JEWELRY DEVELOPMENT IMPACT INDEX STUDY:

A Comparative Case Study of Rubies in Myanmar and Lapis Lazuli in Afghanistan

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Executive Summary

The acknowledgement of diamonds as contributors to conflict in the Congo ushered in an era of increased scrutiny over jewelry supply chains. Subsequently, a global desire grew to recognize the jewelry industry's role in financing conflict. Other voices, however, argued that emphasizing the links between jewelry sourcing and conflict ignores the many positive impacts generated by the jewelry industry. While the complexity of this relationship is recognized in some circles, the lack of an effective and standardized framework hinders the ability to assess how well jewelry industries are performing along their respective supply chains. This report is one piece in a larger attempt to evaluate the relevant impacts of gemstone extraction on human security and economic development while standardizing measurements to better facilitate comparison.

This report highlights a new methodology based on the operationalization of an updated version of the framework presented in December 2017 (Brown, Green, Mwaba, Peterson, and Thomas, 2017). This new system clarifies concepts, specifies indicators that should drive scoring, and uses an ordinal scoring system to generate scores within and across primary categories.

Application of this new system of measurement to the ruby industry in Myanmar and the lapis lazuli industry in Afghanistan provides many interesting insights into how the jewelry industry effects human security. Myanmar receives consistently higher scores than Afghanistan, generating a final score of "weak," compared to Afghanistan's "very weak" in relation to the state of human security associated with the jewelry industry. Some of the key findings generated by this study include:

- The existence of extractive industries is critical to regional communities as mining is often the best, or the only, option for sustainable livelihoods;
- Widespread smuggling and tax evasion cost national governments significant revenue loss, while high rates of political corruption prevent mining communities from receiving reciprocal benefits;
- Occupational mining is particularly dangerous in Myanmar and Afghanistan where safety precautions and equipment are woefully inadequate;
- Lapis lazuli mining is inseparably connected to conflict as warlords exercise virtually complete control over mining operations and profits, a dynamic that is compounded by ever-present armed factions that contribute to a culture of violence and inhibit growth;
- The Burmese government is devoting considerable attention to the institution of legislative changes aimed at lowering environmental impacts, improving health and safety measures, and facilitating localized development.

The process of applying case studies to the Jewelry Development Impact Index (JDII) methodology has also provided lessons for the development of the index itself. Namely,

future work on this project should focus on tightening the operationalization of indicators to improve the clarity of the scoring process and on refining the scoring scale to show greater distinctions between the cases.

Key Terms/ Abbreviations

JDII.....Jewelry Development Impact Index
UNEP.....The United Nations Environment Programme
AGTA.....American Gem Trade Association

Related specifically to Myanmar:

EIC.....Environmental Impact Assessments
EITI.....Extractive Industries Transparency Initiative
KIO.....Kachin Independence Organization
MGE.....Myanmar Gems Enterprise
MGJEA.....Myanmar Gems and Jewelry Entrepreneurs Association
MoECAF.....Ministry of Environmental Conservation and Forestry
MoNREC.....Ministry of Natural Resources and Environmental Conservation
NCEA.....National Commission for Environmental Affairs
NLD.....National League for Democracy
NSDS.....National Sustainable Development Strategy
SPDC.....State Peace and Development Council

Related specifically to Afghanistan:

ALP.....Afghan National Police
ESIA.....Environmental and Social Impact Assessments
ESIR.....Environmental and Social Impact Report
ESMPs.....Environmental and Social Management Plans
LMC.....Lajwardeen Mining Company
MoMP.....Ministry of Mines and Petroleum
NEPA.....The National Environmental Protection Agency
NUG.....National Unitary Government

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Introduction

The global jewelry industry is complex and highly fragmented. It is made up of a number of publicly traded corporations, thousands of small, privately held companies, and government entities. Sourcing, manufacture, and trade of raw materials (e.g., gold, gemstones, diamonds, precious stones, etc.) and production of finished jewelry all have a significant impact on human security where these aspects of the industry occur. It is also the case that these activities are often situated in the world's most fragile and vulnerable societies. The sourcing of raw materials and the production of finished jewelry call for increased study and monitoring to enable the jewelry industry to enhance the positive influence it can have, particularly in emerging economies. At present, the international jewelry industry lacks any measure or standard of how it impacts or how it is impacted by developing countries.

To begin to address this gap, teams of graduate students from the School of International Service at American University have been tasked with developing a comparative tool, called the Jewelry Development Impact Index (JDII), and are assigned case studies to apply the JDII to an existing industry. The first team assigned to this project completed their report in December of 2017, analyzing the cases of the diamond industry in Botswana and the gold industry in Peru. The second team, who was assigned the cases of the ruby industry in Myanmar and the lapis lazuli industry in Afghanistan, has produced the current report. This team has built on the initial efforts of the first team by refining conceptual frameworks, creating a more complex and coherent system of measurement, and broadening the case studies with which information can be extrapolated from. It is anticipated that future teams will continue this process with case studies focused on other regions around the world and other jewelry-related materials such as additional colored gemstones, platinum, and silver. Alternative potential avenues for future growth include examining countries where trading and production occur, including precious metal refinement; treating, cutting and polishing of gems; and jewelry manufacturing.

This report begins by providing some important contextual information on the two assigned case studies for this semester in Chapter 1; diving primarily into the historic and cultural trends in ruby and lapis lazuli industries, in Myanmar and Afghanistan respectively. The next five chapters, chapters 2 through 6, look at specific impact areas where human security and these two jewelry industries overlap; governance impacts, economic impacts, environmental impacts, human health impacts, and human rights impacts. These impact areas were originally delineated by the first team, but were adjusted for the current report, as is detailed further on in this document. Chapter 7 addresses three cross-cutting issues which are relevant to all of the impact chapters, which further contextualize the case studies, and which illustrate why a comparative tool is necessary and important for conducting analyses related to jewelry industry impacts. Chapter 8, Lessons for the Jewelry Development Impact Index begins by

explaining the logic of the JDII tool, which has been significantly revamped during the course of this team's project. It then dives into the application of the impact studies to the JDII. Here, scores are generated, provided, and explained. Effectually, this section is where the rubber meets the road, as the two cases are placed into the comparative tool to produce a measure of human security across case studies. Chapter 9 briefly discusses limitations of the study and knowledge gaps that persist. Chapter 10 then broadens the scope of this study by using the research produced by the first report on Botswana and Peru to generate scores for these countries using the new scoring system. This allows for a more expansive comparative analysis that will guide the following teams as they continue to develop the Jewelry Development Impact Index (JDII.) The report concludes by tying together the findings and suggesting pathways towards future growth.

Chapter 1: Historical and Cultural Background

1.1 Historical and Cultural Contexts of Ruby Mining in Myanmar

The mineral and gemstone rich land of Myanmar, formerly Burma, has contributed to the economic growth and cultural development of the country for centuries, while local communities depend on mining as a necessary livelihood. It is estimated that Myanmar supplies 80 to 90 percent of the world's rubies (Irwin, 2016). The most desired rubies are found in the Mogok Stone Track (Mogok Valley), a region in Mandalay Division with abundant and geologically unique gemstones. Mogok Valley is referred to as the "Land of Rubies," due in part to the highly coveted dark red "pigeon's blood" rubies, understood to be the rarest and most valuable rubies in the world (Irwin, 2016; "The Ruby Land Mines of Myanmar," 2017). The popularity and high value of these gems has led to a history of conflict.

The availability of gemstones, such as rubies, has attracted the attention of royalty, mining investors, and jewelry dealers alike. However, the availability of gemstones have also invited conflict, where ethnic and political groups would mine rubies, jade, and other gemstones and natural resources to fund their armies and causes (Mark, 2018). Local cultural practices have developed around these conflicts that indicate that mining has had an impact of human security for several years. Historically, many Burmese citizens resorted to hiding caches of rubies and gemstones under floorboards or caves in order to have an "insurance policy" if their house or livestock were taken, burned down, or killed. Once peace has returned, they would find their caches, sell the rubies and gemstones, and use the funds to rebuild their lives (Pardieu, 2018).

Image 1: A simplified map of the Mogok Stone Track

Source: United Nations Industrial Development Organization, 2017

Several other mining areas in Myanmar produce fewer, and considerably lower quality rubies. The second largest region, Mong Hsu (Mongshu) in Shan State, is reported to be nearly exhausted of its ruby supply. Other locales include smaller sources in Shan State, Madaya Township, Kachin State, and along the Irrawaddy River west of Mogok (Htun, 2014; "The Ruby Land Mines of Myanmar," 2017). Mines are often considered sacred ground to miners and citizens, and miners will often conduct rituals before entering the mines (Pardieu, 2018). For centuries, locals in these mining areas have depended on recovering gemstones for livelihoods, and mined and sold rubies across generations. Independent artisanal mining, for example, is often viewed as a cultural and family tradition (Solomon, 2016), particularly in Mogok, which celebrated its 800-year anniversary in April 2018 (Pwint, 2018). Traditionally, both men and women have been employed in the mining industry in several facets; women are particularly respected for their skills as merchants (Ehrmann, 1957).

In 1988, a new military government, the State Peace and Development Council (SPDC), opened domestic mining investment through joint-venture mining leasing (Shor, 2009) and the enactment of the Foreign Investment Law to stimulate the Burmese economy (Htun, 2014). To reduce ethnic conflict and increase political stability, the SPDC traded mining land for ceasefire agreements with some of the largest ethnic groups. For example, a number of Ruby mines in Mogok were given to an estimated 20,000 to 40,000 troops of the United Wa State Army (UWSA) (American Gem Trade Association, 2017, p. 14).

In 2003, international coverage of human rights abuses attributed to the SPDC left the military government exposed to widespread condemnation and reprisals. Although violence against ethnic minority populations had long been present, the explicit linkage of exploitation to the SPDC's role in the mining industry set off a chain reaction of global economic sanctions imposed on Myanmar. In 2003, the U.S. Congress enacted the Burmese Freedom and Democracy Act, a sanction on gem trade with Myanmar.

The European Union followed suit and placed "an embargo on importing gems from Myanmar." In 2008, the U.S. Congress acted again, to close a significant loophole in the legislation that had allowed Burmese rubies to come into the U.S. as long as they were not cut in country. The updated sanction, the Tom Lantos Block Burmese JADE Act of 2008, expressly banned the importation of jade and rubies mined in Myanmar (Shor, 2009).

In 2016, the Burmese government halted mining operations across the country by refusing to renew or grant new mining licenses in an effort to improve the application and regulations of the Mines Law (Thiha, 2016). While many artisanal miners supported upgrades in the law to better enable their access to licenses and preserve the "family-owned feel and unique mining landscape" (American Gem Trade Association, 2017), particularly in Mogok, they have not benefited from the eighteen month closure of the mines. Extended closure of the mines begun to negatively affect livelihoods, due to many unable to mine rubies. Updates to the mining law were officially passed in February 2018 and some mines have begun to reopen to the public as of March 2018 (Htoon & Kean, 2016; Interviewee 7.) However, the long-term impact of these closures is still unknown. It is also important to note the number of mines under military control compared to private corporations or small artisanal operations is currently unknown (American Gem Trade Association, 2017, p. 13).

1.2 Historical and Cultural Context of Lapis Lazuli Mining in Afghanistan

For thousands of years, the bright blue stone known as lapis lazuli has been mined from the Kokcha River Valley, known as the 'Blue Mountain,' in Badakhshan province in Northeastern Afghanistan. Lapis lazuli has enjoyed notable significance for the healing powers it was once thought to possess and for its use as blue pigment in Renaissance era paintings (Schroeder, 2003-2018). Similar to Burmese citizens, Afghan citizens would also find and sell lapis lazuli to provide for themselves, and hide caches of the stone in times of war. Notably, small, rural farmers would find and sell lapis to provide for themselves in times of droughts and other hardships, including conflict and war (Pardieu, 2018).

Badakhshan is the world's most important source of lapis lazuli, and the stones found in the Sar-i-Sang mines are considered to be the most brilliant blue of all the lapis in the world (Bancroft, 1984). The Sar-i-Sang mines, which host only five or six mining sites, are the only active lapis mines in Afghanistan (Sibley International Corp., 2007; Pardieu, 2018). Despite such resource wealth, Badakhshan "is among the most deprived provinces of a country that is itself among the poorest in the world" (Carter, 2016). Locals rely on dangerous work in mining for livelihoods but do not reap the full benefits of the industry.

Afghanistan's lapis lazuli reserves once contributed significantly to its national wealth. Until the Saur (Apil) Revolution of 1978 (DuPee, 2012), the Afghan government had

complete control over the mines and extracted four tons of lapis lazuli a year from the Keran-wa-Menjan district in Badakhshan with an estimated revenue of $50 million[1] annually. When Chinese traders began to purchase lapis lazuli stones, the yearly revenue surged to nearly $500 million. Throughout the 1980s, however, conflict decreased the stability of the region and the lapis mines were used to fund a war against the communist state. This practice of using the Sar-i-Sang mines to fund conflict has become all but synonymous with lapis lazuli extraction in Afghanistan (Noorani, 2017).

Jihadi Commander Abdul Malik is currently the most prominent leader in Badakhshan. He has exerted significant influence in the region for over twenty years, maintaining direct control over the lapis lazuli mines since 2001, with the exception of a short time when a legal mining contract was awarded to the Lajwardeen Company. Due to the ongoing lack of national governmental control over the mines and extractive industries more broadly, most gemstones leaving Afghanistan are considered illicit because they are not taxed nor subjected to royalties ("Afghanistan Geological Survey," n.d.). According to one observer, the contract with the Lajwardeen Company threatened the illegal operations of "the lapis lazuli-mafia both in Kabul as well as in Badakhshan province" (Noorani, 2017), which prompted violent altercations between Commander Malik's forces and the former governor of Badakhshan, Zalmai Mujadidi, who had supported the Lajwardeen Company (Noorani, 2017). It is uncertain the extent to which Malek still holds power over the operation of the lapis lazuli mines, however it has been noted that the general dynamics surrounding the mines are relatively unchanged, regardless of who the dominant authority happens to be at any given time (Carter 2018).

The number of non-state actors in the region has grown. Shared ideology has allowed the groups to remain relatively amicable (Carter 2018; Noorani, 2017; Interviewee 22). Most of the revenue from mining operations "evaporates into the black economy with some being collected by insurgents to continue their war against the government" (Noorani, 2017). Residents continue to reap little benefits and suffer under conflict from non-state actors.

[1] All references to currency in this report refer to U.S. Dollars (USD) unless otherwise indicated.

Chapter 2: Governance Impacts of Colored Gem Mining

This chapter will focus on domestic governance and legislation relevant to the mining of colored gems, specifically rubies and lapis lazuli in Myanmar and Afghanistan, respectively. The role that governments play in impacting local mining populations is of particular interest. Analysis is broken down into five subcategories most relevant to this area of inquiry: governance and accountability, transparency, corruption, industry regulation, and presence of non-state actors/criminal organizations.

2.1 State of Governance and Accountability

2.1.1 State of Governance and Accountability in Myanmar

Despite the country's recent shift to democratic rule, the military still maintains an iron grip in the political sphere. In accordance with the 2008 Constitution, 25% of all parliamentary seats are held by military personnel (Ward, 2017). The army appoints one of the two Vice Presidents, as well as the Defense Minister, the Home Affairs Minister, and the Border Affairs Minister. Laws must be implemented by the country's civil service, of which 80% is military personnel. The police force and judiciary are technically responsible for the enforcement of all legislation. However, the military retains control of both sectors (Ward, 2017). Due to its dominant position, the military maintains significant control over the lucrative mining and gemstone industry.

Government institutions relevant to the gemstone industry are the Ministry of Natural Resources and Environmental Conservation (MoNREC) and the Myanmar Gems Enterprise (MGE). The MoNREC regulates the mining industry and its state-owned enterprise, while the MGE supervises and issues permits for local private entrepreneurs, and local entrepreneurs who want to make a joint venture production with the government. The MGE also oversees and organized the emporiums and special sales three times a year for gem sales. Both institutions are responsible for all government functions related to the gem industry, including implementation of policy, taxation, and enforcement. As with other ministries, retired military personnel almost exclusively staff MoNREC and MGE's senior positions or the two military holding companies, the Union of Myanmar Economic Holdings Limited and the Myanmar Economic Corporation (Irwin, 2016).

In addition to MoNREC and MGE, the military actively controls companies that hold interest in the gemstone sector, keeping control over this sector in the hands of former ruling elites. Additionally, the principle functions of MGE have been undermined by its vague rulings, limited capabilities, and the strong influence of the private sector over gemstone management. Due to these issues, MGE has consistently ranked poorly on governance indices. On the 2017 Resource Governance Index (Resource Governance

Index, 2017) MGE ranked in the bottom tenth of State-Owned-Enterprises (SOEs) globally, 21st among 22 mining SOEs, and earned an overall failing score of 16/100.

2.1.2 State of Governance and Accountability in Afghanistan

Afghanistan's government institution most relevant to the mining and gemstone industry is the Ministry of Mines and Petroleum (MoMP,) which is responsible for "establishing an effective governance of natural resources, providing jobs, growing the economy, as well as encouragement of private investments in minerals and hydrocarbon sectors, and raising the level of revenue and improving the capacity of the Government" (Ministry of Mines, 2016). These functions of the MoMP are undermined by its failure to provide vital information about such matters as basic production data and the full value of the lapis lazuli produced (Carter, 2016). With respect to power and authority over the mining/gemstone sector, it is difficult to determine who is truly in control.

2.2 Transparency

2.2.1 Transparency of the Government of Myanmar

Across the board, Myanmar tends to score poorly in indicators of corruption, transparency, freedom, and national attitude surveys. Due to the nature of the current political climate, the accuracy of these scores are contested but still seem to be a general reflection of the aforementioned state of governance. Myanmar's scores have improved since its transition to democratic rule in 2015.

Decline in public trust of the Burmese government has led to the creation of several ethnic armed groups who seek to become independent from the state. A primary grievance armed groups hold relates to lack of local control and external control over mining resources from private Chinese companies. In the Myanmar Centre for Responsible Business's recently launched sector-wide impact assessment of mining, issues raised by ethnic national actors are addressed as the government plans to reduce the role of foreign/Chinese large scale mining companies, decentralize the jewelry industry, and support smaller Burmese mining ventures in the near future (Htoon, 2018).

Another issue relevant to considerations of transparency is concerns related to the Rohingya crisis. The Rohingya are a Muslim-majority ethnic group of about 1.1 million people who have resided in Buddhist-majority Myanmar for centuries. On the basis of the former military-dictatorship's claims that they are of Bengali descent, the Rohingya were denied citizenship in 1982 and their identity is not recognized in the 135 ethnic groups residing in the country, rendering them stateless (Al Jazeera, 2018). Due to the ongoing, horrifying violence carried out by the Burmese military, hundreds of thousands of Rohingya have fled from their residence in the Rakhine state to neighboring countries.

For all intents and purposes, our research *shows no direct link* between Myanmar's mining industry and the ethnic cleansing of the Rohingya population (BBC, 2017). However, there has been significant political action taken by international actors and businesses to divest from Myanmar and label both rubies and sapphires "genocide gems," in order to increase pressure on the Burmese government (Sherwell, 2017; Interviewee 17). For example, in December 2017, the luxury jeweler, Cartier, alerted its consumer base that it would no longer buy gemstones from Myanmar after the company was exposed for selling Burmese sapphire necklaces and earrings. "Genocide gem" campaigners claim that taxes earned from ruby and sapphire sales support the military that has carried out persecution of the Rohingya.

Similar to the effect of sanctions, this massive divestment will most likely impact local mining communities more than the military, their intended target. With the label "genocide gems," domestic mining communities may have to sell their gems at a lower cost or completely cease mining, hurting their overall local economies (Sherwell, 2017). However, local gem traders in Myanmar believe sanctions, negative press, and boycotts will not have a noticeable impact on the country and the livelihoods of miners and gem traders, as jade, rubies, and sapphires are sold to China, India, and Thailand. (Zaw, 2017). Furthermore, Myanmar does not have a direct market with western buyers, as western and international traders will buy the gems from China, thus there would be a limited impact on the national economy and those involved in the ruby value chain in Myanmar (Zaw, 2017).

2.2.2 Transparency of the Government of Afghanistan

Altogether, Afghanistan tends to score poorly on corruption, transparency, freedom, and governance in national attitude surveys. Due to the state of governance, the validity of these scores can certainly be contested, even though they generally reflect the Afghan state of affairs in relation to Afghan citizens and the mining/gemstone industry. However, in comparison to the country's performance prior to Ashraf Ghani's presidency, its current ranking on global indices represents a modest improvement.

According to the current Transparency International Corruptions Perceptions Index, (Corruptions Perceptions Index, 2017) Afghanistan scores 15/100, an improvement from the 2013 score of 8/100. Furthermore, Afghanistan's Freedom House political rights score also improved from a 6 to a 5 due to "increased opposition political activity ahead of scheduled elections, as well as modest gains in government transparency" (Freedom House, 2018). Efforts to promote government transparency have led to modest gains, but limited public information continues to be a problem.

The accessibility of information on mining contracts is one example. Researchers are sometimes able to gather data by reaching out to officials within the government. However, in Global Witness' report on Afghanistan's conflict and lapis lazuli, *War in the Treasury of the People*, the author was unable to obtain basic data from the Ministry of Mines on how much lapis transited from Badakhshan. The Minister of Mines told the investigator he had "inherited a broken institution" and was unable to answer further questions (Carter, 2016).

2.3 Corruption

2.3.1 Corruption in Myanmar

As previously noted, in the 2017 Transparency International Corruptions Perceptions Index (Corruptions Perceptions Index, 2017) Myanmar scored 30/100, an improvement from the 2015 score of 22/100. On the 2017 Freedom House Index (Freedom House Index, 2017), *Freedom in the World Survey*, Myanmar scored a 5/7, which was an improvement in their status from "not free" in 2016 to "partly free" the following year. Freedom House rationalizes this score as follows: "[the] NLD government in 2016 took a series of actions that indicated an opening of associational and organizational space following decades of military dictatorship." They go on to state that in spite of the country's low scores, the NLD took "modest" steps to address the issue of corruption and freedom.

In 2015, Global Witness found evidence that ongoing financial ties between senior military officers and proxy-mining companies were funneling jade revenue back into the Myanmar military (Miller, 2016). The military also prevented foreigners from entering Mogok Valley, a prime location for Myanmar's rubies, thus made it difficult for Global Witness and other non-government organizations to gather information and report on the conditions of ruby miners in Mogok (Miller, 2016). Brilliant Earth, a jewelry company focused on responsibly sourcing their gemstones, stated, "the end of military rule did not put an end to military cronies profiting from jade, and we cannot assume that the same violence and corruption has left the ruby trade" (Miller, 2016).

2.3.2 Corruption in Afghanistan

The Transparency International 2017 Corruptions Perceptions Index gave Afghanistan a score of 15/100, which is an improvement from the 2013 score of 8/100. Despite these improvements, corruption remains one of the most pervasive issues for the country. In a recent Transparency International Report, Afghanistan's anti-corruption efforts towards the UN's Sustainable Development Goals (SDG) have also proven to be insufficient. In Freedom House's assessment of the functionality of the Afghan government (2017) they state:

> Corruption remains a key concern in national life. In addition to depressing state revenues, endemic corruption reduces military effectiveness and undermines government legitimacy...In a December 2016 report, Integrity Watch Afghanistan estimated that Afghans paid approximately $3 billion in bribes to public officials during the year; 71 percent of Afghans believed that corruption was worse in 2016 than in 2014 and 2015" (Freedom House, 2018).

Some researchers have argued that the Afghan government has been assessing lapis lazuli at a low value (Carter, 2016, p. 7). It can be inferred that this is linked to corruption, as one study received multiple reports of officials taking bribes to sell lapis at a lower grade in order to reduce the amount of taxes owed (Carter, 2016, p. 7).

Within the Global Witness report, *War in the Treasury of the People*, corruption is also present within the Afghan Local Police. A high rate of corruption paired with rampant

abuse at the hands of the Afghan Local Police (ALP) force has led to citizens' overwhelming mistrust of the Afghan government, playing into actors with a stake in the mining industry's narrative that the government is inherently corrupt. Cases of beatings, kidnappings, knife attacks, robberies, thefts, and intimidation conducted by commanders of the ALP outside the mines are prevalent (Carter, 2016, p. 28). Miners in the Jurm distract told Global Witness that these commanders are connected to Asadullah Mujadidi and act on his behalf (Carter, 2016, p. 28).

2.4 Industry Regulation

2.4.1 Industry Regulation of Ruby Mining and Trade in Myanmar:

One of the most pertinent, yet highly contested mining regulations in Myanmar is the *Myanmar Gemstone Law* (not to be confused with the Myanmar Mines Law of 1994). Enacted under the State Law and Order in 1995, the objectives of the law are:

a) To establish and develop a complete gemstone and jewelry market within the country for gemstones produced in Myanmar;

b) To allow persons having received a license or permit to freely engage in the production and marketing of gemstones in accordance with the market-oriented economic system;

c) To open gemstone markets in order to trade gemstones and jewelry freely at all times;

d) To eradicate illegal production of gemstones within the country and to prevent and suppress the unlawful export of gemstones and their sale abroad;

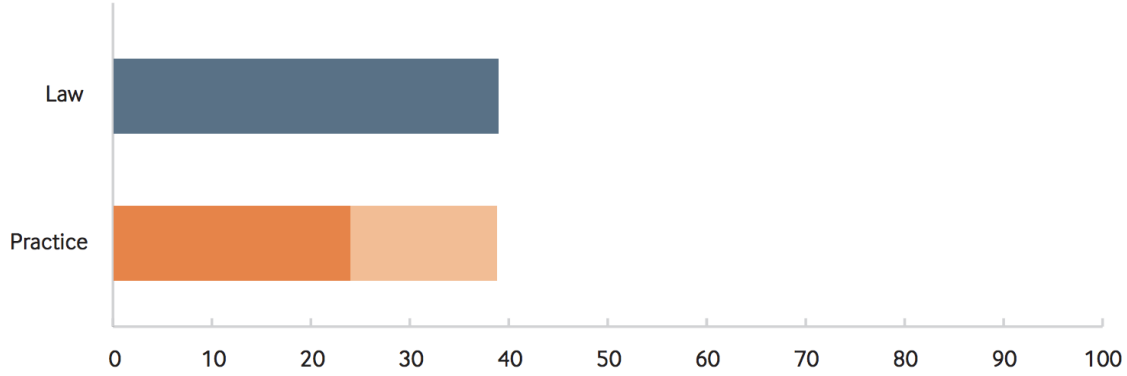
e) To ensure the development of continuous production of gemstones and to plan and perform research;

f) To execute the renovation and rehabilitation of land after closing and confiscating gemstone blocks, and have gemstone excavation with the least harmful impact on the environment.

The gemstone law, amended in 2003 and 2016, sustained critical flaws in the framework that created space for legal ambiguity over time, where amendments within the gemstone law has multiple definitions that make it difficult for consistent enforcement of the law. Even with recent and proposed amendments, the Myanmar Gemstone Law has several gaps in the planning and execution of the law. These gaps include: a disconnect between mining policy and the realities of mining; the licensing process; mining conducted by citizens; production monitoring, and taxation; the valuation process; rough marketing and sales; beneficiation; community grievance mechanisms, anti-corruption measures, and transparency and accountability mechanisms (Shortell, 2017).

As a result of vague legislation such as the *Myanmar Gemstone Law*, Myanmar's gemstone sector has remained opaque, with little to no public access to rules on licensing or the fiscal regime. With the recent passing of new amendments to the Myanmar Mines Law there is potential for improvement of Myanmar's mining sector, specifically pertaining to extraction, transparency/accountability, and sales of gemstones such as rubies.

Image 2: Myanmar's legal framework and implementation



Source: Resource Governance Index, 2017[need to say at least something about the graphic]

Another important piece of legislation is the Myanmar Mines Law, passed in 1994. In order to address concerns expressed by the gemstone industry, the Mines Law was amended in 2015. Key changes following the amendments include: "increasing the maximum production permit period, for large scale production projects only, giving exploration permit holders a clear right to production permits, allowing joint ventures, between foreign investors and local investors, in the case of small and medium scale production projects upgraded to become large scale production projects, specifying the criteria for determining size of individual production permit areas, and providing a guaranteed right to production permit for those who have successfully carried out prospecting and exploration and completed a feasibility study" (Harwood, 2018).

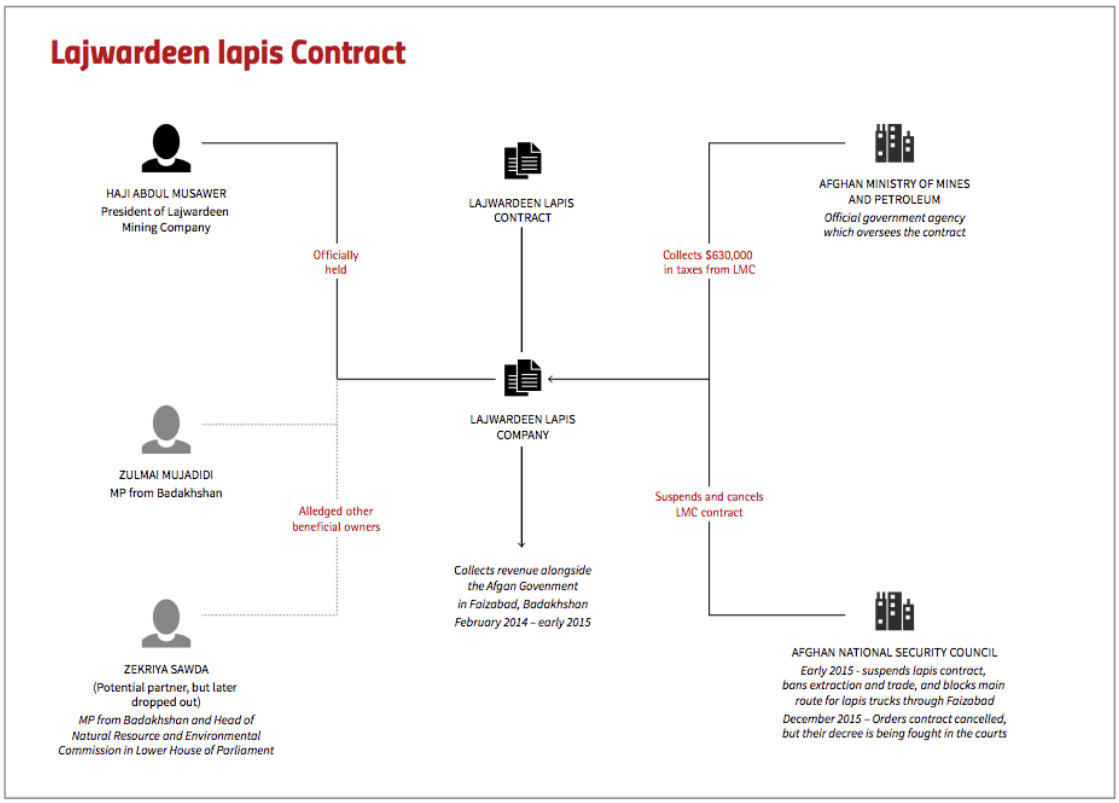
After much anticipation, MoNREC recently passed the Myanmar Mines Rules in February 2018, which address certain regulatory and environmental concerns via rules that are "important additions for the creation of the necessary legal and regulatory environment conducive to investment in the mining industry" (Harwood, 2018).

2.4.2 Industry Regulation of Lapis Lazuli Mining and Trade in Afghanistan

One of the most relevant pieces of legislation is the Afghan Mining Law, which was amended in 2014. The Afghan Mining Law pertains to all matters of administration, licensing, and governance of the mining sector. Despite recent amendments, the Global Witness report has claimed that the law is insufficient in properly ruling the mining/gemstone sector of Afghanistan and has recommended clearer, more transparent, and more accountable guidelines for the industry, in order to decrease room

for collusion and corruption and increase data production, beneficial ownership, and oversight at the Ministry of Mines (Carter, 2016).

Image 3: The Lajwardeen Lapis Lazuli Contract



Source: Carter, 2016

The only published contract for mining lapis lazuli was granted to the, Lajwardeen Mining Company (LMC) on February 13, 2013 to cover around three blocks in Keran-wa-Menjan. While the company seemed to have good intentions and genuine interest in the developing mining in Keran-wa-Menjan, the trades that took place under its contract raise serious concerns (see LMC contract weaknesses in Image 4 below). Some of these concerns include the "questionable arrangement whereby the company facilitated the transfer of lapis in its name when it was unable to access the mining site, essentially providing a cover for an otherwise illegitimate trade; substantial under-valuation of lapis leading to major loses in revenue; and, evidence of the involvement of the (local strongmen and) MPs Zulmai Mujadidi and Zekria Sawda in the company" (Carter, 2016).

Image 4: Weaknesses in the Lajwardeen Lapis Lazuli Contract

The actual terms of the Lajwardeen contract include a number of positive provisions, which reflect international standards in some important respects. For example, it requires an Environmental and Social Management Plan (ESMP)[437] and compliance with the Extractive Industries Transparency Initiative (EITI).[438] But it does have a number of more questionable elements as well.

The first area of interest is that the contract appears simultaneously to grant both an exploration and an exploitation license, with the latter only subject to approval of a feasibility study by the Ministry of Mines.[439] Yet the 2010 Minerals Law normally requires holders of exploration licenses to bid separately for an exploitation license.[440] Although an LMC official told Global Witness the company only held the necessary permissions to conduct reconnaissance work, this still raises questions.[441]

The contract is for fifteen years, but the holder also has an almost automatic right to renew the contract in five year increments – going significantly beyond the normal provision for renewal in the Mining Law.[442] This could lock the Afghan government into the contract even if market conditions changed drastically, potentially leading to significant loss of revenue.

It is striking that LMC is only required to spend a very small sum – $20,000 a year – "for the enhancement of the environment and social services for the community."[443] The Mining Law requires holders of exploitation licenses to have formal development plans covering proposed investments and contributions for local communities, and it seems unlikely such an insignificant sum could satisfy that requirement. [444] An LMC official claimed there were plans to give 10% of their profits to the local community, as well as other benefits – but this is not included in the contract.[445]

While there is welcome provision for various social and environmental impact assessments, the contract does not provide for consultation or grievance resolution mechanisms with local stakeholders and communities.[446] Given the security situation in Afghanistan, the lack of a grievance mechanism or reference to human rights standards for the provision of security around the project site is a significant omission.

Source: Carter, 2016

2.5 Presence of Non-State Actors/Criminal Organizations

2.5.1 Presence of Non-State Actors/Criminal Organizations in Myanmar

Given the recent history of ethnic based conflict in Myanmar, continuing tensions undercut the NLD's efforts to establish a national peace process. Peace continues to be elusive as "military offensives and other violent conflicts offset a government push for more comprehensive negotiations with ethnic armed groups" (Freedom House, 2017). Many of these ethnic armed groups engage in direct and indirect conflict within their state and/or national government, and it is difficult to determine the exact number of the groups. As of 2014, the Asia Foundation stated that there were four categories of ethnic-national actors with resource governance/extraction claims, listed in Image 5 below (Lynn and Oye, 2014).

Image 5: The four categories of ethnic national actors in Myanmar

- More than 20 opposition Ethnic Armed Organisations (EAOs), ranging in size from just a few dozen troops up to approximately 30,000.
- 23 pro-government Border Guard Force battalions (BGFs), once EAOs but now under the command and support structures of the Tatmadaw.
- Thousands of government-linked *Pyithu Sit*, or 'People's Militias' (of a similar structure to BGFs but under less rigid control).
- Constitutionally-instated 'Leading bodies' of Special Administered Zones and Divisions

Source: Lynn and Oye, 2014

Many of these groups have aired grievances about exclusionary policy decisions from the Myanmar's natural resource management. Due to the gemstone trade being tightly controlled by U.S.-sanctioned drug lords, crony companies, and military elites, tensions are often high between the government and military officials and the armed ethnic groups that stand guard at gem mines (Shortell and Irwin, 2017). Members of ethnic armed groups identified large-scale, non-inclusive natural resource extraction (or "mega-development") as a destabilizing force that disenfranchises locals, reduces employment of Burmese citizens, increases control from foreign investors, and deteriorates the surrounding environment. In a series of interviews from 2014, active soldiers in opposition groups identified "community benefits from natural resource development" as a shared goal (Kirkham, 2014).

For this reason, and others, conflict with non-state actors continue on. This is especially pronounced in Kachin State, where both of the government of Myanmar's armed forces, the Tatmadaw and ex-soldiers from the Burma Army are fighting over control of several natural resources within the Kachin State. In fact, the locations of the most prominent ruby mines fall in areas close to Kachin and Shan states and these two ethnic groups still have armed forces, which are not party to the existing ceasefire (Mon, 2017). Due to the ongoing conflict, locals in the Kachin and Shan States suffer from poverty and lack of economic opportunities (Mark, 2018).

2.5.2 Presence of Non-State Actors/Criminal Organizations in Afghanistan

Other major non-governmental forces in the mining and lapis lazuli industry are Abdul Malek and the Taliban. Abdul Malek is a former Jamiat e Islami commander and local police chief, who have effectively maintained control over the lapis lazuli mines since his locally supported, armed takeover of the Keran-wa-Menjan district of Badakhshan in 2014. Despite Malek's role shift from authority figure to pseudo-"dictator" of the region, he is well received and has the respect of Badakhshan locals (Carter, 2016). With heavily connected and authoritative, local strongmen, Zulmai and Asadullah Mujadidi effectively "out of the picture," (Interviewee 22, 2018) Malek has been able to flourish in his power over the region. Over the years, he has gained millions in revenue from the lapis lazuli mines, created a strong network in the region, and made strategic agreements with other powerful actors, such as a protection agreement with the Taliban.

Though the Taliban has only become a major actor in the lapis mines within recent years, they have gained significant control over the countryside of Badakhshan (Interviewee 22, 2018). Additionally, the Taliban has maintained a close relationship with the Islamic State, which is also present near the lapis lazuli mines in order to gain revenue and utilize safe houses for their members. Historically, fighting between government officials, Malek, Mujadidi, the Taliban, and ISIS over mines was correlated with violence against local mining populations, resulting in increases in civilian deaths (Carter, 2016). Currently, fighting has decreased, generating less police presence in the area (Interviewee 22) The absence of police presence during times with less violent outbreaks has incentivized the avoidance of conflict in order for Malek and the Taliban to rule with impunity. This, in turn, has increased the state of insecurity not only in the mining regions, but also for the entire country.

The Afghan government, in response, has tried to lease the lapis lazuli mines to large companies who will bring in their own workforce, which has effectively ousting locals from their right to mine. Locals have pushed back against these plans stating that if the mines were leased to large companies, they would join the insurgency to combat the government, as some locals believe "the government is more rotten than the Taliban" (Global Witness, 2016; Interviewee 22). Commander Malek currently controls the majority of the lapis lazuli mines in Badakhshan. His power over day-to-day operations is such that in order for one to mine lapis lazuli, one has to sit down and negotiate with Malek himself. These negotiations determine how everything else functions – including the amount paid to laborers and provisions for them (Noorani, 2018).

Concerning Mujadidi, we have received conflicting information about his current standing and relevance in controlling lapis lazuli mines and his influence in Badakhshan. Some of our sources say that Mujadidi is no longer relevant, but other sources say he stills controls some lapis lazuli mines and routes that are controlled by his forces (Carter, 2018; Interviewee 22; Noorani, 2018). One source has told us that Malek has been able to remove some of Mujadidi's influence by changing the route of his transportation to bypass Mujadidi's area and by paying insurgent groups to help maintain the status quo (Noorani, 2018).

The Taliban, however, is likely the biggest threat to the Afghan government, as not only is the Taliban weakening the state of Afghanistan, but also it is hindering the development of areas that are controlled by the Taliban as it continues to strengthen its forces every day – due in part to funding from lapis lazuli (Noorani, 2018). In the opinion of one of our interviewees, the only way for the Afghan government to increase their strength in this situation is with help from foreign forces (Interviewee 22). However, the introduction of foreign forces will most likely cause locals to turn against their government, wedging the Afghan government in quite the complex predicament.

Presence of non-state actors and terrorists negatively impact the livelihoods of civilians in Afghanistan. Locals and miners suffer from beatings, kidnappings, theft, and intimidation from the ALP who are connected to Mujadidi and/or members of Malek's forces (Carter, 2016, p. 28). Afghan civilians also suffer from deliberate attacks from

the Taliban, resulting in thousands of civilian causalities and wounded (Kramer, 2018). Lack of economic opportunities for some also impact their livelihoods, as many are stuck between working for Mujadidi, Malek, or the Taliban, or trying to find economic opportunities that are not connected to these groups (Carter, 2016).

Chapter 3: Economic Impacts of Colored Gem Mining

This chapter assesses the economic impacts of the ruby industry in Myanmar and of the lapis lazuli industry in Afghanistan. The chapter discusses the various economic factors related to gem and gemstone extraction, which are potentially linked to impacts on human security in Myanmar and Afghanistan. These economic factors include industry employment, fiscal sustainability, beneficiation, smuggling and the informal economy, and non-state actor/terrorist funding. Within the fiscal sustainability section, we examined the estimated revenue generated from ruby and lapis lazuli sales, revenue allocation, taxation regimes on rubies and lapis, royalty rates and fees for ruby and lapis sales, and diversification of the national budgets.

3.1 Industry Employment

3.1.1 Industry Employment in Myanmar

In Myanmar, mining and working in quarries are considered part of the secondary sector in terms of industry employment. The 2014 Myanmar Population and Housing Census showed 2.6 million people were employed in the secondary sector; comprising 11.9 percent of the total number of people employed in Myanmar. In the mining and quarry sector, only 168,381 (0.8 percent of total individuals employed) were employed in 2014. Men overwhelmingly made up the employment pool in mining and quarry with 138,284 men employed, while women made up 30,097 of those employed in this sector in 2014. However, in regards to the ruby industry specifically, it is difficult to find figures on the exact employment rates. This is especially true of the mining industry, largely due to high level of informal employment in the mining sector.

Although there are 0.8 percent of total individuals employed in the mining and quarry sector, there are still many who depend on this sector in order to have employment and a source of income for themselves and their family. While our research and interviews has shown indirect employment from ruby mining, such as trading and cutting rubies, we could not find any figures on how many are involved in in these economic activities.

3.1.2 Industry Employment in Afghanistan

Figures from 2011 to 2014 show 0.5 percent or fewer individuals work in mining and quarry industries in Kabul, Bamyan, Daykundi, Ghor, Kapisa, and Parwan. In Kabul, 345,071 people work in the mining and quarry industry; 41,045 in Bamyan; 45,488 in Daykundi; 13,616 in Kapisa; 59,458 in Parwan. Figures for Ghor are currently not considered reliable, although the United Nations Population Fund in Afghanistan estimates this number is potentially less than 0.01 percent based on their Socio-Demographic and Economic Survey (2017). Clearly, it is difficult to find current figures for employment in mining and quarry industries broadly, but these knowledge

gaps are especially pronounced in the lapis lazuli industry, due to informal employment and non-state actors' involvement in the mining sector.

Badakhshan is one of the most mineral-rich areas in Afghanistan, especially for lapis lazuli, yet it is the poorest. Despite more than 500,000 individuals employed in the mining and quarry section in Afghanistan, it is clear that many depend on mining gemstones and metals in order to have a livelihood. However, uniquely to Afghanistan, there are others who may rely on criminal organizations and non-state actor groups in order to have an adequate livelihood as well, as some in these organizations and groups may be part of their lapis lazuli mining operations.

3.2 Fiscal Sustainability

3.2.1 Fiscal Sustainability in Myanmar

Revenue Generated from Rubies

Ninety percent of the world's rubies are sourced from Myanmar, and these rubies often command the highest prices in the world (Win & Di Certo, 2014). Revenue from rubies is often generated by formal sales between suppliers and buyers, but the Ministry of Natural Resources and Environmental Conservation and Myanmar Gems Enterprise hold gem emporiums twice a year in order to facilitate the legal sale of rubies, sapphires, jade, and other gemstones and in order for the government to collect taxes on the sales of said gemstones (Lin, 2017). Between the two gem emporiums annually, total sales are average between $1 billion to $2 billion with a portion of the sales contributed to state revenue via tax (Lin, 2017).

Despite the high prices of rubies from Myanmar, revenue from rubies and other extractives make up only a small portion of revenue generation for the Burmese GDP. The extractives sector makes up approximately 6 percent of the GDP, 24 percent of government revenues, and 38 percent of exports (World Bank, 2016). Between April 2013 and March 2014, over $3.13 billion in government revenue was officially reported, with 57 companies total reporting their figures (World Bank, 2016). Definitive figures on how much revenue rubies generate are unknown due to lack of reporting and informal economic activities such as smuggling and armed conflict. Additionally, with hundreds of ruby companies in Myanmar, it is clear only a small fraction have been reporting their profits.

Revenue Allocation

According to the 2014 Extractive Industries Transparency Initiative (EITI) report, "approximately half of reported extractive revenues do not go into central treasury accounts, but into 'other accounts' held by state owned enterprises, details of which are not publicly disclosed" (World Bank, 2016). The EITI report also highlights the difficulty of finding accurate figures due to limited reporting of assets from military-owned holding companies (World Bank, 2016). As mentioned in the EITI report, it is difficult to determine how much revenue from the sales and taxes of rubies are allocated to national and state budgets as well as what portions of the budgets are supported by revenue from ruby sales and taxes.

Taxation Regime for Rubies

In recent years, the tax rate for rubies and jewelry has fluctuated at the Gem Emporiums. In 2015, the commercial tax rate for raw rubies was set at 15 percent, but increased to 20 percent in 2016 under the 2016 Special Commodities Tax Law (Zaw, 2017). The Special Commodities Tax Law also implemented a 5 percent trading rate and a 3 percent service charge (Zaw, 2017). Thus, the total tax rate in 2016 for a raw ruby and ruby jewelry was set at 28 percent (Zaw, 2017). Subsequent protests from gem traders succeeded in lowering the tax rate to 18 percent in 2017; comprised of a 15 percent commercial tax plus a 3 percent service charge (Zaw, 2017). The draft version of the *Myanmar Gemstone Law* 2017 currently proposes a 20 percent tax on rubies, sapphires, jade, and diamonds (Pwint, 2018). However, following protests from local representatives from Kachin State's Myitkyina, it is possible that the tax rate may be lowered to 10 percent for rubies, sapphires, jade, and diamonds (Pwint, 2018). Until the Myanmar Gemstone Law passes, our research shows that the current tax rate for rubies and other gemstones is set at 18 percent.

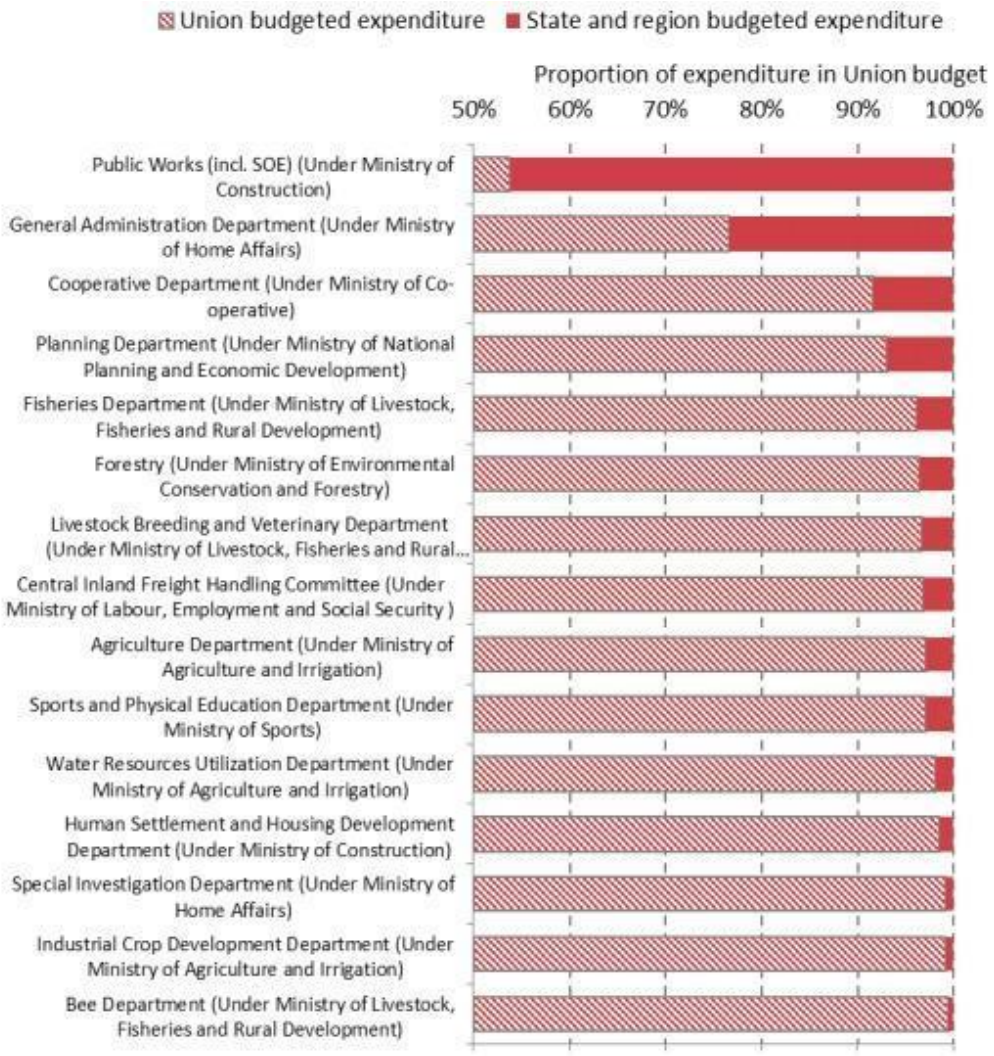
Royalties

Myanmar has set its royalty rate at 20 percent for rubies, sapphires, jade, and diamonds, while the royalty rate for all other gemstones is set at 10 percent (Irwin, 2016, p. 20).

Budget Diversification

Myanmar's national budget is divided into fourteen departments and ministries; illustrated below in Image 6 (see graph below) (Dickenson-Jones, De, & Smurra, 2015, p. 41).

Image 6: The Burmese departments and ministries



Source: Dickenson-Jones, De, & Smurra, 2015, p. 41

Since 2011, Myanmar has made progress to diversify funds for development priorities. From 2009 to 2015, Myanmar's spending on social services increased from 10 percent to 33 percent, but spending on public services saw a decrease from 45 percent to 11 percent (World Bank, n.d.). Spending on defense increased from 21 percent to 32 percent in the same period while capital decreased from 63 percent to 38 percent (World Bank, n.d.).

Due to the government's increased spending on social services, education and health outcomes have improved (World Bank, n.d.). Education reform has had a positive impact on local economies with more children going to school, the elimination of school fees, the hiring of more teachers, and the increased stipends for poor students (World Bank, n.d.). Healthcare reform has improved access and affordability of medical services, including free medicines and selected health services for children, pregnant women, and individuals in need of emergency services (World Bank, n.d.).

Additionally, more medical personnel have been hired due to the improved healthcare services and reform (World Bank, n.d.).

Overall Fiscal Sustainability
The government of Myanmar has made progress in improving the lives of their citizens by investing government revenue in to non-military departments and initiatives, such as social services for education and health. Despite nearly half of revenue allocation is not accounted or ends up in SOEs, it is clear that some of the government revenue generated from taxes and royalties on rubies contribute to government spending on development initiatives.

3.2.2 Fiscal Sustainability in Afghanistan

Revenue Generated from Lapis Lazuli
In 2013, revenue generated from taxes on lapis lazuli was estimated at $453,000 (Global Witness, 2016, p. 39). More recent figures are contested, with various reports presenting conflicting information. A government official in Faizabad claims overall revenue generated from lapis lazuli was $857,000 in 2014, but one senior official from the Ministry of Mines in Badakhshan reported government revenue from lapis was as high as $6.43 million last nine months of 2014 (Global Witness, 2016, p. 39). It is difficult to determine accurate figures for revenue generated from lapis lazuli due to tax evasion (via not claiming trucks for lapis lazuli exports and bribery) and due to corruption present within the Afghan government.

According to our interview with Javed Noorani, some rough lapis lazuli is valued at $4 per kilogram, while some of the best quality of lapis can be valued at $2,000 per kilogram. The lapis that is in most demand are the deep blue variations that come from the mines in Madane-Char. Although the Ministry of Mines and Petroleum (MoMP) reports deposits of the deep blue lapis lazuli have been exhausted, these stones can still be found in stores and are priced anywhere from $300 to $1,200 per kilo. Furthermore, Noorani told us that the estimated value of lapis extracted per year is around $270 million.

Revenue Allocation
We were unable to find any information on how much revenue from lapis lazuli is allocated to sectors of Afghanistan’s national budget.

Taxation Regime for Lapis Lazuli
The Ministry of Mines has set the tax rate to 15 percent of profits made from lapis lazuli trade (Global Witness, 2016, p. 39). Sources also show one of the lapis lazuli mine owners, Asadullah Mujadidi, paid a tax rate of 5 to 12 Afghanis per kilo of lapis lazuli (Global Witness, 2016, p. 39). However, the tax regime is loosely enforced and many individuals illegally evade paying taxes and royalties (Global Witness, 2016, p. 39) Due to the norm of tax evasion, the Afghan government is losing a significant amount of revenue.

Royalties

The royalty rate on lapis lazuli is set at 10 percent (Global Witness, 2016, p. 48). Owners of lapis lazuli mining contracts typically pay royalties on lapis lazuli monthly or when going through border customs in Afghanistan to export lapis lazuli (Global Witness, 2016, p. 39). One example of the broader potential revenues, which could be generated from royalties, is the 2014 Lajwardeen contract, which contributed $630,000 to the Afghan government in the form of royalties (Global Witness, 2016, p. 39). However, parallel to tax evasion, many actors evade paying royalties or manage to pay less for royalties by not registering trucks as part of the shipment convoy (Global Witness, 2016). According to Noorani, in the 2014 financial year, the MoMP collected about Afs 1,016,400 ($14,458 USD) in royalties. So far, the MoMP has only collected Afs 110,000 ($1,564 USD) from royalties of all gemstones. This sharp decline in collecting on royalties may be due to Afghanistan's large-scale smuggling operations, prominent informal economy in lapis trading and mining, corruption within the government, and/or the deteriorating security within the country.

Budget Diversification

Afghanistan's national budget diversifies their spending to nine sectors: Security; Governance, Rule of Law, and Human Rights; Infrastructure and Natural Resources; Education; Health; Agricultural and Rural Development; Social Protection; Economic and Private Sector Development; and Contingency codes and others (Equality for Peace and Democracy, 2016, p. 8). Afghanistan's national budget for 2018 allocates $3.83 billion to general or administrative spending, while $1.3 billion is allocated to development programs (1TV News, 2017). Domestic resources will fund $2.3 billion of the 2018 budget, but donor countries will fund $2.7 billion of the budget. Due to the recent adoption of the 2018 budget, we cannot find figures of how much spending is allocated for each of the nine sectors. Furthermore, we were unable to find figures on how much revenue from lapis lazuli is allocated for spending and where the allocation is implemented.

Overall Fiscal Sustainability

In Afghanistan's current fiscal situation, the Afghanistan's budget is not sustainable due to corruption, smuggling, and tax/royalty evasion. Furthermore, donor countries will fund half of the 2018 budget, which demonstrates Afghanistan's weak revenue generating sources and systems. Although the national budget diversifies sectors, and include several sectors that focus on providing employment, food, development, and livelihoods for Afghans, the sources of domestic funding will need to be strengthened. Additionally, the government of Afghanistan will need to address corruption within the government and SOEs, as well as combat tax and royalty evasion in order to generate more revenue that can be used to improve Afghans' livelihoods.

3.3 Beneficiation

Beneficiation is "the process by which rough stones are transformed into polished gems and jewelry. [This] requires a greater degree of craftsmanship and specialization than processes for other minerals, such as smelting. A fine or poor cut, respectively, may significantly increase or reduce the potential price of a gemstone" (Shortwell & Irwin,

2017, p. 6). Beneficiation process and systems can generate more economic opportunities for individuals, such as cutting, polishing, and treating gemstones. This allows more individuals find employment and provide for themselves and their families (Shortwell & Irwin, 2017, p. 50). Through the creation of more economic opportunities, as well as increasing the economic value of gemstones, beneficiation can be a driver of economic growth for countries if the processes and systems remain within the country (Shortwell & Irwin, 2017, p. 52). This can further drive competition in the value chain among countries, which can further promote economic growth for countries (Shortwell & Irwin, p. 52).

Our research found that in both Myanmar and Afghanistan, there is a lack of domestic beneficiation opportunities outside of cutting rubies in Mogok. Previous attempts to promote beneficiation opportunities in Afghanistan have failed as well (Pardieu, 2018). From our interview with a government official, rubies from Myanmar are often smuggled to Thailand to be polished and processed to make jewelry, as Thailand has the technology to polish and remove impurities from rubies, sapphires, jade, and other gemstones (Interviewee 18.) While there is support to create a domestic value-chain processing industry for gemstones, Myanmar does not have the economic fundamentals and policies to compete with the three leading gemstone-processing markets: Thailand, China, and India (Shortell & Irwin, 2017, p. 9). We were not able to locate any information about domestic value-chain processes in Afghanistan, nor were we able to locate any information on whether or not there is support for creating domestic beneficiation opportunities.

Promoting beneficiation within Myanmar and Afghanistan could potentially create more economic opportunities for their citizens, economic growth, and competition if implemented effectively and monitored throughout the value chain.

3.4 Smuggling and the Informal Economy

3.4.1 Smuggling and Informal Economy of Rubies in Myanmar

As previously mentioned, many rubies are smuggled into Thailand to be cut, polished, and processed for sale or into jewelry. A common tactic smugglers use is a loophole of Myanmar's customs policy on rubies. The government official stationed in Myanmar explained that smugglers would put raw rubies in loose jewelry fittings to avoid paying royalties on the raw rubies (Interviewee 18). Once the smugglers arrive in Thailand, the raw rubies are extracted from the loose jewelry fittings and are then cut, polished, and processed. Revenue is lost from smuggling and many traders point to high tax rates as the cause for smuggling, as gem traders are unable to afford paying such exorbitant taxes on ruby sales. In addition to smuggling, illegal and informal mining occurs in several ruby mines throughout the country. Due to the current freeze on mining licenses, more informal and illegal mining is occurring, especially in Mogok and in the Hpakant mines in Kachin State (Mark, 2018).

An ongoing conflict in Myanmar between the Kachin Independence Organization (KIO) and Myanmar's Tatmadaw is fueling informal mining and trading of natural

resources, including rubies (Mark, 2018). The KIO operate the Kachin Independence Army and continue to engage the Tatmadaw to gain control of the copper, gold, amber, jade, and ruby mines in Kachin State (Mark, 2018). Competition over the mines remains between ethnic minority elites and the regional army commanders, but the local community suffers from the conflict and mining activities (Mark, 2018). The revenue generated from the mining operations is not reinvested into the local community or Myanmar as a whole, thus negatively impacting the socio-economic wellbeing of the local community (Mark, 2018). Exact figures of how much government revenue is generated and how much is lost from trading rubies are unknown.

Attempts by the government of Myanmar to prevent smuggling are currently ineffective. The government does not currently have the capacity or capability to prevent all occurrences of illegal mining and smuggling. Despite reducing the tax rate on gemstones to 18 percent, smuggling still occurs on a regular basis. Due to the prevalence of smuggling, the government loses revenue from taxes and royalty regimes that could be used to fund development initiatives and social services within their country.

3.4.2 Smuggling and Informal Economy of Lapis Lazuli in Afghanistan

The commonality of smuggling lapis lazuli is well known in Afghanistan. Armed groups associated with Abdul Malek or Zulmai Mujadidi and the Taliban conduct the majority of the smuggling of lapis lazuli out of the country (Global Witness, 2016). Smugglers do this to avoid paying taxes and royalties on the stones, despite the low tax rate and the numerous loopholes others take advantage of (Global Witness, 2016). These groups also participate in illegal mining (Global Witness, 2016). Unfortunately, the Afghan government does not have the capacity to prevent illegal mining due to the lack of defense forces and broader limitations on capabilities to remove armed groups from mining areas (Global Witness, 2016). Enforcement of customs and fulfilling contract regulations has proven ineffective as corruption, bribery, and lack of capabilities prevents the Afghan government from effectively tackling smuggling and illegal mining. Exact figures of how much government revenue is lost from smuggling are unknown. Prevalence of smuggling and informal economic activity prevents the government from receiving revenue from taxes and royalty fees, thus unable to fund their national budgets and development initiatives.

3.5 Non-State Actor/Terrorist Funding

3.5.1 Non-State Actor/Terrorist Funding in Myanmar

The KIO, a non-state actor organization comprised of ethnic-minority elites, funds their forces, the Kachin Independence Army (KIA), through sales of timber, gold, jade, and taxes on trafficking narcotics. The Tatmadaw are potentially funded from ruby sales, but no information can be found to confirm their funding sources. However, the KIO and the Tatmadaw continue to fight over control of resources, including ruby mines in the Kachin State. While the KIA and Tatmadaw continue to generate revenue from

their mining operations and fight among one another, locals in the Kachin State suffer from the conflict and poverty (Mark, 2018). Furthermore, none of the revenue generated from the mining operations are invested back into the Kachin community and instead continues to fund the conflict between the KIA and Tatmadaw (Mark, 2018). Despite protests from Kachin locals for equal rights for mining and for peace, the conflict continues to this day and many locals continue to suffer (Mark, 2018).

3.5.2 Non-State Actor/Terrorist Funding in Afghanistan

The Taliban, armed groups associated with Abdul Malek, and armed groups associated with Zulmai Mujadidi all operate lapis lazuli mines in Badakhshan (Global Witness, 2016). Each of these groups generates their own source of revenue through selling lapis lazuli. Global Witness estimated that the total value of lapis lazuli exports from Badakhshan in 2014 was $125 million and in 2015 was $75 million (Global Witness, 2016, p. 10). Armed groups associated with Abdul Malek generated estimated profits of $17.98 million in 2014 and $12 million in 2015 (Global Witness, 2016, p. 10). Armed groups associated with Zulmai Mujadidi generated estimated profits of $1.65 million in 2014 (Global Witness, 2016, p. 10).

Uniquely, the Taliban received $750,000 in direct payments from Abdul Malek in 2014 and generated an additional $386,000 in revenue from road tolls in the region (Global Witness, 2016, p. 10). In 2014, the Taliban obtained $1.14 million in profits from direct payments and road tolls (Global Witness, 2016, p. 10). In 2015, the Taliban generated $4 million from lapis lazuli and it is predicted this trend will continue, as projections estimate the Taliban will generate up to $6 million from the gemstone annually in the coming years (Global Witness, 2016, p. 10). Global Witness (2016) estimates that the government of Afghanistan has lost $100 million in profits from lapis lazuli since 2001, with estimated $18.1 million lost in 2014 and $10 million lost in 2015 due to non-state actors and terrorist organizations operating the lapis mines, smuggling lapis, and evading taxes and royalties.

Commander Malek controls a majority of the mines in Badakhshan, and according to Javed Noorani, there are 50 thick-seams mining operations that Malek rents out to miners on a weekly basis (2018). The sites that yield the best quality of lapis lazuli are reportedly rented at a rate of Afs 10 million ($142,250) per week, while the mines that yield lowest quality of lapis are rented at a rate of Afs 1 million ($14,225 USD) per week. Malek reportedly rents the mines in Keran-wa-Menjan to miners for $50,000 for 24 hours, and miners and traders will use any means to extract as much lapis lazuli as they can.

Noorani also interviewed Mohsin Ullah, a resident of Jurm and a lapis trader, who mentioned the Taliban used to receive a 30 percent cut from Malek but that they are now asking for 50 percent. Furthermore, Ullah spoke about how the Taliban are warning Malek that if he does not pay what they are asking for, they will attack the mine and take control of it. The Taliban have an interest in controlling the mine, but they are moving strategically and are avoiding taking it over prematurely, due to the

fear that if they take control of the mine, the government may send the army to dislodge them; costing them a crucial source of revenue.

Funds from the lapis lazuli trade contribute to the Taliban's activities, including recruitment of soldiers, maintaining and strengthening facilitation networks, and conducting ambushes and terrorist attacks in cities across Afghanistan (Global Witness, 2016, p. 12-17). Livelihoods are negatively affected by the Taliban's attacks and activities. Earlier this year, reports confirmed that the Taliban are deliberately targeting civilians in Kabul (Kramer, 2018). In 2017, 10,453 Afghan civilians were wounded or killed, and many continue to suffer from the ongoing bombings and attacks by the Taliban (Kramer, 2018).

Chapter 4: Environmental Impacts of Colored Gem Mining

This chapter considers how the environment is impacted by the extraction of rubies in Myanmar and lapis lazuli in Afghanistan. By evaluating these industry sectors, this chapter intends to elucidate how potential environmental degradation can engender the loss of livelihood and threatens human security by considering the impact of mining on environmental sustainability and the legislative protections enacted to prevent or reverse environmental damage.

4.1 Environmental Sustainability

4.1.1 The Natural Environment of Myanmar

For nearly 1,000 years, ruby mining has been carried out through traditional rudimentary techniques such as hand axes and panning, yet large-scale mechanized mining operations have become increasingly common due to historically exploited land and economic pressure for productivity. The three primary techniques of ruby mining utilized are:

1. Primary mining which is quarrying/tunneling into the host rock and detonating explosives underground;

2. Secondary/alluvial mining or open pit mining, which requires large machinery to dig into the earth and remove mounds of gem baring earth from the alluvial deposits and;

3. Handpicking or substance mining which is most often when individuals sift tailings from the mines but was once also commonly used to mine gems from the alluvial deposits (Irwin, 2016; Ali, 2016).

Once the gem baring gravel is removed from the mines, it is washed by high-pressured water cannons and pumped into long sluices that collect heavy waste and sift out the wastewater. The silt filled wastewater is then dumped into nearby water sources or washed into valleys below through the drainage system, where locals shift through the slit to find gemstones (UNIDO, 2017).

Several sources indicate that gemstone mining has a serious impact on the natural environment (Interview with Su Hlaing Myint; Earthrights International, 2004; Human Rights Watch, 200) however; they rarely specify the scope of these impacts. Where several other extractive industries in Myanmar have well documented environmental assessments such as the recent Sector-Wide Impact Assessment of Myanmar's Mining Sector on limestone, gold and tin mining, extensive research has not be done on the effects of ruby mining (Myint, 2018). From the information that is available,

environmental concerns around ruby mining are concentrated into two main categories, water pollution/flooding and resource depletion. Issues of small-scale deforestation were described by one interviewee, however no other information could be found to conclusively assess the impact (Interviewee 17).

Water Pollution and Flooding

One of the most significant impacts on the natural environment is water pollution and flooding. Most mining sites are located near creeks and rivers because water is so essential to ruby extraction; digging into the groundwater source has the potential for pollution while the large amount of water used can affect the water levels. These issues have not been researched at length however and would require more assessment to understand the full impact. More substantially reported is the impact of mechanized mining, which produces large amounts of wastewater that is washed back into or dumped into the nearby water source (Myint, 2018; Interviewee 16). This wastewater contains large amounts of earth, gravel, and small rocks that in Mogok create, “rivers and streams of red, muddy, silt that cross-cut throughout the town” (Irwin, 2016, p. 46). The build-up generated from this causes waterways to overflow and flood; an issue that is exacerbated during the rainy season where residents claim that, “Mogok is literally drowning in mud” (Irwin, 2016, p. 46). The potential for landslides has been indicated by some sources, saying that mining has direct causation with landslides (France-Presse, 2017), however other accounts state that mining operations are generally not large enough to trigger major landslides and instead could be attributed to the accumulation of mining waste that slides down into the valley (Interviewee 16).

Resource Depletion

The long history of ruby mining, particularly in Mogok has lead to a major decline in ruby deposits. The most accessible surface-layers have been largely depleted and traditional key deposits may soon become completely exhausted. Miners and mine owners have stated that mining operations have become increasingly challenging and costly due to the necessity to mine deeper and harder to access deposits (Irwin, 2016, p. 43). In an interview in 2008 Dr. U Kyaw Khine, the director of the Kyaw Win Tun Gem Company stated that "[the] ruby mines are getting deeper and deeper, so now we must use 20 men for the work that formerly 10 men could do” (The Myanmar Times, 2008).

The increase in mechanized mining due to this depletion has many local residents worried about the impact it will have on their access to water as well as general environmental concerns. There is also some indication that mining using explosives, used in tunnel mining, can damage the quality of gemstones and many rubies end up broken during the extraction process (Hughes, 2014).

4.1.2 The Natural Environment of Afghanistan

Due to do the high altitude and difficulty reaching the mines, mining communities or teams are relatively small and are said to have little environmental impact (Carter 2018; Marty, 2016). The extractive operations in Sar-i-Sang themselves are simple, crude, tunnel mines where miners use hand-operated jack hammers and dynamite to remove

the lapis lazuli from the hard rock (Marty, 2016). There is very little information published regarding the environmental impact of lapis lazuli mining, however from the available resources two environmental issues were identified: degradation of the lapis lazuli stones and damage caused by conflict.

The use of explosives to mine lapis lazuli can significantly damage the stone and decrease its value, in some cases anywhere from 30 to 60 percent (Carter, 2016, footnote 393; Noorani, 2018). Government officials like Haji Muhammad Akbar Khalid, an official at the Inspection department of the Ministry of Mines and Petroleum (MoMP,) blame non-professional operations for causing the most damage to the mines and stones (Pajhwok, 2010). However, there is no evidence that non-contracted operations do more damage.

Although there are only a few reports, it is worth mentioning that there have been some instances of environmental damage due to mining conflicts. During a clash between Malek and Ghulam Nassir, "heavy weapons such as DShK [heavy machine guns] and RPG7 [rocket-propelled grenades]" were used which, "started fires which damaged several acres of forested land near the Chor Karya area" (Carter, 2016).

4.2 Environmental Protections

4.2.1 Environmental Protections in Myanmar

In 1994 the National Commission for Environmental Affairs (NCEA) established the National Environmental Policy in an attempt to protect and preserve the natural resources of Myanmar. A central focus of this policy was "the integration of environmental considerations into the development process" (Htun, 2014, p. 29). After the 2008 referendum ("Enacted Referendum Law," 2008) a new constitution was enacted that included specific language of environmental protection and charges the entire nation with this task, stating that "Every citizen has the duty to assist the Union in carrying out the following matters: a) preservation and safeguarding of cultural heritage; b) environmental conservation; c) striving for development of human resources; and d) protection and preservation of public property" (Lynn, 2014).

A National Sustainable Development Strategy (NSDS) was initiated in 2009 that offered a "strategic long term framework for sustainable development" (Htun, 2014, p. 29) The NSDS provided three goals for sustainability: "(1) Sustainable management of natural resources; (2) Integrated economic development; and (3) Sustainable social development" (Htun, 2014, p. 29). Protections within the mining industry were categorized both within the management of mineral resources utilization and integrated economic development (Htun, 2014, p. 29).

Although similar strategy had previously been enacted for over two decades, Environmental Conservation Laws were passed in 2012 in an effort to provide environmental protection guidelines for development within Myanmar, including a framework for the EIC. Concerns of the Conservation Laws included, waste disposal, treatment of minerals, industrial minerals, raw materials and gems, and mineral

resources, however, language of environmental degradations and impact assessment was not explicit. In a broader effort to maintain accountability and enforcement of the extraction industry, environmental agencies were established at the subnational and national level (Lynn, 2014).

Myanmar hosts several agencies and departments tasked with environmental protections and sustainability, the central body being the Ministry of Natural Resources and Environmental Conservation (MoNREC) (American Gem Trade Association, 2017) which formed in 2016 through a merger of the Ministry of Environmental Conservation and Forestry (MoECAF) and the Ministry of Mines. The new Ministry houses the Environmental Conservation Department, the Department of Mines, the Department of Geological Survey and Mineral Exploration, and the Myanmar Gems Enterprise (MGE) (Lynn, 2014; American Gem Trade Association, 2017). When the ministries were separated MoECAF was charged with the oversight of environmental impact assessments (EIC) while the Department of Mines regulated and coordinated mining operations and the environmental affairs sectors (Lynn, 2014).

Due to previously ineffective strategies and continued environment damage, in 2017 MoNREC established new assessment requirements for investment projects, the Environmental Quality (Emission) Guidelines and the Environmental Impact Assessment (EIA) Procedure. The former is an effort to prevent pollution and provide better human health and environmental protections by measuring, “noise and vibration, air emission and liquid discharges” (Burma - Mining and Minerals, 2017), while the latter “specifies the assessments required for projects that could cause environmental and social harm” (Hughes & Toime, 2016). In February 2018, mining laws were updated once again to address many of the previous concerns, one notable enhancement is the requirement to submit various environmental impact assessments such as, the Initial Environmental Examination, the Environmental Impact Assessment (EIA) and/or the Environmental Management Plan ("EMP"), in order to receive a permit for exploration (Platts et. al., 2018).

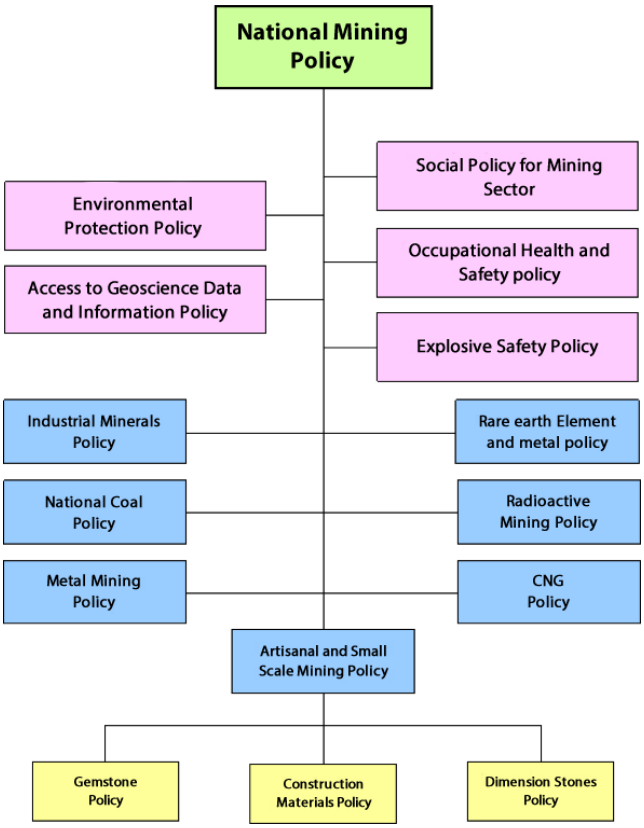
Despite the appearance of continued improvements and legislative changes, the implementation has not seen much improvement. The lack of enforcement, accountability, and knowledge of sustainable mining practices is overwhelmingly considered to be primary reasons for the lack of advancement in environmental preservation (Irwin, 2016; Myint 2018). Contributing factors to the inability to enforce environmental laws come from, “inconsistencies . . . found between the Union-level requirements outlined in the 2012 Environmental Conservation Law and permissions issued at state/region-level regarding permissible distance of mining activities from water sources. There is also a lack of consistency between the Mining Rules and the EIA Procedure.” Other issues include the inability to initiate total reforms in the legal framework, particularly because many of the new laws are simple updates to the outdated 1994 Mining Laws, such as the 2015 Amendments or the 2018 Rules and continue not to provide comprehensive protections (Htwe & Chau, 2018; Interviewee 17).

Some local individual environmental protections are carried out by small mines, miners, and mining communities. There have been reports of some mines utilizing filtration systems that allow water to be recycled and used again in the crushing and separating of gemstones and waste rock, while others use “self-regulating water usage” systems, however, the extent of their presence in mines is unknown (American Gem Trade Association, 2017). Additionally, residents of Mogok have a long cultural history of recycling and adapting materials to be used in multiple ways some examples include, car tires being used as rubber buckets, the aluminum foil from cigarette packs in used to wrap valuable gems when they’re found and fuselages from WWII bombers have been melted down to make structural beams for the mines to prevent cave-ins (Themelis, 2000).

4.2.2 Environmental Protections in Afghanistan

Several agencies, laws and policies have been developed in an attempt to make improvements to the legal framework for environmental protections, many of which focus on the extractive industries (Noorani, 2015). The National Environmental Protection Agency (NEPA) was created in 2005 and is tasked with the monitoring and evaluation of environmental impacts of mining operations, they have the power to reject contacts and license based their findings. The United Nations Environment Programme (UNEP) assisted in the creation of the Environmental Protection Law that was enacted in 2007 which outlined NEPA’s 18 key functions of responsibility addressing issues of pollution control, waste management, biodiversity and natural resource management. UNEP also assisted in the initiation of the Environmental Impact Assessment, cleanup and restoration projects and international environmental conventions (NEPA & UNEP, 2008, p. 9). The Ministry of Mines and Petroleum (MoMP) which has gone by several names over the last century, aims to establish “ an effective governance of natural resources, providing jobs, growing the economy, as well as encouragement of private investments in minerals and hydrocarbon sectors, and raising the level of revenue and improving the capacity of the Government” (MoMP, 2016). Further environmental protections includes The Mineral Law of 2010, which was revised in 2014, and provides regulations for, “the sustainable development of mineral resources, the prevention of waste, and the mitigation of negative Environmental and Social Impacts” (Noorani, 2017).

Image 7: The mineral law and policy framework of Afghanistan



Source: Noorani, 2017

Despite the advancements in environmental protection legislation and agencies, there have been major criticisms regarding their practical application. Within the mining industry broadly, one primary concern is the conflict of interest that is presented by MoMP "tak[ing] the lead in preventing and monitoring harmful environmental impacts" (Global Witness, 2013, p. 12), because of their role in contracting mines to private companies. Some say that while NEPA has independent power to monitor and evaluate environmental impacts, they often rely on MoMP reports rather than conducting their own inspections ("Global Witness, 2013, p. 12).

Compliance and enforcement have also been cited as issues within the extractive sector. The MoMP mandated an exploration plan, a feasibility study, and Environmental and Social Impact Assessments (ESIA) with a corresponding Report (ESIR) as a preliminary requirement for all mining operations before licenses can be administered. However, a 2015 study reported that of the five largest mining companies active in Afghanistan, not one had satisfied these legal requirements (Noorani, 2015; Global Witness, 2013; Noorani, 2017). Other areas of concern in the mining laws include:

- The bidding company pays for eSIAs and Environmental and Social Management Plans (ESMP), presenting a conflict of interest when they are compliant.

- ESIAs are not required to engage in land explorations, which can still be damaging to the environment.

- Land rehabilitation is mentioned with vague details regarding the restored state of the land (Global Witness, 2013, p. 8).

With specific regard to lapis lazuli mines, there is seemingly no oversight from national authorities. One reason for a lack of regulation has been ongoing conflict in the region and disagreements over the legality of mining operations. For example, when the Lajwardeen mining Company won a bid to legally mine in Badakhshan, a conflict broke out between Commander Abdul Malik who controlled the mines and Zalmai Mujadidi, who backed Lajwardeen (Noorani, 2017). Other possible reasons could be because the Sar-i-Sang mining region is remote and difficult to access due to the treacherous mountain passes and lack of paved roadways.

Chapter 5: Human Health Impacts of Colored Gem Mining

This chapter demonstrates the extent to which mining rubies in Myanmar and lapis lazuli in Afghanistan effects human health and safety. By examining three subcategories including: the impact of mining in human health, the state of food security, and the state of water security, a clearer picture is provided of the various impacts of mining on physical well-being as it pertains to human security.

5.1 Human Health Risks

5.1.1 Human Health in Myanmar

Ruby mining is a dangerous and laborious profession, which can present significant impacts on human health and safety. “This is especially true of artisanal mining, which, by definition, is characterized by rudimentary techniques that are often hazardous, labor-intensive, disorganized, and illegal (“Mining, Gender, and the Environment”, 2004). Tunnel mines can reach up to one-kilometer underground but are not often dug or maintained with the supervision of trained engineers and support beams are often insufficient or nonexistent (Interviewee 17; Irwin, 2015; “Chancing Death,” 2015). The lack of structurally sound mines commonly causes tunnels and shafts to collapse, fatally injuring or trapping miners (Interviewee 17). The American Gem Trade Association (AGTA) recently sent a delegation to a Mogok ruby mine and did witness ruby mines that were well lit and structurally sound, however the overall preponderance of evidence suggests that generally this is not the case (2017). There are also concerns of mines flooding during the rainy season, which present potential drowning and cave-in risks.

In Mogok, miners are subject to serious injury or death from explosives, electrocution from hanging wires and falling debris as well as cave-ins (“Chancing Death,” 2015). Many miners suggest that the use of illicit homemade explosives is prevalent because legal explosives available from the government are said to be too strong within the small tunnel blast areas (American Gem Trade Association, 2017).

The most common injuries miners sustain are musculoskeletal injuries. Miners do have a higher risk of contracting infections when working in mines where the ground is clay if their wounds come in contact with the clay (Interviewee 16). Most sources cite that miners do not wear protective clothing, this is due to a lack of priority placed on gear, barriers to accessing gear because of poverty, and “pragmatic calculations” regarding the effectiveness of the gear (Myint, 2018; Interviewee 16). The AGTA delegation did observe that miners had access to hard hats and rain boots however it was not indicated if workers took advantage of this; a finding, which counters the vast majority of other published accounts. A lack of posted safety regulations has also been cited as an

inadequacy of safety precautions (American Gem Trade Association, 2017; Interviewee 17).

Air quality is also a concern within in tunnel mines. The use of explosives in mining exposes miners to mineral dust inhalation, which has the potential to cause respiratory issues or silicosis when silica dust is inhaled. Silicosis can compromise the immune system of miners, increasing their susceptibility to tuberculosis or HIV, diseases which have been reported across the Myanmar mining industry (Burma's Gem Trade, 2008; Interviewee 17). This research cannot conclude if these issues are significantly present in the ruby extraction sector, but the lack of protective gear certainly does increase concerns of dust exposure.

Artisanal (individual) miners are often at a higher risk for injury or death because of the illegality of their mining. Artisanal miners are often bound by poverty and their inability to procure mining licenses themselves, and therefore generally engage in more dangerous mining practices such as, mining in secret at night; not observing safety precautions, such as using support beams; and facing increased problems with cave-ins and floods (Interviewee 16). There is also concern for the lack of safety precautions in all-mining operations regarding the safety of children. It is not uncommon for children to fall into mines.

Healthcare or emergency health services are not provided in mining regions (Myint 2018). Despite national health care system improvements in 2014, there has been no mention of healthcare in mining areas.

5.1.2 Human Health in Afghanistan

Due to the high risk of earthquakes in the Sar-i-Sang region, mines are generally soundly reinforced although they are rarely inspected (Carter, 2018; Interviewee 22). Dynamite and recycled explosives, including unearthed landmines, are the most common method to extract lapis lazuli from within mines (Land of the Enlightened, 2016; Carter, 2018). Despite the use of volatile and unpredictable incendiary devices, workers are rarely seen wearing safety equipment and often directly handle the explosives with no training (Boone, 2009; "Lapis Lazuli mining in Sar-i-Sang," 2007). The Afghan mining industry is broadly poverty driven, compounding issues of informal and unregulated extraction efforts (Noorani, 2015). The most common injuries occur from malfunctioning and misused explosives, improper ventilation and dust inhalation (Carter 2018; Interviewee 22). Improper ventilation is specifically dangerous because explosives consume the oxygen in the tunnels, which can be fatal for miners. While there have been no studies conducted with lapis lazuli miners specifically, there are larger implications that the inhalation of mineral dust from mining with explosives can cause silicosis.[2] Inadequate or nonexistent medical care and first aid facilities on site magnify these concerns (Noorani, 2015).

[2] Silicosis is caused by exposure to respirable crystalline silica dust. Crystalline silica is a basic component of soil, sand, granite, and most other types of rock, and it is used as an abrasive blasting agent. Silicosis is a progressive, disabling, and often fatal lung disease. Cigarette smoking adds to the lung damage caused by silica (OSHA, n.d)

Miners face additional risk outside of the mines as well due to the difficult terrain leading into the tunnels while carrying backpacks full of lapis lazuli rocks down the nearly vertical side of the mountains (Rodriguez, 2018). Once they reach the collection points, armed guards search the miners for smuggled stones (Land of the Enlightened, 2016)

5.2 Food Security

5.2.1 Food Security in Myanmar

Little information is published regarding issues of food security near Myanmar's ruby mines, however there is some evidence that mining can impact the viability of farmland due to the water quality and the land space that mining operations take up. More prevalent issues concern how mining areas are in more remote areas without large agricultural sectors, requiring food to be imported from other regions in Myanmar. This has forced food prices to be much higher around mining areas, threatening the 3sustainability of mining communities (Myint, 2018). Some larger-scale mining operations provide employees and their families with food and homes (Interviewee 18), while miners are forced to invest their own money into community development including agriculture and food production in other instances (American Gem Trade Association, 2017).

5.2.2 Food Security in Afghanistan

Food security is not impacted directly by mining other than some occurrences of conflict induced land degradation. However, the land surrounding the mines is not conducive to self-sustaining agriculture, which causing rampant food insecurity. The only arable land in this region is the Kokcha valley which only provides a narrow strip of land where some crops can be planted using terrace farming (Interviewee 22). Families also keep some cows and yaks in the surrounding communities, but these sources are not sufficient to sustain life in these areas and so food has to be imported, at a high cost to local families.

There are several accounts of investors and mining companies providing food to their employees, although this research has found it inconclusive that this is sufficiently sustainable (Carter, 2016, footnotes 205, 206, 396).

5.3 Water Security

5.3.1 Water Security in Myanmar

Water security has been affected by the pollution mining has added into water sources. The excess silt and rock wastewater found in Mogok rivers causes a decrease in water quality while the large quantity of water used can decrease the availability of water supplies near mining sites as well as to communities downstream (Myint, 2018). Some mines have been found to recycle their water using filtration systems and others have been found to institute self-regulation of water usage, however the extent to which

these practices are used and their effect on the availability of clean water is unclear () and there are no apparent water quality testing practices in places around mining sites (Myint, 2018; Irwin, 2016). Other interviews have indicated that water quality in mining areas is generally poor and can remain stagnant, breeding mosquitoes (Interviewee 16).

5.3.2 Water Security in Afghanistan

One of our interviewees stated that lapis lazuli mining has no impact on the water security in Afghanistan (Interviewee 22).

Chapter 6: Human Rights Impact of Colored Gem Mining

This chapter explores the impact the extraction of lapis lazuli in Afghanistan and the extraction of rubies in Myanmar has on the respect for the human rights of affected local populations. Review of the human security principles outlined by the United Nations presents five relevant components related to extractive industries, indigenous and minority rights, workers' rights, women's rights, children's rights, and freedom from violence, which have been grouped under a singular Human Rights Impact category (Gomez and Gasper, 2013.) This section will provide an analysis of security for both of the case studies within these five components and will conclude by assigning a Jewelry Development Impact Index score and by providing an explanation for the score generated.

6.1 Workers' Rights

6.1.1 Workers' Rights in Myanmar

Safety of Working Conditions

There are two different categories of ruby mining common in Myanmar. The first includes large-scale operations, which are run by companies awarded contracts through the Burmese government. The second includes artisanal mining operations, which are typically run by local families who keep their mining locations secret from the state (Interviewee 16; Interviewee 17). The conditions within these two types of mining vary widely, and thus present very different realities for miners.

In both large and small-scale operations, the safety of mines and mining practices has been the focus of some concern. Many sources cite a lack of safety equipment, including hardhats, masks, and ventilation systems which make miners more susceptible to injuries and infections, such as musculoskeletal injuries and silicosis (American Gem Trade Association, 2017; Interviewee 16; Interviewee 17). Yet it is not just an absence of safety equipment that presents hazards, but also the use of dangerous tools. Homemade explosives are sometimes used in ruby mining as a means to separate rubies from other rock formations (American Gem Trade Association, 2017). This presents significant danger to users, as homemade explosives are more likely to be inconsistent and/or malfunction. Large companies specifically have been charged with negligence by some who say that mining companies have failed to post signs around tunnels and pits warning of the dangers of entering the mines, although more recent attempts to publicize these dangers have been attempted through the use of media (American Gem Trade Association, 2017; Interviewee 17). While this critique is not relevant to artisanal mines, as these are usually family operations, the secretive nature of artisanal mines makes them more susceptible to hazardous conditions as they are not subject to any regulations and as artisanal miners sometimes employ risky behavior in order to keep their mining operations hidden from state actors (Interviewee 16). These

behaviors can include tunneling at night, not using water pumps during the rainy season, and inadequate support beams in the tunnels, which are associated with higher rates of cave-ins, tunnel collapses, and drownings. These factors contribute to high rates of mining accidents in Myanmar's ruby extraction industry (American Gem Trade Association, 2017; Interviewee 16; Interviewee 17; Human Rights Watch, 2008).

Prevalence of Forced Labor

It is unclear how prevalent forced labor is in ruby extraction. A number of reports have cited human trafficking as a major issue within extractive industries (Arianayagam and Sidhu, 2013; Yenkin and Marcinec, 2012; Human Rights Watch, 2018; Bureau of International Labor Affairs, 2014; Shortell and Irwin, 2017; Guest, Wachenfeld, and Bansal, 2017). Forced labor in ruby mines was a huge concern during military rule of the SPDC and more recent reports suggest that this is still the case. However, little detail has been provided on how it is conducted, where it occurs, and who is involved. Additionally, those interviewed for this report suggested they were not currently aware of the presence of forced labor in ruby mines (Interviewee 16; Interviewee 17).

Fair Compensation

The existence of fair compensation for work in mining companies is similarly contested and also requires significant complexity of analysis. A recent report by the AGTA showed that although minimum wage standards were established in 2015, payment of wages to miners is lacking and, in many cases, outright ignored (2017). Wage standards in Myanmar require employers to pay employees a minimum of $3 per day, but most mines in Myanmar do not pay this rate (Interviewee 18; American Gem Trade Association, 2017; Irwin, 2016). Miners typically are paid either a percentage of the value of the gems they find, which permits great fluctuation in wages, or are paid only at the completion of their six month contract, and often at a lower rate than promised. However, a minority of mines in Mogok does treat employees better (Irwin, 2016). A couple mines in the area can pay miners up to $250 a month with opportunities to earn commission on exceptional gemstones found.

Despite the existence of unfair, and sometimes deceptive, wage payment, it is important to look at this occurrence with a broader comparative analysis. While low wages are certainly a cause for concern, ruby mining tends to occur in locals where alternative livelihoods are not available or pay significantly less (Interviewee 16; Interviewee 3). Some estimates suggest that being a ruby miner can pay an individual three to five times more than they would make working in another local profession (Interviewee 16). Thus, the income generated from mining is hugely significant to Burmese citizens. It has been noted that people travel from all over Myanmar to take advantage of the opportunity to earn money in ruby mines (Interviewee 3; Pardieu 2018; Themelis, 2000). Additionally, the existence and prevalence of artisanal mining provides evidence that the mining of rubies is a primary, or at least secondary, source of valuable income for local Burmese families (Pardieu 2018; Interviewee 16; Interviewee 17).

Ability to Advocate

The evidence collected by this study suggested that there are considerable impediments to miners being able to advocate for themselves with their employers (Irwin, 2016; American Gem Trade Association, 2017; Spohr, Wolfrum, Borssen, Danz, and Renner, 2016). While the repression of calls for change has not been explicitly tied to the mining of rubies, it has been noted in other extractive industries in Myanmar. Irwin's report suggested that local miners are sometimes able to use the Myanmar Gems and Jewelry Entrepreneurs Association (MGJEA) to assist them negotiate with the government and is therefore perceived to be "like a bridge" in terms of advocating for changes, yet some have suggested the support MGJEA actually provides to small companies and groups of miners is slim (2016).

6.1.2 Workers' Rights in Afghanistan

Safety of Working Conditions

Lapis Lazuli mining in Afghanistan is an extremely dangerous profession, as safety has received little prioritization. Accidents in the mines are both common and dangerous (Interviewee 22; Spohr, Wolfrum, Borssen, Danz, and Renner, 2016; Noorani, 2015; Nelson, 2007; Boone, 2009). One reason for this is Afghanistan's geographic location. Situated right on top of a convergent zone, earthquakes are extremely common and often lead to tunnel collapses, despite an explicit effort to soundly reinforce the (Interviewee 22). These collapses are especially dangerous as most mines are built with only one entry and exit; meaning there is no escape route for miners if the mouth of the mine collapses (Nelson, 2007). The absence of safety equipment available at the mines means that miners trapped inside the tunnels during a collapse must be dug out by hand, which takes a significant amount of time and decreases the miners' likelihood of survival. Other safety equipment such as hardhats, joists, and ventilation systems are also lacking (Noorani, 2016; Interviewee 22; Carter, 2018). Additionally, although lapis lazuli mining was traditionally mined using a technique of temperature manipulation, it is now primarily mined with homemade explosives (Bakhtia and Bariand, 2011; Interviewee 22; Boone, 2009; Carter, 2018). These explosions are associated with injuries such as musculoskeletal injuries, tinnitus, and suffocation; as lack of ventilation keeps oxygen from being resupplied quickly enough after explosions burn up the oxygen in the tunnels. Serious injuries often result in death, as no medical facilities are located anywhere near the mines (Noorani, 2016). The Mineral Law of 2010 required companies with mining contracts to fill out the Environmental and Social Impact Report (ESIR) which include sections on safety measures, but this has largely been disregarded (Noorani, 2016).

Image 8: Four lapis lazuli miners prepare to set off explosives

Source: Carter, 2016

Once the lapis lazuli has been brought out of the mine shaft, locals are employed to carry the large stones on their backs down the steep and mountains; terrain so treacherous that most mules are not even able to navigate safely (Noorani, 2018; Ramirez, 2016). The men typically carry the heavy stones for hundreds of meters down to the mules waiting where the paths are more stable and less sharp. Transportation of these stones in this manner is a dangerous activity, which can lead to death and/or debilitating injury.

Prevalence of Forced Labor

The data collected for this report was not able to neither confirm nor deny the existence of forced labor or human trafficking connected to lapis lazuli mining.

Fair Compensation

Similar to the case of ruby mining in Myanmar, the compensation miners receive for their work requires a broader understanding of the socioeconomic conditions within mining communities. By international standards, the wages lapis lazuli miners receive are meager. Afghanistan lacks a minimum wage, which has allowed organizations with mining contracts to pay miners very little while subjecting them to long working hours (Noorani, 2016; Spohr, Wolfrum, Borssen, Danz, and Renner, 2016). Typically, a miner will make about one or two dollars a day, although a lucky find could increase that amount to up to ten dollars (Interviewee 22; Nelson, 2007). This payment is provided to miners in a variety of different options; from periodic allowances to lump sums depending on negotiations between those who have control over the mines and those who bring in teams to perform sourcing (Noorani, 2018.)

These low wages paired with woefully inadequate housing, which often lacks toilet facilities and bedding, and other political and economic factors have contributed to the communities around lapis lazuli mines being some of the most poverty stricken in Afghanistan. The poorest people may work hard in the mines all day long and still not be able to afford a single meal (Noorani, 2018). Despite low and inconsistent wages,

there are virtually no other job opportunities available for locals in Sar-i-Sang, as the amount of arable land is minimal, limiting agricultural pursuits, and the surrounding areas are all very rural, limiting other kinds of professions (Interviewee 22; Nelson, 2007).

The lack of arable land and cold climate means that most families are not able to survive on subsistence farming alone, while the remoteness of the mining communities means the cost of basic necessities is driven up by the expenses of transportation. What this means for local communities and families it is "almost impossible to survive" without access to income from lapis lazuli mining (Interviewee 22).

Ability to Advocate
Given the unique geo-political conditions in Sar-i-Sang, it is extremely difficult to determine if miners have the ability to advocate for themselves and, if they do, how much space is afforded to them for this. However, it has been noted that where the Afghan government has attempted to interfere with locals' abilities to mine, local men have joined and/or threatened to join insurgent groups in the area (Interviewee 22). This form of resistance suggests there are few avenues for peaceful advocacy and negotiation between miners, mining companies, and the state. However, it does show that miners have been able to express some form of their desires and have some tools at their disposal to fight for their livelihoods - although these are only in the form of last-ditch attempts.

6.2 Indigenous and Minority Rights

6.2.1 Indigenous and Minority Rights in Myanmar

Indigenous/Minority Exclusion and Exploitation
The post-colonial history of Myanmar has been rife with tensions between the majority ethnic group, the Burmese, and the more than 135 other minority ethnic groups (Themelis, 2000; United States Institute of Peace, 2017). The several decades' long conflict with more than ten armed ethnic groups has waned in recent years, yet the violence and abuses have not yet dissipated. One of the most prominent forms of abuse the SPDC used against ethnic minorities was forced labor in natural resource extraction. While slave labor was not confined solely to ruby mining, it was systematically used to facilitate "forced labour … and the ethnic cleansing of opposition minority groups living near sources of mineral wealth" (Arianayagam and Sidhu, 2013; McDougall, 2010).

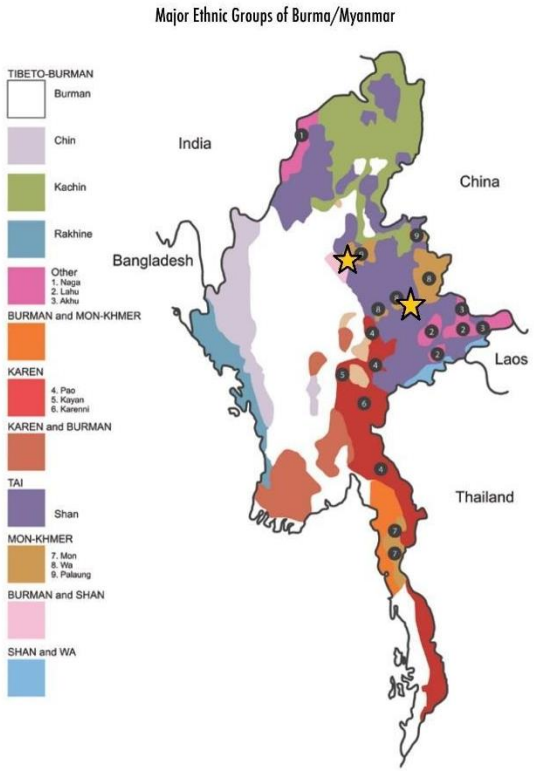
Faced with broad international criticism and subsequent bans placed on ruby imports by the United States and others, the Burmese government has been forced to institute reforms, which are still underway (Shor and Weldon, 2009; Pardieu 2018; Interviewee 16; Interviewee 7; Interviewee 18; Interviewee 17). Since ruby mining is in the middle of a significant shift and much of the mining activity has been temporarily halted, as has been outlined in the sections above, the degree to which forced labor is being used in ruby mining in Myanmar is unclear.

All of the individuals who were available for this project said they had yet to see forced labor within the mines and were unaware of its continued existence. Given the high degree of scrutiny directed towards forced labor in ruby extraction, this is a particularly striking improvement.

Heightened Rates of Violence

Violence against indigenous and minority groups related to ruby extraction has been noted to primarily take the form of forced displacement. The spread of mining has been linked to significant forced displacement of local populations all over the country (Spohr, Wolfrum, Borssen, Danz, and Renner, 2016; Guest, Wachenfeld, and Bansal, 2017). And open cast ruby mining, in contrast to underground ruby mining, is known to take up a lot of surface area, which could lead to locals being pushed out (Interviewee 17). Although this study was unable to determine definitively if land confiscations were tied directly to ruby extraction, the patterns of forced displacement of local populations in extractive industries and the high number of ethnic groups in the mining areas of Mogok and Mong Hsu present a cause for concern (Spohr, Wolfrum, Borssen, Danz, and Renner, 2016; Guest, Wachenfeld, and Bansal, 2017; Themelis, 2000).

Image 9: A map of ethnic groups in Myanmar. Stars added by authors to indicate Mogok and Mong Hsu mining areas.



Source: The Border Consortium, 2013

Benefits to Indigenous/Minority Groups

The benefits provided to indigenous and minority groups in Myanmar are slightly more apparent. Firstly, it should be noted the Burmese government has used gem mining as a

tool to support peace negotiations (American Gem Trade Association, 2017; Pardieu 2018). By offering access to, and sometimes ownership of, ruby mines in Mogok to armed ethnic forces, the Burmese government aimed to incentivize peaceful resolution through opportunities for wealth creation. These concessions served to provide potentially substantial benefits to ethnic minority groups in Myanmar.

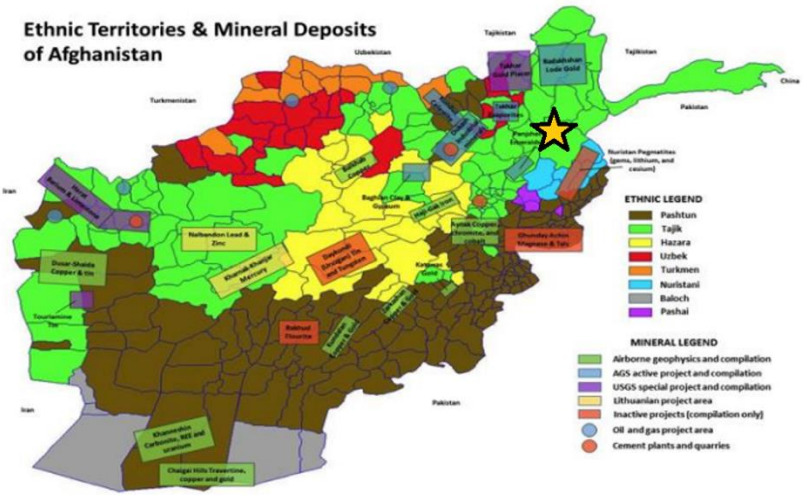
Some groups have expressed frustration that profits made from the mines go to the central government and are not invested back into mining towns and local people (American Gem Trade Association, 2017; Lynn and Oye, 2014). Some regional governments, like those in Shan state, have called for a portion of the profits from mining to be funneled into local government bodies through a more decentralized tax system, which would allow for the development of local areas where indigenous and ethnic minority populations live. To date, restructuring is underway but still has yet to be introduced.

6.2.2 Indigenous and Minority Rights in Afghanistan

Virtually no information about the effect of lapis lazuli mining on minority groups in Afghanistan and Badakhshan is available. The dominant ethnic group in the area where lapis lazuli is mined is the Tajiks, but there has long been a presence of Uzbeks there as well (University of Washington, 2015). More recently, new ethnic groups have been introduced to the area, as armed foreign actors, such as the Taliban and ISIS, have tried to gain footing in Badakhshan (Interviewee 22).

We were able to find out, however, that displacement is essentially a non-issue related to lapis lazuli mining specifically for two main reasons: first, lapis lazuli mines are located in rural mountain areas where most people do not want to live and second, these mines have been operating for a few thousand years and so people know not to move too close to them.

Image 10: A map of ethnic groups in Afghanistan. Star added by authors to indicate the Sar-i-Sang mining area



Source: University of Washington, 2015

6.3 Women's Rights

6.3.1 Women's Rights in Myanmar

Economic Opportunities

In the case of ruby mining in Myanmar, the roles women play are diverse, demonstrating a high degree of variation in how mining impacts women and women's security. This is certainly evident in economic opportunities available to women near mining communities. Women are employed throughout the ruby supply chain, from digging in the shafts to subsistence mining to selling rubies in the markets as merchants (Interviewee 18; Themelis, 2000; Interviewee 17; Pardieu 2018; EarthRights International, 2004; Irwin, 2016; Lucas and Pardieu, 2014). In artisanal mines, women generally work alongside their husbands, performing similar forms of labor in order to collectively provide for their families (Irwin, 2016). But in companies, which hold government contracts, women are generally not provided equal employment opportunities.

Instead, companies actively encourage women to fill subsistence-mining positions as hand-pickers; where women sort through the mine waste to uncover any gems, which may have missed (Pardieu 2018; Irwin, 2016; Lucas and Pardieu, 2014). Whatever these hand-pickers find there is theirs to keep. Pardieu noted that handpicking serves as an informal social security system which provides essential income to support families and that this kind of arrangement does not exist anywhere else in the world (2018). Considering this, the importance of handpicking as a beneficial financial opportunity should not be understated. However it is worth drawing attention to the fact that "when women are sometimes included, they only receive what is leftover" (Interviewee 16).

In contrast to some forms of exclusion women experience in the more labor-intensive stages of ruby production, women are heavily represented as merchants in the supply chain (Interviewee 18; Themelis, 2000). In fact, women have long been lauded in Myanmar for their prowess in trade and salesmanship (Ehrmann, 1957). Burmese women are the "bosses of the gem trade" and sales cannot be considered final without the approval of the head female of the family (Ehrmann, 1957).

Image 11: A female merchant assessing a ruby at the market

Source: Lucas and Pardieu, 2014

The Rate of Violence Against Women (VAW)

Another occupation women have been cited as participating in related to mining activities is providing sexual services to miners (Interviewee 16; Arianayagam and Sidhu, 2013; Interviewee 17; Hughes and Ward, 1997). As miners "generally spend their money on alcohol and women," sex work presents a financial opportunity (Interviewee 16; Interviewee 17; EarthRights International, 2004). Although this can be interpreted as presenting an economic benefit to women who actively choose to pursue sex work as an occupation, it can also present significant risks to physical and sexual health if violence is in any way involved, as some research has suggested (Interviewee 17; EarthRights International, 2004). According to EarthRights International, "The rapid in-migration of men to mining sites leads to increased demand for sexual services," thus this is correlated with increases in sexual violence (EarthRights International, 2004).

Other forms of violence are also relevant, such as domestic violence, which is associated with strains such as financial difficulties and conflict near the mines. The extent to which gender based violence is relevant near ruby mines has yet to be fully quantified by scholars and experts, however, despite recognition of it as a problem.

Women in Leadership

Regarding the leadership roles of women, it is clear some groups of women have a significant say in the ruby industry as the leaders of merchant transactions. Although this is hugely significant and should not be understated, women's participation in other stages of the supply chain appear limited, and their contributions are undervalued (Ehrmann, 1957; Themelis, 2000; Interviewee 17; Interviewee 16). The broader role of women in the ruby mining communities is not entirely clear, in terms of political and religious influence.

6.3.2 Women's Rights in Afghanistan

There is limited scholarship and expert understanding of women's general position in and around lapis lazuli mines. It is generally understood that "women are affected differently, and often more negatively, than men by extractive industries operating in or close to their communities" in terms of safety as well as participation in economic, social, and political endeavors, but the lack of nuance from primary and secondary sources will certainly be reflected in this analysis (Horin, 2014).

Economic Opportunities

Women have been virtually entirely excluded from participation in lapis lazuli production. Women are not involved in the mining, the refining, or the sales of the stones and are largely relegated to the confines of their houses (Interviewee 22). The degree to which women's mobility is limited has been increasing in recent years due to cultural shifts towards conservatism that have accompanied the introduction of Wahhabism to the area. International organizations have responded to women's economic exclusion by sponsoring programs to teach women how to carve lapis lazuli stones into beads, which could be sold for a profit, but this program never reached the people on the ground (Pardieu 2018; Interviewee 22).

The Rate of Violence Against Women (VAW)

Broadly speaking about extractive industries across Afghanistan, mining has contributed to notable incidents of violence against women in three primary ways. First, the in-migration of miners during peak mining seasons and of male fighters associated with armed groups has contributed to decreased security for women (Noorani, 2017; Horin, 2014; Carter and Vittori, 2016). Threats of harassment and assault presented by the increase in men have caused women's freedoms to be curtailed by men who aim to protect them. Furthermore, new values of conservatism brought with these influxes of men have caused women's issues to be further deprioritized and women have experienced increased cultural and structural violence, including limited access to food, education, and healthcare, as a result (Horin, 2014; Interviewee 22).

Second, the out-migration of male family members for work creates a number of specific vulnerabilities for women, including the lack of perceived protection which makes some women appear to be easier targets for abuse and further restrictions on women's mobility. As women are not permitted to travel alone, the departure of male relatives for work means that women are not able to venture out, even to obtain necessities such as food and medical services (Horin, 2014; Carter and Vittori, 2016). Third, continued conflict and corruption surrounding lapis lazuli mining has contributed to the diversion of funds away from channels, which could finance development projects, such as health clinics (Carter and Vittori, 2016). These foregone projects allow structural violence against women to continue unabated.

Women in Leadership

At this point it appears that women are not occupying leadership positions in economic, political, religious, or other spheres. This result should not be surprising considering the systemic exclusion of women listed above.

6.4 Children's Rights

6.4.1 Children's Rights in Myanmar

Violence Against Children

Child labor in ruby mining is reported to be at a low level (American Gem Trade Association, 2017; Pardieu 2018; Interviewee 16). Where it occurs it generally takes one of three forms: children mining within their family unit, teenagers working to care for themselves, and children working with a third-party adult (Interviewee 17). While children mining with their families is by far the most common form of child labor, child exploitation, often at the hand of third-party adults, is certainly occurring (Interviewee 17; Leber, 2010; Bureau of International Labor Affairs, 2016; Guest, Wachenfeld, and Bansal, 2017).

With low levels of government oversight and a high degree of informal mining, the conditions in and around ruby mines are often conducive for the exploitation of minors. Typically, although certainly not exclusively, boys are forced to perform dangerous work in the mines while girls are forced to provide sexual services to miners (Interviewee 17). It is assumed that children are exposed to other forms of violence, such as domestic violence, which has been noted to be prevalent in Mogok, but data regarding the scope of this is insufficient to draw conclusions from (EarthRights International, 2004; Interviewee 16).

Protection from Danger

While questions of exposure to violence focus on actions taken which produce harm, questions of protection from danger focus on responsibilities to act, which are undertaken or neglected. One area where this has been specifically noted is in where children are not provided safe spaces while their parents are at work. Female subsistence farmers often do not have access to child care services and, as the ones expected to be the caretakers, must bring their children to the mines with them in order to work (EarthRights International, 2004; Interviewee 17; Guest, Wachenfeld, and Bansal, 2017).

While the women work, the young children often play unaccompanied around the mines, where many hazards are present. Accidents, such as children falling into open pit mines, are relatively common and often lead to injury and, in the worst cases, sometimes result in death. Additional dangers are present in artisanal mines, where the majority of minor miners work (Interviewee 17). As stated in the section on worker's rights, artisanal mines are often more hazardous given their evasion of regulations and the risky behaviors used to operate them (Interviewee 16). The dangers stemming from lack of protective gear, inadequately supported tunnels, and dangerous explosives all present specific threats to the safety of children.

Image 12: A child sits while their mother sorts through waste to find rubies

Source: Lucas and Pardieu, 2014

Attention to Developmental Needs

Information regarding support for the developmental needs of children has proven to be less accessible. Yet some information can still prove informative. Primary schools are accessible to Burmese children in Mogok and have been for some time (Interviewee 17; Themelis, 2000). The school system has been critiqued by some local families who argue that there are not many employment opportunities for locals outside of ruby mining and so it makes more pragmatic sense for children to be spending more time working in the mines early on, making money and developing skills, than wasting their energy in the classroom. Other factors impacting children's wellbeing which should be considered within this sub-category but which have insufficient evidence include healthcare facilities to assist children grow up healthy; food provision, as nutrition is vital to maintain healthy growth in young bodies; and play time, which is an important part of cognitive development.

6.4.2 Children's Rights in Afghanistan

Violence Against Children

It is fairly uncommon to find minors working in the lapis lazuli mines of Sar-i-Sang, because the labor is so intensive that it requires bodies working there to be relatively mature (Noorani, 2018). Adolescents have been known to perform labor in the mines however, but this does not necessarily suggest the existence of exploitation. For the most part, these boys are working alongside their fathers in order to learn the trade of lapis lazuli mining to prepare for their own futures (Interviewee 22). It seems that in most other cases, the boys are orphans who have to work in order to survive and therefore seek out employment in the mining industry, but no studies have yet attempted to determine if forced labor of children is occurring here.

Girls, on the other hand, do face some specific forms of structural and cultural violence. Although quantitative and qualitative studies here too are lacking, it is apparent from the experiences of women in the areas surrounding lapis lazuli mines that girls are largely excluded from broader society (Horin, 2014; Carter and Vittori, 2016; Interviewee 22). Their freedom of movement is curtailed, their access to education has been virtually eliminated, and gendered systems of food allocation in a place already

coping with food scarcity means that the dietary needs of girls are not prioritized, leading to malnourishment.

Protection from Danger
While no research thus far has explicitly discussed the realities of mining life for children in Sar-i-Sang, it is possible to extrapolate, from previous sections in this chapter, some areas where children should be afforded special protections but are likely not receiving them. For example, given the high degree of occupational hazards male miners face while performing work, it can be reasonably assumed that boys who work in the mines are not receiving any additional safety precautions and therefore sustain similar rates of significant injuries; injuries which have the potential to have longer-lasting effects with younger children who are still in the process of physical and cognitive development.

Attention to Developmental Needs
The prioritization of the developmental needs of children is certainly lacking in many ways. No schools or medical facilities are located within the mining communities (Interviewee 22; Noorani, 2016). It is unclear to what extent food scarcity is impacting children broadly, although, as previously stated, it is apparent that the dietary needs of girls have been deprioritized (Horin, 2014).

6.5 Freedom from Violence

6.5.1 Freedom from Violence in Myanmar

A quick glance back at image 9 makes it immediately apparent that the ruby mines of Mogok and Mong Hsu are situated in areas with high populations of Shan, Kachin, Mon, and Burmese peoples (The Border Consortium, 2013). Given that all of these ethnic groups are considered to have sizeable armed forces[3] which participated in the conflict that has been raging in Myanmar for the past several decades, it is no surprise that the ruby mines are located in and around recent conflict zones and that these parties often engaged in violent altercations in attempts to seize the mines and finance themselves through supply of this precious natural resource (Irwin, 2016; Human Rights Watch, 2008; Mon, 2017). This was associated with high rates of killings, kidnappings, disappearances, and extortion directed towards local populations. However, considering the current state of affairs in Myanmar today, the frequency and scope of conflict around the mines that pose threats to local populations is not so obvious.

The mines of Mogok have been officially closed for over a year now and the reasons cited for this are often contradictory (Pardieu 2018; Interviewee 16; Interviewee 17; Interviewee 18). Some accounts state that the mines are closed purely in an attempt to update the outdated mining code and make some necessary revisions to increase the

[3] The Shan State Progressive Party, the Kachin Independence Army, the New Mon State Party, and the State Peace and Development Council (originally the State Law and Order Restoration Council.)

support of miners and decrease negative impacts (Pardieu 2018; Interviewee 18.) While others point out that there have been security incidents in the areas surrounding the mines that have contributed to the government ordering them to be closed (Interviewee 16; Interviewee 17). It is not exactly clear what kind of conflict exists at these locations however.

Banditry has been cited as one possible source of conflict while continuations of older conflicts has been cited as another; while the New Mon State Party has signed ceasefire agreements with the Burmese government, the Kachin Independence Army and the Shan State Progressive Party remain outside negotiations (Interviewee 16; Interviewee 17; Mon, 2017; Mark, 2018). In fact, linked to the broader ethnic violence in Myanmar, the Tatmadaw recently launched airstrikes into the Tanai Township, which is a large mining town held by the KIA; highlighting how the control of mines continues to be relevant in this protracted conflict (Mark, 2018). As the true scope of conflict cannot be determined at this time however, it is not possible to determine how free the local populations are from violence associated with violent actors.

6.5.2 Freedom from Violence in Afghanistan

Considering the number of violent non-state actors in Badakhshan, including the Taliban, ISIS, and the Northern Alliance Jihadi group, concerns related to the safety and wellbeing of the general populous are justifiable (Noorani, 2017; Interviewee 22; Carter 2018). Most sources suggest that the intentional use of violence to intimidate local populations is low; no improvised explosive devices (IEDs) are used in the area, no targeted attacks of civilians seem to be occurring, etc. (Interviewee 22; Carter 2018).

Although there are certainly a number of deaths related to combat, these appear to generally not involve innocent civilians (Noorani, 2017; Interviewee 22; Carter 2018). Because of this, the number of people being killed is relatively low. And this makes sense. Those in charge of the mines have a vested interest in not antagonizing local communities and have therefore largely attempted to avoid eruptions, despite the existence of tensions between armed factions (Noorani, 2018).

This does not mean that violence against civilians is not occurring. Fighting has occurred in many towns surrounding the mines and sometimes civilians are caught in the cross fire (Carter, 2016). The Taliban does not actively go after non-partisan citizens, but they do actively hunt down government officials (Interviewee 22). The threat of violence due to affiliation is used as a tool to keep people in line. ISIS' involvement in Badakhshan is still quite minimal, but it is worth noting that where they have been involved in altercations, civilian casualties have been higher (Carter 2018). The Afghan National Police (ALP) have been chronically linked to abuses against civilians, the most obvious during the Malek takeover in 2014 but continuing on after Mujadidi's disposal (Carter 2018). These abuses include beatings, theft, kidnappings, and a variety of forms of abuse. At this time, it is unclear to what extent Commander Malek is involved in and/or contributing to violence against the local populations (Interviewee 22).

Image 13: General Qadam Shah meets with Commander Malek

Source: Carter, 2016

More recent whisperings about escalating tensions in Afghanistan (discussed further in Chapter 7) are relevant here as well. While the Taliban receives funds through lapis lazuli mining to strengthen itself and prepare for future offensives, the future risk of violence against civilians throughout the country becomes more likely (Noorani, 2018; Kramer, 2018; Interviewee 18. Additionally, local men in Badakhshan have begun arming themselves in preparation to retake the mines from Abdul Malek. Predictions suggest that it will not be long before these tensions erupt, increasing the number of experiences where civilians encounter direct and indirect violence.

Chapter 7: Special Issues

This chapter focuses on the special issues that touch on all or several of the four human security pillars we examined for Myanmar and Afghanistan (Governance, Economic, Environment/Health, and Socio-Cultural.) These issues should be considered when developing strategies and initiatives to improve human security in Myanmar and Afghanistan as they add more to the complexity surrounding security with which these countries face related to mining operations.

7.1 Special Issue #1: Growing Demand for Responsible Sourcing in Jewelry Supply Chains

Jewelry and gemstones hold both economic and cultural value in many communities, as well as the global market. However, considering the growing awareness of conflicts and activities of armed groups around the world and the growing awareness of "blood diamonds" as a tool to fuel conflict, "conflict minerals" are starting to catch the attention of governments. Human rights advocates, buyers and sellers of gemstones, and gemstone associations have increasingly called for responsible sourcing measures of minerals and gemstones. Human Rights Watch recently released a report, *The Hidden Cost of Jewelry*, that examined the policies and practices of 13 major jewelry brands on due diligence for responsible sourcing (Becker and Kippenberg, 2018). Within the report, Human Rights Watch found that half of the brands which provided information on due diligence had weak to very weak responsible sourcing policies and practices, while the other half demonstrated moderate to strong policies and practices. Additionally, Human Rights Watch highlighted the information that brands provided and showed how the policies and practices were created and adapted due to the increasing public demand for responsible sourcing (Human Rights Watch, 2018).

Although there are several measures of existing due diligence practices and policies from the United Nations (the Kimberley Process and UN Guiding Principles on Business and Human Rights) and Organization for Economic Co-Operation and Development (OECD) majority of the jewelry brands from the Human Rights Watch report either do not provide information on their due diligence practices and policies or have weak policies and practices (Human Rights Watch, 2018). However, there are several actors who are responding to the growing demand of responsible sourcing. On January 1, 2021 the *Conflict Minerals Regulations* law from the European Union (EU) will enter into force. This law aims to stem the trade of tin, tantalum, tungsten, and gold; minerals the EU recognizes that "sometimes finances armed conflict or are mined using forced labour" (European Commission, 2018).

The Chinese government has similarly created guidelines for responsible mineral sourcing based off of OECD's "Due Diligence Guidance for Responsible Supply Chain of Minerals from Conflict-Affected and High-Risk Areas" for the Chinese state and

privately owned firms to use for investing and trading across the world and in multiple resource sectors (Parsons, 2017). The Dodd-Frank Act from the U.S. and similar laws for the "3TG" mineral sectors (tin, tantalum, and gold) from Rwanda, Congo, and the EU influenced China to implement due diligence practices (Parsons, 2017). In the case of Myanmar and Afghanistan, responsible sourcing is certainly needed.

In December 2017, Cartier, a French luxury jewelry brand, announced its boycott of gemstones from Myanmar due to the Rohingya Genocide (Sherwell & Ungoed-Thomas, 2017). A number of American luxury jewelry retailers have also boycotted buying gemstones from Myanmar in response to the genocide (Zaw, 2017). The International Campaign for the Rohingya and SumOfUs called upon Bulgari, an Italian luxury jewelry maker, to boycott buying and using gems from Myanmar (Lownsbrough, 2017). Even within Myanmar, some gem dealers refuse to buy rubies that come from military-owned mines (Carroll, 2018). Due to the genocide, human rights advocates have labeled Myanmar's gemstones as "genocide gems" in order to promote awareness of the genocide and how revenue from the gemstones from Myanmar have been used to fuel the genocide (Lownsbrough, 2017).

Despite the calls to action and potential sanctions on Myanmar's gems, gemstone sales in Myanmar have not been significantly harmed since many of the gemstones are sold to buyers from China, India, and Thailand (Zaw, 2017). Additionally, the conflict between the Kachin Independence Organization and Myanmar's Tatmadaw is another example of conflict minerals fueling ongoing conflict that investors and actors will need to consider for due diligence measures (Mark, 2018).

In the case of Afghanistan, a report by Global Witness, *War in the Treasury of the People*, sheds light on how the Taliban are funding some of their terrorist activities from profits gained by selling lapis lazuli (Carter, 2016). Although several news outlets ran articles about the Global Witness report, our research could not find a single instance of any other human rights advocacy group (aside from Global Witness) calling for boycotting buying and selling lapis lazuli from Afghanistan. Based on our findings, this may be due to the lack of popular demand for lapis lazuli, but we cannot definitively say why there are not more calls to action from human rights advocacy groups on this issue.

Moving forward, human rights advocacy groups, jewelry brands, gem dealers, and governments must consider how they can promote responsible sourcing of gemstones. Blanket approaches, such as the 2008 U.S. sanctions on Myanmar on banning the imports of jade and rubies, are not effective and can negatively impact miners and buyers who are not associated or involved in funding armed conflicts. It is recommended that governments consult with gem dealers, jewelry brands, and human rights advocacy groups to create measures that target armed groups, prevent negative impacts on those not involved in armed conflict, and promote due diligence measures that can be enforced and regulated.

7.2 Special Issue #2: Restrictions of Myanmar Mines

In early 2016, the government of Myanmar announced it would not renew, extend, and grant mining licenses until by-laws of the Myanmar Gemstones Law are approved (Thiha, 2016). The Ministry of Natural Resources and Environmental Conservation (MoNREC) justified the move as a means to change rules and regulations, and in the case of Hpakant and Lone Kin mining areas, implement environmental protections for mining operations (Mon & Sway, 2016). Other mining areas in Myanmar have seen some renewed and extended mining licenses, but only for small-scale operations (Htwe, 2016). In the case of Mogok, we interviewed a government official who informed us that majority of the mines are closed and are thus unable to operate due to the freeze of renewing and extending mining licenses (Interviewee 18).

According to the information provided by the government official the freeze is affecting the local economy in Mogok. Miners are unable to work, leading many to feel increasingly unhappy with their inability to work. Many companies in Hpakant and Lone Kin were forced to stop mining operations due to fighting between the Kachin Independence Army and the Tatmadaw (Htwe, 2016). Landslides in Hpakant and Lone Kin also factor into the closure of several mines due to the danger and environmental degradation in and around mining areas (Htwe, 2016). The government official informed us that the main priority is to enact changes to the regulations and by-laws of the Myanmar Gemstone Law, but the government of Myanmar is also hoping to freeze out Chinese investment and mining companies (Interviewee 18).

The government official explained that Chinese investors and mining companies have claimed a large stake in Mogok's mines, and have led to fierce competition between local mining companies (Interviewee 18). Chinese companies often do not hire local miners, but instead bring in their labor from neighboring countries. This has led to a cut in profits for Mogok's local community, miners, and economy, as well as a cut in revenue for Myanmar's national budget. Environmental protections have become tied to renewing, extending, and granting licenses as well due to the pressure the government has received from human rights advocates and environmentalists (Mon & Sway, 2016).

The freezing of renewing, extending, and granting mining licenses is causing a negative economic impact in several areas. Due to the cultural significance of mining in Myanmar, this is also causing a negative impact on Burmese citizens to practice a cultural tradition. However, the freeze has a positive effect on collaboration between the Burmese government; state governments in Mogok, Kachin, and other areas; non-government organizations; investors; and local communities. Environmental protections are important, thus the consideration for these protections in mining operations can play a positive role in future development in Myanmar. It is imperative for the Burmese government to enforce these environmental protections and monitor mining operations to ensure the environmental protection guidance is followed in order to prevent further death of miners and environmental degradation.

7.3 Special Issue #3: Rumors of Civil War in Afghanistan

The same government official we interviewed informed us that trust in the U.S. and its armed forces in Afghanistan is falling among Afghan citizens, while the Taliban and Islamic State continue rebuild their forces and launch ambushes on Afghan government forces, government officials, and civilians (Interviewee 18; Sharifi & Adamou, 2018). Currently, the Taliban are openly active in 70 percent of Afghanistan, where they fully control 14 districts and have open physical presence in 263 districts (Sharifi & Adamou, 2018). In Afghanistan's capital, Kabul, the Taliban are present and operation facilitation networks, which allow the Taliban to conduct high-profile attacks (Lamothe, 2018). In the past few years, Kabul has seen numerous deadly high-profile attacks, and in early 2018, there was an eruption of these attacks (Lamothe, 2018). Despite the rise in U.S. special operation raids for Kabul, many fear the Taliban could control Kabul soon. The Taliban and Islamic State intentionally target Afghan civilians as peace talks between the Taliban, Afghan government, United Nations, and the U.S. have failed (Kramer, 2018). Instead of reaching a diplomatic solution, the Taliban and the U.S. government seek victory in the Afghanistan War (Kramer, 2018).

Due to the falling trust of the U.S., the weak government and government forces of Afghanistan, and the rise of Taliban and Islamic State presence and attacks, Afghan civilians fear a civil war is on the horizon (Interviewee 18). Many lapis lazuli mines are controlled by the Taliban and are a small source of revenue for their activities (Global Witness, 2016). The government official we spoke to explained that Afghan civilians, especially small farmers, are gathering lapis lazuli to sell and become rich in order to send their families to Dubai for safety (Interviewee 18). Selling and/or hoarding lapis lazuli also allows civilians to stockpile funds for post-civil war rebuilding of their homes, livestock, crops, and any other goods and property that may have been stolen, lost, or sold during the war. Civil war will negatively impact all development in Afghanistan, and with lapis lazuli funding terrorist activity and civilian relief, the issue of responsible sourcing for lapis lazuli becomes complex and crucial. In the event of civil war, development initiatives for Afghanistan may have to be halted until the war ends. Due to the number of the lapis lazuli mines under the control of the Taliban, the only possible way for the Afghan government to gain control of the mines once more is to defeat the Taliban.

Chapter 8: The JDII Tool and Its Application to the Case Studies

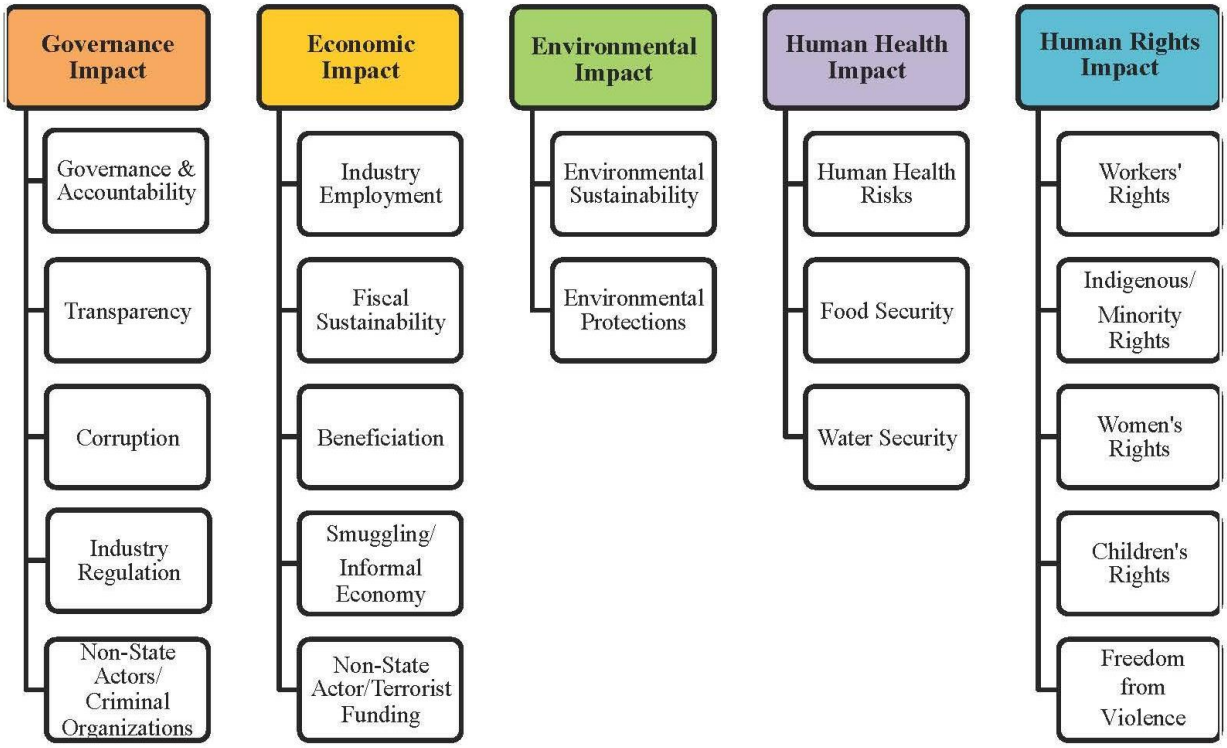
8.1 Methodology, Framework, and Measurement

The purpose of the Spring 2018 Practicum Team's comparative case study is the same as that of the Fall 2017 Practicum Team: firstly, we aim to create a framework for the future development of a Jewelry Development Impact Index; secondly, we aim to craft a system of measurement for the comparison of various cases, and thirdly, we aim to highlight gaps in the available information.

To fulfill these expectations, the authors consulted bodies of literature relevant to extractive industries and security in the cases of lapis lazuli mining in Afghanistan and ruby mining in Myanmar. The texts compiled in the literature include scholarly work from journals, reports from organizations active in the area, and newspaper clippings. To supplement this information, provide additional context, and fill the gaps in the literature, the authors conducted ten interviews with experts in the field. Some of these participants were provided as contacts through connections with the United States Department of State and JOIA Consulting, while the authors found others independently. The participants were carefully chosen in order to maximize the potential perspectives with which would inform this report. The expertise of these participants ranged from state actors to non-state actors, from international observers to local civil society organizations, from gemologists to conservationists to journalists.

To enhance the methodology of the Jewelry Development Impact Index, this report has built on last semester's report by adding in a more complex system of measurement. The first step in this process was to update the conceptual framework. Our team utilized the previous practicum team's framework and analysis, based on the seven indicators of Human Security as defined by the United Nations, to guide our own process. Additionally, we carefully took into account the previous team's recommendations to collapse and combine certain categories. To this end, we have kept the four large categories from last semester's proposed framework but have made considerable adjustments to the sub-categories which we believe more accurately reflect the principles of human security provided by the United Nations and more clearly articulate the measured concepts (Gomez and Gasper, 2013). Image 14 shows our updated version of the JDII Framework.

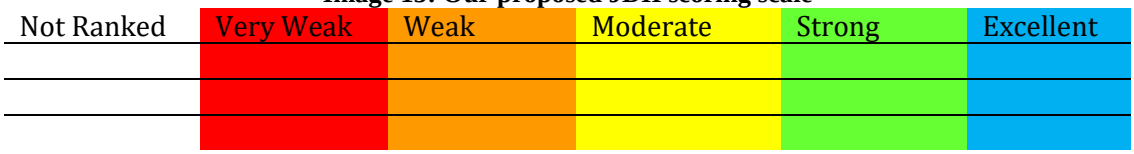
Image 14: The updated JDII framework



The second step in this process was to choose a standardized way of generating scores to allow for an eventual expansion of the study, as the development of a Jewelry Development Impact Index (JDII) will require a much larger range of cases. Our team has updated the previous team's scale in order to provide greater accuracy, to reflect greater complexities of the cases, and to take all of the categories into consideration when making summative and comparative conclusions. Whereas last semester's team's scale assessed "which country *experiences* better (green) or worse (red) impacts from the jewelry industry," our team shifted the focus to each country's *performance* along the lines of governance, economic, environmental and human health, and human rights impacts (Brown, Green, Mwaba, Peterson, and Thomas 2017).

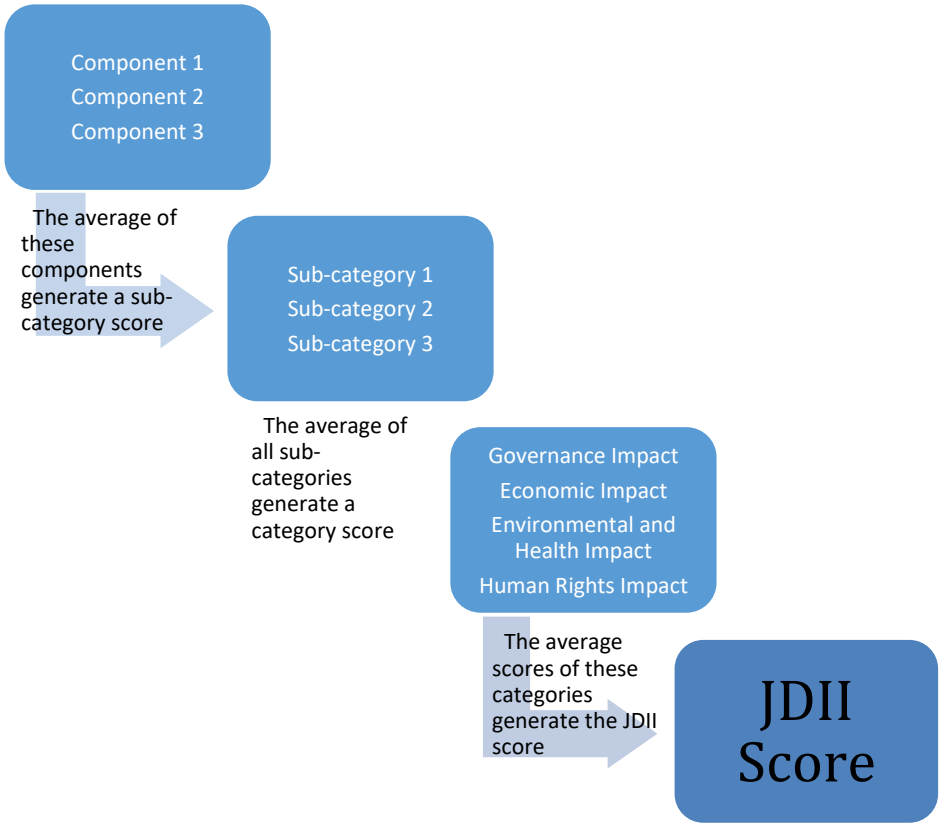
We chose to do this by using an ordinal scoring system derived from a recent report by Human Rights Watch on jewelry supply chains to calculate our own scores (Becker and Kippenberg, 2018). In this report, the ordinal values include the range: "very weak," "weak," "moderate," "strong," and "excellent." A number system is affixed to these scores in order to assist with determining averages - from "1" denoting very weak to "5" denoting excellent. Additionally, where we do not feel confident providing a score for a sub-category, we simply consider it non-ranked and list it as "NR." Image 15 showcases a visual representation of our proposed JDII scale.

Image 15: Our proposed JDII scoring scale



The third step in this process was to strengthen the scoring matrix to reflect greater complexity of scores. In this report, we break down the framework from Image 2 into smaller components, which are taken into consideration in order to score each sub-category. These sub-categories are then averaged together to generate a score for each category and these categories are averaged together to generate a cumulative JDII score for each country. Where insufficient information prevents a sub-category from receiving a score, that sub-category is excluded in the calculation of the average for the category. To further illustrate the logic of this process, Image 16 shows how this system works pictorially.

Image 16: The JDII scoring process



8.2 Application to the Case Studies

In this section, we use the proposed JDII tool to analyze the aforementioned case studies of rubies in Myanmar and lapis lazuli in Afghanistan. The following subsections provide the score across each measurement and provide the rationale behind the score provided. Additionally, Table 1 in the Annex shows them succinctly in numerical form.

8.2.1 Comparison of Governance Impacts for the JDII

Myanmar:

Governance and Accountability: Very Weak (1)
Despite a recent shift to a democratic ruling party, Myanmar's government is still ruled in alongside the former military regime, which has been accused of carrying out ethnic cleansing of the Rohingya in addition to committing abuses against other ethnic groups. Accountability for unjust treatment of these groups is absent. The military regime still largely holds control over the ruby mines.

Transparency: Weak (2)
The Burmese government is not transparent about the amount of military personnel independently invested in the ruby mines.

Corruption: Weak (2)
The position of Aung San Suu Kyi as State Chancellor rather than rightly elected position as President, due to constitutional stipulations, is likely indicative of corruption within the government. The amount of ruby mining contracts issued to large companies instead of to the benefit of local Burmese citizens is also likely linked to corruption.

Industry Regulation: Weak (2)
Myanmar's legislation around the regulation of mines has historically been exclusionary towards local mining populations and has mostly revolved around contracting large companies. MoNREC has only recently taken steps to address their policies and to be more accommodating with small local businesses.

Presence of Non-state Actors/ Criminal Organizations: Moderate (3)
Myanmar currently has a set of ethnic national actors and ethnic armed groups that govern local ruby mines both dependent of and independent of the Burmese government.

Overall: Weak (2)
Despite the perceived positive impact of the election of the NLD's Aung San Suu Kyi, a militarized, corrupt, and non-transparent government that is perpetuating ethnic cleansing currently governs Myanmar. The government has made modest efforts to reconcile its exclusionary mining policies to support smaller, more local, businesses and non-state actors who formed as a result of said policies and poor governance.

Afghanistan:

Governance and Accountability: Very Weak (1)
Across multiple governance indices, Afghanistan's overall governance score is very low. The current government is often caught in political gridlock and does not hold overall governing power over Afghanistan.

Transparency: Very Weak (1)
The government is not transparent about governance, contracting, or revenue connected to the lapis mines. The Ministry of Mines has admitted they inherited "a broken system." (Carter, 2016)

Corruption: Very Weak (1)
Corruption indices indicate that Afghanistan's level of corruption is high.

Industry Regulation: NR
There is not enough information on current legislation or on the regulation of lapis lazuli mines to rank this sub-category.

Governance of Non-state Actors/ Criminal Organizations: Very Weak (1)
Non-state actors, like Commander Malek, are the true governing bodies in the areas around the lapis lazuli mines. Terrorist organizations like the Taliban do hold a significant amount of control over lapis lazuli transportation.

Overall: Very Weak (1)
Afghanistan currently struggles with a lack of governmental accountability and governing power over both Afghanistan broadly and the lapis lazuli mines. Paired with the prevalence of corrupt and non-transparent government officials, gaps in basic data on mining legislation, and a strong governing presence of non-state actors and terrorist organizations, Afghanistan's cumulative score indicates that governance is very weak.

8.2.2 Comparison of Economic Impacts for the JDII

Myanmar:

Industry Employment: Moderate (3)
Myanmar employs over 100,000 individuals in the mining sector, but, due to informal economic activities, it is difficult to determine exactly how many are involved in the ruby mining sector in Myanmar. The mining sector is a small sector compared to other sectors in Myanmar, but the cultural and economic aspects of mining plays in an important part of Myanmar's economy and livelihood.

Fiscal Sustainability: Moderate (3)
Ruby mining generates nearly a billion dollars annually from legal sales, but smuggling and other informal economic activities cause the government to lose out on significant revenue. Myanmar has made good progress in growing their economy by diversifying their budget and by focusing on spending more on social services. The taxation and royalties regimes are high, which some claim is the cause of smuggling in Myanmar

since gem traders are unable to pay for the taxes on ruby sales. Finding a fair tax and royalty regime for gem trades may help increase legal sales of the gemstones.

Beneficiation: Very Weak (1)
Despite Burmese miners and gem traders ability to cut rubies, there are no other beneficiation opportunities in Myanmar. Promoting beneficiation opportunities in Myanmar can provide more economic opportunities for Myanmar civilians.

Smuggling and Informal Economy: Very Weak (1)
Smuggling and informal economic activities are prevalent in Myanmar, especially with the conflict in Kachin State. Attempts to address smuggling have been weak; merely reducing the commercial tax rate to 18 percent is not enough to combat smuggling of rubies in the country. Additionally, Myanmar forces are funding their conflict against the KIO through extractives and potentially from ruby sales.

Non-State Actor/Terrorist Funding: Strong (4)
Although Myanmar's forces are engaged in combat with the KIO and the KIA, the non-state actors do not control the ruby mines as far as our research has found. Since the KIO funds their activities from sales of timber, gold, jade, and taxes on narcotics, rubies are not funding non-state actor efforts. .

Overall Score: Moderate (3)
Considering two factors scored at "Moderate", two factors scored at "Very Weak", and a factor scored at "Strong" the overall score for Myanmar's economic impact from ruby mining is considered Moderate. Although Myanmar's economy is steadily growing and the government is more focused on development activities, the other negative factors outweigh the positive. Myanmar's armed forces are engaged in a conflict that is fueled by extractives – conflict minerals – and does not address smuggling or finding diplomatic solutions to the conflict.

Afghanistan:
Industry Employment: Weak (2)
Afghanistan employs a small portion of its population in the mining and quarry industries, but due to lack of information, it is not known how many are involved in lapis lazuli mining specifically. This may be due to three different armed groups controlling the lapis lazuli mines, which employ individuals associated with them to conduct mining operations.

Fiscal Sustainability: Very Weak (1)
Afghanistan is losing millions of dollars annually from lapis lazuli mining due to poorly enforced taxation and royalty regimes, smuggling, and informal economic activities. Afghanistan does have a diverse budget, but the allocation of funds is not strengthening the capability to enforce taxes and royalties on lapis lazuli. The lapis lazuli industry is not currently sustainable due to the lack of enforcing taxation and royalty fees to generate revenue.

Beneficiation: NR
There is no information on beneficiation opportunities in Afghanistan for lapis lazuli.

Smuggling and Informal Economy: Very Weak (1)
Smuggling and informal economic activities, such as terrorist and armed groups operating the lapis lazuli mines, are highly prevalent in Afghanistan. There have been no attempts from the Afghan government to prevent smuggling and informal economic activities or to reduce corruption.

Non-State Actor/Terrorist Funding: Very Weak (1)
Armed groups and the Taliban control the lapis lazuli mines in Badakhshan and profit from their mining operations. The Taliban has attacked civilians and ambushed government officials as part of their terrorist campaign, which has been funded partially from revenue earned from lapis lazuli trading, road tolls, and direct payment from the leader of one of the armed groups, Abdul Malek.

Overall Score: Very Weak (1)
The state of economic security in Afghanistan related to lapis lazuli mining is very weak. Non-state actors and terrorist groups generate revenue from trading lapis, which has caused conflict across the country. There have been no attempts from the Afghan government to address smuggling, corruption, and control of the lapis lazuli mines by non-state actors and terrorists. The government is losing millions of dollars in revenue from lapis lazuli each year, which could be allocated in their diverse budget for development initiatives and security operations.

8.2.3 Comparison of Environmental Impacts for the JDII

Myanmar:
Environmental Sustainability: Weak (2)
From the data collected, mining rubies in Myanmar has some environmental impact concentrated in the quantity of water used in the mining process as well as the effect of gravel filled waste water contaminating regional water sources. The long term effects of these actions is unknown as this time, however the immediate impact on the mining villages and the significant resource depletion contribute to the reasoning for a score of weak on the state of environmental sustainability.

Environmental Protection: Moderate (3)
The extensive presence of mining codes and the frequency, as of late, in their improvement indicates that the Burmese government does have a commitment to developing further protections and sustainable mining practices. However, despite the existence of environmental clauses in national legislation, there has been little oversight and enforcement of these rules within the ruby mining sector. Therefore, the score of moderate reflects how some progress is being made but requires further accountability and compliance in order to meet the standards of environmental protections.

Overall Score: Weak - Moderate *(2.5)*
The averaging of these scores gives Myanmar a ranking of 2.5, meaning that the state of the environment in Myanmar related to ruby extraction is weak-moderate.

Afghanistan:
Environmental Sustainability: Moderate (3)
The hard rock of the mountainous regions around the Sar-i-Sang mines allow for little direct impact from mining operations, however the possibility of resource depletion and the small scale environmental damage done due to conflict shows a moderate impact on the state of environmental sustainability.

Environmental Protection: Weak (2)
There is some presence of environmental protections in the legal framework of Afghanistan; within recent years the government has increased their interest in the sustainability of mining practices. However, because of the overall lack of enforcement and issues of political conflict that occurs around the control of the mines, the capacity of the national government to oversee the mines is extremely limited. A score of weak is given as a measure of the inability to implement the preliminary actions that have begun to be taken across mining industries in Afghanistan.

Overall Score: Weak – Moderate (2.5)
The averaging of these scores gives Afghanistan a ranking of 2.5, meaning that the state of the environment in Afghanistan related to lapis lazuli extraction is weak-moderate.

8.2.4 Comparison of Human Health Impacts for the JDII

Myanmar:
Human Health Risks: - Weak (2)
Ruby extraction has significant human health and safety concerns caused predominantly from the lack of safety equipment and unregulated mining techniques. These issues indicate that a score of weak accurately conveys the impact on the state of health and safety as it applies to human security in the mining regions.

Food Security: Weak (2)
While the mining process may not have a direct impact on the ability to secure food in ruby mining regions, the lack of sustainability and high cost of foods in these regions causes food security to be an issue that significantly affects mining communities. For this reason the state of food security in Myanmar is ranked as weak.

Water Security: Weak (2)
Mining practices and the stagnant water sources in several ruby mining sites found in this research indicates that the state of water security is weak.

Overall Score: Weak (2)
The averaging of these scores gives Myanmar a ranking of 2, meaning that the state of human health in Myanmar related to ruby extraction is weak.

Afghanistan:

Human Health Risks: - Very Weak (1)

By all accounts, mining lapis lazuli in Afghanistan is very dangerous work and no safety measures are taken to ensure the protection of miners. The mining practices themselves and the harsh conditions in which miners live and work proves that the state of health and safety is very weak in regards to lapis lazuli mining.

Food Security: Very Weak (1)

The limited agricultural and livestock opportunities in the areas around the Sar-i-Sang mining sites currently are not sustainable even for such small part-time mining communities. The reliance on high-cost imported food decidedly causes the state of food security to be very weak in regards to lapis lazuli mining.

Water Security: NR

There was not enough data available rank the impact of mining on the water security.

Overall Score: Very Weak (1)

The averaging of these scores gives Afghanistan a ranking of 1, meaning that the state of human health in Afghanistan related to lapis lazuli extraction is very weak.

8.2.5 Comparison of Human Rights Impacts for the JDII

Myanmar:

Worker's Rights: Weak- Moderate (2.5)

It is unclear how prevalent forced labor is and the extent to which miners and laborers along the supply chain are able to advocate for themselves and generate change. But the information collected for this report does indicate that there are significant concerns tied to the safe conditions of working in ruby extraction. Despite evidence of some concerns that compensation for work in this industry is inadequate, these concerns vary depending on ownership of the mines and occupation within the industry. Further, considering how central ruby mining is to the communities where it takes place, the income generated from participation in the industry is often unparalleled to the other limited professions.

Indigenous Rights: Moderate (3)

While exploitation of minority populations has been a central concern related to natural resource extraction in Myanmar, analysis conducted for the purpose of this report suggests some of these concerns may be overgeneralized. To be clear, displacement and lack of investment in local areas continues to be a significant concern, but the unique opportunities to participate in mining provided by the state and the subsequent high rate of inclusion in the ruby extraction industry are critical to understanding the true impact of mining on indigenous and minority communities in Myanmar.

Women's Rights: Moderate – Strong (3.5)

Increases in violence against women appear to be correlated with the mining industry, but it is unclear to what extent and how prevalent this is. Opportunities for women to benefit financially within the ruby industry are likely among the broadest in the world - from sorting through mine waste for free to running the sale of rubies in the local markets.

Children's Rights: Weak-Moderate (2.5)
Children are employed in ruby mines and/or are consistently found within the boundaries of the mines, both of which present serious potential harms to the wellbeing of the children. However, at this time it appears forced exploitation of children is relatively low. The level of support for the healthy development of children could not be determined by this study.

Freedom from Violence: NR
The research conducted for this report was unable to confirm the extent to which ruby mining is currently correlated to the existence of violence within local communities.

Overall Score: Moderate (3)
The averaging of these scores gives Myanmar a ranking of 3, meaning that the state of human rights in Myanmar related to ruby extraction is moderate.

Afghanistan:

Worker's Rights: Weak (2)
This report has been unable to confirm or deny the existence of forced labor in the lapis lazuli extraction industry and has not been able to determine the amount of space provided for miners to air their grievance. It has, however, confirmed that the conditions within lapis lazuli mines are extremely dangerous. Similarly to the case of Myanmar, the income generated from lapis lazuli mining, while sometimes criticized for being miniscule, represents the only real opportunity for local laborers to earn an income capable of supporting their families.

Indigenous Rights: NR
This report was unable to determine the impact of lapis lazuli mining on indigenous and minority groups.

Women's Rights: Very Weak (1)
There are clear patterns linking women's systematic exclusion from economic opportunities and from public life to dynamics surrounding lapis lazuli mines; leading to greater disenfranchisement as women are not simply relegated to their homes but often also unable to access goods and services necessary to sustain their lives.

Children's Rights: Very Weak-Weak (1.5)
It is apparent that some young boys do work in the lapis lazuli mines and that young girls are subjected to the same exclusions women face. The prioritization of

developmental needs have generally been neglected as no schools or medical facilities are available in local communities.

Freedom from Violence: Weak (2)
The prevalence of violent non-state actors certainly presents a substantial risk for local populations. While this has led to the deaths of some individuals, it appears that the broader use of violence against civilians is extremely limited.

Overall Score: Very Weak - Weak (1.5)
The averaging of these scores gives Afghanistan a ranking of 1.5, meaning that the state of human rights in Afghanistan related to lapis lazuli extraction is very weak-weak.

8.2.6 The Overall JDII Scores

We averaged the overall scores within each of the sub-categories to determine an overall JDII score for comparison. This process provides Myanmar with a score of weak-moderate (2.38) and Afghanistan with a score of very weak (1.4). Judging from the scores, Myanmar scores higher than Afghanistan due to the enforcement of recent legislation that has promoted economic growth and environmental protections; increased focus on improving human rights; smaller presence of non-state actors, criminal organizations, and terrorists; and some focus on human health for miners and citizens.

Afghanistan is ranked "Very Weak" due to the deteriorating security situation in the country which stems from non-state actors and criminal organizations operating the lapis lazuli mines; the financing of illicit and/or terrorist activities from sales of lapis lazuli; the lack of focus on improving human health measures for miners and citizens; a weak and corrupt government that rarely enforces laws, rules, and regulations; and a poor track record in protecting human rights for miners and citizens. However, as our ordinal ranking system uses only whole numbers, the rounding of these scores provides Myanmar with a ranking of "weak" (2), and Afghanistan with a ranking of "very weak" (1), meaning that the respect for human security related to the industries within our case studies is weak; as shown pictorially in image 17.

Image 17: Our Case Study Scores

Not Ranked	Very Weak	Weak	Moderate	Strong	Excellent
		Rubies in Myanmar			
	Lapis Lazuli in Afghanistan				

Chapter 9: Gap Analysis and Limitations

As with all research endeavors, our research suffers from the existence of some unknowns. The gaps and limitations we experienced in this study do not negate the findings identified by our report, but rather, have presented restraints on the discovery of further information. Time was a major limitation for our group. Our team had only three and a half months to gather information from open-sourced materials and conduct interviews. With a limited number of published reputable sources and with challenges in contacting and coordinating with potential interviewees, we believe that if given more time to research and conduct interviews, our report may have been able to accumulate more detailed information.

These time limitations were compounded by the fact that the two case studies in this semester's report present a number of enormous challenges. In both Afghanistan and in Myanmar, recent instability and conflict goes back decades, and, as natural resources have been significant financiers of these conflicts, areas around mines have been particularly difficult to access. While the restrictions around ruby mines in Myanmar have been relaxing over the past couple years, a couple of the experts we spoke to about Afghanistan said they had tried to visit lapis lazuli mines, but, as of yet, have been unable to reach them. Due to barriers on observation of mines in Afghanistan and the omnipresent political concerns surrounding in-country dynamics, it was difficult to find quality written sources of information as well as qualified sources willing to be interviewed.

Each of the four impact areas of our report developmental impact (Governance, Economic, Environmental & Human Health, and Socio-Cultural) also had their own unique gaps and limitations. For this chapter, we present these specific gap analyses within their own sub-sections, to allow readers to understand each of the unique gaps and limitations in an effort to guide future researchers to address these areas.

9.1 Gaps and Limitations in Governance Impact

Both Afghanistan and Myanmar's governments are riddled with political tensions, gridlock, and non-state actors who wield a significant amount of power within the mining and gemstone sector. Due to the nature of the Burmese government, as a pseudo-democratic country still heavily influenced by military officials, it is difficult to assess the legislation and state of governance in Myanmar without maintaining concerns regarding the validity of information. There is still little knowledge about the number of military officials invested in the private sector of the mining and gemstone industry, which may indeed result from the conflicts of interest with which the military holds in the gemstone sector. We recognize that this "gap" may be a reoccurring issue for future teams researching the gemstone sector. However, we suggest taking this lack of information into account when ranking or scoring different countries both independently and comparatively.

In Afghanistan, the information gaps that our team identified are the same gaps that other researchers have identified before us. Currently, Afghanistan's Ministry of Mines still has only issued one contract for mining lapis lazuli. Even in the contract, there are significant gaps in information, including amount of lapis lazuli that has been transported from Badakhshan. When questioned about the absence of adequate information by Global Witness, Afghan government officials only acknowledged that the mining industry is a "broken system." Without direct answers, accurate data on the political impact of the mining and the jewelry industry will continue to be limited.

9.2 Gaps and Limitations in Economic Impact

A major gap in our research for the economic impact of our report concerns the lack of accurate information on revenue from ruby and lapis lazuli trades, industry employment in both sectors, and how much revenue is lost due to smuggling of rubies and lapis lazuli. Additional missing information includes whether or not there are beneficiation opportunities in Myanmar outside of cutting gemstones, and whether or not there are beneficiation opportunities in Afghanistan for lapis lazuli processing. While the EITI report on Myanmar does address some of these gaps, it is the only source we were able to locate which devotes attention towards these issues. However, an article from the World Bank calls into question the accuracy of the data shown in the EITI report:

"Other significant issues include poor quality data; compilation made more difficult by paper-based systems; a lack of unique tax identification numbers; and variation in classification. In addition, there is no publicly available mineral license registry and there is minimal reporting on the extractive assets of military holding companies" (World Bank, 2016).

The data gathered for these factors is vital in order to provide a clear picture of the true economic situation of mining and trading rubies in Myanmar and lapis lazuli Afghanistan. More research will need to be conducted on finding accurate estimations and figures for the missing information. Furthermore, collaboration with the Burmese and Afghan governments to gather and maintain data from research is needed to ensure accuracy of data that can be used for future economic, security, and/or development projects and initiatives within Myanmar and Afghanistan.

9.3 Gaps and Limitations in Environmental Impact

The environmental impact of mining rubies Myanmar and lapis lazuli in Afghanistan are both sectors of the extractive industries in their respective countries that have not been extensively researched of analyzed. In Myanmar, for example, a 2018 Sector Wide Impact Assessment of Limestone, Gold, and Tin Mining were completed that discussed many of the issues we have concerned ourselves with in this report (SWIA, 2018). However, the information on ruby mining specifically has not been addressed. In Afghanistan issues of environmental impact are often generalized across mining industries; or they are neglected entirely due to conflict and human security issues taking precedence. Neither ruby mining nor lapis lazuli mining seemingly has as

significant an environmental impact as other extractive industries such as jade in Myanmar or deforestation caused by illegal logging in Afghanistan. However, the lack of conclusive data makes it difficult to calculate an index score that definitively reflects the reality on long-term environmental sustainability.

9.4 Gaps and Limitations in Human Health Impact

In the health sector, there are very few official assessments of the health and safety concerns of ruby and lapis lazuli mining. While it is clear that lack of safety precautions and equipment exacerbate the already dangerous work conditions, without accurate numbers of workplace injuries and community impacts, it is difficult to fully assess the effect of mining on human security in comparison to other gemstone operations or countries. With regards to food and water security, a lack of formal assessments in the regions and provinces where mining takes place also impacts the accuracy of information available. While it is clear that food and water access in ruby and lapis lazuli mining communities because the full extent of these issues have not been studied it may be difficult for recommendations to made to improve the situations. The information that has been collected provided a baseline for the impact of human health and safety, however quantitative data collection would be beneficial to providing a more accurate index score.

9.5 Gaps and Limitations in Human Rights Impact

Despite uncovering and compiling some very valuable information on the human rights context in our case studies, a quick review of the literature and scores makes it immediately obvious that our analysis has some large gaps. It is not just that is it is difficult to find quality data, but also that there is little precedent for collecting data of this nature. Thus, no real models even exist to direct how data should be captured.

Related to the content of human rights and security, a number of specific gaps remain; particularly around the topics of forced labor, indigenous rights, and children's rights. This should be no surprise. The illegality of forced labor shrouds it in secrecy that naturally impedes research into its existence; the relative disempowerment of indigenous and minority communities has worked to limit their voices and disregard their experiences; and, although children's rights routinely garners worldwide attention, it typically takes years of work in an area to get reliable information on children's safety.

9.6 Moving Forward

It is imperative for future researchers to take into account the identified gaps and limitations mentioned above, as it will allow them to find creative ways to address and fill these gaps with the added benefit of allow for the expansion of the scope of future studies.

Future teams involved in the development of the Jewelry Development Impact Index (JDII) can also use our gap analysis to further their own efforts, to preemptively identify potential areas of difficulty they may face in their respective case studies, and/or to make determinations on how to adjust the scoring matrix of the index. We

encourage researchers, both students and professionals, to expand their research to fill these gaps if their expertise or subject matter at all overlaps with the scope of our work.

Chapter 10: Extending the New JDII to Last Semester's Case Studies

As this report is the second in a series of organized efforts to develop a Jewelry Development Impact Index (JDII,) it is imperative that developments in the system of measurement be extended to all existing case studies within the project and that special attention be devoted to extrapolating information from comparative analysis across these respective case studies. To support this endeavor, this section uses the developed JDII Tool, explained above in Chapter 8, to analyze last semester's work and provide additional comparative analysis.

One thing to note is that the authors of this report did not conduct any independent study of the diamond industry in Botswana nor the gold industry in Peru. The analysis provided here relies entirely on the prior work established by last semester's team (see Brown, Green, Mwaba, Peterson, and Thomas, 2017) as this team was supervised by the same individuals, worked towards the same overarching goal, developed the foundation of the current report, and spent several months conducting in-depth literature reviews and interviews. While this strategy presents many benefits, some issues have arisen from this.

Namely, adjustments to the conceptual framework and to the methodology paired with a concerted effort to account for positive impacts have left several large gaps where lack of information presents obstacles to scoring. It is possible that the limitations arising from this slightly distort the scores for these case studies. Where applicable, these gaps are mentioned within the following explanation of scores. Due to the restructuring of the Spring 2018 report the impacts chapters differ slightly in their structure. However, generally information is provided on the impact of mining on countries' governance capabilities, economy, environment, human health, and human rights, thus these issue areas will be compared.

10.1 Application to the Case Studies

10.1.1 Comparison of Governance Impacts for the JDII

Botswana:

Governance and Accountability: Strong (4)
Botswana holds a considerable level of authority over their gem mining industry, and demonstrates a history of democratic governance and stability.

Transparency: Moderate (3)
Despite Botswana receiving "moderate" to "good" scores from the Transparency

International's Corruptions Perceptions Index, the Botswanan government has been criticized for its lack of transparency in the mining industry.

Corruption: Moderate – Strong (3.5)
According to the Transparency International's Corruptions Perceptions Index, the Botswana government has received "moderate" to "good" marks. The index ranks Botswana 34th out of 180 measured countries, with a score of 61 out of 100.

Industry Regulation: Excellent (5)
Along the lines of industry regulation, the Botswanan government has set an excellent example for other countries looking to assess the human and economic impact of their jewelry industry. Botswana has made significant efforts to implement industry regulations for their diamonds, and partnered with diamonds industries in order to create more effective regulations.

Non-State Actor/Criminal Organization Presence: Excellent (5)
Fall 2017's report indicated that there are no criminal organizations involved in Botswana's diamond industry.

Overall Score: Strong (4)
The averaging of these scores gives Botswana a score of 4, meaning that the state of governance in Botswana related to diamond extraction is strong.

Peru:

Governance and Accountability: Moderate (3)
Peru holds a considerable level of authority over their gem mining industry. A unique roadblock for the Peruvian government is maintaining governance within their nation due to topography that is difficult to navigate.

Transparency: Weak (2)
The generally weak transparency efforts from Peru seems to be reflective of the high rate of corruption. However, the Peruvian government has made some effort to be more transparent concerning national budgets.

Corruption: Weak (2)
According to Transparency International's Corruptions Perceptions Index, Peru received a score of 37 out of 100. They are ranked 96th out of 180 measured countries.

Industry Regulation: Strong (4)
Peru has made modest efforts to rectify issues of social and economic concern, but still struggles in addressing illegal gold mining operations.

Non-State Actor/Criminal Organization Presence: Strong (4)

Despite Peru having a significant presence of criminal organizations, the Peruvian government has taken steps seize control of diamond mines that are operated by these organizations.

Overall Score: Moderate (3)
The averaging of these scores gives Peru a score of 3, meaning that the state of governance in Peru related to gold extraction is moderate.

10.1.2 Comparison of Economic Impacts for the JDII

Botswana:
Industry Employment: Moderate (3)
Botswana's mining industry is a large contributor to government revenue, and due to the high governmental standards, miners and workers within the mining industry are given training on safety and capacity building.

Fiscal Sustainability: Moderate (3)
Botswana has a successful tax regime, which allows the government to receive significant revenue from diamond sales. The government relies on domestic sources and consultations, thus revenue and trade largely remain within the country. Lastly, Botswana is showing progress in reducing its dependence on diamonds and investing in social services for its citizens.

Beneficiation: Moderate (3)
According the fall 2017 report, there are positive examples of beneficiation processes within Botswana. While the report did not give specific examples, we are relying on their research and findings for this score.

Smuggling/Informal Economy: Moderate (3)
Although there is a presence of illicit mining and informal trade, Botswana is taking steps to address these issues through their taxation regime, investing in social services, and reducing their dependence on diamonds.

Non-State Actors/Terrorist Funding: NR
The report did not mention any cases of non-state actors/terrorist funding within Botswana.

Overall Score: Moderate (3)
The averaging of these scores gives Botswana a score of 3, meaning that the state of the economy in Botswana related to diamond extraction is moderate.

Peru:
Industry Employment: Weak – Moderate (2.5)
There is a moderate amount of informal employment within Peru, but according to the fall 2017 report, the informal sector is semi-formalized. While the Peruvian government suffers from a loss of revenue from the informal sector and illicit mining, having a

semi-formalized informal sector provides individuals with a source of income and employment.

Fiscal Sustainability: Weak (2)
Peru has a successful taxation regime, but there is concern that gold is funding conflict within Peru. Furthermore, lack of transparency and accountability on use of funds is a great concern on the sustainability of fiscal budgets in Peru.

Beneficiation: Weak (2)
According to the fall 2017 report, there are negative examples of beneficiation in Peru, and there are tensions with local communities are prioritizing environmental and social needs, such as addressing deforestation and mercury contamination.

Smuggling/Informal Economy: Weak – Moderate (2.5)
As previously mentioned in the industry employment section, there is a presence of an informal economy in Peru, but it is semi-formalized. Thus, the informal economy provides individuals with an adequate livelihood.

Non-State Actor/Terrorist Funding: Weak (2)
According to the fall 2017 report, there is evidence that gold mining in Peru is fueling conflict between mineral-rich and non-mineral-rich regions, ethnic tensions, and factionalized elites. Peru does have a presence of criminal organizations that conducting gold mining operations that have a negative impact on the environment and social wellbeing of Peruvians.

Overall Score: Weak (2)
The averaging of these scores gives Peru a score of 2, meaning that the state of the economy in Peru related to gold extraction is weak.

10.1.3 Comparison of Environmental Impacts for the JDII

Botswana:
Environmental Sustainability: Excellent (5)
Diamond mining in Botswana is by far a clear representation of a country with excellent safeguards and protections for the environmental impact of mining. It appears that measures have been taken to promote land sustainability, air quality, and water conservation has been implemented.

Legal Environmental Protections: Excellent (5)
Botswana has done a great job in implementing environmental protections. The government of Botswana has implemented environmental impact reduction strategies and biodiversity protections to prevent biodiversity degradation from mining. Although the country faces food and water insecurity, these issues are independent from the mining sector in Botswana.

Overall Score: Excellent (5)

The averaging of these scores gives Botswana a score of 5, meaning that the state of the environment in Botswana related to diamond extraction is excellent.

Peru:
Environmental Sustainability: Very Weak (1)
Gold mining in Peru has a significant impact on the natural environment, as the use of mercury contributes to significant environmental degradation and human insecurity.

Legal Environmental Protections: Weak (2)
Peruvian governmental accountability and enforcement plague the gold mining sector, as illegal mining activities linked to organized crime and corruption have prevented adequate standards from being adopted and enforced. Further, protections that do exist cannot be implemented until the government addresses mercury and deforestation issues.

Overall Score: Very Weak - Weak (1.5)
The averaging of these scores gives Peru a score of 2, meaning that the state of the environment in Peru related to gold extraction is weak.

10.1.4 Comparison of Human Health Impacts for the JDII

Botswana:
Health and Safety: NR
Insufficient information was provided to be able to determine a score related to health and safety in Botswana's diamond industry although it does appear that mining companies in Botswana do provide trainings and implement safety measures for miners.

Food Security: Weak (2)
Diamond mining in Botswana appears to alleviate some food insecurity through the revenue generated from diamond sales and a reliance on South Africa for food and water supplies. This however is an unstable source of security as resource depletion is a large concern.

Water Security: NR
While Botswana does suffer some cases of water insecurity, these cases are independent of the mining operations in Botswana.

Overall Score: Weak (2)
The averaging of these scores gives Botswana a score of 5, meaning that the state of human health in Botswana related to diamond extraction is weak.

Peru:
Health and Safety: Very Weak (1)
The direct impact on humans of gold mining is severe due to the regularity of mining accidents and the heavy reliance on the use of mercury during the extraction phase.

Food Security: Very Weak (1)
The act of gold mining in Peru has a significant direct impact on food security due to deforestation and poisoning of the Mota fish from mercy used in the mining process.

Water Security: Very Weak (1)
The use of open pit mining in chemicals in Peru can pollute water sources with excess silt and gravel. Additionally, mercury drain-off from mining operations is an especially large safety hazard as it pollutes water sources.

Overall Score: Very Weak (1)
The averaging of these scores gives Peru a score of 1, meaning that the state of human health in Peru related to gold extraction is very weak.

10.1.5 Comparison of Human Rights Impacts for the JDII

Botswana:
Worker's Rights: Weak - Moderate (2.5)
Botswana receives a score of very weak here. This is heavily influenced by lack of information. While the fall 2017 report did thoroughly cover how limited workers' advocacy is, as all forms of striking are considered illegal, and mentioned how compensation is "generally fair," other important factors were not covered sufficiently to draw conclusions from; there was no information on forced labor, and there was no evaluation of the conditions of safety with which workers in the diamond industry work in.

Indigenous Rights: Very Weak (1)
The very weak state of indigenous rights related to the diamond industry in Botswana is very apparent in last semester's report. The most prominent indigenous group, the San, are discriminated against by the government and are often targets of sanctioned violence; including the use of beatings as legal punishment and the cementing over of wells. The San people have experienced high rates of displacement due to mine development and are almost completely excluded from economic benefit of securing employment in the mines.

Women's Rights: NR
No information on women's rights was provided in the fall 2017 report other than saying high levels of violence do not seemed to be linked to the industry.

Children's Rights: Moderate (3)
Child labor in the diamond industry in Botswana is extremely low while the consideration of developmental needs of children has increased, thanks to the revenue generated by the diamond industry.

Freedom from Violence: NR

No information is provided about direct violence occurring at the hands of violent actors related to the diamond industry.

Overall Score: Very Weak - Weak (1.6)
The averaging of these scores gives Botswana a ranking of 1.6, meaning that the state of human rights in Botswana related to diamond extraction is very weak - weak.

Peru:
Worker's Rights: Very Weak - Weak (1.5)
Safety represents a major concern in the area of workers' rights, as the rate of deaths attributed to cave-ins and the rate of mercury poisoning remain worrisomely high. This is compounded by safety concerns outside of the workplace, as some sources have noted that workers are housed in very poor facilities, often without access to water and cooking gas. High rates of forced labor are also notable features within the gold industry in Peru. Information on the ability of workers to advocate for themselves is not explicitly addressed in the previous report, but one potential positive feature within this category is that although payment has been noted to be unstable and inconsistent, miners have asked for the government to not step in and change the laws regarding wages.

Indigenous Rights: Very Weak (1)
The negative impacts on indigenous communities, namely the Awajúns and Wampís, are documented in the fall 2017 report. Indigenous people have a higher risk of exploitation due to an inability to procure identity documents. Additionally violence is a major concern in a couple different forms: direct violence, illustrated by violent clashes between police officers and indigenous protestors which have resulted in a number of deaths, and structural violence, illustrated by the high rates of mercury poisoning within indigenous communities. Questions about the positive impacts on these indigenous communities warrant further research.

Women's Rights: NR
The fall 2017 report did not go into detail about the scope of economic opportunities for women within the gold industry nor the types and levels of violence against women. The only details provided said that women are typically given lower paying jobs, suggesting there are at least some economic benefits they reap from the industry, and that low paying jobs are correlated with increased dependency on men and, subsequently, higher rates of abuse. This insufficient evidence paired with no discussion on the leadership roles which women occupy, or don't, prevents this category from being scored.

Children's Rights: Very Weak (1)
This state of children's rights within this industry is very weak. Human trafficking of children occurs in many different forms from forced labor in the mines to sexual slavery to service miners. The forms of labor where children work tend to be amongst the most dangerous, with the fall 2017 report pointing out that sometimes teenagers are forced to "swim in mercury filled pools;" indicating that there are few protections for

children within this industry. The level with which developmental needs are considered is not clear, but is assumed to be low, as the level of child slavery and exploitation appears high.

Freedom from Violence: Very Weak - Weak (1.5)
The clashes between law enforcement and local mining populations have contributed to a number of deaths in the past few years. This coupled with the presence of dangerous organized criminal actors involved in the gold trade who are highly involved in the proliferation of violence, especially regarding sex trafficking and child labor.

Overall Score: Very Weak (1)
The averaging of these scores gives Peru a ranking of 1, meaning that the state of human rights in Peru related to gold extraction is very weak.

10.1.6 The Overall JDII Scores

We averaged the overall scores within each of the sub-categories to determine an overall JDII score for comparison. This process provides Botswana with a score of "moderate" (3) and Peru with a score of "weak" (2). Judging from the scores, Botswana scores higher than Peru due to the absence of non-state armed groups involved in the diamond industry, successful industry regulations in Botswana, the breadth of environmental protections, and in fiscal sustainability. The high scores in these areas are balanced out, however by negative impact areas including discrimination against indigenous populations and rampant food insecurity. Peru is ranked as "weak" due to significant concerns of child exploitation and structural violence against indigenous populations in the human rights category, high rates of corruption, and mercury poisoning. Combining these two case studies with the two case studies for this current report produces the following total scores shown pictorially in image 18.

Image 18: Scores from all four countries

Not Ranked	Very Weak	Weak	Moderate	Strong	Excellent
		Rubies in Myanmar			
	Lapis Lazuli in Afghanistan				
			Diamonds in Botswana		
		Gold in Peru			

Conclusion

Our analysis clearly reveals some positive impacts related to the ruby industry in Myanmar; namely the inability of armed factions to use rubies to finance conflict and the high level of involvement of women in the industry. A number of other issue areas show some positive signs, such as recent attempts by the Burmese central government to bolster environmental protections and the vital role with which the ruby industry plays in local economies. While there are certainly some positive developments, the JDII ranking of "weak" shows that there are a number of pressing concerns in need of attention. Low levels of accountability, high rates of corruption and limited safety precautions during sourcing are some of the major reasons for why Myanmar received the low final score it did.

The lapis lazuli industry in Afghanistan, on the other hand, received low scores almost across the board. The prevalence of armed militias in the mining areas is certainly a primary reason for this. These organizations wield huge influence and power over mining operations, causing huge losses in revenue, fueling conflict, hindering development, and presenting potential threats to local communities. This is not to say that all the blame lies with these non-state actors. Our analysis also shows lack of state prioritization, rampant corruption, and challenging, and sometimes inaccessible, terrain as contributing factors to negative impacts. Environmental sustainability scored the highest in this case study, at a level of "moderate." This is primarily because mining for rocks does not require the use of dangerous chemicals that can contribute to pollution and because the hard rock of the mountain range can withhold expansive tunneling.

Extending this analysis to Botswana and Peru, it is clear that Botswana has a decisive lead over Peru, with more effective legislation, lower rates of violence associated with the jewelry industry and proactive steps to ensure the protection of the environment. In fact, Botswana receives a higher score of at least one scoring level in each of the five impact categories. This carries over to the larger comparison between all four case studies, where Botswana receives a higher score than all of the other three case studies in each of the five categories with the exceptions of having the same score as Myanmar in the human health impact ("weak") and a lower score than Myanmar in the human rights impact ("weak" vs. "moderate.") Afghanistan, by contrast, receives the most consistently low scores, never managing to score higher than any other case study in any category; although it does receive a couple higher scores in the human rights subcategories, in comparison to Peru. Peru and Myanmar's respective scores congregate around the middle scores, thus receiving mostly scores of "weak" and "moderate" with just a few scattered "very weak" scores. Despite these two scores generally ranking in the middle, most categories and subcategories give Myanmar a slight edge over Peru.

For these reasons, it is clear that human security related to these industries is stronger in the case of Botswana. This is reflected in our numerical JDII score shown in Table 1 of

the Annex; where Botswana receives a score of 3.2 compared to Myanmar's 2.38, Peru's 2, and Afghanistan's 1.4. However, as the scoring system we have adopted uses whole numbers, these raw scores must be rounded to the nearest whole number, placing Afghanistan in the "very weak" category, Myanmar and Peru in the "weak" category, while Botswana alone is scored as "moderate."

The work conducted in this round of the JDII development has contributed to the development of the JDII in a number of meaningful ways. First, it has polished the conceptual framework that underpins the entire index. The current framework more clearly articulates relevant concepts and thus provides a more solid base for the entire project. Second, it has developed a more complex, clear, and standardized way of generating scores that allow for broader findings within cases as well as for greater ability to make comparisons between cases. Third, it has contributed to the base of knowledge that will continue to inform future projects and continue to be expanded upon as future teams advance this project towards the eventual goal of the creation of the JDII.

The accomplishments of this round are notable, but there is still a long way to go. In the perspective of the authors, there are four areas which should be given ample attention moving forward. First, case studies should be explicitly selected where very different scores are likely. This will allow the JDII tool to be stretched to capture greater variation in order to showcase weak points where improvements are needed and where the range of realistic scores actually lies. Second, future teams should work to clarify the operationalization of the framework. While the improvements in this area are evident and scores are more clearly related to a working methodology, there is still a need to buckle down and clarify the definition of concepts and the specific ways in which sub-categories receive scores. Third, future teams should continue to tinker with the scoring scale in an effort to sharpen it to allow for greater distinctions to be made. While all of these cases may, in fact, have a number of similarities which cause them to truly have similar final scores, it is also possible that the current measurement is slightly obtuse and should depict greater variation in scores between these case studies. Fourth, an effort should be made to see how the jewelry industry and state actors perceive the JDII and interpret its results. As one of the explicit goals of this project is to enable the jewelry industry to maximize its positive impact, future efforts could benefit greatly from constructive feedback from these actors. Knowing how useful the current tool is for industry actors, how accurately it depicts the case studies, what kind of information it conveys to leaders in the industry, and what potential solutions state and industry actors might propose to address deficiencies identified in this report could go a long way in informing how future efforts can be improved.

ANNEX

Table 1: The Numerical JDII Scores for the Case Studies of rubies in Myanmar, lapis lazuli in Afghanistan, diamonds in Botswana, and gold in Peru

		Myanmar	**Afghanistan**	**Botswana**	**Peru**
Governance Impact	Governance and accountability	1	1	4	3
	Transparency	2	1	3	2
	Corruption	2	1	3.5	2
	Industry Regulation	2	NR	5	4
	Presence of non-state actors/criminal organizations	3	1	5	4
	Governance Impact Total	**2**	**1**	**4**	**3**
Economic Impact	Industry Employment	3	2	3	2.5
	Fiscal Sustainability	3	1	3	2
	Beneficiation	1	NR	3	2
	Smuggling and informal economy	1	1	3	2.5
	Non-state actor/terrorist funding	4	1	NR	2
	Economic Impact Total	**2.4**	**1**	**3**	**2**
Environmental Impact	Environmental sustainability	2	3	5	1
	Legal environmental protections	3	2	5	2
	Environment Impact Total	**2.5**	**2.5**	**5**	**1.5**
Health Impact	Health and Safety	2	1	NR	1
	Food Security	2	1	2	1
	Water Security	2	NR	NR	1
	Human Health Impact Total	**2**	**1**	**2**	**1**
Human Rights Impact					
	Worker's Rights	2.5	2	2.5	1.5
	Indigenous rights	3	NR	1	1
	Women's Rights	3.5	1	NR	NR
	Children's Rights	2.5	1.5	3	1
	Freedom from Violence	NR	2	NR	1.5
	Human Rights Impact Total	**3**	**1.5**	**2**	**1.5**
Average Score		**2.38**	**1.4**	**3.2**	**2**
Final JDII Score		**2**	**1**	**3**	**2**

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