified by Myanmar are in ***Bold***

- **C29 Forced Labour Convention, 1930**
- **C87 Freedom of Association and Protection of the Right to Organise Convention, 1948**
- **C182 Worst Forms of Child Labour Convention, 1999**

Not Ratified by Myanmar

- C98 Right to Organise and Collective Bargaining Convention, 1949

- C100 Equal Remuneration Convention, 1951
- C105 Abolition of Forced Labour Convention, 1957
- C111 Discrimination (Employment and Occupation) Convention, 1958
- C138 Minimum Age Convention, 1973

ILO Mining Convention and Recommendation

- C176 Safety and Health in Mines Convention, 1995
- R183 Safety and Health in Mines Recommendation, 1995

Other relevant international standards

- UN Guiding Principles on Business and Human Rights
- UN International Bill of Human Rights and Core Human Rights Instruments
- ICMM Sustainable Development Framework
- IFC Performance Standards and Guidance Notes:
  - PS 1 – Assessment and Management of Environmental and Social Risks and Impacts
  - PS 2 – Labour and Working Conditions

Guidance:

- ICMM, Health and Safety
- ICMM, Health and Safety Performance Indicators
- IFC, Environmental, Health and Safety Guidelines for Mining
- IFC, Good Practice Note: Non-Discrimination and Equal Opportunity
- IFC, Good Practice Note: Workers' Accommodation: Processes and Standards
- IFC, Measure & Improve Your Labor Standards Performance: Performance Standard 2 Handbook for Labor and Working Conditions
- IFC, Women in Mining: A Guide to Integrating Women Into the Workforce
- ILO, Safety and health in small-scale surface mines: a handbook, 2001
- ILO, Safety and health in opencast mines: an ILO code of practice, 1991
- International Cyanide Management Code for the Manufacture, Transport, and Use of Cyanide in the Production of Gold

International Initiatives:

- Pure Earth, Teaching Artisanal Gold Miners to Extract Gold without Mercury. Pure Earth has been testing and teaching a century-old, traditional method of Mercury-free gold mining. So far, Pure Earth has worked with miners in Bolivia, Mongolia, and Peru. This document provides a step-by-step guide as to the process of mercury free mining as well as describes in detail the organisation's work.
- UNDP, Guidance: Developing a National Strategic Plan to Reduce Mercury Use in Artisanal and Small Scale Gold Mining. This document guides governments in the development of a national strategic plan relating to improving practices and working conditions in ASM gold mining and reducing the impact of mining on the environment.
- US Environmental Protection Agency (EPA), Reducing Mercury Pollution from Artisanal and Small-Scale Gold Mining. EPA has partnered with Argonne National Laboratory to design a low-cost, easily constructible technology called the Gold

Shop Mercury Capture System, which was piloted and tested in Amazonian gold producing regions in Brazil and Peru.

- Artisanal Gold Council, Sustainable Development of Artisanal and Small-Scale Gold Mining in Indonesia. This project aims to improve incomes, health, and the environment of the vulnerable and marginalised women and men dependent on the ASM gold mining economy. The project supports the introduction and popularization of non-chemical alternatives to mercury in gold processing.
- The Ban Mercury Working Group, Ending Mercury Use in Artisanal Gold Mining. This report is about the general use of mercury as well as communities at risk, and the mercury alternatives that exist.