

THE COLOR OF RESPONSIBILITY: ETHICAL ISSUES AND SOLUTIONS IN COLORED GEMSTONES

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The mining and processing of colored stones, a multibillion-dollar industry, spans 47 countries on six continents. Despite the industry's high profile, an ethical, sustainable mine-to-market supply chain for these materials has still not been achieved, impacting the physical environment and quality of life for laborers. The history, issues, challenges, and efforts to rectify this lack of transparency and traceability are explored.

In addition to cut, color, and mounting, jewelry consumers have long been seduced by the "story" that accompanies their most treasured pieces. The history of a piece can provide romance and character to a purchase or gift. As a result, human rights and environmental issues related to the gem and jewelry industry supply chain are gaining attention among producers and customers worldwide. "Conflict diamonds" gained notoriety in the late 1990s (Global Witness, 1998), particularly after the 2006 release of the movie *Blood Diamond*. Yet diamonds are far from the only gem material requiring responsible sourcing. Due to its broad scope, the colored stone industry, estimated to be a US\$10–\$15 billion (and growing) global enterprise (Cross et al., 2010), has yet to establish a responsible, sustainable, verifiable mine-to-market supply chain (Responsible Ecosystems Sourcing Platform, 2016).

The mining and production of colored gemstones takes place in 47 countries (Boehm, 2014). Industry observers have noted that this sprawling and largely unregulated industry presents issues that are similar to other small-scale extractive industries: forced and child labor, other types of criminal activity, environmental damage, and health and safety concerns (Valeiro, 2010; Cartier, 2010; Connell, 2014). They assert that these problems have been endemic in the colored stone industry, especially in artisanal small-scale min-

ing (ASM) performed by individuals or small groups of people using rudimentary tools (figure 1). The concerns related to small-scale mining are pervasive with colored stones, 75%–80% of which are retrieved in this fashion (UNICRI, 2013).

As the United States' \$78 billion jewelry industry continues to grow (Gassman, 2015), end customers are increasingly aware of the ethical impact of what they buy (Braunwart et al., 2015). As a result, more consumers are asking questions about the origins of pieces and basing their purchases on the answers they receive (Shor and Weldon, 2010). Millennials, the young adults born since the early 1980s, are the newest generation of gem and jewelry consumers. Studies show that this generation is particularly inclined to take factors such as fair trade status, sustainability, and human rights into account before making a purchase (Carter, 2014). As a generation, they consider their purchase a personal investment in a brand that represents their own values, and they are a force to be reckoned with: By 2020, millennials are expected to spend US\$1.4 trillion annually on retail purchases (Young, 2014).

With these consumer interests developing alongside an environment of heightened scrutiny over responsible practices, both new and established colored stone suppliers are examining their relationships to the mining, cutting, and production sectors. Some industry leaders have long been concerned with corporate social responsibility, yet a combination of public awareness and the desire to self-govern the industry rather than be subjected to top-down legislation has been the greatest motivation to change. Governments

See end of article for About the Author and Acknowledgments.

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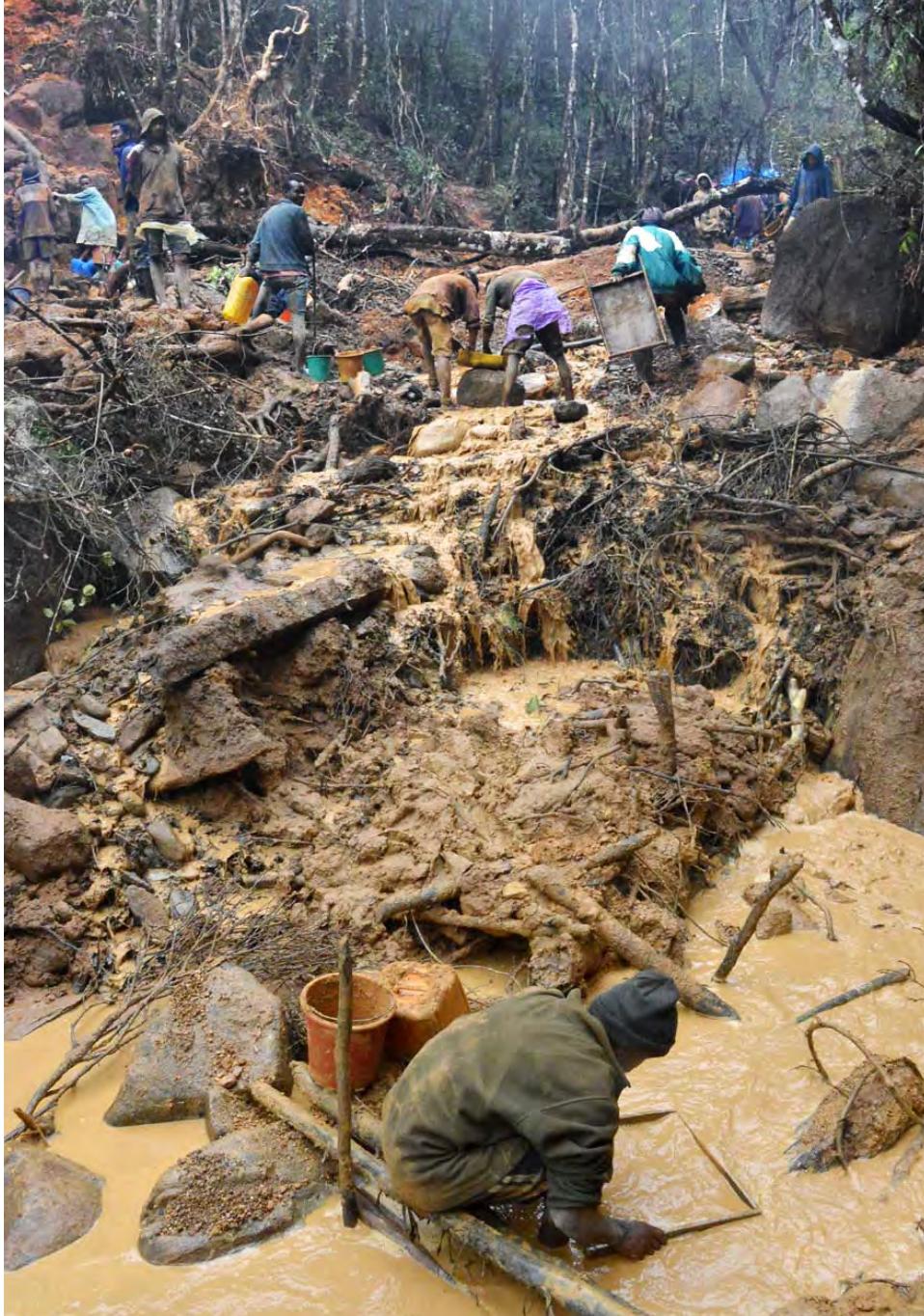


Figure 1. This view of the recently discovered ruby deposit in Zahamena National Park in Madagascar demonstrates conditions at a small-scale mining site. Photo by Vincent Par dieu/GIA.

and non-governmental organizations (NGOs) are feeling the impetus to create initiatives and voluntary standards that will foster social and environmental change within the entire industry—mining, cutting, trade, jewelry manufacture, and retail. As these standards take root, individual companies and organizations are launching community development and education efforts to improve the standard of living of miners, cutters, and their families.

As part of a panel on responsible practices at GIA in April 2015, Eric Braunwart, president and founder of colored gemstone wholesaler Columbia Gem House, noted, “I think we can come up with a new

narrative, and that narrative is based around responsible sourcing, and helping everyone along the supply chain.” This paper considers aspects of that supply chain in the context of current trends in corporate social responsibility (CSR) within the gem and jewelry industry. It also reviews some of the risks and challenges encountered by those endeavoring to ethically source colored gems.

BACKGROUND

Artisanal and Small-Scale Mining. Usually grouped together, artisanal and small-scale mining of precious metals, gem materials, and industrial minerals is

conducted in more than 80 countries, on every continent except Antarctica (ASM-PACE, 2012). Traditionally, there has been no official definition of "artisanal mining"; the term was understood to mean the removal of material by individuals or groups using little to no mechanization. This type of mining often occurs where large-scale mining is illegal, physically inaccessible, or financially impractical. In 2013, the Organisation for Economic Co-operation and Development (OECD) published a definition of ASM pertaining to gold extraction (re-published in 2016) that can easily be applied to other precious metals, minerals, and gemstones:

Formal or informal mining operations with predominantly simplified forms of exploration, extraction, processing, and transportation. ASM is normally low capital intensive and uses high labour intensive technology. "ASM" can include men and women working on an individual basis as well as those working in family groups, in partnership, or as members of cooperatives or other types of legal associations and enterprises involving hundreds or even thousands of miners. For example, it is common for work groups of 4–10 individuals, sometimes in family units, to share tasks at one single point of mineral extraction (e.g. excavating one tunnel). At the organisational level, groups of 30–300 miners are common, extracting jointly one mineral

deposit (e.g. working in different tunnels), and sometimes sharing processing facilities (OECD, 2016c).

ASM is a form of subsistence mining that can quickly generate income. This is especially true for alluvial mining, where stones and gravels from riverbeds are sifted for gems (figure 2). The material is generally close to the surface, allowing for easy retrieval. Agricultural workers seeking work outside of a given farming season often supplement their income through alluvial mining.

ASM is particularly widespread in developing countries, which often have high illiteracy rates (B. Wheat, pers. comm., 2015). According to the Inter-governmental Forum on Mining, Minerals, Metals and Sustainable Development (2013), across the entire mining industry, which encompasses both minerals and precious metals, there are approximately 30 million artisanal miners worldwide, including about 2 million children. There is, however, no reliable figure for the number of people involved in small-scale colored stone mining. A 2007 report from the International Labour Organization (ILO) notes that colored stone extraction is often a family affair, with school-aged children of both genders participating in sifting and sorting.

The Rising Popularity of Colored Gemstones. Colored gemstones were especially popular prior to the mid-20th century; it was not until after the Great Depression and World War II that diamonds took center stage in engagement and wedding jewelry (Matsangou, 2015). Efforts by De Beers, which formed in 1888, to create an air of romance and rarity around diamonds began to catch on in 1947 with the iconic "A Diamond Is Forever" campaign (Sullivan, 2013).

In recent years, colored stones have seen a resurgence. This enthusiasm is due in large part to greater access to material from remote areas, as well as the stronger advertising and promotion of these gems (R. Shor, pers. comm., 2015). This promotion largely results from the efforts of multinational companies such as London-based Gemfields, which has invested heavily in marketing and promotional campaigns. Gemfields has accomplished this through various channels, from signing Hollywood actress Mila Kunis to a three-year contract to represent their brand (Carr, 2013) to partnering with designers to create collections from their responsibly sourced production (King, 2016). Their efforts dovetailed with the overproduction and subsequent weak demand for diamonds (Boehm, 2014). With this greater availabil-

Figure 2. Alluvial mining often involves the retrieval, washing, and sorting of gem materials from gravels, as with this processed tsavorite from Lemshuko, Tanzania. Photo by Robert Weldon/GIA.



ity and marketability, more designers are turning to colored stones. This has allowed jewelry consumers to purchase pieces that offer a distinctive look for less money (R. Shor, pers. comm., 2015). The rise in colored stone popularity coincides with the industry's recent attempts to improve the lives of the miners and cutters who are the very foundation of the trade.

Corporate Social Responsibility vs. Fair Trade. While there is an impulse to use the terms "corporate social responsibility" (CSR) and "fair trade" interchangeably, the two have distinct meanings.

According to Visser (2008), CSR encompasses "the formal and informal ways in which business makes a contribution to improving the governance, social, ethical, labour and environmental conditions of the developing countries in which they operate, while remaining sensitive to prevailing religious, historical and cultural contexts." Simply put, it is a

In Brief

- The colored stone industry, worth US\$10–15 billion and largely driven by artisanal and small-scale mining (ASM), has yet to establish a sustainable, ethical mine-to-market supply chain.
- Challenges include remote mining sites, cost, poor relations along the supply chain, and "greenwashing."
- Intergovernmental organizations and NGOs have created frameworks for gem mining and other sectors that can mitigate environmental impact, prevent human rights abuses, build relationships with miners and cutters, and meet community needs.

company-led commitment, worked into its business plan or mission, to safeguard social values, community relations, and the environment. The CSR movement has gained traction among many industries since its inception in the 1960s. Sustainable development, the preservation of natural resources for future generations, is usually a central tenet of CSR. This is often mistaken for philanthropy and designated as a public relations effort rather than the core mission of a business (Nieuwenkamp, 2016). CSR involves responsible sourcing and due diligence from corporations who create policies for their own work and also influence their business partners to do the same to ensure a "clean" supply chain (see box A).

Fair trade, a post-World War II social movement that has its origins in missionary programs and po-

litical and humanitarian groups (Fair Trade Federation, 2011), seeks to alleviate the poverty and marginalization of producers who have traditionally been excluded from the benefits of mainstream business. Secondarily, it creates a relationship between disadvantaged producers (in the case of ASM activity, mine workers) and consumers by following set guidelines for production, sourcing, and manufacturing, creating expectations among end-customers. The fair trade movement also focuses on raising awareness about trade imbalances and abuses of power, while creating policies that promote equitable trade (World Fair Trade Organization, n.d.). Several different organizations exist to certify a product and designate it a "fair trade" item; issuing organizations have guidelines and audits that lead to certification and permission to use the fair trade designation. For instance, Fairtrade International has a list of standards pertaining to pricing, trade, hired labor, and prohibited materials (among others) that must be met before they will issue their logo to a producer (Fairtrade International, 2011). While a company may include CSR goals as part of their mission, this does not mean their products will be issued fair trade certification.

Many of the colored gemstones currently in circulation would not qualify as "fair trade" for one simple reason: time in the marketplace. Cartier and Pardieu (2012) compared the number of privately owned gems (both in museums and private collections) against up-to-date production numbers and estimated that many were decades old. Since established frameworks only address current mining practices and provenance, many of the gems on the market cannot be designated "fair trade," even if they were produced in the past using the appropriate practices (Cartier and Pardieu, 2012); however, such designations may be applied in the future by modifying existing guidelines.

THE ISSUES

While media attention has caused some people to associate diamonds with horrific human rights abuses, smuggling, and terrorist funding, colored stones are not immune to criminal activity. Actions taken to create positive change in the colored gems sector are discussed in the "Responsible Solutions and Recommendations" section.

Forced and Child Labor. Forced labor, though universally condemned and illegal, is an unfortunate reality of gem mining. Forced labor is defined by the ILO as "all work or service which is exacted from any person

BOX A: APPLYING DUE DILIGENCE TO THE GEM AND JEWELRY SUPPLY CHAIN

One concept at the core of a sustainable and traceable supply chain is due diligence, a risk management strategy a company uses to evaluate an individual, company, or product ("Due diligence...", 2015). Within the gem and jewelry sector, the risks that require due diligence include child and forced labor; living conditions; health and safety risks; environmental impact; ties to armed conflict, terrorism, and known criminal activity; money laundering; and smuggling ("Due diligence...", 2015). For instance, a jeweler who wished to create conflict-free pieces would perform due diligence to ensure her gold supplier did not source material that was mined via forced labor. Current legislation, regulations, and non-governmental organization (NGO) frameworks have been influenced by intergovernmental institutions such as the International Labour Organization (ILO), the United Nations (UN), and the Organisation for Economic Co-operation and Development (OECD). The following timeline demonstrates each organization's role in achieving current standards.

1919: As part of the Treaty of Versailles at the end to World War I, the International Labour Organization (ILO) is created as an agency of the League of Nations. The ILO is dedicated to promoting social justice and internationally recognized human and labor rights by developing labor standards that address production, security, and human dignity.

1945: The United Nations (UN) is founded, replacing the League of Nations.

1946: The ILO becomes an agency of the UN.

1948: The Organisation for European Economic Cooperation (OEEC) is created to help administer the post-World War II Marshall Plan.

The Universal Declaration of Human Rights, which sets out fundamental rights such as the prohibition of slavery, equal pay for equal work, and freedom of movement, is adopted by the UN. It is the first document to spell out these fundamental rights, and is the basis of many subsequent frameworks and laws.

1961: The OEEC expands beyond Europe, becoming the Organisation for Economic Co-operation and Development (OECD).

1976: *The OECD Guidelines for Multinational Enterprises (MNE)*, outlining sustainable development recommendations to rely on economic, environmental, and social progress, is published. The MNE is updated in 1979, 1984, 1991, 2000, and 2011.

1999: The ILO publishes *Social and Labor Issues in Small-Scale Mines*.

2000: The UN Global Compact (UNGC), the world's largest corporate sustainability initiative, is formed.

2005: The Responsible Jewellery Council (RJC), a third-party certification organization, is founded by 14 industry members.

2010: In the United States, the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank), with provisions governing disclosure on conflict minerals (tin, tantalum, tungsten, gold, and their derivatives) from the Democratic Republic of Congo region, is signed into law.

2011: Publication of the *UN Guiding Principles on Business and Human Rights*.

The first edition of the *OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas (OECD Due Diligence Guidance)* is published. The document is the basis of a variety of initiatives, including the RJC's Chain of Custody Certification, the ITRI Supply Chain Initiative, Solutions for Hope, and the World Gold Council's Conflict-Free Gold Standard.

2012: The U.S. Securities and Exchange Commission names the *OECD Due Diligence Guidance* as a framework for companies who must file a conflict minerals report under the Dodd-Frank Act.

under the menace of any penalty and for which the said person has not offered himself voluntarily." For instance, a mine operator could threaten a worker or his loved ones, retain his identification documents, or deprive him of food or sleep. A worker's living quarters might be kept under surveillance or isolated

from the community. Debt bondage, wherein wages are withheld or loans must be paid through labor, is another method of coercion. An employer might also seek to exploit a worker's vulnerability by taking advantage of illiteracy or forcing female workers into prostitution (Hidrón and Koepke, 2014).

Child labor is any form of work detrimental to a child's general well-being, including their education and their physical, emotional, and mental health. Not all labor activities involving children are considered harmful; in fact, a child or adolescent's "participation in work that does not affect their health and personal development or interfere with their education, is generally regarded as being something positive" (United Nations, n.d.). This is frequently the case when an entire family is involved in mining colored stones. In Kambove, Democratic Republic of Congo (DRC), many children had to be at the mineral mining sites because their families could not pay for schooling costs. Some children worked more hours during school vacations, and at least one child reported that his wages paid part of his school fees (World Vision, 2013). Other children were kept on-site due to lack of childcare options. In light of this, allowing children to work at mining sites benefits the family and community at large (World Vision, 2013).

Even so, the mining industry is considered by the ILO to be hazardous to children (2011). While ASM or alluvial mining might not seem particularly harmful, it is often the result of coercion or debt bondage between an employer and the child's parents or other family members (United Nations, n.d.). Thus, the psychological hold over both child and parent is devastating. The International Programme on the Elimination of Child Labour (IPEC), administered by the ILO, indicated that in addition to health and safety risks, informally run mining areas are notorious for a culture of drug abuse, prostitution, and violence (2006). The physical demands of the work also have a negative effect on children's well-being (see "Health and Safety Concerns").

Forced labor and child labor arise not only in colored stone mining, but also in cutting and processing (Leber, 2010; Martinez Cantera, 2014). Materials known by the U.S. Department of Labor to be produced by exploitation are listed in table 1.

Other Forms of Criminal Activity. Over the past 15 years, diamonds have come under a great deal of scrutiny for financing guerrilla and terrorist groups. Colored stones also have a troubling background as a method of funding criminal activity.

Burmese rubies and jade may be the most notorious among colored gems for funding conflict and perpetuating other human rights atrocities, but they are not alone. During their rise to power, the Khmer Rouge famously mined sapphires from the Cambo-

TABLE 1. Colored stones mined and processed by forced and child labor.

Material	Forced Labor	Child Labor
Emerald	Colombia	
Jade	Myanmar (Burma)	Myanmar (Burma)
Ruby	Myanmar (Burma)	Myanmar (Burma)
Sapphire	Madagascar	
Tanzanite	Tanzania	
Multiple	Bangladesh, India, Zambia	

Adapted from the U.S. Department of Labor (2014).

dian province of Pailin in order to fund guerrilla activities. After the fall of Phnom Penh in 1975, sapphires continued to finance the regime. By 1979, when the Khmer Rouge was overthrown, Cambodian sapphire had been mined into near nonexistence ("Pailin blue sapphire," 2014). More recently, a prosecution witness linked the tanzanite trade to the August 1998 bombings of U.S. embassies in Dar es Salaam, Tanzania and Nairobi, Kenya (Maharaj, 2002). This allegation supported the post-9/11 claim that al-Qaeda had ties to the tanzanite trade, though the U.S. State Department would largely dismiss such a connection (Schroeder, 2010).

The value of colored stones to a country or regime should not be underestimated. Global Witness (2015) estimated that the Burmese jade industry alone was worth about US\$31 billion in 2014. More recently, Afghan lapis lazuli (figure 3) has come under scrutiny for financing conflict. Global Witness reported in May 2016 that material from Badakhshan province has been funding insurgents and other armed groups since 2014. Production from the area raised approximately US\$12 million for armed groups in 2015, with an estimated US\$4 million of lapis mine revenue paid to the Taliban (Global Witness, 2016). Illegal contracts and intimidation have kept money in the pockets of these groups and out of the pockets of locals with mining rights, as well as the official Afghan government, which in 2014 lost US\$18.1 million in revenue from the two mining districts of Deodarra and Kuran wa Munjan (Global Witness, 2016). While President Ashraf Ghani announced efforts to deal with the crisis, as of this writing there were no measures taken to monitor or retake control of mining sites, and illegal extraction and smuggling of lapis continue. As a result, Global Witness has named Afghan lapis lazuli a conflict mineral (Global Witness, 2016).

Colored stone mining is also susceptible to other

types of criminal activity. Emerald and corundum have been vehicles at various times for fraud, smuggling, and money laundering (Naylor, 2010). Because of their small size and a lack of oversight and regulation, colored gems are easily smuggled. One notable case is Zambia; an estimated \$60 million worth of emeralds are smuggled out of that country every year (Hill, 2013).

Environmental Impact of Colored Stone Mining. The environmental damage caused by mining precious metals is well documented. The use of mercury and cyanide in gold extraction is harmful to plant and animal life. Virtually all gold mining results in rock and soil erosion, deforestation, and sulfuric acid pollution in air and water (Bland, 2014).

Colored gemstone mining is generally less hazardous to the environment than gold mining because

chemicals are not used. Furthermore, digging for colored gems generally takes place within 10 meters of the earth's surface (Valerio, 2016b). Still, there remains considerable uncertainty regarding the environmental impact of colored stone production. When asked about gemstone mining's carbon footprint¹ on the environment, British jeweler and industry activist Greg Valerio said this was a common yet unresolved question among ethical jewelers, one that deserved answers, particularly from large-scale operations (Valerio, 2016b).

Even so, gemstone mining is known to have harmful effects. Unless proper, sustainable practices—including land reclamation and rehabilitation—are part of the mining plan, soil erosion and degradation, deforestation, and harm to plant and animal life are inevitable. Negative impacts on the environment can include habitat loss, spread of disease to animal species, population decline of critically threatened or endangered species, increased human/wildlife conflict, decline in water quality, and destruction of land and aquatic ecosystems (ASM-PACE 2012).

Health and Safety Concerns. The health impact of gem production and processing on laborers is significant. For independent miners, the lack of appropriate sanitation facilities can result in illnesses and diseases. Abandoned diggings may become filled with stagnant water that attracts mosquitoes, leading to the spread of malaria (ASM-PACE, 2012), and causes waterborne diseases such as dysentery (Hilson, 2002). Pools of water left unattended are also a drowning hazard, particularly among children in the surrounding areas (ASM-PACE, 2012). Meanwhile, the round-the-clock nature of mining can cause sleep deprivation, appetite loss, and fatigue (Hilson, 2002).

The toll on human health does not end with gem extraction (figure 4). The Solidarity Center, a global labor organization, estimates that 80% of all colored stones in the market are processed in cutters' homes or in small shops (Connell, 2014). Eric Braunwart warned that "there are probably many more people dying in our industry from the cutting end than the mining end" (pers. comm, 2015). These workers frequently contract deadly lung diseases such as silicosis as a direct result of gem cutting. An estimated 30% of all gemstone grinders will die of silicosis (Na-

Figure 3. In June 2016, lapis lazuli from Afghanistan was named a conflict mineral by Global Witness. Photo by Duncan Pay.



¹ A simple definition of "carbon footprint" is the tons of carbon dioxide (or CO₂ equivalent) produced by one's actions, either directly or indirectly, per year.



Figure 4. Cobbing and cutting gem materials without appropriate ventilation or safety gear, such as the surgical mask worn by this woman at the Anahí ametrine mine in Bolivia, can lead to silicosis and other respiratory illnesses. Photo by Robert Weldon/GIA.

tional Labor Committee, 2010). While silicosis is most closely associated with cutting, the disease may also be contracted by workers in underground mines, as with tanzanite miners in Merelani, Tanzania (Cartier, 2010). Headaches, impaired vision, and fatigue may also result from gemstone cutting; asphyxiation may even occur. Children in the workforce suffer orthopedic problems such as bone deformation, and skin conditions are another area of concern (World Vision, 2013).

CHALLENGES

Once the issues have been identified, the impediments to resolving those issues must be recognized. Each colored stone type comes with its own unique set of circumstances, and a commitment to sustainable practices calls for patience, steady financial resources, and an understanding of the local community's culture.

The first problem is the sheer number of small-scale mining sites. With so many of them scattered in remote areas around the world, monitoring each one is not a realistic solution. There are, in fact, no recorded estimates for most colored stone mining sites, making it extremely difficult to trace the exportation of stones from these areas. Any effort at total oversight without taking into account rush ac-

tivity, which appears and disappears virtually overnight, is impossible. Even if it were realistic, the expense of such an enterprise could be prohibitive for many smaller businesses who would otherwise be interested in consistently tracing exportation, though some models exist in other extractive industries (see "Regulations and Frameworks" section). Eric Braunwart of Columbia Gem House sees financing as a major roadblock; while interest in fair trade gems and sustainability has grown over the past decade, many small businesses were derailed by the global financial crisis that started in 2007. The crisis and subsequent recession damaged the mining industry at large, and colored stones were no exception. Mining, already curtailed due to high fuel costs, came to a standstill in many locations, with production and retail sales following suit (Shor and Weldon, 2010). Because it can take years to see results from mining activity, sustainable practices were now beyond the reach of many small gem dealers and jewelry manufacturers (E. Braunwart, pers. comm., 2015). Greg Valerio (2013) indicated that he had to reduce staff, close workshops, and deplete his own savings on several occasions to successfully create a line of ethical jewelry.

In addition, there is a level of distrust between producers and buyers. Small-scale miners are accustomed

to being taken advantage of. These relationships "have never been based on a mutual profitability, mutual respect and support model" (E. Braunwart, pers. comm., 2015). Some of this comes from not understanding local cultures and traditions. Another factor is the miners' lack of gemological and pricing knowledge. The high illiteracy rate among artisanal miners leaves them unequipped to fully understand their own product, and thus they are easily swindled out of a fair market price (Weldon, 2008). This continues the vicious cycle of poverty.

Public perception also comes into play, especially with the previously noted misunderstanding of the differences between "fair trade" and "sustainable." While many people are aware of the general concepts of fair trade, the movement actually encompasses an entire spectrum of actions, whereas ethical business practices in the gem industry have primarily focused on traceable chains of custody rather than sustainable actions (Hilson, 2014). When questions regarding fair trade practices are asked by jewelry customers, especially millennials well versed in the fair trade movement, answers that pertain only to traceability may be less than satisfying.

Ideas about CSR and its role across industries are also changing. As previously mentioned, CSR is often seen as voluntary philanthropy, and the work of company CSR managers is all too often considered tangential to daily operations (Nieuwenkamp, 2016). This attitude of neglect toward CSR works to a company's detriment. A 2015 survey of more than 2,500 companies reported that nearly one out of five were subject to CSR-related sanctions amounting to about 95.5 billion euros (roughly equivalent to US\$108 billion) between 2012 and 2013 (Nieuwenkamp, 2015). This is leading some in the business world to believe that, in the words of Townsend (2016a), "Corporate Social Responsibility is, at best, only a partial solution—one which can be misused to create an illusion of responsibility." Thus, many key players are re-thinking their approach to the topic (see "Meeting Community Needs" section below).

While many consumers do believe in the importance of an ethical gemstone supply chain, a number of skeptics consider this movement "greenwashing," an environmentalist-inspired marketing scheme to get consumers—in this case, jewelry customers—to pay top dollar for an ultimately meaningless designation. In fact, some industry members and the general public feel that the industry is not doing nearly enough to address the issues faced by miners and processors and have lost heart about the colored

stone industry's motivation and capacity to change. Greg Valerio believes the movement has lost ground over the past ten years, although not because the industry lacks commitment. To him the problem is that the same industry movers are talking to each other rather than to the consumer (Valerio, 2016a). This insularity, which Valerio refers to as a "cul-de-sac of inertia," keeps the movement from gaining momentum.

RESPONSIBLE SOLUTIONS AND RECOMMENDATIONS

Although there is no "one-size-fits-all" solution due to geographic, political, and socioeconomic differences between gem-producing areas, most experts agree that simply boycotting jewelry is not a solution. The miners who eke out a living by small-scale mining would ultimately suffer. Nor is the solution to cut out buyers altogether. Thomas Cushman of the Gemmological Institute of Madagascar, points out that every role along the supply chain is necessary for it to function, as mining and dealing require different skill sets, an assertion confirmed by the United States Agency for International Development (2011). Rather than eliminate the market or the players, the essential components are managing human rights abuses alongside instances of white-collar crime (OECD, 2016c), providing reasonable payment for services, establishing and maintaining a minimum hiring age, championing environmental rehabilitation and reclamation, and instituting strict health and safety standards (Alawdeen, 2015). On the cutting side, fair labor hours and safe working conditions are also necessary. Various parties have launched efforts to improve these issues within the colored stone mining sector.

Regulations and Frameworks. The general public is broadly aware of the measures intended to prevent "conflict diamonds" from financing rebel groups and militias. As of this writing, 52 countries around the world voluntarily meet the minimum requirements of the Kimberley Process Certification Scheme, established by the UN General Assembly in 2003. Significantly, the Kimberley Process extends only to rough diamonds being used to fund rebel militia efforts to overthrow a legitimate government, not to other human rights issues. There are currently no binding international regulations with regard to colored stone trade, even in a limited scope.

Some governments have taken steps toward colored stone regulation. In the United States, the

Burmese Freedom and Democracy Act of 2003 banned the importation of all products from Myanmar (formerly Burma). Congress expanded this order in July 2008 through the Tom Lantos Block Burmese Junta's Anti-Democratic Efforts (JADE) Act, which specifically prohibited imports of rubies and jadeite from Myanmar (figure 5), as well as products incorporating these items. In August 2013, President Barack Obama issued an executive order to reinstate the import ban, which had expired in July of that year. The reinstatement applied it solely to gemstones; the other elements of the ban had already been lifted. As of May 2016, the ban on Burmese jade and rubies remains in place (Pennington, 2016).

The *UN Guiding Principles on Business and Human Rights* (UNGPs), endorsed in 2011, serves as a framework for creating international standards. The UNGP holds that both states and corporations have a duty to prevent and remedy human rights abuses. Further, the UN's Global Compact, formed in 2000, established 10 principles for sustainable business practices; to date, the Global Compact has more than 8,000 business-related and 4,000 nonbusiness participants, including NGOs, labor unions, academic institutions, and cities/municipalities ("Who should join?", n.d.).

Intergovernmental organizations are not the only actors on the ethical jewelry scene. Independent groups have formed to help ensure transparency and promote fair treatment of workers. The Responsible Jewellery Council (RJC), a third-party certification organization, goes a step further than the UNGP. The RJC subjects its more than 700 voluntary member companies ("Members," n.d.) to additional standards that have been guided by the Compact and other sources, and then has those efforts audited by independent third parties. RJC members must receive certification within two years of joining, submit to voluntary third-party audits, and make ongoing efforts to improve their business practices ("FAQs: Membership & membership responsibilities," 2012). Certified members can then pursue Chain of Custody Certification, a framework that was inspired by the OECD's *Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas*. Following this guidance indicates that all materials used are ethically produced along the entire supply chain—that they meet human rights, labor, environmental impact, and accepted business standards. Yet the RJC has faced criticism that loopholes in their system allow members to use jewelry materials that do not meet ethical



Figure 5. The Tom Lantos Block Burmese JADE Act, an act of Congress signed in 2008, banned ruby and jadeite imports from Myanmar into the United States. Photo by Robert Weldon/GIA.

standards with regard to forced and child labor, environmental protection, or certification process, among other issues ("More shine than substance...", 2013). Moreover, the RJC's Chain of Custody Certification is only available for diamonds and precious metals, although in March 2016 RJC announced plans to expand its scope to include colored stones ("RJC to expand scope...", 2016).

In the wake of the Dodd-Frank Act of 2010 (again, see box A), tracking and tracing systems for conflict minerals from the DRC region have been implemented, such as the one developed for Miniera province (Channel Research for iTSCi, 2012). Similar systems could be created for the colored stones sector. The Jeweltree Foundation, a Netherlands-based non-profit, uses an online track-and-trace platform for its supply chain. Founded in 2008 to give small-scale miners a voice in the international market while certifying ethical, traceable jewelry lines, Jeweltree works directly with cooperatives and small-scale communities in Brazil, Madagascar, and Tanzania. To set up a viable track-and-trace chain, Jeweltree has set up a database wherein certified members (or supporters) are listed and their actions to assemble jewelry are logged. Jeweltree has a list of

suppliers of metals, gems, and services that have been approved by the organization as ethical and transparent. Each step of the process, from selection to final polishing, is logged in their database (Jewel-tree Foundation, n.d.).

Since 2013, governments and groups representing the industry, including the International Colored Gemstone Association (ICA), have worked with the United Nations Interregional Crime and Justice Research Institute (UNICRI) to create a system for tracing and certifying colored gemstones origin (Chen, 2013). More information on this program will be available later in 2016.

Education. Without question, promoting education for colored stone miners and processors will improve their quality of life (S. Pool, pers. comm., 2015). In many areas where ASM is practiced, high illiteracy rates make it difficult to implement safety regulations or value stones appropriately (B. Wheat, pers. comm., 2015). Providing literacy education allows the miners to interpret and follow protocols that protect both themselves and the environment; it also allows them to access employment options outside of mining. Another practical option is to provide training at the literacy levels of the workers themselves, a method that has been successful in some areas, including South Africa (Booyens, 2013).

Keeping the production local through value-added activities such as cutting, setting, and design is another vast undertaking that may have long-term benefits. These activities create new options that build upon the existing economy of a gem-producing area. The Bridges family keeps the cutting of their tsavorite production in Kenya, near the Scorpion mine, and plans to do so for the foreseeable future (Hsu and Lucas, 2016). The Gemmological Institute of Madagascar, founded in 2003, teaches gemology, gem cutting, and fashion jewelry design and creation; there is also a gem lab on-site (T. Cushman, pers. comm., 2015). This allows the Malagasy people to gain valuable trade knowledge about the materials found on their native soil.

Meeting Community Needs. Recognizing the need for responsible and sustainable practices, many companies are making the move to vertical integration, the merging of two or more businesses that operate at different stages of the production chain ("Vertical integration," 2009). When one company has control over various aspects of production and manufacturing, this structure allows producers to maintain a

more transparent mine-to-market trail and to more efficiently contend with the risks that go along with those trails. The concept of a carefully monitored supply chain has been pursued and practiced by some industry innovators since the turn of the century. A secondary benefit of vertical integration is that a company charged with both mining and cutting gem material has a chance to develop relationships with the people who perform these duties.

There have been efforts to meet the needs of mining communities through CSR. Weldon (2008) noted that some Colombian emerald mine owners were working with local governments to build roads, schools, hospitals, and homes, which improved quality of life and resulted in greater efficiency and production. Founded in 1977, Columbia Gem House has been at the forefront of responsible sourcing for over a decade. At GIA's April 2015 panel, the company's president and CEO Eric Braunwart discussed Columbia's creation of the Dzonze District Development Fund in Malawi. This group, made up of locals, provides feedback to Columbia on the community's most pressing needs. One outgrowth was the construction of a school that, due to the high percentage of adults with AIDS in the area, has also provided residence for orphaned children. Building this school has helped identify the need for more teachers, more housing for those teachers, clothing for schoolchildren, sewage facilities, and other infrastructure to meet the needs of the locals and the new population of teachers.

Some analysts, in an effort to recognize the importance of ethics and sustainability in a company's operations, are moving away from CSR to embrace the concept of responsible business practices (RBP). CSR has a reputation for "feel-good" projects and, as previously mentioned, carries a connotation of philanthropy and voluntary compliance (Nieuwenkamp, 2016). The reimagined RBP is intended to create a strong, productive business based on high sustainability and strong social and environmental practices, integrated not only throughout the supply chain, but also into every aspect of the corporate culture (Nieuwenkamp, 2015; Townsend, 2016b).

All speakers at GIA's April 2015 panel on responsible business practices confirmed that ethical sourcing is an ever-evolving process wherein they must identify new areas for economic and community development. In the past, such efforts have included building hospitals and schools (figure 6); future RBP efforts must involve maintaining medical staff and teachers at these facilities, along with updated equip-



Figure 6. Children attend the school built in 2007 by Swala Gem Traders in Arusha, Tanzania. Photo by Robert Weldon/GIA.

ment and other resources. There are opportunities available for those who wish to make a difference in the world of colored stones. Beth Gerstein of U.S.-based jewelry retailer Brilliant Earth noted that her company has provided scholarships in conjunction with the Gemmological Institute of Madagascar and plans to work with community development efforts in the colored stones field in the future (B. Gerstein, pers. comm., 2016).

While creating long-term plans to start their own socially responsible foundation, UK-based Nineteen48 supports several charitable efforts in Sri Lanka, including Emerge Global's Beads-to-Business program ("Programs and impact," 2016). This project teaches Sri Lankan women leadership skills and business knowledge, alongside jewelry design, to help them achieve long-term self-sufficiency ("Programs & impact," 2015). And in June 2016, the American Gem Trade Association (AGTA), in conjunction with the ICA and the Indian Diamond and Colorstone Association (IDCA), announced a study to evaluate how to address silicosis in the colored stone industry (Branstrator, 2016). These programs are setting the stage for future generations of industry leaders. Mr.

Braunwart reiterated that young people entering the industry will be setting these standards, both in the gem industry and in the business world at large, in the years to come.

Relationship Building. Understanding indigenous cultures and building trust with artisanal miners and their community leaders can lead to ethical sourcing while generating a steady supply of gemstones. Recognizing that each region has its own culture, and that CSR and RBP should be sensitive to established traditions, is key to a successful relationship. Fostering these relationships and respecting the community's identity may also discourage miners from selling the stones for ultimately illegal purposes. Gem dealer Guy Clutterbuck has developed relationships with small-scale African miners and independent cutters based on respect for tradition and trust. In an interview on ethically sourcing aquamarine, spessartine, and tourmaline, Clutterbuck explained his working relationship with the chief and two representatives of the Tombuka (or Tumbuka) tribe, which stretches from Zambia into Mozambique and Malawi. His practices, which include paying in ad-

vance for rough and allowing the material to be collected, set aside, and retrieved by him later, have a “trickle-down” effect on the local economy, as the tribal chief makes sure his people benefit from these purchases (Choyt, n.d.). This is quite different from the tribe’s earlier dealings with buyers. Clutterbuck also noted that he uses a cutter in Sri Lanka who subsidizes education and food costs for employees and their children (Choyt, n.d.).

Involving the miners and cutters in the community development process will also generate goodwill and underscore the workers’ importance to the entire operation. There can be no responsible sourcing and production without these essential local personnel, a fact that should be driven home to everyone along the supply chain. Allowing these community members to identify their own needs and see them brought to fruition, as Columbia Gem House has done in Malawi, instills the confidence necessary to continue doing business with trustworthy buyers, and allows those same community members greater financial security in the future.

While a “one-size-fits-all” approach will not accommodate every aspect of the jewelry supply chain, there are lessons to be learned from previous endeavors in other sectors. In a feasibility study on the direct marketing of Liberian and Central African-mined diamonds, USAID indicated that some of their findings would be relevant for non-diamond-related supply chains, including colored gemstones (2011). While reiterating that the most successful strategies are those that directly involve the miners, the authors advised that any formalization project requires the following:

- *Trust, transparency, and partnership:* Taking the time to develop relationships, offering fair market value for mined material, and making workers feel instrumental to the success of the operation are key factors.
- *Certainty of price, volume, and delivery of supply:* Since the volume of gemstones collected by artisanal means can vary, it may be best to take a grassroots approach, partnering smaller jewelers with lower demand to mine sites.
- *Keeping the middlemen:* While there is often a desire to eliminate gem buyers, they do in fact perform a variety of commercial duties, as noted by Thomas Cushman. Buyers provide the financial liquidity that keeps a mine operational (“Due diligence...,” 2015). In addition to entering the market on behalf of the miners who would otherwise be looking for gems, middle-

men also provide sorting and transportation of material, freeing the miners from these tasks.

- *Understanding the artisanal miner’s mindset and existing marketing strategies:* It is key to understand why the miner is motivated to sell.
- *Basing plans on existing structures and institutions as much as possible:* Understanding the way local political systems work and adapting the mining operation accordingly is more likely to be successful than imposing structures that may be foreign, or even repugnant, to the culture.
- *Starting with producers who have demonstrated commercial and/or development success:* All players should demonstrate the ability to perform his or her given task, from producing gems to marketing the material to creating community development opportunities (USAID, 2011).

Reclamation, Remediation, and Recycling. Land reclamation uses practical methods to restore land to productive use, while remediation is specifically the removal or reduction of hazardous wastes or materials to protect the environment. Both play important roles in sustainable gemstone production. Reclamation may include restoring topsoil or planting native plants such as trees or grasses in the previously mined area, while remediation plans can involve the reduction or elimination of heavy metals from the soil or drinking water. Small and artisanal mining operations often do not recognize the importance of these measures; even when they do, they seldom have the financial resources to put such efforts into practice (Cartier, 2010).

Cartier and Pardieu (2012) have called upon the trade to become more involved in reclamation and remediation, rather than relying on the miners or governments to act. They maintain that the multi-billion-dollar industry can afford to set aside an optional levy of 0.1% at a retail level for conservation and remediation purposes. Their article also suggests holding gemstone auctions to support regional projects, such as the sale of tsavorite to fund conservation projects at the Tsavo national parks in Kenya.

Recognizing the financial burden of reclamation and rehabilitation, the Asia Foundation’s Frugal Rehabilitation Methodology (FRM) recommends a course of action that is achievable for ASM communities (2016a). FRM is designed to be funded by governments or large-scale mining interests who wish to address degraded and abandoned mining sites, but

the Whole Mine Cycle Approach, another element of FRM, is a way for small mines to incorporate the methodology into their standard operations in order to mitigate, rather than retroactively repair, the effects of mining (Asia Foundation, 2016a). FRM includes defining the boundaries of the area to be rehabilitated, providing a plan for waste management and disposal of toxic waste, accounting for the amount and types of infill material and topsoil needed, and scheduling the planting of appropriate vegetation. Since 2014, 17 projects using FRM have been successfully completed (Asia Foundation, 2016a), with one such project launched in Mongolia in April of this year (2016b). While FRM was developed specifically for gold and fluorite mining sites, it would serve well as a model for rehabilitating colored gemstone sources.

In addition to remediation efforts, some companies are reaping the benefits of recycled materials already in the market. Most of the gold mined throughout recorded history, an estimated 165,000 metric tons, is still in circulation (Bland, 2014). Since 2007, U.S.-based jewelry manufacturer and refiner Hoover and Strong has supplied 100% recycled precious metals, including gold, to the industry, moving away from the mining process as part of their efforts to "go green" (S. Grice, pers. comm., 2016). This has been a very realistic and successful approach for Hoover and Strong. The company is also pursuing and promoting responsibly mined gold on behalf of the companies they do business with, though the additional costs of sourcing the metal have made this difficult. With this enterprise, there is also the concern that "dirty gold" is being laundered through supply chains (Sharife, 2016), although there are frameworks in place for precious metals that diligent businesses can follow to prevent this from happening.

Consumer Education. Jewelry has always been an emotional purchase, and customers care about the "story" behind their pieces. Eric Braunwart stressed the "emotional value of gemstones to the consumer," noting that stones with a backstory are preferred over those of unidentified origin. Millennials, who have grown up knowledgeable about fair-trade products and sustainability, expect that issues pertaining to human rights, environmental impact, and social consciousness are addressed in the supply chain for the products they wish to purchase (Bates, 2016). Members of the GIA panel confirmed that the "silent majority" may not ask for clarification or proof of ethical, sustainable material, but in the end

they expect it. Since many companies have long-established practices and are generating healthy revenues without following responsible practices, they may be reluctant to change. Thus, the general public must be prepared to ask questions about the origin of materials and demand detailed answers from manufacturers or dealers (S. Pool, pers. comm., 2015). Jewelry activist Marc Choyt (2013) adds that if just 5% of jewelry customers insisted on ethical products from retailers, the impact on the worldwide industry would be dramatic.

Consumer education is vital to the success of this effort. Openness about the supply chain, including the mines of origin, the buying process, and manufacturing details educates the public and ensures long-term consumer confidence. There are various ways of assuring the public, such as marketing materials that provide details about the mines and communities in which the stones are sourced. In April 2016, Greg Valerio's blog featured a video interview with a member of a gold co-op in Uganda who explained how Fair Trade gold has improved their lives. Such videos could also be used to explain how community development helps colored stone mining areas. These kinds of efforts, along with training retail staff about the importance of the ethical and sustainable background of the pieces they are selling, create greater public awareness. Certain responsibly mined products do carry a higher cost (about 10%–15%, according to Gerstein), so explaining the value of that designation may be useful to the consumer.

CONCLUSIONS

As gem and jewelry consumers become increasingly conscious of responsible practices, they are demanding greater transparency from the companies who provide their goods. The gem and jewelry industry has felt this pressure and is starting to change. Despite the inherent financial, logistical, and communication challenges, a growing number of trade members are adopting practices that will improve the livelihoods of workers and protect the environment; this in turn has the potential to create more long-term sustainability. Domestic and international trade regulations and membership organizations that require responsible practices create the impetus for these companies to maintain a higher ethical standard. Acknowledging and managing the impact of mining and production on human quality of life and the environment at large promotes community development, education, and responsible future sourcing.

The level of transparency exhibited by producers

who make ethical and sustainable decisions regarding their products and practices creates a chain of responsibility that benefits miners, cutters, and other industry laborers. Public disclosure of these efforts and subsequent improvements lead to greater consumer trust and ultimately greater demand, especially among the millennial population that has come to expect such behavior in the marketplace.

Adopting responsible business practices can increase the volume of ethically sourced materials, while improving quality of life among ASM personnel, ensuring greater trust among producers and buy-

ers and sustaining the mining and cutting trades around the world. Yet the very real financial and logistical challenges cannot be underestimated. Major efforts to educate consumers about these challenges and their obvious and subtle impacts alike may be the key to unlocking the next wave of ethical practices. It is important to reach this broader audience to combat consumer and industry fatigue. Reaching out to the public will help spread the message Fashion Revolution cofounder Orsola del Castro delivered in April 2016: "I don't want to wear someone's misery, I want to wear someone's dignity" (Valerio, 2016c).

ABOUT THE AUTHOR

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REFERENCES

Alawdeen N. (2015) Ethical sourcing regimes should be designed to benefit local communities, and not primarily marketing interests. *CIBJO Congress 2015 Special Report*, [http://congress2015.cibjo.org/CIBJO%20Special%20Report%202015%20\[Coloured%20Stones\].pdf](http://congress2015.cibjo.org/CIBJO%20Special%20Report%202015%20[Coloured%20Stones].pdf)

Asia Foundation (2016a) Frugal Rehabilitation Methodology (FRM) Field Handbook, <http://asiafoundation.org/wp-content/uploads/2016/04/Frugal-rehabilitation-methodology-FRM-eng.pdf>.

— (2016b) Asian Foundation launches Frugal Rehabilitation Methodology for small-scale mining in Mongolia, Apr. 18, <http://asiafoundation.org/2016/04/18/asia-foundation-launches-frugal-rehabilitation-methodology-small-scale-mining-mongolia/>

ASM-PACE (2012) *Artisanal and Small-Scale Mining in Protected Areas and Critical Ecosystems Programme: A Global Solutions Study*. WWF Report, Sept. 2012. www.estellelevin.com/wp-content/uploads/2013/11/Global-Solutions-Study.pdf

Bates R. (2016) The industry ponders the millennial enigma. *JCK Online*, June 6, www.jckonline.com/2016/06/06/industry-ponders-millennial-enigma#comment-2715386288

Bland A. (2014) The environmental disaster that is the gold industry. *Smithsonian*, Feb. 14, www.smithsonianmag.com/science-nature/environmental-disaster-gold-industry-180949762/

Boehm E. (2014) Chain of custody challenges for colored gems. *National Jeweler*, May 21, <http://www.nationaljeweler.com/diamonds-gems/899-chain-of-custody-challenges-for-colored-gems>

Booyens Y. (2013) Company assisting semiliterate mineworkers to improve health and safety. *Mining Weekly*, May 17, http://www.miningweekly.com/article/company-assisting-semi-literate-mineworkers-to-increase-health-and-safety-2013-05-17/rep_id:3650

Braunwart E., Grice S., Bouffard D., Gerstein B. (2015) Responsible Sourcing. Panel discussion held at the Gemological Institute of America, Apr. 23, Carlsbad, California.

Branstrator B. (2016) AGTA aims to combat rise of silicosis. *National Jeweler*, June 13, www.nationaljeweler.com/diamonds-gems/social-issues/4336-agta-aims-to-combat-rise-of-silicosis

Carr T. (2013) Gemfields boosts brand awareness via Mila Kunis ambassadorship. *Luxury Daily*, Feb. 22, [https://www.luxury-daily.com/gemfields-boosts-brand-awareness-via-mila-kunis-ambassadorship/](http://www.luxury-daily.com/gemfields-boosts-brand-awareness-via-mila-kunis-ambassadorship/)

Carter C. (2014) Market to someone who cares: the millennials. *Retailer Now*, March 1, <http://retailernowmag.com/market-to-someone-who-cares-the-millennials/>

Cartier L. (2010) Environmental stewardship in gemstone mining: Quo vadis? *InColor* (Fall/Winter), pp. 2–9.

Cartier L., Pardieu V. (2012) Voices: Conservation gemstones: Beyond fair trade? *National Geographic*, Jan. 12, <http://voices.nationalgeographic.com/2012/01/12/conservation-gemstones-beyond-fair-trade/>

Channel Research for iTSCi (2012) iTSCi Governance assessment, Maniema: Key issues & recommendations for mitigation measures, <http://www.channelresearch.com/wp-content/uploads/iTSCi-Maniema-Gov-Ass-EN-FINAL.pdf>

Chen S. (2013) ICA joins UN initiative on certification of origins of colored gemstones, April 12, http://www.gemstone.org/index.php?option=com_content&view=article&id=554:ica-joins-un-initiative-on-certification-of-origins-of-colored-gemstones&catid=32:press-room&Itemid=63

Choyt M. (n.d.) Ethical gemstones. *Saunders & Pughe*, <http://www.saundersandpughe.com/ethical-gemstones/>

— (2013) How to purchase ethically sourced jewellery. End note to G. Valerio, *Making Trouble: Fighting for Fair Trade Jewellery*, Lion Books, Oxford, UK.

Connell T. (2014) Asia network fights deadly silicosis among gem processors. *Solidarity Center AFL-CIO*, April 28, <http://www.solidaritycenter.org/asia-network-fights-deadly-silicosis-among-gem-processors/>

Cross J., van der Wal S., de Haan E. (2010) *Rough Cut: Sustainability Issues in the Coloured Gemstone Industry*. Stichting Onderzoek Multinationale Ondernemingen (Centre for Research on Multinational Corporations), <http://www.somo.nl/rough-cut>

Due Diligence for Responsible Sourcing of Precious Stones: A Study Commissioned by Jewelers of America on behalf of the Precious Stones Multi-Stakeholder Working Group (PS-MSWG) (2015) Report by Sustainable & Responsible Solutions and Estelle Levin Ltd. July 16, www.dmia.diamonds/wp-content/uploads/2014/11/PS-MSWPreciousStonesReportFinal.pdf

FAQs: Chain of custody certification (2012) Responsible Jewellery Council, Feb. 9, <http://www.responsiblejewellery.com/files/FAQs-for-Chain-of-Custody-Certification-2012.pdf>

FAQs: Membership & member responsibilities (2012) Responsible Jewellery Council, Feb. 9, <http://www.responsiblejewellery.com/files/FAQs-on-Membership-Member-Responsibilities-2012.pdf>

Fair Trade Federation (2011) Brief history of fair trade. <http://www.fairtradefederation.org/wp-content/uploads/2012/12/History-of-Fair-Trade-11-2011.pdf>

Fairtrade International (2011) Standards. <http://www.fairtrade.net/standards.html>

Gassman K. (2015) *Index online* research: US 2014 jewelry sales edge barely higher. *Index Online*, Feb. 5, www.idexonline.com/FullArticle?Id=40398.

Gemfields (n.d.) Strategy, <http://corporate.gemfields.co.uk/about-us/strategy>

Global Witness (1998) A rough trade: The role of companies and governments in the Angolan conflict, Dec. 1, <https://www.globalwitness.org/archive/rough-trade/>

— (2015) Jade: Myanmar's "big state secret," <https://www.globalwitness.org/en/campaigns/oil-gas-and-mining/myanmar-jade/>

— (2016) War in the treasury of the people: Afghanistan, lapis lazuli, and the battle for mineral wealth, June 5, <https://www.globalwitness.org/en/campaigns/afghanistan/war-treasury-people-afghanistan-lapis-lazuli-and-battle-mineral-wealth/>

Hidrón C., Koepke R. (2014) *Addressing Forced Labor in Artisanal and Small Scale Mining (ASM): A Practitioner's Toolkit*. Alliance for Responsible Mining, Envigado, Colombia, www.solidaridadnetwork.org/sites/solidaridadnetwork.org/files/publications/ForcedLaborToolkit%20-%20Solidaridad%20ARM.pdf

Hill M. (2013) Emerald thieves brave dogs to sap Zambia's gem revenue. *Bloomberg Online*, Jul. 3, <http://www.bloomberg.com/news/articles/2013-07-02/emerald-thieves-brave-dogs-to-sap-zambia-s-gem-revenue>

Hilson G. (2002) Small-scale mining and its socio-economic impact in developing countries. *Natural Resources Forum*, Vol. 26, pp. 3–13.

— (2014) 'Constructing' ethical mineral supply chains in sub-Saharan Africa: The case of Malawian fair trade rubies. *Development and Change*, Vol. 45, No. 21, pp. 53–78, <http://dx.doi.org/10.1111/dech.12069>

Hsu T., Lucas A. (2016) Gem News International: Update on the Scorpion tsavorite mine. *G&G*, Vol. 52, No. 1, pp. 89–91, <http://www.gia.edu/gems-gemology/spring-2016-gemnews-update-scorpion-tsavorite-mine>

Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development (2013) *A Mining Policy Framework*, <http://globaldialogue.info/MPFOct2013.pdf>

International Labour Organization (2007) Girls in mining: Research findings from Ghana, Niger, Peru, and the United Republic of Tanzania. Bureau for Gender Equality, International Programme on the Elimination of Child Labour, <http://www.ilo.org/public/portuguese/region/eurpro/lisbon/pdf/girlsmining.pdf>

International Programme on the Elimination of Child Labour (2006) Minors out of mining! Partnership for global action against child labour in small-scale mining, <http://www.ilo.org/pecinfo/product/download.do?type=document&id=2519>

— (2011) Children in hazardous work: What we know, what we need to do, www.ilo.org/global/publications/ilo-bookstore/order-online/books/WCMS_155428/lang--en/index.htm

Jeweltree Foundation (n.d.) Certified jewellery, www.jeweltreefoundation.org/#jewellery.html

King J. (2016) Gemfields foresees direct-to-consumer opportunity for jewelry. *Luxury Daily*, June 3, [https://www.luxurydaily.com/gemfields-foresees-direct-to-consumer-opportunity-for-jewelry/](http://www.luxurydaily.com/gemfields-foresees-direct-to-consumer-opportunity-for-jewelry/)

Leber B. (2010) Child labor, health, and welfare issues in Asia's gem & jewelry sector. U.S. Department of Labor, April 9, <https://www.dol.gov/ilab/submissions/pdf/20100409d.pdf>

Maharaj D. (2002) Gem tied to terror loses sparkle. *Los Angeles Times*, March 20, <http://articles.latimes.com/2002/mar/20/news/mn-33686>

Martinez Cantera, A.L. (2014) Indian children toil in Jaipur gem industry, *Al Jazeera Online*, March 11, <http://www.aljazeera.com/indepth/features/2014/03/indian-children-toil-jaipur-gem-industry-201433121436164849.html>

Matsangou E. (2015) Diamonds aren't forever? Coloured stones come into favour. *World Finance Online*, July 16, www.worldfinance.com/markets/diamonds-arent-forever-coloured-stones-come-into-favour

Members (n.d.) Responsible Jewellery Council, <http://www.responsiblejewellery.com/members/>

More Shine than Substance: How RJC Certification Fails to Create Responsible Jewelry (2013) A report by IndustriALL, Construction, Forestry, Mining and Energy Union, United Steelworkers, Earthworks, and MiningWatch Canada, <http://miningwatch.ca/sites/default/files/more-shine-than-substance-final.pdf>

National Labor Committee (2010) Hearts of darkness, February, http://bario-neal.com/bn/media/upload/2011/04/hearts_of_darkness-12.pdf

Naylor T. (2010) The underworld of gemstones. Part 1: Under the rainbow. *Crime Law and Social Change*, Vol. 53, pp. 131–158, <http://dx.doi.org/10.1007/s10611-009-9223-z>

Nieuwenkamp R. (2015) Can companies really do well by doing good? The business case for corporate responsibility. *OECD Insights*, Nov. 2, <http://oecdinsights.org/2015/11/02/can-companies-really-do-well-by-doing-good-the-business-case-for-corporate-responsibility/>

— (2016) CSR is dead! What's next? *OECD Insights*, Jan. 22, <http://oecdinsights.org/2016/01/22/2016-csr-is-dead-whats-next/>

Organisation for Economic Co-operation and Development (2016a) About the OECD, <http://www.oecd.org/about/>

— (2016b) Implementing the *OECD Due Diligence Guidance*, www.oecd.org/daf/inv/mne/implementingtheguidance.htm

— (2016c) *OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas*, 3rd ed. OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264252479-en>

Pailin blue sapphire (2014) GemSelect, www.gemselect.com/other-info/pailin-blue-sapphire.php

Pennington M. (2016) U.S. eases Myanmar sanctions after civilian government takes power. PBS NewsHour, May 17, www.pbs.org/newshour/rundown/u-s-eases-myanmar-sanctions-after-civilian-government-takes-power/

Programs & impact: How we make a difference (2015) Emerge Global, <http://emergeglobal.org/programs-and-impact/>

RJC to expand scope to include colored stones (2016) *National Jeweler*, March 22, www.nationaljeweler.com/diamonds-gems/

social-issues/4047-rjc-to-expand-scope-to-include-colored-stones

Responsible Ecosystems Sourcing Platform (2016) Challenges to advancing social and environmental responsibility in the coloured gems industry, Jan. 31, <http://www.resp.ch/resources/publications/challenges-advancing-environmental-and-social-responsibility-coloured-gems>

Schroeder R. (2010) Tanzanite as conflict gem: Certifying a secure commodity chain in Tanzania. *Geoforum*, Vol. 41, No. 1, pp. 56–65, <http://dx.doi.org/10.1016/j.geoforum.2009.02.005>

Sharife K. (2016) Panama Papers: The DRC's gold standard. *Times Live*, April 4, <http://www.timeslive.co.za/africa/2016/04/04/Panama-Papers-The-DRC's-Gold-Standard>

Shor R., Weldon R. (2010) An era of sweeping change in diamond and colored stone production and markets. *G&G*, Vol. 46, No. 3, pp. 166–187, <http://dx.doi.org/10.5741/GEMS.46.3.166>

Sullivan J.C. (2013) How diamonds became forever. *New York Times*, May 3, http://www.nytimes.com/2013/05/05/fashion/weddings/how-americans-learned-to-love-diamonds.html?_r=0

Townsend M. (2016a) CSR is dead. What comes next? *GreenBiz*, Jan. 12, <https://www.greenbiz.com/article/csr-dead-now-what>

——— (2016b) CSR is dead, part 3: Blazing a trail to business transformation. *GreenBiz*, May 5, <https://www.greenbiz.com/article/csr-dead-part-3-blazing-trail-business-transformation>

United Nations (n.d.) Resources for speakers on global issues: Child labour, www.un.org/en/globalissues/briefingpapers/childlabour/

United Nations Interregional Crime and Justice Research Institute (2013) Expert meeting to discuss a new initiative on coloured gemstones traceability and certification of ethical origin, April 11, www.unicri.it/news/article/2013-04-11_Expert_meeting_Gemstones

United States Agency for International Development (2011) Property rights and artisanal diamond development (PRADD): Feasibility of direct marketing of artisanal diamonds from Liberia and CAR to the USA, http://www.usaidlandtenure.net/sites/default/files/USAID_Land_Tenure_Feasibility_Study_of_Direct_Marketing_of_Artisanal_Diamonds.pdf

United States Department of Labor (2014) List of goods produced by child labor or forced labor, Dec. 1, http://www.dol.gov/ilab/reports/pdf/TVPRA_Report2014.pdf

Valerio G. (2010) Ethical and fair trade gemstones – an overview, Nov. 17, <https://blog.gregvalerio.com/2010/11/17/ethical-and-fair-trade-gemstones-an-overview/>

——— (2013) *Making Trouble: Fighting for Fair Trade Jewellery*. Lion Books, Oxford, UK.

——— (2016a) (video blog) #KnowYourSource – Gemstone Questions 1, April 1, <https://blog.gregvalerio.com/2016/04/01/knowyoursource-gemstone-questions-1/>

——— (2016b) (video blog) #KnowYourSource – Gemstone Questions 2, April 5, <https://blog.gregvalerio.com/2016/04/05/knowyoursource-gemstone-questions-2/>

——— (2016c) Twitter post, April 19, <https://twitter.com/gregvalerio/status/722413630705254401>

Vertical integration (2009) *The Economist*, March 30, <http://www.economist.com/node/13396061>

Visser W. (2008) Corporate social responsibility in developing countries. In A. Crane, A. McWilliams, D. Matten, J. Moon, and D. Siegel, Eds., *The Oxford Handbook of Corporate Social Responsibility*. Oxford University Press, Oxford, UK, pp. 473–479, www.waynevisser.com/wp-content/uploads/2012/04/chapter_wvisser_csr_dev_countries.pdf

Weldon R. (2008) The challenge of sustainable development. *The Loupe*, Vol. 17, No. 4, p. 22.

Who should join? (n.d.) United Nations Global Compact, <https://www.unglobalcompact.org/take-action/events/411-un-global-compact-leaders-summit-2016>

World Fair Trade Organization (n.d.) History of fair trade, <http://wfto.com/about-us/history-wfto/history-fair-trade>

World Vision (2013) Child miners speak: Key findings on children and artisanal mining in Kambove DRC, [www.worldvision.org/resources.nsf/main/press-reports/\\$file/201303_Child-Miners-Speak_REPORT.pdf](http://www.worldvision.org/resources.nsf/main/press-reports/$file/201303_Child-Miners-Speak_REPORT.pdf)

Young K. (2014) The young and the excess: What jewelers need to know about millennials. *JCK Online*, Oct. 5, <http://www.jckonline.com/2014/10/05/young-and-excess-what-jewelers-need-to-know-about-millennials>

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