



JEWELRY INDUSTRY IMPACTS

A Comparative Case Study of Gold in Peru
and Diamonds in Botswana



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Executive Summary

This paper was produced in accordance with a Statement of Work (SOW) issued by the U.S. Department of State and Jóia Consulting to understand the impacts of the diamond industry in Botswana and the gold industry in Peru along their respective value chains. Human security elements will be mapped and assessed in the below analysis, leading to a comparative study and a recommendation for a future Jewelry Development Impact Index (JDII), based on interviews with industry actors, independent desk research, and qualitative assessments. The six sectors that we focused on in our research were based on the United Nations' Human Security Approach, including: (1) sociocultural, (2) political, (3) economic, (4) human rights, (5) health, and (6) environmental.

Key Findings

After examining the industry's sociocultural impacts along the value chain in Botswana and Peru, ethnic compilation, group grievances, and uneven development are the most significant for the JDII.

- In both nations, the indigenous populations have been eliminated from the political dialogue in regard to the jewelry industry. Despite this, there are little ethnic and social tensions in Peru and Botswana, unlike other mineral rich nations.

Of the political impacts of the jewelry industry, we found that governance, integrity, and civil society participation are the most significant factors for the creation of the JDII. Overall, Botswana has more robust accountability mechanisms and procedures to seek public input on its natural resource governance policies.

- Corruption is present in both Peru and Botswana, but highly lucrative mining industries are still able to operate. In this context, though there are nuances, Botswana is more successful at governing with corruption, as illustrated by international surveys and indexes.
- Civil society participation and governance are strong indicators of political stability, and Botswana has been lauded for its good governance and economic prosperity. Botswana is able to control its citizenry with well administered state authority. Additionally, civil society is more heterogeneous in Botswana than Peru, which has ensured a sense of social cohesion for decades. Peru has a more diverse demographic, and, because of its topography, Peru finds it difficult to spread its influence beyond its capital. In some mining regions, citizens of Peru are so far removed from government that they are forced to engage in clientelism, or informally settling disputes between themselves and the industry.
- The legal atmospheres of Peru and Botswana vary, but Botswana has developed in tandem with its diamond industry. Botswana has well enforced laws surrounding its mining industry, from access to a mining site to those involved in ancillary labor. For example, only certain individuals can cut diamonds in Botswana, but in Peru, if you have access to a source that is not secured, then you are free to engage in gold mining. Botswana also, by law, has the right to be a part of a mineral extractive industry, which is non-existent in Peru.

After examining the industry's economic impacts on host societies, we found that industry taxation, revenue distribution, economic diversification, and budget sustainability are all important issues for comparison.

- Progressive taxes that target resource rents are considered best practice for the extractive industry, and both Peru and Botswana have implemented effective regimes.
- Peru and Botswana use two distinct revenue distribution mechanisms; Peru uses the more common derivation-based intergovernmental transfer method, while Botswana uses a National Development Plan process that relies on local consultation and centralized development goals to determine the use of industry revenue. While Botswana's system is showing signs of increasing tension between urban and rural development goals, in Peru there is concerning evidence of conflict between mineral-rich and non-mineral-rich regions, rising clientelism, and a lack of accountability and transparency of the use of funds.
- Over the past twenty years, Botswana has made some progress in reducing its dependence on diamonds. However, attaining the level of economic diversification necessary to offset diminishing mineral resources remains a prominent economic concern. On the other hand, gold makes up a much smaller percentage of Peru's GDP, and thus, the specific jewelry-industry impacts on the composition of Peru's economy are significantly smaller.
- To ensure budget sustainability, Botswana has developed a Budget Sustainability Index and Peru utilizes spending limits. However, under Botswana's index, health and education expenditures are considered investments instead of recurrent costs. Additionally, Peru's spending limits do not indicate the amount of resource revenue spent in relation to recurrent expenses in a given year making it difficult to compare the sustainability of its budget.

Of the human rights' impacts along the value chain, we found that indigenous rights, workers' rights, and women and children's rights are the most important factors for the creation of the JDII.

- Botswana fails in regard to treatment of the native San people. They face mass evictions from their ancestral homelands, the diamond-heavy Central Kalahari Game Reserve, as well as discrimination within the local diamond workforce. Similarly, Peru's indigenous populations are vulnerable to exploitation by mining concession owners in the informal gold sector and criminal organizations in the illicit gold sector.
- Within workers' rights, Botswana's partnership with Debswana allows the diamond conglomerate to provide disease management and financial counseling, among other benefits, to its workforce. The biggest critique of Botswana's treatment of workers' rights again falls in the form of discrimination against the San people. Peru's illicit sector workers are subject to violence, debt bondage, and grave safety hazards, while the informal sector workers also face debt bondage and conditions likened to indentured servitude.
- Botswana struggles societally with sexism, violence towards women, and child labor in the agricultural sector. These issues, however, do not pertain to the diamond industry in-country. Peru's issues in these same categories stem mainly from the informal and illicit gold sectors, in which young children are sold into sexual slavery and/or child labor

within mining towns. Moreover, women are relegated to less desirable, lower paying jobs in Peru's gold mining activities.

Within the industry's health impacts on host societies, we found that food security and disease management are both critical issues for comparison.

- Although Botswana's arid climate makes food security an issue, this is unrelated to the diamond industry. The widespread use of mercury in Peru's illicit and informal gold separation processes, however, significantly contributes to its deteriorating food quality.
- Botswana, in conjunction with Debswana, has made an extended effort to address the local HIV/AIDS epidemic, spending millions of dollars on HIV/AIDS prevention, treatment, mitigation, support, and care programs for diamond industry workers. Peru, on the other hand, struggles to address the impact of mercury on illicit and informal gold miners.

After researching the industry's environmental impacts on both Botswana and Peru, we found that deforestation and chemical pollution are most significant for the creation of the JDII.

- Botswana has a well developed and implemented program for its land clearance impacts through diamond mining, while Peru has many evolving issues to address before its safeguards to the environment, particularly in regard to deforestation in the Madre de Dios region, can be effective.
- While Botswana releases minimal chemical pollutants, the use of mercury in Peru's illicit and informal gold sectors has created an environmental epidemic. It has particularly harmed the Amazonian ecosystem.

A main challenge of our value assessment was securing accurate data tailored to specific industry products. The creation and collection of such data is important for jewelry index building purposes. The following information will form the basis of the JDII.

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Introduction

The global jewelry industry is complex and highly fragmented, made up of a number of publicly-traded corporations, thousands of small, privately held companies, and government entities. Sourcing of raw materials and the production of finished jewelry has significant effects on the economies of host countries. These activities are often located in some of the world's most vulnerable societies.

In order to enhance the positive influence of the jewelry industry, particularly in emerging economies, the industry requires study and monitoring. However, the international jewelry industry currently lacks any standard measurements of its impacts on host countries. To begin to address this gap, our study will assess the impact and influence of the jewelry industry on two separate host countries: gold in Peru and diamonds in Botswana.

Our comparative case study will provide insight into private sector and government policies and programs related to the two industry products. Additionally, it will identify gaps in the available information and the existing indexes or measurements that can be further adapted and developed into a Jewelry Development Impact Index, a uniform assessment of industry impacts.

To achieve this analysis, the authors completed extensive research and conducted interviews with stakeholders, including NGOs, governments, and private industry. Our report integrates existing industry and human security data to produce a comprehensive narrative of the effects of the industry products on people along the value chains. To create a framework for the analysis, we have identified the gold and diamond industries' impacts on human life, dignity, and opportunity along the value chain by relying on the United Nations' Human Security Approach,¹ adapting its seven original components into six categories of potential impacts: (1) sociocultural, (2) political, (3) economic, (4) human rights, (5) health, and (6) environmental.

Additionally, by analyzing two distinct industry products in two different state contexts, our report begins an exploration of the breadth of possible effects, highlighting distinctions and providing suggestions for potential universal measurements to be adapted into the future Jewelry Development Impact Index.

In the following sections, our report provides (1) an overview of the gold and diamond value chains, (2) a history of the industry products in their respective host states, (3) a comparative analysis of the categorical impacts of the industry products on each state, and (4) the lessons learned for the future development of the Jewelry Development Impact Index.

Chapter 1: Descriptions of the Value Chains

The terms value chain and supply chain are used interchangeably in our report. The Organization for Economic Cooperation and Development (OECD) defines the mineral value chain as follows: “The process of bringing a raw mineral to the consumer market involv[ing] multiple actors and generally includ[ing] the extraction, transport, handling, trading, processing, smelting, refining and alloying, manufacturing, and sale of the end product. The term supply chain refers to the system of all the activities, organizations, actors, technology, information, resources and services involved in moving the mineral from the extraction site downstream to its incorporation in the final product for end consumers.”²

1.1 Diamonds in Botswana

Most of the world’s rough diamonds come from a relatively small number of mines in Russia, Canada, Australia, and southern African nations, such as Botswana, the Democratic Republic of Congo, Angola, Zimbabwe, and South Africa. Rough diamonds are cut and polished, often in India and nations throughout Africa, before eventually making it to the hands of traders in countries like Belgium.³ The diamond value chain has four main components: exploration/mining, cutting/polishing, manufacturing, and retail. Experts in the jewelry industry describe the value chain in terms of upstream (diamonds are mined from the ground), middle market (diamonds are cut, polished, and made into jewelry), and downstream (diamonds are sold to consumers). In a joint report by Bain & Company and the Antwerp World Diamond Center entitled “The Global Diamond Report 2013: Journey through the Value Chain,” the authors explain that diamonds are mined, then sorted and sold by producers through either long- or short-term contracts, or auctions. Long-term contracts and auctions account for about 30 percent to 65 percent of rough diamond sales. Short-term contracts are mainly applied to leftovers and diamonds that are not in the typical size range.⁴ As the report notes, “Increasing mining exploration costs, stricter beneficiation requirements, and discovering the most efficient routes to market seem to be the biggest challenges for the upstream segment of the value chain.”⁵

The middle market is the most complex part of the value chain, as it covers a vast range of activities, including: secondary sales of rough diamonds, cutting and polishing, primary and secondary sales of polished diamonds, and jewelry manufacturing. Middle market players face the challenge of remaining cost competitive with respect to cutting and polishing, accessing customers, and maintaining beneficiation requirements.⁶ Edahn Golan, an Israel-based diamond industry consultant, notes:

There is this growing trend of consolidation, especially in the midstream of the diamond pipeline. This is not where one business buys another, but one where businesses close because of the difficult business environment, resulting in a decrease in the number of players. Several retailers, mainly in the US, found themselves with relatively high inventories and have therefore slowed down purchases from wholesalers. This reverberated up the diamond pipeline, resulting in an overall slowdown in business activity.⁷

In this middle market segment of the value chain, Botswana has made major investments to keep cutting and polishing in-country, rather than outsourcing. This is done to keep jobs and bring buyers to Gaborone, in hopes of also boosting the security, transportation, and financial industries. In an effort to increase employment and secure economic activity, the government of Botswana made a deal with De Beers in 2004 (revised in 2011) requiring “diamantaires who were Diamond Trading Company (DTC) sightholders to cut and polish in Botswana.”⁸ The Debswana complex, representing a fifty-fifty joint venture between De Beers and Botswana, includes a USD 35 million state-of-the-art diamond sorting, valuing, and selling center called DTC Botswana, the world’s largest facility of its kind.⁹ It has the capacity to make 45 million ready-for-market carats of rough diamonds per year, or about 40% of the world’s total annual diamond supply. In value terms, it accounts for about USD 6 billion worth of rough diamond sales annually.¹⁰ De Beers lists 84 sightholders on its website of which 21 are manufacturing in Gaborone. In 2013 the “London box” (a box where a hefty amount of all diamonds produced in Southern Africa are placed) was moved from London to Gaborone and is now called an “international sight.” Every ten weeks in Gaborone, sightholders may get up to five boxes of diamonds.¹¹

In Botswana, “four polishing factories were closed and over 1,000 jobs lost in 2015.”¹² Diarough, one of the biggest employers in the village of Serowe, closed with a loss of 320 jobs, leaving over 2,000 dependents affected. In 2014, Botswana had a total of 3,750 people employed in the diamond cutting and polishing industry, however global competition and higher wages in Botswana are making it difficult to keep these jobs in-country. Fierce competition, low wages, and high productivity in places like Surat and Mumbai, where most of the world’s diamonds are cut, may cause further job loss in Botswana.¹³

The downstream stage of the value chain involves selling diamonds to consumers. There are many challenges facing the industry here, such as slowing markets, increased millennial interest in synthetic diamonds, and the general oversupply of diamonds. Even with all of these challenges, the global rough diamond industry is “expected to grow at a compound annual rate of 5.1 percent,” rising to almost USD 26 billion in 2023, according to a 2015 report from Bain & Company.¹⁴ Even though the U.S. produces almost no diamonds for commercial consumption, the U.S. buys more than 40 percent of the world’s gem quality diamonds – making it the world’s largest diamond market.¹⁵ Emerging markets, such as China, India, and the United Arab Emirates, are also expected to see a rise in consumer spending on diamonds.

Figure 1: The Basic Steps of the Diamond Value Chain



1.2 Gold in Peru

Peru is one of the world's largest producers of base and precious metals, as well as the sixth largest producer of gold in the world. It is also one of the top ten mineral-rich countries in the world. Accordingly, Peru is Latin America's largest gold producer, often exporting to Switzerland, Canada, the U.S., India, and the United Kingdom.¹⁶ Over the past few years, global mineral and commodity prices have fallen, causing Peruvian exports to decrease, and overall mining activity to slow down. The price of gold has decreased from USD 1,859 in 2011 to USD 1,240 in 2016.¹⁷ This has further affected employment generated by mining activities, including direct mine employment, contractors, suppliers, and indirect employment. Gold is mined both by large scale and artisanal, small-scale (ASM) operations.

Gold is of particular value to the jewelry, electronics, and financial industries. For the purposes of our study, we will focus on jewelry demand, which accounts for about 50% of gold use. India and China account for more than half of the global gold jewelry production and consumer demand.¹⁸ The upstream sector includes industrial scale mining (representing 50% of global supply), recycled gold (representing 37% of global supply), and ASM (representing 12% of global supply).¹⁹

Mr. Stewart Grice from Hoover and Strong explains the typical gold value chain as follows:

- 1) Gold is mined; 2) Ore is processed and refined to 'Dore', which is typically around 80%+ pure gold by weight; 3) Gold is re-refined either by a mine or bullion refiner to 99.99% pure; 4) A manufacturer will then alloy it into the required karats and colors, which is used to make jewelry; and 5) Any scraps remaining from the jewelry manufacturing process are either re-used or sent to secondary refiner to process and 'de-alloy' back to fine gold.²⁰

Figure 2: The Basic Steps of the Gold Value Chain



Though not many studies have been conducted on the ASM-specific value chain, it is safe to assume that it varies in the upstream mining segment. It is also important to note the specific geographic characteristics of Peruvian mines, which create unique problems for mining in the region. Most of the Peruvian mineral deposit areas are located in the high altitudes of the Andean mountains, covering 32% of the country. Machines and traditional methods tend to fail in these regions, as the veins are very narrow.²¹

Some of the gold mining activities that take place in the Amazon region have led to environmental concerns relating to the use of mercury in the amalgamation process. In 2011, scholars Sonia Valdivia and Cassia Ugaya conducted a study that described how miners amalgamate gold with mercury, and its damaging impact on ecosystems and human health throughout the world.²²

Environmental, socioeconomic, and human rights issues in Peru are adding pressure to manufacturers and suppliers along the gold value chain. As consumer awareness and concerns about transparency, conflict-free resources, environmental damage, and human security mature, so does the need for corporate social responsibility. As a result, actors along the gold value chain are paying closer attention to the negative effects of mining on the environment and human health, working to create positive impacts on local communities. Recently, there has been a strong movement towards responsible conflict-free gold mining. The World Gold Council notes that gold mining companies that take responsible actions can have “transformative effects on socio-economic development,” leading to employment opportunities and improved infrastructure, and tax revenues.²³ Responsible gold mining and jewelry manufacturing companies are adhering to responsible standards. Representative standards include the Conflict-Free Gold Standard and Fairtrade or Fairmined gold certification, where gold producers are able to provide assurances that the gold is conflict-free, environmentally friendly, and human rights conscious. Moreover, standards like the OECD Due Diligence Guidance encourage companies to work with artisanal miners, and “unless a buyer finds evidence of armed group involvement or serious human rights abuses in the mine or trader, ongoing engagement with artisanal miners is recommended.”²⁴ This will be expanded upon in the ‘Human Rights’ section of our report.

In Peru, it is also important to distinguish between illicit, informal, and formal jewelry industry activities as they impact the first steps of the value chain: mining and refining the base materials. Much of the available data used to analyze the economic impacts of the jewelry industry measures formal economic activity because these activities are legal and monitored through a government’s licensing requirements, regulations, and taxation regimes. Conversely, data can be harder to find regarding informal or illicit mining activities because there is, by definition, a lack of government involvement.²⁵

Additionally, it is necessary for policymakers to differentiate between “illicit mining” or mining carried out “in blatant violation of the law” and “informal mining” or mining “conducted by miners who operate on a small-scale and have begun the process of formalization but have not yet been able to meet all legal requirements.”²⁶ Illicit mining operations often take place in protected environments, and do not comply with environmental, tax, or labor requirements.²⁷ Illicit mining operations can be large, employ heavy equipment, earn hundreds of millions in profits, and can also have connections with armed groups and organized crime.²⁸ According to a 2015 report by the Lima-based NGO Cooperaccion, “between USD 15 billion worth of gold was produced illicitly and/or informally in Peru between 2003 and 2014, meaning an estimated loss of between USD 1.4 billion and USD 4.9 billion to the Treasury.”²⁹

When policymakers fail to differentiate between these types of mining operations, they “wrongly criminalize informal miners and eliminate the livelihood of highly vulnerable populations, increasing their risk of becoming victims of human trafficking or even members of armed groups.”³⁰ Additionally, formalizing informal mining operations provides the government a source of additional revenue and provides informal miners supplementary protections as well as access to government benefits and services. The government of Peru has attempted to formalize ASM in the Madre de Dios region of Peru “to gain better control of the adverse social and environmental impacts of mining.”³¹

Chapter 2: Historical and Cultural Background

2.1 Contemporary History of Mining in Botswana

In 1966, Botswana gained its independence and was one of the poorest countries in the world with a per capita income of about USD 80 a year, relying mainly on mixed agriculture (crops and livestock), hunting and gathering, and remittances from migrant labor in South Africa.³² Farming of sorghum, maize, millet, and beans, along with small stock and cattle, are still important for both human survival and the economy.

In 1967, however, a huge diamond mine was discovered in a remote area called Orapa, located about 324 miles north of the capital, Gaborone.³³ De Beers discovered the mine and soon after joined forces with the government of Botswana to develop the industry, leading to economic growth in the country for decades to come. Nearly all of Botswana's diamond mines are jointly owned and operated by the state of Botswana and De Beers. The arrangement, called “Debswana,” is characterized as “one of the most successful public-private partnerships in the world.”³⁴ According to De Beers, they have recovered nearly 700 million carats of diamonds over the past fifty years, supporting 1 in 20 jobs in the country and boosting their GDP 5.9% a year.³⁵

2.2 Contemporary History of Mining in Peru

During the period of the Inca (1433-1572), there was a regimented administrative system for mining gold.³⁶ The production of metals during the Inca period was sophisticated and mainly characterized by the use of copper, the reduction of mercury (found to be harmful to health), and bronze alloy.³⁷ Furthermore, gold production came from extraction in the Andes Mountains and the jungle plains.³⁸

Mining continued during Spanish rule (1533-1821), forcing indigenous populations into unpaid, slave labor in gold mines. Colonial notions about the physical and intellectual capacities of indigenous peoples led to the mining *mita*, forced labor that was introduced on a large scale in the 1570s.³⁹ Indigenous values and traditions were disregarded, as imperial colonial demands forged ahead. This sentiment continues today. This narrative of abuse and exploitation presently resonates with the local community, highlighting the idea that foreigners come and leave with their gold, leaving indigenous communities with nothing.

In modern day Peru, there were a series of gold rushes between 1930 and 2009. For example, according to the World Bank, between 1990 and 1997, investment in mining exportations grew by 90% at the global level, by 400% in Latin America, and by 2,000% in Peru.⁴⁰ In the period 2002 to 2012, the Peruvian economy almost doubled in size, due primarily to the commodity boom, influenced largely by gold.⁴¹ In fact, in the early twenty-first century, high prices of metals continued to drive the expansion of mining frontiers into areas formerly used for agriculture and farming, affecting more than half of Peru's rural and indigenous communities.⁴² The expansion of mining frontiers has led to an increase in conflicts over natural resources, some of which have turned violent. As Peter Klaren, a scholar at George Washington University,

points out, “local communities’ grievances are mostly tied to demands for greater economic benefits, environmental protection, or land rights.”⁴³

2.3 Social Structures in Botswana

Botswana is diverse, with eight Tswana tribes recognized by the Botswana constitution, as well as about fifty distinct indigenous groups, which speak twenty-six different languages.⁴⁴ Despite the many ethno-linguistic groups, there is widespread social cohesion throughout the country, which contributes to conflict-free diamond mining. Indeed, with a population of 2.25 million,⁴⁵ Botswana is considered one of the most prosperous countries in Africa with a per capita income exceeding USD 6,600 a year, due in large part to diamond industry. It is considered the one African nation to escape the “resource curse,” or “the failure of many resource-rich countries to benefit fully from their natural resource wealth, and for governments in these countries to respond effectively to public welfare needs.”⁴⁶

At independence, mineral rights were held by the landowners, which could have led to “considerable inequalities between mineral-producing and other areas of the country, uneven growth, and quite possibly generating ethnic, social, and political tension.”⁴⁷ For example, under the Territories Act, “land in ethnic territories is distributed under the jurisdiction of majority groups” causing a “lack of representation in the [local legislative council] House of Chiefs, [as] minority groups are subject to patriarchal Tswana customary law despite having their own traditional rules.”⁴⁸ However, through a process of negotiation and the implementation of a mineral tax that encouraged “rapid exploration or surrender of mineral rights,” the first president, Seretse Khama, led the process of transferring the rights to the state, which notably did not include any expropriation of privately held rights.⁴⁹ It should also be noted that Seretse Khama, was “Chief of the Bangwato, the largest tribal group, whose land also included most of the areas where minerals had been found.”⁵⁰ By facilitating the transfer of tribal mineral rights to the state, “Khama subordinated narrow tribal interests to the overall national interest, and provided the basis for the subsequent national stability.”⁵¹

Some scholars claim that the Botswanan elite’s ability to politically and socially engineer a homogeneous national identity via identity management tools, through mechanisms of assimilation to reduce “ethnic distance”⁵² and encourage nationalism, helped prevent ethnic tensions and allowed Botswana to escape the aforementioned resource curse. Scholar Angela Gapa suggests that one key reason for Botswana’s success is its high level of homogeneity, in which a majority of the population are Tswana. This is recognized by membership to the eight Tswana tribes (BaKgatla, BaKwena, BaLete, BaNgwato, BaNgwaketse, BaRolong, BaTawana, BaTlokwa and BaHurutshe) or use of the Setswana language. These ethno-linguistic designations can be further divided into Bantu and non-Bantu groupings.⁵³ Gapa also suggests that the political elites’ strategy led to the creation of “Tswandadom,” which is essentially the social hierarchy of identification.

2.4 Social Structures in Peru

The social class system devised by colonialism still affects many social and political disagreements between Peru’s population of more than 31 million.⁵⁴ During colonial times,

indigenous communities were largely excluded from key positions of power in favor of elites of Spanish descent. Such discriminatory power structures continue and are apparent in the gold industry today,⁵⁵ where scholars have argued that Peru's allocation of resource revenue has contributed to conflict. Since regions with mineral production receive much higher levels of transfers from the Canon Minero and other systems, "the central government transfers higher amounts of regular resources and fixed resources to those districts, provincial and regional governments that contain negligible or no mining operations."⁵⁶ Despite receiving minimal revenue from the gold industry, Peru's indigenous groups are most vulnerable to exploitation within the illicit and informal gold sectors, as expanded upon in chapter 5 on 'Human Rights Impacts.'

Peru has a plethora of marginal, indigenous populations and peoples with access to gold deposits. There are four main ethnic groups listed in Peru, including Afroperuvians, Indigenous peoples of the Amazon, Indigenous peoples of the Andes, and the Whites/Mesitzos.⁵⁷ The Whites/Mesitzos are the dominant social group, and it is important to note that indigenous groups are still relatively powerless on a national level. Indigenous peoples are estimated to make up between 30% and 47% of the Peruvian population, with the Quechua being the largest group.⁵⁸ There also exists a clear distinction between the indigenous groups due to imbalanced political dealing. As the Ethnic Power Relations (EPR) Atlas says, "There exists a long-lasting division between Andean and Amazonian indigenous peoples, which is the result of both unequal legal and political treatment...For a long time, the representation structure of indigenous peoples was fragmented along this geographical and ideological division."⁵⁹

Generally, Peru lacks a hierarchical structure between indigenous tribes, instead allowing for social cohesion. This does not indicate a lack of identity, but rather a nation that placates the possibility of ethnic, tribal, and racial strife by a majority. The gold mining industry in Peru does not care about one's creed; it is a dynamic industry with a host of actors in its supply chain.

2.5 Social and Cultural Comparison for JDII

Both Peru and Botswana experience low levels of ethnic tension due to social cohesion among the indigenous populations. In Botswana, socially and politically engineered social policies contribute to stability, while in Peru, the legacy of colonialism plays a role in the general sentiment among the indigenous populations that foreigners come and take their resources. Ultimately, in both nations, indigenous populations have been eliminated from the political dialogue, and the political elite consider them obstacles to the economic growth of their nations.

Given our research, there is a clear connection between colonial legacy, resource distribution, and ethnic conflict. In regard to colonial legacy, Botswana has not been affected as much as Peru, as Britain did not use 'divide and conquer tactics' in Botswana as in other parts of Africa, where ethnic conflict over natural resources, particularly diamonds, has led to years of civil conflict. However, an important point to mention regarding Botswana is that at independence, the decision to distribute diamond revenues at the national level versus a local/ethnic tribal level has led to decades of economic growth in addition to relatively low social issues among ethnic groups. In the case of Peru, colonial legacy and social structure has played a profound role in

how the indigenous populations view the mining industry. The attitude remains that foreigners deplete the local resources without due recourse. This has led to social conflict in regard to the mining industry, including gold mining. The Peace Fund rates Botswana with a Warning and Peru with an Elevated Warning in terms of being potential conflict states.

Regarding the JDII, the Global Conflict Risk Index, Uppsala Conflict Data Program, and the Fragile State Index 2017 are helpful in assessing the following indicators: ethnic power change, ethnic compilation, transnational ethnic bonds, civil war, factionalized elites, group grievances, and uneven development. These indexes support out finding that Botswana rates more positively than Peru in regard to social conflict.

Chapter 3: Political Impacts along the Value Chain

Botswana and Peru are two nations endowed with mineral wealth. They are large players in the jewelry industry because they produce such high amounts of precious minerals for jewelry products, namely gold in Peru and diamonds in Botswana. The jewelry industry in these countries has immense influence because of its large contribution to each country's economy. In Botswana, the robust legacy of the public-private partnership provides an enhanced level of influence. Additionally, the laws regarding the diamond industry in Botswana have created an ironclad environment of security and surety for the diamonds through top-down governance, whereas in Peru, the regulations of the industry are much harder to enforce, which can be observed in the high levels of illicit and informal mining operations. This section will examine the governance, domestic perspectives on the industry and its regulation, and legislation that impact the value chains.

3.1 Governance

Both Botswana and Peru support free and fair elections and entertain multiple political parties. They are willing partners for the jewelry industry in its fight against illicit mining and funding of violence through conflict minerals.

Botswana differs from Peru in a crucial way; it has had the same political party in power since 1966: the Botswana Democratic Party (BDP). Contemporarily, the president of Botswana is His Excellency Mr. Seretse Khama Ian Khama, the son of former president and Botswana liberator, Sir Seretse Goitsebeng Maphiri Khama.⁶⁰ This political continuity has been a benefit for the jewelry industry because it provides assurance that the investment environment will not drastically change so long as BDP retains power. Though the presence of diamonds does not guarantee government continuity, the revenue from diamonds allows the party to respond to constituent demands and indirectly allows the BDP to retain power, preventing disruptions along the value chain.

The current president of Peru is Pedro Pablo Kuczynski Godard, and he represents the Peruvians for Change party (PPK). He is expected to be a break away from the Ollanta Humala Tasso administration, especially in terms of the mining formalization policy.⁶¹ If he is successful, this would be hugely beneficial to the jewelry industry throughout the gold value chain, especially within excavation, extraction, and first separation, due to the assurance that the gold exported is clean and the work is dignified for miners.

Botswana has two tiers of government, local and federal, and maintains three government branches. While there are many actors in the two-tiered government, only the central government has a direct relationship with the diamond industry.⁶² Indeed, Botswana maintains a centralized government system through top-down control. Upwards of 90% of revenue for the local governments is distributed from the central government.⁶³

On the other hand, Peru has a three-tiered government with local, regional, and national government bodies.⁶⁴ Peru's second tier of government is composed of directly elected municipal, provincial, and district councils. These councils are incorporated into regional

governments. In Peru, royalties and a 50% corporate income tax on mines are remitted by the central government back to the regional and local authorities of the area where the mine is located, called the “Canon Minero,” which will be further explored in chapter 4 on ‘Economic Impacts.’⁶⁵ Though autonomous, the second-tier regional governments are financially dependent on the central government because most cannot cover operating costs through their own revenue generation.⁶⁶

Peru is divided into regions, municipalities, districts, and the province of Lima.^{67, 68} The Peruvian government’s institutional integrity is fragile as “the state of Peru has limited capacity to enforce its laws and be the legitimate guarantor of order” and this “absence of state power is dramatic in some areas of the territory, such as cocoa-growing areas, illicit mines, and even areas where formal mining companies operate.”⁶⁹ This illustrates an environment that, on paper, would not be attractive to foreign investors, such as the jewelry industry. Further still, because formal institutions are weak, locals live a different reality mediated by “unwritten codes that citizens and public officers share” creating instability and volatility between themselves and the jewelry industry.⁷⁰ The Peruvian government has trouble projecting its influence from Lima, making it challenging to regulate extractive activities and creating opportunities for corruption and patronage.⁷¹ To further compound the problem, the subnational governments lack the capacity to implement regulatory policy. For example, the Ministry of Economy and Finance has little functional capacity to monitoring their expenditures, which has resulted in serious public spending problems, as discussed further in section 4.3 on ‘Distribution Mechanisms.’⁷²

The Botswanan central government retains more power than Peru’s. Botswana is also a small country with a navigable topography, making governance less arduous. This is appealing to the jewelry industry because it means that the rights of their corporations will be respected, and their investments kept safe. Peru has a more difficult topography and political situation, one that necessitates slow development towards efficiency. The nature and physical location of the mineral deposits affect government’s ability to control sourcing activities, which has implications for tax collection. That said, Peru has been trying to curtail illicit mining by increasing the enforcement of regulation and putting forward initiatives that favor foreign investment. This bodes well for the jewelry industry, if the government’s objectives are met and gold mining is formalized.

3.2 Domestic Insight into Botswana

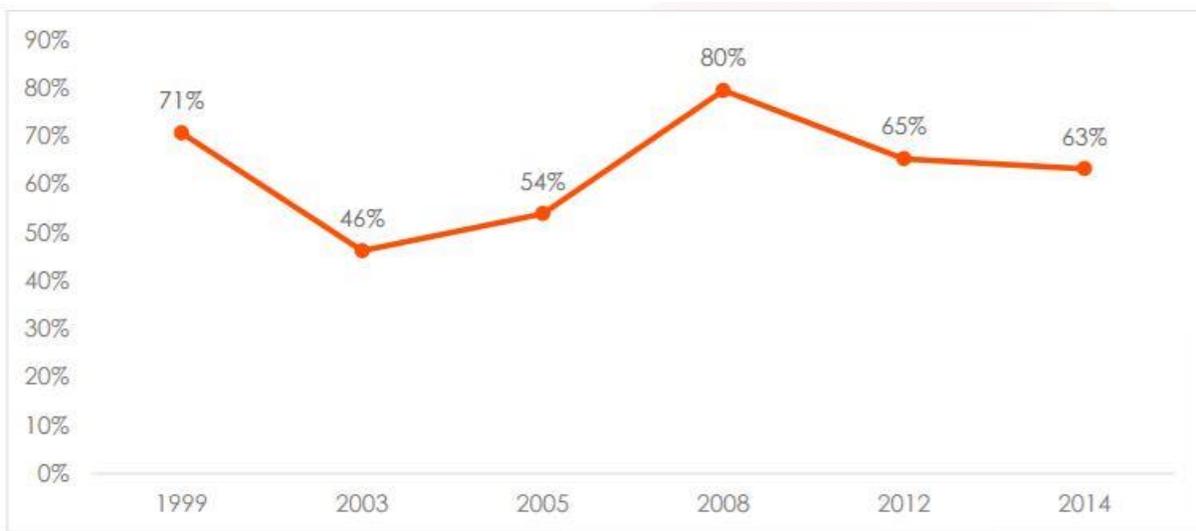
Botswana’s consistently high marks hide underlying issues within the nation, all the while creating an environment where the jewelry industry can thrive. Though Botswana is lauded for its democratic history, this notion is contemporarily contested. For instance, the country lacks a freedom of information law, drawing criticism for government secrecy.⁷³ In that same vein, the World Bank has recently raised “concerns about the government’s decision to keep the negotiation process around contracts for diamond mining confidential and secretive.”⁷⁴ Moreover, Botswana is a part of the Kimberley Process (which will be further discussed in section 5.7.1 on ‘Diamond Certification’), which provides some level of transparency, but that not on the internal management and collection of funds.

Additionally, as the Bertelsmann Stiftung index notes:

[T]here is no law on declaration of assets and liabilities by public officeholders, demonstrating the lack of political will in combating corruption or abuse of office. Unpublished Afrobarometer survey results from 2012 and 2014 suggest that the majority of Botswana interviewed were in favor of a law requiring that ministers, members of parliament and senior government officials declare their assets.⁷⁵

This enables behavior that could harm the commodity chain before it even starts. For instance, the secretary-general of the BDP was awarded a BWP 40 million (or USD 3,880,400) contract to build a new fire station in Molepolole, in an exchange that had no true measure of competition or open bid.⁷⁶

Figure 3: Afrobarometer – Supply of Democracy Index for Botswana (1999-2014)⁷⁷



In 2008, Afrobarometer¹ reports stated that Botswanans sensed a decline in how free they were to speak their minds, which is a paramount characteristic of their democracy. In 2008, 83% felt completely free in the nation and that number has dropped to 65% in 2014.⁷⁸ 63% of Botswanans believe that they live in a full democracy or a democracy with minor problems, down seventeen points from 2008.⁷⁹ One action that left many concerned was the creation of the clandestine Directorate of Intelligence Service (DIS), and the positioning of it within Khama’s office and in his control. The director is Isaac Kgosi, a close ally to Khama. DIS has been accused of civilian harassment and violence, particularly towards opposition leaders and journalists.^{80, 81} According to the World Press Freedom Index of 2014, an assessment of a nation’s press freedoms run by Reporters Without Borders, Botswana was ranked 41st out of 180 countries. Botswana is a nation with only one, free but not impartial, state-owned newspaper, making dissent unlikely.⁸² Additionally, with the Media Practitioner’s Bill of 2008, the government has a supervisory council overseeing all media. The government has been primarily criticized by private media and

¹ Afrobarometer is a “pan-African, non-partisan research network that conducts public attitude surveys on democracy, governance, economic conditions, and related issues across more than thirty countries in Africa.”

analysts because state media does not provide them a platform, with the publication of articles that disparage the president being deemed a “criminal offence.”^{83,84}

An institution charged with mitigating state corruption is the Directorate on Corruption and Economic Crime (DCEC).⁸⁵ The director of the DCEC is appointed by the president and is a relative of Khama, Rose Seretse. One high profile corruption incident was a case of embezzlement by a managing director of Debswana, who ended up committing suicide before the case could be concluded. Following this, his son and a former senior executive were convicted but cleared on appeal.⁸⁶ The exhibition of poor accountability and competition does not lend support to the notion that the jewelry industry is a good local citizen, as it operates in a country that allows its high-ranking officials and company employees to function with impunity and amass wealth.

3.3 Domestic Insight into Peru

According to the Corruptions Perception Index (2016), Peru scored a 35/100, earning it a “lower ranked” country designation. Peru is described as a country “plagued by untrustworthy and badly functioning public institutions, like the police and judiciary.”⁸⁷ Freedom House, even after labeling Peru as free, posits that Peru suffers from a “lack of political representation and exclusion from decisions on land use and other issues” of indigenous populations, as well as “activism related to land use [having] often led to violence and the use of lethal force by police” explored in chapter 5 on ‘Human Rights Impacts.’⁸⁸ They go on to cite a National Corruption Survey which concludes that nearly 80% of respondents think corruption increased under the Humala government and 85% think the central government does “little” or “[nothing] at all” to effectively combat corruption.⁸⁹ The Latin American Public Opinion Project reported that less than 64% of the nation supports Peruvian democracy; Latinbarometro puts that number at 53% for 2013. Further still, the judiciary is understood to be the apogee of corruption with a penchant for being selective of cases they pursue, leaving people to settle disputes informally.⁹⁰

Communities often do not distinguish between the extractive gold industry and the Peruvian government.⁹¹ It could be said that Peru has patron-client relationships at multiple scales, particularly within the extractive industry at the national and subnational levels. From excavation and extraction, first separation, and amalgamation, stakeholders in ASM or informal mining are in physical danger because they lack a formalized status in the gold industry. They operate in a grey area with little assurances and high duress. The local government has little avenue to invest the revenue productively to bring about ground-level benefits promptly.⁹² This affects the jewelry industry, which cannot reach certain areas due to poor infrastructure or help create cyclical development because there are no value adding gold facilities available.

A research paper produced by a team from the University of Western Australia and the Latin America Mining Monitoring Program interviewed individuals affected by the mining industry, from NGO officials to locals, in the hopes of understanding their lived experiences, with a focus on the Yanacocha and Tintaya mines.⁹³ This report provides insight for the jewelry industry about how its operations manifest and how those who represent its interests operate. The report discussed the communication processes between corporations and the affected populations, noting that it is supposed to be structured, formal, and inclusive, but on the ground often

manifests differently. Instances that demonstrated a lack of transparency and forthrightness between the mining corporations and the locals, who have been taken advantage of by entities of the mining industry on multiple occasions in different ways, include manipulation, misleading information, and assurances of safety, compliance, or gifts.⁹⁴ Similarly, reports of police officers employed by the mines violently stopping protests and even killing citizens, paints the jewelry industry and the government as complicit to these actions. It was noted that the police officers were in full uniform when they worked for the mines.⁹⁵

In this situation, the government already does not have a direct relationship with these communities and when it does, via these instances, it is less than reassuring.⁹⁶ Respondents even spoke on how the mining companies try to foster a relationship with local authoritative figures, like the police and the military, to ensure security. One respondent claimed that municipalities were not alerted that a mine concession had been granted in their particular area.⁹⁷ They also did not have meaningful community input; respondents stated that the representatives did not speak at length on the negative aspects of the mine or field their concerns in a personal manner. Rather respondents would be, on occasion, mocked by representatives, spoken to with condescension by engineers, and/or gifted into submission.⁹⁸ This knowledge could impact demand in the jewelry industry at the consumer sales stage.

A researcher for a Peruvian NGO reported that when announcements are made regarding extractive industry activities, the information dissemination is low with few newspapers being circulated. This issue is compounded, as these tend to be Quichuan-speaking communities, and they cannot understand the heavily technical Spanish impact studies. They do not have the time nor the ability to respond. As a result, you have an uninformed body of stakeholders who have to take the mining company representatives word as truth.⁹⁹ The new administration should aim to address these issues.

President Pedro Pablo Kuczynski's short time in office is often referred to in a positive light.¹⁰⁰ His aim is to streamline regulation through formalization. Former President Humalas approach was more aggressive and uncompromising. He wanted to destroy illicit and informal mining and chased this goal with raids on small scale miners. He established a decree that miners who used banned machines or worked in prohibited zones would be labeled as illicit, immediately criminalizing thousands of ASM miners.¹⁰¹ President Kuczynski's approach should hold positive gains for stakeholders along the supply chain. He has set up formalization offices in regional governments for on the ground support.¹⁰² This action is positive for the jewelry industry because it would establish credibility at the excavation and extraction phase of the cycle. It also means that workers in the first separation and amalgamation phase will have a safer work environment.

Furthermore, once miners register, they are no longer considered illicit because they are in the process of formalizing. When miners register to formalize, additional resources are made available to them, from financial to technical support. They will have access to assistance with the completion of their application, as well as the completion of the environmental impact study. Capacity building through cooperation with the central government is crucial to the formalization process and an effort that has been warmly received, with Kuczynski and others already seeing strong results.¹⁰³ The formalization process of ASM mining is a key focus of this administration

and positive step for the jewelry industry. Clean formalization would help prevent those who provide fake receipts for gold produced at illicit mines.¹⁰⁴

3.4 Relevant Legislation in Botswana

The government of Botswana has a Competition Act, mandated to regulate competition in the economy, but it must be noted that any entity of which the government holds shares is not beholden to this law.¹⁰⁵ Botswana is a dedicated member of the Kimberley Process (as discussed in section 5.7.1 on ‘Diamond Certification’), making it an attractive investment destination. The most relevant and applicable laws regarding diamonds are the Precious and Semi-Precious Stones Act, the Diamond Cutting Act, Acquisition of Property Act, and Tribal Territories Act.

The Tribal Territories Act paved the way for regulatory success in the diamond industry for the government of Botswana. President Khama Senior received the mineral rich areas under the auspices of the government from tribal leaders. Mining concessions, from prospecting to extraction, are controlled and disseminated by the government, which is also to be the first informed if diamonds are found. The semi-precious stones dealer’s license is issued by the Director of Mines, but the Minister of Minerals, Energy, and Water has ultimate decision-making power.¹⁰⁶ This keeps the most profitable elements of diamond ownership in the government’s hands.

Diamond cutting is part of the second part of the diamond pipeline. The Minister sets an annual charge for those who engage in the activity. Diamond cutting licenses are approved on the condition that the applicant agrees that the government can acquire an interest in the operations to be carried out under the license.¹⁰⁷ Extra terms and conditions in licenses can occur after they have been issued. This law also allows the government to exempt applicants from certain provisions claiming, “special circumstances.”¹⁰⁸ One law that impacts groups in the diamond cutting industry is that license holders must have their employees approved by the Minister prior to the start of their work, which can be dangerously limiting and unfair.¹⁰⁹ However, this does maintain a high pedigree of employee.

Finally, the president has the option of acquiring property, sometimes with compensation for the affected, if it is deemed to benefit the interests of the public.¹¹⁰ Though this is not the fault of the jewelry industry, the industry could be an indirect cause of displacement. If the title holder refuses to convey their title, the Registrar of the High Court is authorized to complete and sign the relevant documents. If one protests at the site or hinders the acquisition process, they may face arrest for no longer than three months or can be fined BWP 50 (approximate USD 5).¹¹¹

3.5 Relevant Legislation in Peru

The opportunity to explore, extract, process, and produce minerals in Peru is administratively controlled by the nation and through the General Mining Law. Mining and processing concessions are given from the Ministry of Energy and Mines, through the Institute of Geology, Mining and Metallurgy (INGEMMET) but this does not stop actors in the jewelry industry from circumnavigating these and engaging privately with land owners.¹¹² These concessions, as long as production and fees are maintained, have indefinite terms, while also validating exploration

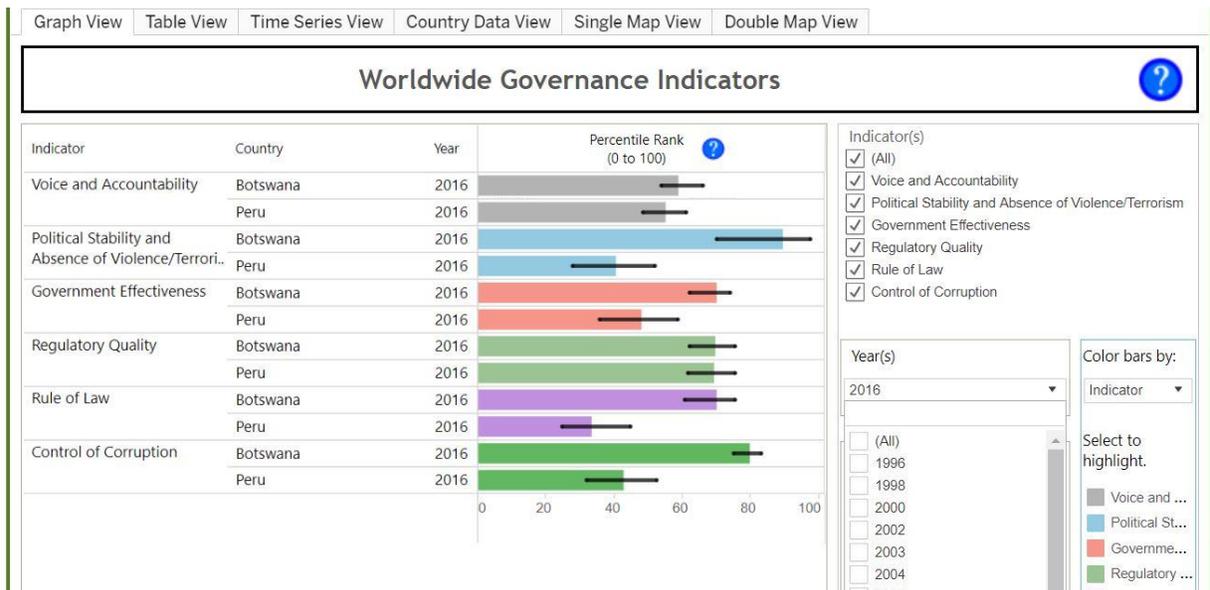
and exploitation operations.¹¹³ This is appealing to the jewelry industry because it solidifies excavation and exploration access, however, it is a porous set-up because of how gold is obtained in Peru.

Peru is a nation that has tried to ensure an atmosphere that is amicable to foreign investment and, in doing so, does not have restrictive regulations, specifically in the gold mining and mineral extractive industry. The laws that it has in place reflect that Peru, as a nation, has “taken the necessary steps to establish a consistent investment policy that eliminates all obstacles for foreign investors, with the result that now Peru is considered to have one of the most open investment regimes in the world.”¹¹⁴

Peru’s legal framework allows for less government oversight through automatic investment authorization and the protection of private investors from arbitrary changes in the legal terms and conditions of their ventures.¹¹⁵ The Foreign Investment Law, which provides an option for a stabilization agreement, has a government agency called “Proinversion” that guarantees “10 [year] stability concerning: corporate income tax regime, currency exchange regime, free availability of foreign currency and non-discrimination. In order to qualify for this benefit, the investor must invest a minimum of US\$10 million within two years of entering the Stabilization Agreement.”¹¹⁶ This is a plus for the jewelry industry because it establishes an attractive investment arena.

A key difference between Peru and Botswana is that Peru has high levels of informal and illicit mining. In Botswana, the rigid control of the mining industry vehemently prohibits this. Another significant operating difference is that, in Peru, companies in mining areas must have an agreement with the owners of the land. It also has no industry-specific regulations regarding worker rights, treatment, or pedigree.¹¹⁷ Cheap and abundant labor for mining makes gold mining attractive in Peru. The government of Peru has a Prior Consultation Law, which explains the proper participation processes a company must take before project approval occurs that may impact indigenous people, but it is not always respected, as discussed earlier in this section.¹¹⁸

Figure 4: World Bank's Worldwide Governance Indicators with Peru and Botswana Selected¹¹⁹



3.6 Political Comparison for the JDII

It seems that Botswana would score higher than Peru on a future index if one analyzed their political and governing contexts. The amount of state control Botswana enjoys is greater than that of Peru. Botswana is more politically and governmentally stable than Peru, yet they both suffer from varying levels of corruption, which are well documented. In this situation, the question becomes how much peripheral macro- and micro- level corruption is acceptable to operate in, while gaining financially. Nonetheless, Botswana strongly enforces its relevant laws whereas Peru is not able to spread its influence and administrate mineral rich resource areas at the same capacity as Botswana.

That being said, Botswana has more robust institutional structures operationalized to monitor and maintain the integrity of its diamond industry. The financial incentives to engage in both countries will exist as long as the resource wealth does.

Chapter 4: Economic Impacts along the Value Chain

The following chapter assesses the economic impacts of the diamond industry on Botswana and the gold industry on Peru. The chapter discusses (1) measuring the size of the industries, (2) managing revenue, and (3) economic sustainability.

4.1 Measuring Industry

The jewelry industry is complex and fractured, including many different products, countries, and value chains. Therefore, when measuring and analyzing the impacts of the jewelry industry in a particular country, it is important to be clear about the product and sectors involved, in order to frame the challenges and successes in ways that are helpful for future policy-making.

Additionally, in some countries, the industry can be divided into formal, informal, and illicit sectors. In these contexts, it is important to isolate and discuss these sectors individually, as the impacts and related policy solutions for each will be notably different. This issue was discussed in more detail above in section 1.2 ‘Gold in Peru.’

4.1.1 Size of Industry

Without understanding the relative size of the industry, it is impossible to understand the scope of its effects or compare the impacts of the industry across different countries. There are several ways to measure the size of an industry, but the primary methods are to measure the industry as a percentage of GDP or as a percentage of total exports. For example, in 2013, diamonds accounted for around 20-24% of Botswana’s GDP,¹²⁰ indicating that the diamond industry has large effects on economic security, while gold accounted for less than 8% (percentage of all metals) of Peru’s GDP in 2013,¹²¹ indicating that the effects of the gold industry on Peru’s economic security as a whole may not be as significant. Additionally, gold accounted for around 18% of Peru’s exports in 2013¹²² and diamonds accounted for 83% of Botswana’s exports in 2015.¹²³ While there are limits to the accuracy of this data, including challenges in measuring the presence of informal or illicit mining, these ratios represent a basic understanding of the role that a given industry plays in a state’s economy.

4.1.2 Employment

The number of citizens employed in jewelry industry activities can also be indicative of its relative size and economic impact on the host country. It is important to note that most sectoral employment data only reflects the formal mining sectors and often does not distinguish between individual products, such as gold or diamonds.

4.1.2.1 Diamond Industry and Related Employment in Botswana

In its March 2016 *Formal Sector Employment Survey*, Statistics Botswana reported that 3.1% of the employed citizens work in the mining and quarrying sectors.¹²⁴ Although the report does not distinguish employment specifically for diamond production, we can assume that a large proportion of those employed work in the diamond industry because diamonds account for 81%

of all mining activities.¹²⁵ While the proportion employed in this sector seems low, especially compared with the overall contribution of the diamond industry on GDP (20-25%),¹²⁶ the mining sector is one of the highest wage industries, with employees making on average BWP 10,940 (approximately USD 1,061) per month (the only two higher paid industries are finance at BWP 13,713 (approximately USD 1,330) on average per month, and electricity and water at BWP 11,960 (approximately USD 1,160) on average per month).¹²⁷ Additionally, diamond industry companies often sponsor employee education and training. For example, Debswana contributes to human resource development by providing intensive training, apprenticeship programs, and scholarships for employees to study for advanced qualifications.¹²⁸ Once these employees leave the industry, they provide a skilled resource for other industries.¹²⁹ Furthermore, the number of expatriate workers has dropped, suggesting that citizens have been trained to take over positions that required skills that were previously not available in the local employment market.¹³⁰

However, the main employment impact of the diamond industry is indirect. While only 46.6% of citizens are employed in the private sector, 53.5% of citizens are employed in the parastatal, central government, or local government (5%, 25.8%, and 22.6%, respectively).¹³¹ In Botswana, the public sector is the largest employer, which “is only possible on the basis of revenues collected by the government”¹³² of which diamonds account for around 30-45%.¹³³ Aside from the public sector, the largest industry employers are wholesale and retail trade (12.2%), manufacturing (8.9%), construction (5.5%), real estate (5%), and hotels and restaurants (4.5%).¹³⁴ Out of these industries, the services sector has been the biggest contributor to GDP and employment growth in recent years, particularly the tourism industry.¹³⁵

While reducing the dependence on the state as the main employer and fostering private sector-led job creation are important to reducing the ultimate dependence on the diamond industry for employment, it is also a necessary step to reduce unemployment (averaging around 20%),¹³⁶ inequality, and poverty.¹³⁷ The high dependence on the diamond industry’s indirect employment is a symptom and an indicator of the larger challenges of economic diversification and budget sustainability explored in section 4.4 entitled ‘Sustainability’ below.

4.1.2.2 Gold Industry and Related Employment in Peru

The mining industry accounts for a very small proportion of Peru’s employment. However, for every one job in the mining industry, ten additional jobs are indirectly created,¹³⁸ which may account for as much as 14% of jobs among the economically active population.¹³⁹ Additionally, the mining industry has an informal sector, although it is relatively highly formalized compared to the overall informality of Peru’s employment, which is estimated to be 70%. At least half of the employment of each economic sector is informal.¹⁴⁰ For example, a 2013 report indicated that informal and illicit mining employed 100,000 people in Peru and indirectly employed 500,000 more. Other reports indicated that 90% of the gold produced in Madre de Dios is informally or illicitly mined and 90% of the population in the region directly or indirectly relies on the informal and/or illicit mining industry.¹⁴¹ In all sectors including the mining sector, informality limits government revenue, the quality and scope of social services, and infrastructure spending.¹⁴²

4.2 Managing Revenue

In order to effectively manage revenue from jewelry industry products, states must have efficient (1) taxation regimes and (2) distribution mechanisms.

4.2.1 Taxation Regimes

States can create economic growth and development from jewelry and other extractive industry operations through taxation, investment, and redistribution.¹⁴³ In order for states to receive the optimum returns from the jewelry industry, they must balance the rate of taxation with levels of production and the creation of an attractive investment environment.¹⁴⁴ According to a report from the Working Party of Trade Committee of the Organization for Economic Co-operation and Development (OECD), a progressive tax regime² based on profits is “commonly considered best practice for natural resource-endowed countries” because it is most likely to capture the maximum amount of resource rents without reducing incentives for industry operation and investment.¹⁴⁵ Additionally, progressive taxes are generally preferred by mining companies because they ensure a fair and reasonable allocation of benefits and risk between the company and the host government.¹⁴⁶ More specifically, in theory, the optimal type of progressive taxation is one that is based on resource rents, or “the portion of net investment proceeds [that] exceeds the minimum rate of return required by the investor to undertake an investment,” because it “should not, in principle, distort investment decisions.”¹⁴⁷

Additionally, the type of mining and nature of the resource deposits can impact the effectiveness of tax regimes. While large scale mining projects might be most effectively taxed progressively, in countries with large numbers of artisanal miners, it is better practice to collect royalties by requiring traders to withhold and pay instead of taxing miners directly.¹⁴⁸ In this case, consumption taxes can also be collected in mining areas.¹⁴⁹

Different types of taxes affect products at different stages of the value chain. For example, import duties on exploration and development equipment taxes the extractive industry before the generation of revenue begins, although it provides government revenue early.¹⁵⁰ On the other hand, unit- or value-based royalties begin as soon as the production stage starts and can incentivize industry to stop production once only low-grade ore remains, which can lead to the under-exploitation of mines.¹⁵¹ Finally, profit-based or corporate profit taxes provide revenue only once operations are profitable.¹⁵² While they could reduce incentives for new projects, profit-based taxes are seen as an effective way to distribute risk between industry and government and can more effectively ensure tax stability.¹⁵³

Ultimately, determining the optimal mix of policies and mechanisms for a tax regime is difficult and requires an assessment of the risks and rewards of the industry, the accuracy of available

² According to the 2007 UNCTAD World Investment Report, many taxation regimes for extractive industries are regressive rather than progressive, meaning that “the government’s share falls as profitability improves.” The reason for this is unclear, although is potentially due to weakness in tax administration capacity, which is especially true when the administration of taxes “requires robust reporting and auditing, and where vigilance is needed to safeguard against tax avoidance measures, such as underreporting of revenues and over-statement of costs.” Additionally, provisions that provide incentives to investors can offset the progressive nature of a tax system.

information on the resources, and the administrative capacity. When taxes are excessive, they “will result in firms refusing to invest or undertaking sub-optimal extraction or exploration,” while taxes that are too low “represent foregone income for the government of the host country.”¹⁵⁴

4.2.1.1 Diamond Taxation Regime in Botswana

Botswana imposes taxes on its mining sector using three distinct instruments: a royalty, corporate profits tax, and withholding tax on dividends.¹⁵⁵ Diamonds are subject to a 10% royalty, calculated from the gross value of diamonds when the mine goes into production.¹⁵⁶ Generally, this is a relatively easy tax to collect when the value of the extracted resource is easily ascertainable, however, properly valuing diamonds in Botswana can be challenging due to the small and specialized market and “within the De Beers network, quite firmly controlled.”¹⁵⁷ Diamond valuation is a complex and imperfect process because it depends on the subjective evaluation of experts on four important categories: carat, color, clarity, and cut.¹⁵⁸

Botswana’s corporate profits tax is a variable rate income tax, meaning that the “tax rate increases with the profitability of the mining company.”¹⁵⁹ The tax is progressive and transparent, effectively capturing mineral rents and providing a degree of certainty to investors.¹⁶⁰ Investors pay a 7.5% withholding tax in Botswana on distributed dividends with no distinction for resident and non-resident investors.¹⁶¹

In addition to these tax instruments, when granting mining licenses for products other than diamonds, Botswana reserves the right to acquire up to 15% working interest participation in the proposed mine, which includes the right to appoint two directors.¹⁶² If the Government of Botswana decides to exercise this right, then the Government contributes its share of all expenses incurred in the project.¹⁶³ This option lapses at the end of the development phase. In diamond mining operations, “the level and terms of ownership are a matter for negotiation.”¹⁶⁴

One important reason for Botswana’s successful taxation regime is that Botswana has kimberlitic diamond deposits or “pipes” that “occur in well-defined locations where exploitation rights can be granted to a single recipient, [and] production can be monitored for taxation purposes and effective security enforced to minimise opportunities for theft.”¹⁶⁵ This makes diamonds easier to monitor and tax, especially when compared to countries with large amounts of alluvial diamond deposits, “where diamonds are widely scattered in riverbeds and mining tends to be carried out by a large number of small scale artisanal miners.”¹⁶⁶ Therefore, the nature of the diamond deposits makes it easier to tax along the value chain as compared with gold mining in Peru.

4.2.1.2 Gold Taxation Regime in Peru

In 2011, former President Humala implemented mineral tax reform in the hopes to “raise funds for social programs in a country where a quarter of the people still live in poverty.”¹⁶⁷ Supported by the mining companies, these reforms served to shift the tax regime from regressive to progressive.¹⁶⁸ Revenue from mining in Peru is generated from four different sources: corporate income tax, mineral royalties, a special tax on mining, and the special obligation on mining.¹⁶⁹

The corporate income tax rate is 28% of profits of companies, collected annually.¹⁷⁰ Royalties, the special tax on mining, and the special obligation on mining are paid quarterly and are deductible from total corporate income taxes.¹⁷¹ Mineral royalties are progressive; and “companies with higher operating margins would pay higher amounts” from 1% to 12%.¹⁷² The special tax on mining is progressive, ranging from 2% to 8%, and based on the operating margins of companies.¹⁷³ Companies with fiscal stability contracts are exempt from both the royalties and the special tax on mining, however, the special obligation on mining was designed for companies that benefit from the fiscal stability contracts.¹⁷⁴ Companies may be eligible to enter into stabilization contracts with the government, or “agreements that assure that a given set of rules, mainly about tax schemes, will remain unchanged for a certain number of years” under the Foreign Investment Law and the General Mining Law, if they meet certain qualifications.¹⁷⁵ These agreements are for 10 or 15 years.¹⁷⁶

The special obligation on mining is progressive, “and tends to be higher than the rate applied to the special tax on mining,” from 4% to 13%, which “ensures that companies effectively ‘pay’ for their stabilized tax terms.”¹⁷⁷ While the special tax on mining is therefore voluntary, “most mining companies under tax stabilization agreements are likely to elect to pay...to help build schools, hospitals, roads, electricity and water supplies that are much needed to reduce infrastructure bottlenecks.”¹⁷⁸

Additionally, the *derecho a vigencia* or the sub-surface fee is an annual payment that any owner of a mining concession, no matter the size of the operation, must make.¹⁷⁹ This flat fee is determined by the Geological, Mining, and Metallurgical Institute, based upon “the extension of the area and the type and scale of the activity.”¹⁸⁰ Generally, the fee is USD 3 per hectare, but small-scale mining operations are usually charged USD 1 per hectare and artisanal mining operations are charged USD 0.50 per hectare.¹⁸¹

4.3 Distribution Mechanisms

In many resource-rich countries, there are distinct rules for distributing revenue from natural resource extraction to subnational governments.¹⁸² Most of these countries have national governments that collect revenue from natural resource extraction and transfer it back to the areas of origin.¹⁸³ This is often called “derivation-based intergovernmental” transfer.¹⁸⁴ Other countries transfer resource revenue to subnational governments using objective criteria, such as population, revenue generation, or poverty level, irrespective of where resources were extracted.¹⁸⁵ A third, smaller set of countries allows subnational governments to directly collect revenue from the extractive industry.¹⁸⁶

Revenue sharing can help reduce poverty and increase growth and development.¹⁸⁷ It can also be used to reduce conflict in states that suffer from resource-based conflict.¹⁸⁸ However, when poorly designed and executed, revenue sharing regimes can exasperate or create conflict.¹⁸⁹ Additionally, because resource wealth is often associated with weak institutions and poor governance, resource-rich countries are often criticized for failing to spend “resource revenue wisely and equitably...even if the private sector is extracting natural resources efficiently and paying all the taxes that are due.”¹⁹⁰ Therefore, effective distribution mechanisms are important for development and stability.

4.3.1 Mineral Revenue Allocation System in Botswana

Central to understanding Botswana's mineral revenue distribution mechanism, was an early decision to transfer mineral rights to the state.¹⁹¹ Discussed in section 2.3, 'Social Structures in Botswana,' mineral rights were transferred from landowners to the central government. By facilitating the transfer of landowner rights, and consequently tribal mineral rights, to the state, Botswana created a precedent to highlight national interests over tribal interests, which has helped to promote stability.¹⁹²

Ultimately, Botswana's financial discipline is high, and "historically there has been little off-budget spending."¹⁹³ However, government revenue from mineral exploitation is not separated or allocated into a special fund, instead it is combined with the rest of the government's revenue.¹⁹⁴ The allocation of mineral revenue is not governed by legislation, but by a policy framework that specifies that "revenues derived from minerals, as they are the result of the sale of an asset, should be used to finance investment in other assets."¹⁹⁵ This principle is reflected in the Sustainable Budget Index (discussed in detail in section 4.4.2 on 'Sustainability'), which measures the "ratio of non-investment spending to recurrent revenue."¹⁹⁶

While the general pooling of government revenue makes it challenging to track the direct use of funds, Botswana's main public financial management tool is the National Development Plan (NDP) Process.¹⁹⁷ The NDP, which is approved by the legislature, determines the "general policy objectives" and all public investment projects that can be funded over a six-year period.¹⁹⁸ The annual budget provides funds for recurrent spending and the annual portion of development project funding for NDP projects.¹⁹⁹

The NDP is created through a "bottom-up" process, which begins with local community consultations carried out by the sixteen local authority administrations, which include "10 district councils, two city councils, and four town councils."²⁰⁰ These local community councils are based on pre-colonial public forums used to discuss issues of public interest and develop solutions.²⁰¹ The feedback collected during these community consultations is consolidated into the NDP. However, not all of the projects developed in the community consultations can be accepted for implementation in the NDP.²⁰² Additionally, some NDP projects are top-down and adopted by the legislature to accomplish national policy goals, such as an electricity grid or airport.²⁰³ Tension between local and national priorities has intensified, as major national infrastructure projects have been completed and small, rural communities' projects have not.²⁰⁴ This divide is often justified by arguing that smaller community projects are not cost-effective or emphasize social or political objectives instead of economic return.²⁰⁵

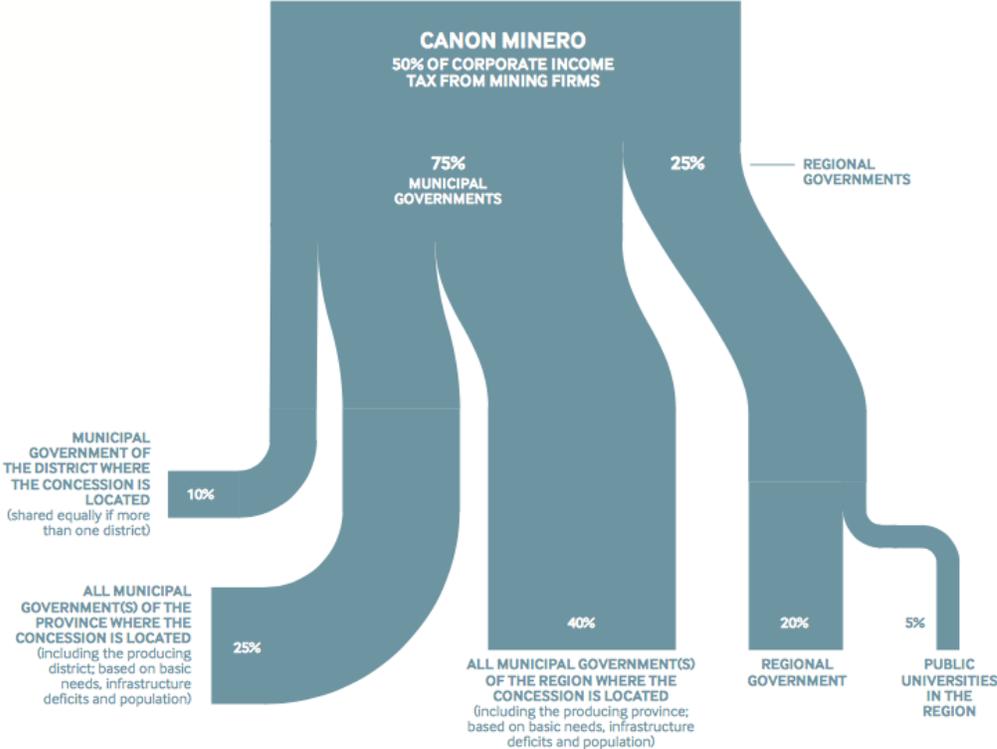
4.3.2 Mineral Revenue Sharing System in Peru

Similar to Botswana, Peru has a decentralized government system, which includes national, regional, and municipal (both provincial and district) levels of government in 25 regions, 194 provinces, and 1,838 districts.²⁰⁶ In 2014, around 60% of revenue collected from the mining sector is distributed to regional and municipal governments.²⁰⁷ Revenue sharing from mineral resources in Peru is based on the principle of derivation, "the revenues from the collection of

taxes on mining operations are to be allocated with a large proportion of the revenue going to provinces and districts in which mines are located.”²⁰⁸

The distribution system, called the Canon Minero, began as early as 1976 with the discovery of oil fields, and was implemented in the mining sector in 1992.²⁰⁹ In 2004, the Peruvian legislature further concentrated the revenue transfers to natural resource producing regions, a reform supported by Members of Parliament from mining regions and the mining industry, in an effort to “demonstrate the benefits that mining can bring to local communities and to calm the growing social unrest associated with mining activities.”²¹⁰ The subsequent rise in mineral prices has increased these transfers twelvefold over three years, meaning that the six mineral producing regions have received more than 52% of the total revenue transferred to local governments during this period.²¹¹ Revenue allocation under the Canon Minero is calculated per concession and distributed in a way that “aims to benefit all municipal governments in a producing region.”²¹² The distribution of mineral revenue depends upon the tax instrument. The Canon Minero was established “in response to claims that mining regions were losing out on benefits flowing from the industry’s overall economic impact.”²¹³

Figure 6: Example of the Canon Minero for corporate income taxes²¹⁴



There are specific earmarking provisions for the use of all of the mineral revenues distributed through the Canon Minero or related systems, which include public investment projects, maintenance of public investment projects, and investing in science and technology research in public universities.²¹⁵ However, research on the earmarked funds for university research, “indicates that most of the spending is in financing infrastructure and equipment rather than research activities” due to “weak institutional governance; low research capacity in public

universities; ambiguous university and research policies; and bureaucratic organization of research activities.”²¹⁶ Accordingly, earmarking does not serve as an effective accountability mechanism, as funds that are not used in a given year are usually incorporated into supplementary budgets for the next years, creating a “systematic mismatch between original budget plans and the actual use of resource revenue.”²¹⁷ Additionally, improved sub-national budget transparency would improve accountability. For example, at the national level, all regulation and transfers to regional and municipal governments are available online on the government’s transparency portal.²¹⁸ However, only two subnational governments provide the same disclosure of received revenue and expenditures on different projects.²¹⁹

Some argue that the transparency and accountability challenges have contributed to a local-level resource curse, noting that the following signs are evident in sub-national governments that receive resource related revenue: “increase in corruption of public works; increase in the political dispute between rival groups; higher levels of patronage; deterioration of governance; and excessive public spending that distorts salaries and affects agriculture.”²²⁰ The success of the Canon Minero is “dependent upon sound governance and public fiscal management, as well as adequate administrative capacity at the sub-national government levels in order to translate into lasting improvements to local living conditions.”²²¹ Several recent reports have indicated that regional and municipal governments have “underutilized” distributed mineral revenues.²²² For example, a recent study by Crabtree (2014) suggested the Canon Minero “tends to create perverse incentives that discourage open and democratic government” at the local level. The study found that in four provinces of Cusco, located in a large gold-producing region, in the “absence of a robust civil society, excessive funding tends to encourage clientelism and corruption rather than accountable and transparent administration.”²²³

Additionally, as discussed in section 2.4 ‘Social Structures in Peru,’ some have argued that Peru’s allocation of resource revenue has contributed to increased rates of conflict. Under the Canon Minero, the regions with mineral production receive higher levels of transfers from the central government.²²⁴ For example, the Amazonas region, which has no mineral resources, received \$4.8 million in regular intergovernmental transfers in 2014, compared with Moquega, which received \$21.6 million in mineral revenue, but only \$0.7 million in regular intergovernmental transfers.²²⁵ When commodity prices rose between 2005 and 2008, “some local leaders in Peruvian mining regions attempted to instigate violent protests in order to extract additional transfers from the national government and control over municipalities where mines were located.”²²⁶

4.4 Economic Sustainability

Economic sustainability can be a challenge for countries that rely primarily, or even in part, on nonrenewable extractive resources, like gold and diamonds, because overreliance can cause states to be vulnerable to shocks and unprepared when exploitable deposits diminish. The impacts of an industry on economic sustainability can be measured as the impacts on (1) economic diversification, and (2) government budget sustainability.

4.4.1 Economic Diversification

Economic diversification is critical for sustainable development in resource-rich countries because a high dependency on the export of natural resources can leave countries vulnerable to shifts in commodity prices.²²⁷ Additionally, extractive industries tend not to greatly improve the growth or productivity of other industries and generally do not contribute significantly to employment.²²⁸

There are three basic tools that are used to diversify economies. First, investment in infrastructure is significant when promoting diversification because it is often the most critical constraint for growth in many developing countries and can help to increase the competitiveness of other industries.²²⁹ Second, support of agriculture, including “improving agricultural productivity and commercialization, and linking producers to markets,” is important because this sector often suffers from exchange rate appreciation in resource-rich countries.²³⁰ Additionally, while mineral resources, like gold and diamonds, can have a relatively large impact on growth without providing significant levels of employment, agriculture can often employ a large sector of the labor force.²³¹ Finally, encouraging private investment in the non-extractive sectors is critical to promoting diversification.²³²

While there is no clear consensus about the measures needed to “achieve” economic diversification,²³³ a basic measure of the diamond and gold industries’ impacts on diversification of their host countries is the percentage of each respective industry on the countries’ GDP and total exports. This can be seen in the same data used to illustrate the size of an industry in a given economy as seen in section 4.1 on ‘Measuring Industry’ above.

4.4.1.2 Economic Diversification in Botswana

According to the World Bank, over the past twenty years, Botswana has made some progress in reducing its dependence on diamonds.²³⁴ However, attaining the level of economic diversification necessary to offset diminishing mineral resources remains a prominent economic concern in Botswana,²³⁵ where diamond production makes up 20-25% of GDP²³⁶ and 83% of exports.²³⁷ While the percentage of GDP has dropped, from a high of close to 60% in the early 1980s, the percentage of exports has been increasing, meaning that Botswana is almost entirely dependent on diamonds for its exports.²³⁸

While Botswana’s diamond industry has led to impressive levels of growth, the government has had to prioritize “diversification in its national development plans,” as well as increasing private sector diversity through government initiatives.²³⁹ It is unknown how long Botswana’s diamond reserves are expected to last; however, the diamond industry is still the largest sector of the economy.²⁴⁰ Current trends indicate that the industry’s dominance has been declining: it accounted for 48.9% of the economy in 1985 and only 28.3% in 2009.²⁴¹ In order to be economically sustainable when revenues begin to decline, further progress still needs to be made.

Botswana has implemented numerous diversification policies with varying levels of success. Early efforts, such as the Tourism Policy, the Privatization Policy, and the National Policy on Agricultural Development,²⁴² “led to duplication of effort and poor monitoring and evaluation,

which undermined the efficacy of [the] initiatives.”²⁴³ The sheer number of institutions tasked with implementing these policies sometimes created rivalries that undermined the ultimate goal of the programs.²⁴⁴ It is hoped that the “rationalization process,” or the “merge[ing of] public enterprises with similar mandates,” will help to reduce duplication and improve efficiency.²⁴⁵ Already, several public enterprises are to be merged, while others have agreed to sign agreements detailing how they will cooperate.²⁴⁶

These past efforts were also fragmented and uncoordinated.²⁴⁷ To address this issue, under the Botswana Excellence Strategy, the government set up an office under the President to coordinate the implementation of diversification efforts.²⁴⁸ Additionally, the government, in collaboration with the private sector and other stakeholders, developed an economic diversification master plan.²⁴⁹ This master plan will facilitate the implementation of the Economic Diversification Drive initiative, which aims to promote local procurement and support local companies.²⁵⁰ The government’s Local Procurement Programme has set aside up to 30% of the annual budget for purchases from local firms in order to “enhance the development of local entrepreneurs.”²⁵¹ Additionally, recent policies have focused on local procurement and the promotion of value creation in the diamond industry.²⁵² Eighty percent of Debswana’s \$250 million-dollar annual procurement budget is spent locally, which represents a huge increase in local capacity since the time of independence when there was almost no local capacity to provide services other than unskilled labor in the mines.²⁵³

The government’s efforts to increase value creation in the diamond industry included the establishment of the Diamond Trading Company (DTC) in 2006.²⁵⁴ Funded by De Beers, DTC sorts, values, markets, and distributes diamonds; activities that were previously performed in London.²⁵⁵ The company also supports 15 new cutting and polishing factories in the country, which were also set up by De Beers.²⁵⁶ The DTC and associated upstream activities have created 3,000 jobs in the country.²⁵⁷ However, this initiative has yielded controversial results because the “costs of manufacturing diamonds in Botswana are twice to three times as high as in China and India.”²⁵⁸ Therefore, “it is doubtful whether the diamond cutting and polishing industry can remain sustainable after the main rough diamond deposits are exhausted.”²⁵⁹

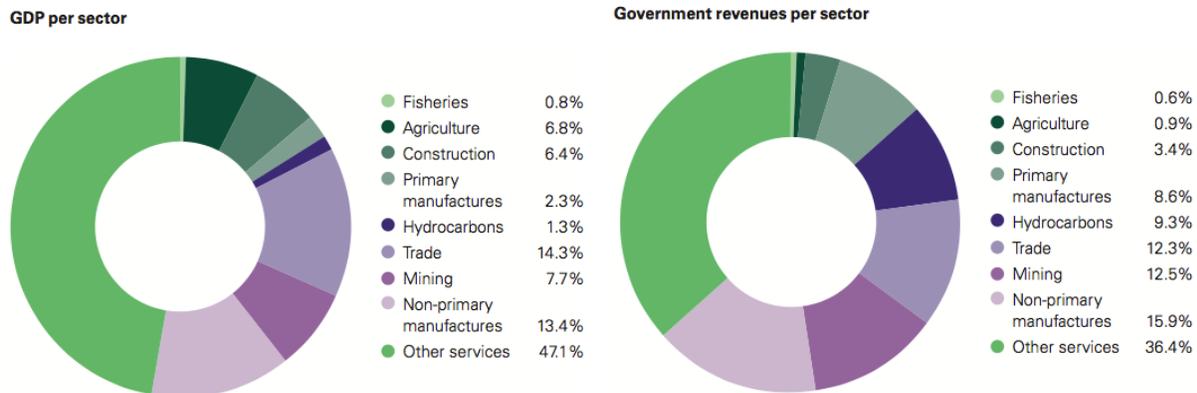
4.4.1.3 Economic Diversification in Peru

Diversification is less of a challenge in Peru than in Botswana. Gold only accounts for 8% (percentage of all metals in 2013) of GDP²⁶⁰ and around 18% of exports,²⁶¹ while mining as a whole makes up 15% of GDP (2015)²⁶² and over 50% of total exports (2014).²⁶³ While Peru’s economy does not seem to suffer from an overreliance on gold alone, the mining sector still makes up a large proportion of exports, which makes Peru vulnerable to fluctuating commodity prices.²⁶⁴

Additionally, there is evidence to suggest that Peru’s natural resource revenue has been used to diversify the economy.²⁶⁵ The relative contribution of mining to Peru’s GDP has decreased from 15% of GDP in 2004 to 12% in 2014.²⁶⁶ Similarly, mining now accounts for 52% of exports, down from 62% at its height in 2006-2007.²⁶⁷ The agricultural sector, in particular, has contributed to diversification. From 2004-2014, total exports of asparagus, grapes, and avocados

increased by 2.09%.²⁶⁸ The tourism industry is also growing and contributing to diversification and formal job creation.²⁶⁹

Figure 8: Peru Government Revenue per sector vs. GDP per sector (1999 to 2009)²⁷⁰



4.4.2 Budget Sustainability

Revenue volatility is a concern for extractive industry dependent states, as future revenue is often uncertain.²⁷¹ There is a high risk of overspending when the price of resources rises, and harsh spending cuts when prices fall.²⁷² Budget sustainability can help prevent these negative impacts by ensuring that revenue from nonrenewable sources is not being used to finance recurring expenses, such as necessary public benefits and safety nets, rather than consumption. Ideally, nonrenewable resource revenue should be invested into economic security and sustainability measures.

4.4.2.1 Budget Sustainability in Botswana

The Government of Botswana recognizes that “its heavy dependence on diamond revenues is not sustainable, and that it exposes the economy to risks such as failure to meet future funding obligations.”²⁷³ To mitigate these risks and increase sustainability, it implemented spending policies that allocate diamond revenue to investment in physical and human capital, avoiding consumptive spending to the extent possible.²⁷⁴ Botswana utilizes the Budget Sustainability Ratio, which measures the ratio of total government expenditure to non-resource revenue.²⁷⁵ This measure helps to determine when Botswana is dependent on diamond (and other nonrenewable) revenue to fund recurrent budget expenses.²⁷⁶

While Botswana’s budget is consistently determined to be “sustainable” under the index, it should be noted that Botswana considers health and education expenses and other recurrent programs, such as for maintenance of infrastructure, to be investment spending and not consumption.²⁷⁷ While these are important programs that have contributed greatly to Botswana’s development, there is a high risk that, if Botswana does not successfully diversify its revenue, these programs will not be able to be funded properly once diamond reserves are depleted.

Botswana has historically aimed to minimize the cost and risks of borrowing.²⁷⁸ However, from 2009 to 2011, when diamond revenue decreased, the government increased its borrowing, particularly externally.²⁷⁹ During this period, the total debt to GDP ratio increased from 22.1% to 27.5%.²⁸⁰ As the government's budget becomes "increasingly tight" and diamond revenue gradually depletes, there will be a need to increase borrowing.²⁸¹ According to the 11th National Development Plan, this means that "the implication of such borrowing on monetary and fiscal policies and vice versa will have to be more deliberately considered" and that "there is a need to strengthen debt management systems."²⁸²

Additionally, Botswana does not currently have a fund reserved for future generations.²⁸³ The 11th National Development Plan notes that, "The exhaustible nature of diamonds requires that if future generations are to benefit from this resource, some savings need to be set aside for them now in a well-defined fund."²⁸⁴ The Plan continues saying that "despite the fact that the sustainability index...is acceptable, there is no guarantee that sometime in the future, economic conditions may suggest the need for mineral resources to be increasingly utilized to fund recurrent expenditures."²⁸⁵ While Botswana does have the Pula Fund, its practical purpose remains unclear and non-transparent.²⁸⁶

4.4.2.2 Budget Sustainability in Peru

The mining industry is a prominent contributor to government revenue, contributing a higher percentage to government revenue than its percentage of GDP.²⁸⁷ For example, in the decade from 1999 to 2009, the mining industry accounted for 12.5% of government revenue and only 7.7% of GDP.²⁸⁸

Peru has adopted fiscal policies to help "insulate the budget from the volatility of resource revenue."²⁸⁹ One of the policies was to "set a spending limit...based on annual forecasts of...resource and non-resource revenue."²⁹⁰ However, unlike Botswana's sustainable budget policy, this spending limit does not separate resource from non-resource revenue; and therefore, the amount of resource revenue spent and saved in a given year is not reported or readily identifiable.²⁹¹

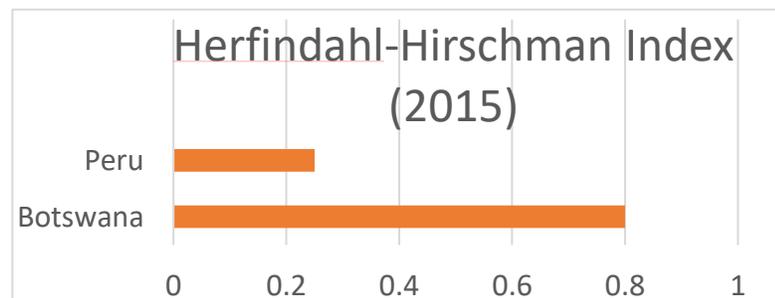
Due to Peru's decentralized government structure, subnational budget sustainability is emerging as a potential concern. According to 2010-2011 studies by the Natural Resource Governance Institute, when "local governments had limited options to offset the volatility of resource revenue transfers, local governments increased public spending in response to windfall revenues, creating local price inflation and crowding out traded sectors, like manufacturing and agriculture, from resource-rich regions."²⁹² The study also noted that "subnational governments rarely have any control over monetary policy," which further limits their ability to manage the effects of large revenues.²⁹³ Additionally, more than 80% of some of Peru's subnational government's budgets come from revenue transfers from the central government.²⁹⁴ One method that has been used to create sustainability in subnational budgets is to create forecasting systems for revenues to assist in longer-term planning and budgeting.²⁹⁵

4.5 Economic Comparison for JDII

The size of the gold industry in Peru is much smaller than the diamond industry in Botswana; therefore, addressing the relative intensity of the impacts comparatively can be challenging. Even so, both Botswana and Peru have progressive taxation regimes that target resource rents, which makes it attractive for industry to operate and ensures that the host states are receiving adequate compensation for the sale of their natural resource assets. However, both states have implemented very different methods of distribution resource revenue for growth and development. In Botswana, the National Development Plan developed through the integration of community consultation recommendations and central government development priorities seems to be relatively effective, although signs of rural-urban tension can be observed, especially as the budget becomes tighter. In Peru, the Canon Minero has led to increased competition over resource revenue and inequality, and its effectiveness in yielding local development has suffered from poor local capacity, accountability, and transparency. Therefore, it seems that Botswana's revenue distribution mechanism yields more positive industry impacts than Peru's.

Additionally, while economic sustainability is a concern for the security of most resource-rich countries, it is still especially concerning for Botswana, although, progress has been made in recent years. Finally, both Botswana and Peru have implemented measurements to track budget sustainability, although neither perfectly captures the impact of the jewelry industry, or mining more broadly. For example, under Botswana's Budget Sustainability Index, health and education expenditures are considered investments instead of recurrent costs. Additionally, Peru's spending limits do not indicate the amount of resource revenue spent in relation to recurrent expenses in a given year, making it difficult to assess the sustainability of its budget in regard to resource revenue generally or jewelry industry revenue specifically. Thus, while it is difficult to compare the impacts of the jewelry industry on budget sustainability, it appears that they both are attempting to implement safeguards and are affecting some level of budget sustainability in their countries.

Figure 7: Herfindahl-Hirschman Index – This index measures the degree of diversification of exports across industries. The index ranges from 0-1, with 1 indicating the most concentrated (or least diverse) and 0 indicating the least concentrated export portfolio (or most diverse). The scores for Botswana and Peru were taken from the UNCTAD Statistics database.²⁹⁶



Chapter 5: Human Rights Impacts along the Value Chain

This chapter will explore the impact of the jewelry industry on indigenous peoples' rights, workers' rights, and women and children's rights along the value chain.

5.1 Indigenous Peoples' Rights in Botswana

The indigenous hunter-gathering nations of Botswana, henceforth collectively referred to as the San,³ have occupied the Central Kalahari Game Reserve (CKGR) for tens of thousands of years.²⁹⁷ In 1967, the colonial government officially recognized the Reserve as a means of preserving tribal lands.²⁹⁸ After discovering diamond deposits in the CKGR in the early 1980s though, the federal government evicted the San from their ancestral homelands, most notably conducting mass evictions in 1997, 2002, and 2005.²⁹⁹ Government officials maintain that the eviction had no relation to the discovery of diamonds in the region, though San leaders and several human rights' organizations dispute this claim. As a result, many San were forced into resettlement camps, such as the one in Metsimantle, where they report abnormally high levels of alcoholism, depression, and tuberculosis, among other issues.³⁰⁰ In 2006, for instance, the UN Committee on the Elimination of Racial Discrimination (UNCERD) noted:

...the discrepancy between the information provided by the State party that residents of the Central Kalahari Game Reserve have been consulted and have agreed to their relocation outside the Reserve, and persistent allegations that residents were forcibly removed, through, in particular, such measures as the termination of basic and essential services inside the Reserve, the dismantling of existing infrastructures, the confiscation of livestock, harassment and ill-treatment of some residents by police and wildlife officers, as well as the prohibition of hunting and restrictions on freedom of movement inside the Reserve. (Articles 2 and 5).³⁰¹

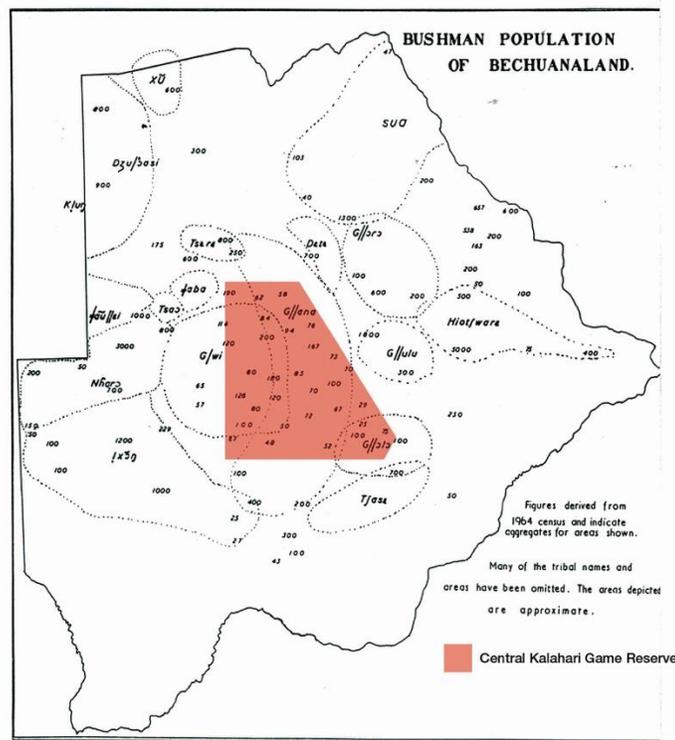
That same year, the Botswana High Court ruled in favor of the San people and granted them renewed access to the CKGR.³⁰² Though a technical victory, the U.S. Department of State determined the rulings were unfairly and narrowly interpreted by the Botswanan government, only allowing 189 of the San applicants to access the CKGR without permits, while also not extending access to adult children or family members of said applicants.³⁰³

In 2010, Botswana's Attorney General declared that the government was no longer responsible for providing essential services to the San people and, in what NGOs like Amnesty International and Survival International deemed to be a retaliatory measure, cemented over the primary water borehole in the CKGR.³⁰⁴ This ruling also prevented the San people from creating new boreholes for survival.³⁰⁵ A 2011 appeal favored the San people, however, specifically citing the government's "degrading treatment" of the San in their decision.³⁰⁶ The government reportedly

³ The terms San, Bushmen, and Basarwa have been used to refer to the many indigenous groups native to Botswana. Though all have problematic origins, this paper will use the term San, as deemed most appropriate by delegates of the various indigenous groups.

continued to harass the San in efforts to keep them out of the CKGR, resulting in further appeals by the San to the High Court. In 2013, the San’s legal representative, a British national, was added to a list of individuals from visa waiver nations who must apply for a visa to enter Botswana, hindering the San’s ability to respond with legal action.³⁰⁷

Figure 9: A mapping of the various San populations prior to Botswana’s independence in 1966, with the CKGR highlighted in red. This shows the CKGR has long been occupied by the San people.³⁰⁸



In general, the San, who make up only 3% of the population, face discrimination from the majority Tswana government.³⁰⁹ The UNCERD explained that they also face difficulty “in accessing common law courts, due in particular to high fees, the absence of legal aid in most cases, as well as difficulties in accessing adequate interpretation services.”³¹⁰ The San continue to face challenges, as seen in 2014, when they lost rights to hunt in Botswana, denying them their traditional way of life. In August 2016, nine San people who disregarded this law were shot at by an aerial anti-poaching unit.³¹¹ Though no one was killed, the San hunters were arrested for poaching antelope, and then reportedly stripped, beaten, and imprisoned for several days.³¹² Other San who attempt to work in the diamond industry cite rampant discrimination by mine managers who refuse to hire indigenous people.³¹³ The exploration, mining, and rough sorting and value aspects of the diamond value chain have negatively impacted the San people’s ability to live freely in the CKGR.

The San people of Botswana are mostly impacted along the exploration and mining aspects of the diamond value chain, as seen in their mass evictions from the CKGR by the Botswanan government. There are instances of discrimination against the San people along later stages of the value chain as well, particularly within rough sorting and valuing, where San people are

denied work based on their ethnicity. Since Debswana takes great pride in their many corporate social investment projects, having spent a total of BWP 17.8 million (approximately USD 1.76 million) in 2016, some of this money could instead go towards hiring and training local San people.³¹⁴ UNCERD recommended that the Botswanan government would do well to amend the Tribal Territories Act to provide equal protection to non-Tswana ethnic groups.³¹⁵

5.2 Indigenous Peoples' Rights in Peru

The gold-laden Madre de Dios region of Peru is home to several indigenous populations, including over 70,000 Awajúns and Wampís.³¹⁶ The Wampís live between the Santiago and the Morona Rivers, the former of which sees an estimated 20 to 120 grams of gold illicitly harvested each day.³¹⁷ The unregulated mercury used to extract this gold seeps into the river at a rate of 30 tons per year and, thus, affects the overall food chain, resulting in harmful consequences for the indigenous communities who depend on the surrounding ecosystem.³¹⁸ A report by the Carnegie Amazon Mercury Project in 2013 found that children in native communities exhibited mercury levels more than five times the safe limit.³¹⁹

The Awajúns and Wampís have protested further gold mining, as well as oil and wood extraction projects, from taking place on their land. In 2009, for instance, they blocked a road to prevent access to the development sites, leading to a clash between protesters and police that resulted in the death of 33 indigenous people, including three children.³²⁰ There have likewise been protests in the Cajamarca region, most notably in 2013, when local farmers and indigenous groups objected to the large-scale Minas Congas project, led by the U.S.-based Newmont Mining Corps.³²¹ Five protesters were killed and Newmont Mining Corps abandoned its development plan in 2016. More recently, in July 2016, the Wampís attempted to raid an illicit mine off the Santiago River, only to find that the miners had been alerted and hid their machinery in advance of the raid.³²²

Peru's indigenous populations are also more susceptible to exploitation along the gold value chain. Due to geographic isolation, few indigenous people receive National Identity Documents and are thus labeled *indocumentados*.³²³ This prevents them from working in the formal sector and they instead turn to illicit mining, where such documents are unnecessary.³²⁴ Indeed, a majority of the self-employed and/or illicit gold miners within the Madre de Dios region hail from indigenous communities.³²⁵ The illegality of their actions and inability to find other work makes the *indocumentados* feel susceptible to censure by authorities.³²⁶

The indigenous populations in Peru are impacted by the excavation and extraction and first separation stages of the gold value chain, as seen through the negative health effects of mercury on local communities. It is important to note that this stems from the illicit gold mining sector, not the more regulated ASM and legal gold industries within Peru. However, the legal gold industry also affects indigenous communities, farther along in the refining aspect of the value chain, where there have been deadly protests against mining operations and related developments. Peru's government should continue to ease the formalization process to deter access to the illicit sector, thus lessening exploitative or manipulative practices.

5.3 Workers' Rights in Botswana

Debswana annually reports to its stakeholders on the well-being of the company, including profiles of its corporate social investment projects. By the beginning of 2017, for instance, Debswana enrolled 806 employees and 348 dependents on the company's disease management program to help those living with HIV/AIDS.³²⁷ Moreover, Debswana provides financial counseling, financial awareness training, and debt restructuring advice for all of its employees. Similarly, the Orapa, Letlhakane, and Damtshaa mines utilize the traditional kgotla systems to "resolve welfare issues at the lowest level."³²⁸ These efforts show a cultural awareness and respect from the industry.

The greatest issue lies in the diamond industry workers' right to strike. The right to strike is overall restricted within Botswana, as the government deems such a move illicit until all other arbitration methods have been attempted.³²⁹ Those who do strike are subject to dismissal and fines.³³⁰ However, the Botswana Mine Workers Union works well with Debswana itself, as demonstrated by the quick agreement negotiations between the two groups for the 2017 to 2019 period.³³¹

David Greenberg of Leo Schachter & Company, which runs a diamond polishing plant in Molepolole, noted,

There's no indentured servitude, it's genuinely fair work and fair wages... I can tell you from our own direct experience, we have a factory with hundreds of people, and we've had instances where we're called into industrial court and the protections that are afforded to workers in Botswana are significant. You know, unfair dismissal, or harassment, or any other thing that could happen in an employee/employer relationship, the labor court and other tribunal systems like that that are available to the workers, are extremely protective of workers' rights.³³²

The Botswanan government has also been criticized by the UNCERD for not explicitly "prohibit[ing] discrimination based on descent and national or ethnic origin, nor indirect discrimination" within its constitution. This impacts the aforementioned ability of the San people to get work in the diamond plants.³³³ Overall, though, the diamond industry works to ensure that profits from the trade goes towards creating jobs and progressing development within Botswana.³³⁴

5.4 Workers' Rights in Peru

Human rights abuses overwhelmingly stem from the illicit mining sector of Peru's gold industry. This includes both voluntary and involuntary workers, particularly those laboring in the excavation and extraction and first separation stages of the value chain. Many of the voluntary employees are coaxed into the mines under false pretenses, then subjected to "physical confinement, withholding of wages, and indentured servitude."³³⁵ One NGO found that mine recruiters will promise as much as USD 3,000 per month to entice potential employees, revealing later that that money was actually a loan meant to be worked off.³³⁶ There are likewise reports of unlivable conditions, particularly for those working in the La Rinconada mines in the Andes,

where there is no access to water or gas, as well as harsh temperatures throughout the year.³³⁷ Furthermore, these miners are forced into a type of debt bondage, in which they must work for thirty days and on the thirty-first day can take as much gold ore as they are physically able to carry to their property in one trip.³³⁸ Despite the instability of this payment system, miners resisted government attempts to regulate the pay, as they believed it would result in lower income.³³⁹

Within both La Rinconada and the Amazon region of Madre de Dios, illicit miners face grave safety hazards. As one worker relayed, “cave-ins at the edge of the hole are the things that take most men.”³⁴⁰ In fact, mine accidents kill up to thirty people a year, though this includes only reported cases.³⁴¹ Miners also face the possibility of mercury poisoning when directly exposed to the element for extraction purposes. Others may face threats of violence when their mines, most notably in Cusco and Arequipa, are controlled by Peruvian and international criminal groups.³⁴²

Self-employed gold miners from the informal sector are also prone to exploitation. In Arequipa, for example, the law requires the consent of mining concession owners before a local miner can be formalized. These mining concession owners then charge the self-employed miner money, in exchange for their legally-required consent, causing the self-employed miners to fall into debt and, sometimes, into more serious debt bondage.³⁴³ Others explain that their National Identity Documents were seized and withheld by informal mine leadership until the miner completed an arbitrary amount of work.³⁴⁴ In some cases, workers who complained about the poor conditions went missing.³⁴⁵ Moreover, there are reports of mineral processing companies undervaluing gold bought from such self-employed workers, and middlemen overcharging the self-employed miners for necessary supplies.³⁴⁶

5.5 Women and Children’s Rights in Botswana

Though Africa as a continent faces widespread child labor issues in the mining industry, Botswana is an exception. Instead, Botswana has issues with child workers in the agricultural sector or in rural villages.³⁴⁷ The economic boom from diamond revenues allowed Botswana to establish universal primary education.³⁴⁸ Moreover, though discrimination and violence against women remain a societal problem in Botswana, there is no explicit link to the diamond industry.³⁴⁹

5.6 Women and Children’s Rights in Peru

The illicit gold sector in Peru is increasingly controlled by organized crime groups.³⁵⁰ The Global Initiative Against Transnational Organized Crime estimates that 28% of gold from Peru stems from the illicit sector, and 90% of gold extracted from Madre De Dios is either from the illicit or informal sectors.³⁵¹ It is further estimated that approximately USD 1 billion worth of illicit gold arrived in the United States and Switzerland in 2014 alone.³⁵² This link between organized crime and the illicit gold industry in Peru has resulted in more nefarious crimes, such as sex trafficking and child labor.

There are several reports of children being sold by their families under false pretenses, only to become virtual slaves for illicit mining operations. The NGO Association Huarayo, which

rescues and runs a safe house for such children, reports instances of rural families entrusting their children with middlemen who promise to find the children work in the city. In reality, the children are forced into gold labor, whether that be periphery roles such as cooking and cleaning for the miners, or becoming miners themselves.³⁵³ Teenagers are usually given the most dangerous roles, such as “swimming in mercury filled pools.”³⁵⁴ Adult women, though voluntarily working in mining camps, are also relegated to less desirable, lower paying jobs, such as grinding discarded rocks with small gold deposits in them. This often leads to a dependent relationship on the male miners, making the women vulnerable to abuse.³⁵⁵

Sexual exploitation of minors, especially young girls, is also rampant in illicit gold mining areas. These children, oftentimes promised real work and then forced into prostitution, are trafficked along the rivers of Madre de Dios and put to work in the surrounding bars frequented by illicit or informal gold miners.³⁵⁶ There are also reports of children being auctioned off to the highest bidder in mining sites.³⁵⁷ In fact, in Madre de Dios, thousands of girls, some as young as twelve, are being sexually abused by local miners, and “misbehaving clients” are often reported by minors to the brothel owners.³⁵⁸ The same occurs in La Riconada region, where authorities estimate 4,500 Peruvian and Bolivian girls are forced into sex work.³⁵⁹ The victims, young, isolated, and “under constant surveillance” are unable to escape.³⁶⁰

Peru’s illicit mining sector faces prevalent difficulties in the excavation and extraction, first separation, and transportation aspects of the gold value chain. Children are routinely exploited for sex and labor in mining camps, while women are forced into low-level jobs at the benefit of their male counterparts. The gold industry and Peruvian government could reduce such issues by easing the formalization process and increasing police presence in the affected areas, respectively. It would also reflect positively on the gold industry if they supported local NGOs and government programs that work to end such violence.

5.7 Certification Programs

5.7a Diamond Certification Programs in Botswana

The Kimberley Process Certification Scheme (KPCS) was created in 2002 as a means “to curtail the production and profitability of conflict diamonds around the world.”³⁶¹ Members are held to strict transparency standards regarding rough diamond import and export statistics, and it also requires them to only trade with fellow KPCS members. Moreover, the KPCS is not a binding legal agreement and instead relies on enforcement through participating nations’ domestic governments.³⁶² Indeed, Botswana is one of 81 members of said agreement, having also chaired the annual KPCS meeting in 2006.³⁶³ Critics of the KPCS argue that it uses too narrow of a definition of conflict diamonds and, furthermore, its reliance on self-reported data does not “guarantee the quality, accuracy or consistency of the data presented.”³⁶⁴ As David Greenberg of Leo Schachter & Company notes, the KPCS has “been quite effective in terms of regulating the very large majority of rough diamonds coming into the world and, at the margins, there are always going to be bad actors and impossible to make completely airtight.”³⁶⁵ It is overseen by various observers, including the World Diamond Council.

5.7b Certification Programs in Peru

Similar to the Kimberley Process, various gold certification programs rely on transparency to function properly. The World Gold Council introduced the Conflict-Free Gold Standard in 2009 to guarantee that gold industry members were not buying the mineral from conflict-affected areas.³⁶⁶ Doubling down on these efforts, the Organisation for Economic Co-operation and Development (OECD) created a guidance for responsible gold mining in July of 2012.³⁶⁷ Since its adoption, it has become the leading industry standard and is used in binding regulations in the United States and the European Union.³⁶⁸ Its goals are to “build secure, transparent and verifiable supply chains from mine to market and enable due diligence for legitimate artisanal and small-scale mining..., [as well as] to ensure that legitimate artisanal mining communities can benefit from ongoing trade in conflict-affected and high-risk areas, to support their development and thus contribute to the general improvement of the situation on the ground.”³⁶⁹ Within Peru, Quinn Kepes of Verité recommends buying gold directly from a mine that is consistently audited on social and environmental standards.³⁷⁰ Kepes also advised industry companies to participate in corporate-responsibility programs, like those sponsored by the Responsible Jewellery Council or the No Dirty Gold Campaign.³⁷¹

5.8 Human Rights Comparison for JDII

Though each nation has critical human rights issues that need to be addressed, Botswana would perform higher than Peru on the Jewelry Development Impact Index’s section on human rights. This is due to the fact that Peru’s illicit and informal gold sectors exploit and abuse all of the aforementioned vulnerable populations. While Botswana’s diamond industry has a poor record regarding discriminating against the San people and restricting workers’ rights to strike, they rate positively in the field of women and children’s right and adherence to the Kimberley Process. Peru, on the other hand, faces much more far-ranging problems, especially because the illicit and informal sectors can be easily manipulated by criminals and mining concession owners, respectively.

Chapter 6: Health Impacts along the Value Chain

6.1 Food Security in Botswana

Food security in Botswana remains one of its larger, chronic challenges. Due to arable agriculture, Botswana cannot influence food prices via production because of low and erratic rainfall, endemic droughts, and uncertain water resources. Moreover, roughly 60% of its population is below the global poverty level, living on USD 3 a day. Indeed, 500,000 people are food insecure, due to lack of access to quality food. As Botswana is an import-dependent country, high-priced reliance on transportation and crop reallocation has drastically compounded the food security issues.³⁷²

70% of Botswana is covered by the Kalahari Desert and, without large bodies of water, it is prone to droughts. This year's rainfall, for example, amounts to a little more than the average 550 to 600 millimeters in the fertile northwest, where water scarcity has led to the deaths of 10,000 to 15,000 heads of cattle, according to the Botswana Press Agency (BPA).³⁷³ Nonetheless, the country's physical duress is alleviated in part by its diamond wealth, allowing Botswana to import the majority of its yearly water provisions. Still, because the country's reservoirs are depleted through evaporation at a faster rate than through consumption, Gaborone has relied on South Africa for a fifth of its annual water supply since the 1990s.³⁷⁴

Only 6% of Botswana's total land area is suitable for agriculture, yet 50% of its population depends on rain-fed agriculture for their livelihoods. As a consequence, livestock dominates Botswana's agriculture and accounts for over 80% of the country's agricultural GDP. The mining sector contributes about 51% to the country's GDP, now dominated by diamonds, however, the agricultural sector has declined through shares of the GDP. The most drastic changes in the economy were seen in the 1990's due to the decrease in diamond prices globally.^{375, 376}

As seen, Botswana depends heavily on imports, mainly from neighboring South Africa. Minerals and beef exports accounted for 85% and 4.4%, respectively, of total exports in 2009.³⁷⁷ Even with the influx of finances from mining operations, there have been no sustainable solutions to food security measures. Recent talks of soil testing have had operations, but the trail of income from mining to the agricultural issue is not clear. The Gaborone Dam has reached 23% of its capacity with the expectations of being depleted in ten months.³⁷⁸ Local governance and cattle farmers are unaware of where water will come from. Bafana, a local cattle farmer, states "When the diamonds run out, maybe then we'll worry."³⁷⁹ This is troubling, as economists and diamond mine operators in Botswana project the exhaustion of diamonds in the near future.

6.2 Food Security in Peru

Comprehensive mining operations, including copper, zinc, gold, and silver have dominated the Peruvian economy, notably during high world prices from 2002 to 2008. In effect, the Peruvian economy growth rate increased from 4% to 9% in this period. The global recession only slightly reduced the sustained trade liberalization that stimulated the economy, and the sustained high

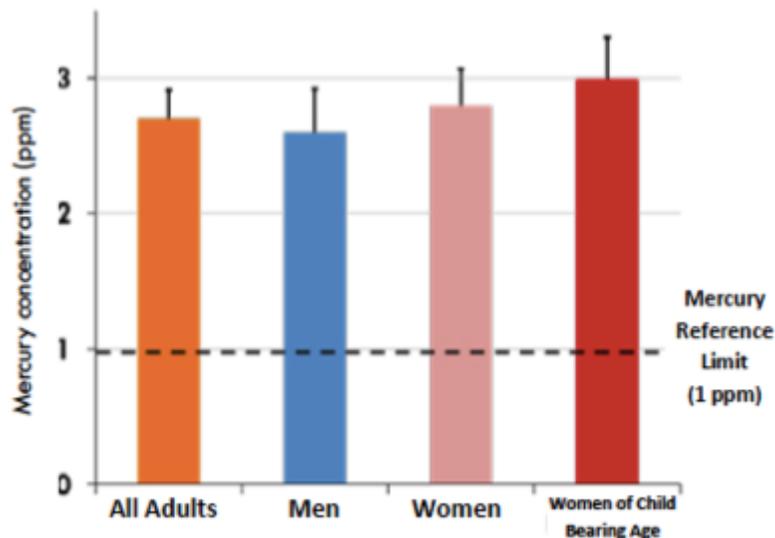
growth rates directly helped reduce the national poverty rate by 15%. As in many middle-income countries, this positive effect has not been distributed evenly among rural and urban households.³⁸⁰

Poor rural households' income is roughly half of that of the urban poor. Reports state that food expenditure is a major portion of the Peruvian household budget, with the poorest spending half of their income on food.³⁸¹ Overall, Peruvian households spend close to 40% of their income on food. In addition, there are substantial levels of corruption, which have resulted in inefficient usage of natural resources and food distribution. The agricultural sector is also suffering from massive deforestation created by the informal and illicit mining operations.³⁸²

Gold mining, in its exploration and harvesting phase, has had a direct effect on Peruvian food security as well. Illicit gold miners in Peru engage in open pit mining, which uses water pumps powered by gas engines to thrust high pressurized water onto river banks. The loose dirt is collected, creating a swamp-like land condition.³⁸³ The miners then use mercury as a binding agent, which inevitably runs off from the operation sites into local waterways, poisoning local fish species. Mota is one species that has been particularly affected by this poisoning.³⁸⁴

Indeed, the mota fish is a main staple of the Peruvian diet and, in recent years, has tested positive for high levels of mercury.⁴ The World Health Organization has stated that two servings of this fish can contain seven and half times the safe limit of mercury ingestion. In addition, 60% of the fish species sold in Puerto Maldonado, the capital of the Madre de Dios region, have excessive mercury concentrations. Mercury levels increased by 90% between 2009 and 2012, coinciding with the increased levels of gold mining.³⁸⁵

Figure 10: Graph showing mercury levels in Peruvian people in parts per million³⁸⁶



⁴ The gold rush from 1980 to 2012 destroyed 50,000 hectares of forest and pushed hundreds of tons of mercury into rivers.

Peru's agriculture sector is also enduring a battle of illicit and informal mining deforestation, along with plans for the maximization of its arable land. The sporadic nature of illicit mining, forming pockets of deforestation and barren areas, has created topsoil erosion, further decreasing Peru's scope of increased agricultural production. Most of Peru's arable land is located in the coastal regions along the river valleys. The Andes agriculture is subsistence based and roughly 24% of total land area is used for agriculture. Maximization of the arable land means increased deforestation. Upwards of 70% of all land is covered by forest areas. Agriculture in the coastal regions is heavily dependent on irrigation systems, and drought in the Sierra Mountains is a widespread issue.³⁸⁷

Peru is a middle-income country, which enjoyed sustained economic growth between 2005 and 2014; however, Peru's issue with food insecurity and poverty continue to exist. 39% of the Peruvian population live below the national poverty line, which equates to 10,770,967 people. Of the total population, 42% are not able to cover the minimum caloric intake (2,100 kcal) and 21% of infants suffer from chronic malnutrition.³⁸⁸ A lack of access to food commodities, poor consumption patterns, inadequate child care and nutrition practices, and low education levels among mothers, are the main causes of chronic undernutrition in Peru. Peru's gold resources combined with global demand has placed its food security and agricultural output in a crosshair.

6.3 Health Comparison for JDII

Botswana and Peru's jewelry industry activities both have health impacts that directly effect their populations and their respective mining operations. Botswana, however, performs better than Peru on the Jewelry Development Impact Index's section on health concerns. This is due the fact that Botswana's food security issues are curtailed by the Southern African Customs Union and its financial ability to acquire food. Peru's health matters are expanding as the government struggles to contain both illicit gold miners and the by-product consequences of mercury drain-off into many of the Madre De Dios communities.

Chapter 7: Environmental Impacts along the Value Chain

7.1 Environmental Challenges in Botswana

Botswana engages in open pit mining procedures under the modern ISO 14001 standards of environmental management. Diamond mining has the following associated challenges:

- Energy use and emissions
- Waste and recycling
- Use of Water
- Impact on Biodiversity³⁸⁹

Diamond mining, unlike gold mining, does not use hazardous materials to extract or bind its mining objectives. Issues, however, can arise with the exposure of hard rock, radioactive elements, asbestos, tailings, and possible leaking liquids. Botswana's mines are regulated by the ISO 14001 standards and has also implemented the use of 'Environmental and Social Impacts Assessments' to identify possible gaps in operations. To date, Botswana Diamond operations have been executed accordingly to legal safeguard requirements.³⁹⁰

According to the Diamonds for Development 2016 Stakeholders Report,³⁹¹ a total of 65,417 hectares of land have been set aside for two game parks, in an effort to reduce and limit the biodiversity impacts of mining.⁵ Water conservation solutions have also been conducted with construction of a facility to process potable water via the Jwaneng mine site. International conversation has been enacted through the UN Environment Assembly on emissions, however, no data found has suggested that Botswana's diesel power vehicles are emitting gases over the ISO 14001 initial environmental standards for diamond mining. Botswana's mining operations have vast layers of environmental impact reduction and biodiversity protections.

7.2 Environmental Challenges in Peru

Illicit mining in Peru incorporates organized crime and political corruption. While these issues complicate the political ramifications, the impact of Peru's illicit mining activity has highly visible environmental effects. Juan José Córdova, audit partner and leader of the energy sector at KPMG in Peru, told Kitco News that "information on the environmental impact of illicit mining is abundant and available for all to see."³⁹²

In fact, numerous reports by NGOs, academics, and the media have highlighted the impacts and conditions of illicit mining in Peru, such as the destruction of forests and river-banks and the contamination of rivers by mercury and cyanide.³⁹³ According to a 2015 report by Lima-based NGO Cooperacion, between USD 15 billion worth of gold was produced illicitly and/or informally in Peru between 2003 and 2014, outlining an estimation figure loss between USD 1.4 billion and USD 4.9 billion to the Treasury.³⁹⁴

⁵ At the Jwaneng and Orapa Mine locations.

Liquid mercury is commonly used to extract and bind gold particles, but there is a lack of consistency in regard to the version of the process used by the illicit sector. The effects of informality have allowed the toxic metal to contaminate local ecosystems.³⁹⁵ Indeed, Córdova notes “It is estimated that 30 to 40 (metric) tons of mercury are dumped into the environment annually and burned off after amalgamation – generally without even using rudimentary technology to protect workers’ health or capture waste or fumes.”³⁹⁶

William Tankard, research director on precious metals, states that the main issue of gold mining processes is that “some producers operate illicitly without any rehabilitation plan, or intention to rehabilitate their workings,” Tankard said. “You’ve got the use of mercury and cyanide which may, or may not be, undertaken with adequate controls in place. That’s likely the biggest issue, a lack of rehabilitation and unregulated use of beneficiation chemicals common in gold extraction.”³⁹⁷

The Madre de Dios region relies heavily on its agricultural products, including cotton, coffee, sugarcane, and cacao beans. Deforestation is actively destroying animal ecosystems. Due to the illegality of the operations, accurate numbers are ever elusive to produce, in regard to the raw volume of illicit miners in the country and the amounts of gold extracted. Tankard estimated that, “Peru produced 182 (metric) tons of gold in 2013, of which well over 10% we ascribe to informal activities, likely more towards 15%.” Massive uncertainty exists, but estimates state that 555,000 illicit miners operate in 24 of Peru’s 26 regions, and this correlates to 18% to 22% of Peru’s gold exports being illicit sourced. Specifically, in the Amazon, estimates reveal that more than 30,000 miners are operating without permits and are engaging in state regulation violations. Within this region, direct and indirect involvement represents upwards of 50% of local businesses output.³⁹⁸ As informal local business develops, this creates an environment for the human trafficking and labor rights issues, as discussed previously in chapter 5 on ‘Human Rights.’

Moreover, the recent gold rush, prompted by skyrocketing prices and enabled by the Interoceanic highway completed in July 2010, have allowed an access point for thousands of previously inconvenient proximity miners to enter the Madre de Dios region. In 2009, scientists showed that the three big mines—Huepetuhe, Guacamayo and Delta-1—had removed 15,500 hectares of forest, and were growing at a rate of 1,900 more every year.³⁹⁹ The Ministry of Environment estimates that there are 50,000 to 70,000 of these small-scale miners in the region, who work in groups of three to ten personnel teams. The previous government focus on large cleavages of illicit mining has cloaked the effect of small-scale open pit alluvial mining.

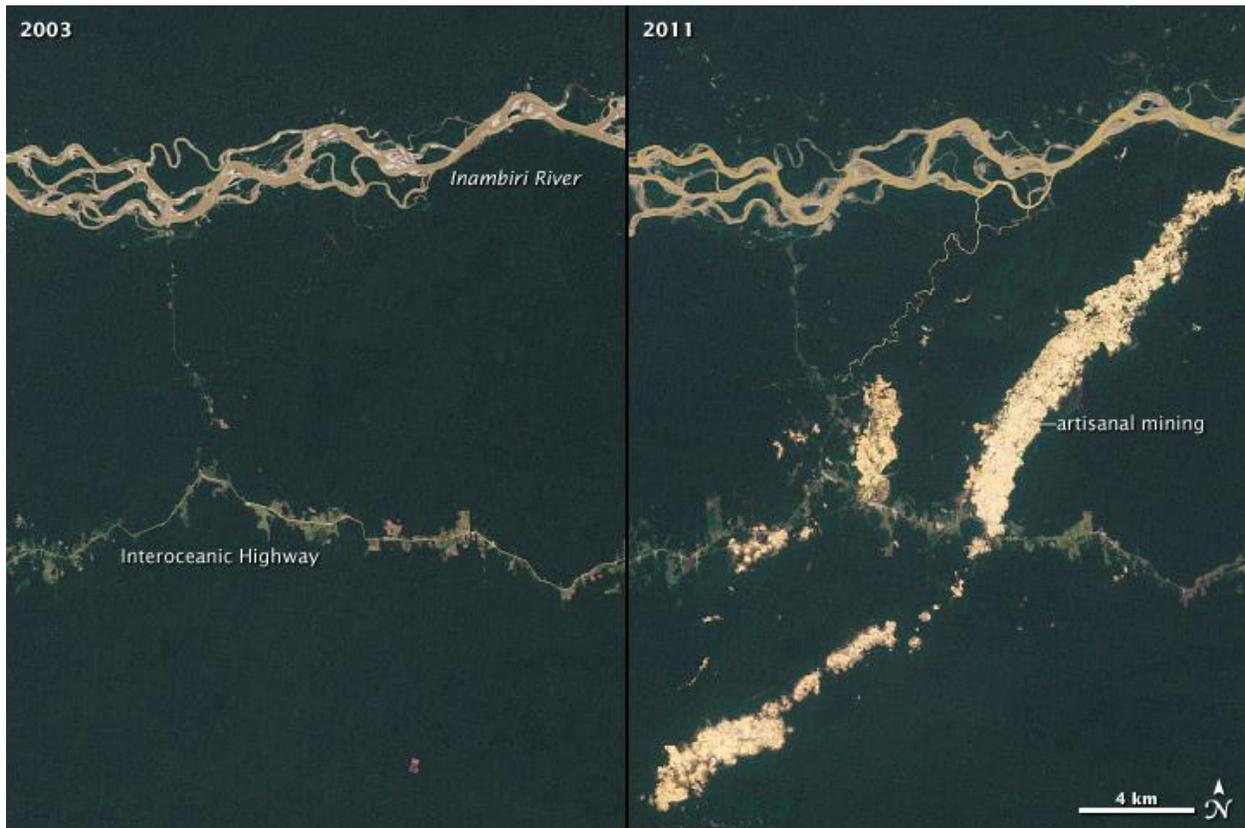
These small-scale mines are muddy deposits that are 10 meters deep in cleared forest land. The results are varied pools of topsoil degradation and a desert-like landscape. The mercury binds to any gold in the mud, which the miners filter out with a pan. The nuggets are dried and heated, releasing even more mercury into the air as vapor. A clear consequence is that the miners and nearby towns and downstream rivers are adversely affected by mercury.

Satellite images show that gold mines in Madre de Dios have quintupled in coverage since 1999, from 10,000 hectares to more than 50,000. These smaller mining operations have multiplied to account for 51 percent of mining in the area. The expansion and destruction of the environment

are increasing at drastic rates. Before 2008, 2,166 hectares were destroyed per year. After the gold price boom of 2008, the current rate is 6,145 hectares per year. Alluvial illicit gold mining has increased by 40% in the Madre De Dios region, and gold mining has outpaced logging and farming as the key driver of deforestation in the area. The Ministry of Environment has stated that rampant illicit gold mining will increase environment degradation as illicit miners are moving further into the foothills of the Andes and dense vegetation, which will aggravate the downriver waterway mercury poisoning of fish, animal, and plant species.⁴⁰⁰

In 2010, Peru's former Minister of Environment, estimated that miners had cut down over 370,000 acres of forest.⁴⁰¹ Weak governance, sporadic enforcement strategies, and political pressure have allowed the illicit mining operations to continue unregulated in spite of police crackdowns. The government of Peru does not restrict the import of mercury and it is estimated that 95% of mercury is imported for unregulated mining.⁴⁰² The United Nations Environmental Program and over 140 countries negotiated a global, legally binding treaty in January 2013, which is to be implemented using national laws and creative financing to increase responses to the mercury trade. Peru has not signed nor ratified a procedure for limiting mercury access for illicit miners; Peru's focus has been on limiting the availability of gas reserves to the Madre De Dios region. The effects of this process have not been clear as miners recede deeper into the Andes.⁴⁰³

Figure 11: Satellite imaging of artisanal mining expansion in Peru from 2003 to 2011⁴⁰⁴



7.3 Environmental Comparison for JDII

Botswana and Peru represent the extremes of successful environmental protections; based on the proper safeguards in Botswana and the environment degradation of Peru, Botswana performs above Peru on the Jewelry Development Impact Index's section on environmental concerns. Peru does not have a stable solution to rectify the mercury and deforestation issues that illicit alluvial small-scale mining continues to impose. Peru's efforts to plant seedlings and perform soil testing are the basic steps in land restoration, however, these methods cannot be truly implemented until the current mining issues are controlled.

Chapter 8: Special Issues

8.1 Economic Incentives for Transnational Crime and Conflict in Peru

There were two primary incentives that led criminal groups to become involved in gold mining in South America, and specifically in Peru, during the 2000s.⁴⁰⁵ First, the War on Drugs reduced the profitability of drug trafficking.⁴⁰⁶ Second, the sharp rise in gold prices greatly increased the profitability of gold trafficking.⁴⁰⁷ By taking advantage of the “fragmented nature of artisanal gold mining” and assuming control over remote mining operations away from governmental control, these criminal enterprises have been able to “generate larger profit margins with much lower risk.”⁴⁰⁸ The value of illicit gold exports now exceeds cocaine exports.⁴⁰⁹ As discussed in chapters 5 and 6 on ‘Human Rights Impacts’ and ‘Environmental Impacts’, illicit mining has serious negative consequences on the environment and people of the affected regions, including labor and sex trafficking, child labor, displacement, contamination of drinking water, and destroyed ecosystems.⁴¹⁰

Illicitly mined gold makes its way to the international market after being laundered in Peru.⁴¹¹ Once it makes its way out of the country, it gets sent to refineries, primarily in the United States or in Switzerland.⁴¹² From the refineries, the main consumers of gold are central banks and jewelry and electronics producers.⁴¹³ In 2015, approximately 90% of the 72 Fortune 500 companies that filed conflict mineral reports with the Securities and Exchange Commission under the Dodd-Frank Act obtained gold from smelters and refineries with demonstrated patterns of purchasing illicitly mined gold from Latin America.⁴¹⁴

Governments have responded with legislation and international conventions to curb transnational organized crime linked to mineral extraction.⁴¹⁵ Therefore, jewelry industry participants may face legal liability under a variety of different statutes, spanning corruption, human trafficking, dealing in conflict minerals, and complicity in organized crime, which could involve fines and even jail time for company executives.⁴¹⁶ Aside from potential legal consequences, jewelry producers can be exposed to reputational risk if discovered to have ties to the illicit mining activities, even if previously unknown. These reputational risks associated with involvement in illicit mining can have financial impacts.⁴¹⁷ According to Deloitte’s 2014 Global Survey on Reputational Risk, respondents indicated that the biggest impacts after a negative reputational event were revenue, loss of brand value, and resulting regulatory investigations.⁴¹⁸

Several sets of guidelines have been developed and initiatives started in the private sector, including the UN Guiding Principles on Business and Human Rights and the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas.⁴¹⁹ These guidelines are voluntary, but “through elective due diligence, companies can mitigate the risk of illicitly extracted gold in their mineral supply chains, violations of human rights and decent labor conditions as well as circumstances of illicit trade or handling.”⁴²⁰ Additionally, there are several initiatives that focus on the gold mining sector, which include The International Council on Mining & Metals, The London Bullion Market Association, and The Better Gold Initiative.⁴²¹ The World Gold Council developed the Conflict-Free Gold Standard to help partners certify responsible and legal gold extraction.⁴²² For more information on certification processes, please reference chapter 5 on ‘Human Rights Impacts.’

While the private sector has increasingly tried to encourage responsible gold mining practices, particularly in small-scale artisanal mining, the industry induced standards and the certification schemes tend to be weakly enforced.⁴²³ A more coordinated and in-depth approach could be attempted. Additionally, the Global Initiative Against Transnational Organized Crime recommends that the private sector adhere to internationally recognized due diligence guidelines, conduct compliance inspections to ensure adherence to international and domestic legislation, publish the names of gold providers and due diligence reports of suppliers to enable the traceability of gold, and increase purchases of certified Fairtrade and Fairmined gold.⁴²⁴

8.2 Beneficiation

Beneficiation can refer broadly to extractive industry benefits or creation of value in other aspects of a country's economy. Often, it is described as the process of creating downstream industries within the source country to promote the export of processed rather than raw products. This creates value and jobs within the industry. For example, as previously discussed, Botswana's efforts to increase value creation in the diamond industry included the establishment of the Diamond Trading Company (DTC) in 2006.⁴²⁵

Additionally, the term can also describe extractive industry investment in other parts of a host country's economy, including its educational institutions, health sector, or infrastructure. This could include building hospitals or sponsoring employees to receive education or training. For example, Debswana contributes to human resource development by providing intensive training and apprenticeship programs and providing scholarships for employees to study for advanced qualifications.⁴²⁶ Once these employees leave the industry, they provide a skilled resource for other industries.⁴²⁷

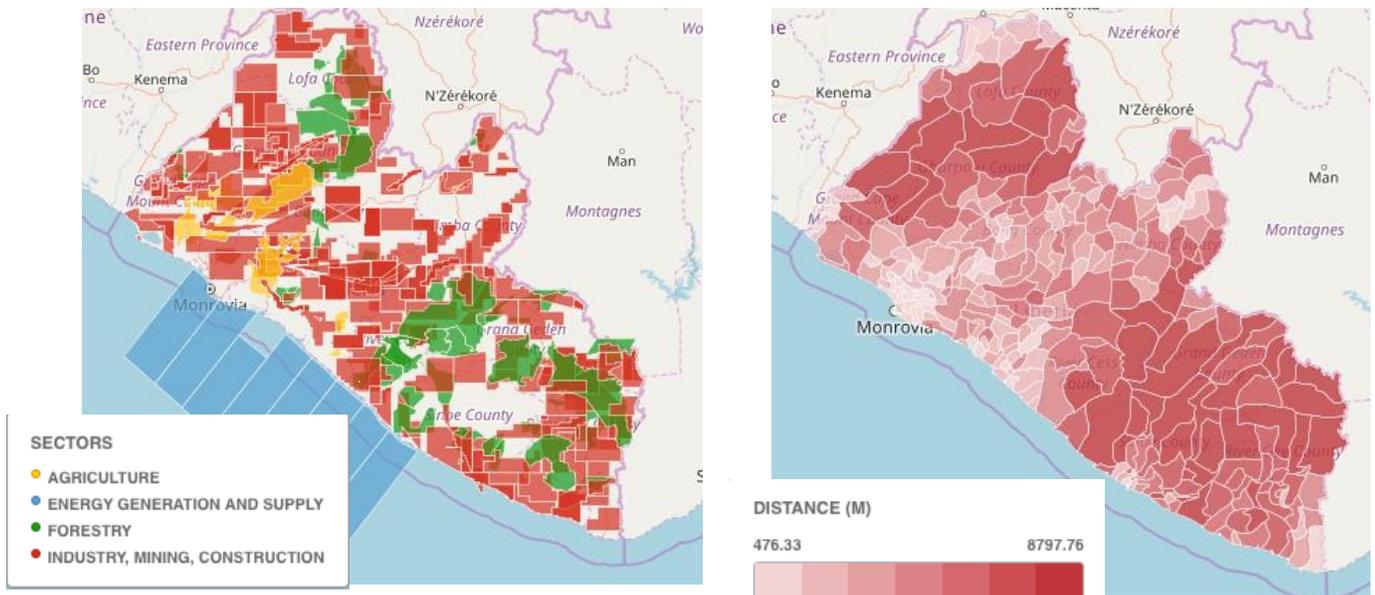
While there are many examples of positive efforts by the diamond industry in Botswana, it is more challenging to identify positive examples in Peru (although this could be due to a lack of Spanish language ability). However, one example of a mining company that has focused on developing human capital on Peru is Newmont Mining. They work with Yanacocha's Asociación Los Andes de Cajamarca (ALAC) in the Cajamarca region, the Fulbright Commission, and a few other firms, to award full scholarships for students and teaching opportunities abroad for teachers.⁴²⁸ While this is not on-the-ground beneficiation, it is an example of the mining industry engaging with local community for their benefit. Further still, the same foundation is working towards finishing two water treatment plants in tandem with Newmont. This initiative will boost the water plant's capacity by 50%. Nonetheless, according to Mining Watch, protestors and activists have been making social and environmental demands of other mining companies, such as HudBay Minerals, to invest in their communities, including in schools and hospitals.⁴²⁹ However, attempts at dialogue failed and these examples of tension between local communities and mining companies over local development may indicate a lack of positive beneficiation efforts in Peru.

The ultimate aim of beneficiation is to provide benefits aside from the financial compensation, that will remain as a legacy within the country long after the resources and the industry have left.

Therefore, the most successful beneficiation initiatives or investments are ones that tackle the negative impacts left by the industry.

Some countries, like Liberia, are now granting concessions to foreign investors contingent upon the foreign companies providing public goods—“by building and rehabilitating roads, power plants, and health and education systems—in or near the communities where their natural resource sector investments are physically sited.”⁴³⁰ The ultimate goal of these policies is to “maximize the economic multiplier effects that can be generated by infrastructure financed and supplied by concessionaires—in particular, mining concessions.”⁴³¹ Brookings, in partnership with the International Growth Center and Humanity United, completed a geospatial impact evaluation to analyze whether this investment management and coordination strategy is working in Liberia.⁴³² Similar methods may be adapted to measure these types of impacts in other countries and can be targeted to the jewelry industry by filtering the concessions that are analyzed.

Figure 12: Mapping of extractive industry and the distance to nearest road as an example of some of the measurements undertaken by Brookings, in partnership with the International Growth Center and Humanity United, in their geospatial impact evaluation in Liberia. The maps below indicate the location of concessions and foreign direct investment (left) and the distance to roads (right).



8.3 Declining Demand for Diamonds

Polished diamond exports from Belgium have been declining 4.5% year to year, falling to USD 772 million for the month of January 2016, according to the Antwerp World Diamond Centre (AWDC). This heavily impacts Antwerp’s diamond district, which is reported to employ over 8,000 workers.⁴³³ Also affecting the global supply chain is the fact that the price of diamonds is on the decline, and according to RapNet Diamond Index (RAPI), a respected industry benchmark, “prices of top-quality diamonds have dropped by as much as 80% in real, inflation-adjusted terms over the last 30 years.”⁴³⁴ Weaker demand for diamonds, coupled with a growing supply glut, is unsettling for all in the value chain, whose businesses are linked to a web of

traders in cities like Antwerp, Tel Aviv, Mumbai, Shanghai, and Dubai. The impact has been felt more acutely further upstream in the supply chain as diamond miners, cutters, and polishers around the world watch mines shutter and factories close, leaving hundreds out of work.⁴³⁵ Botswana's exports of rough diamonds produced at the major mines in the country fell in the first half of 2017 by 8.6%, compared to the same period a year earlier, and 25% compared to the second half of 2016, according to statistics from the Bank of Botswana. In total, the country exported rough diamonds valued at USD 1.65 billion during the most recent six-month period, down from USD 1.81 billion in H1 2016 and USD 2.21 billion in H2 2016. First quarter sales during the year were strong, but tapered off in the second quarter, falling to only USD 105.9 million in June. The decline is directly related to rough sales by De Beers, whose value of sales were down due to higher demand for lower priced goods. This comes despite De Beers' Botswana operation, Debswana, seeing production increase by 14% in the half year to 5.9 million carats.⁴³⁶

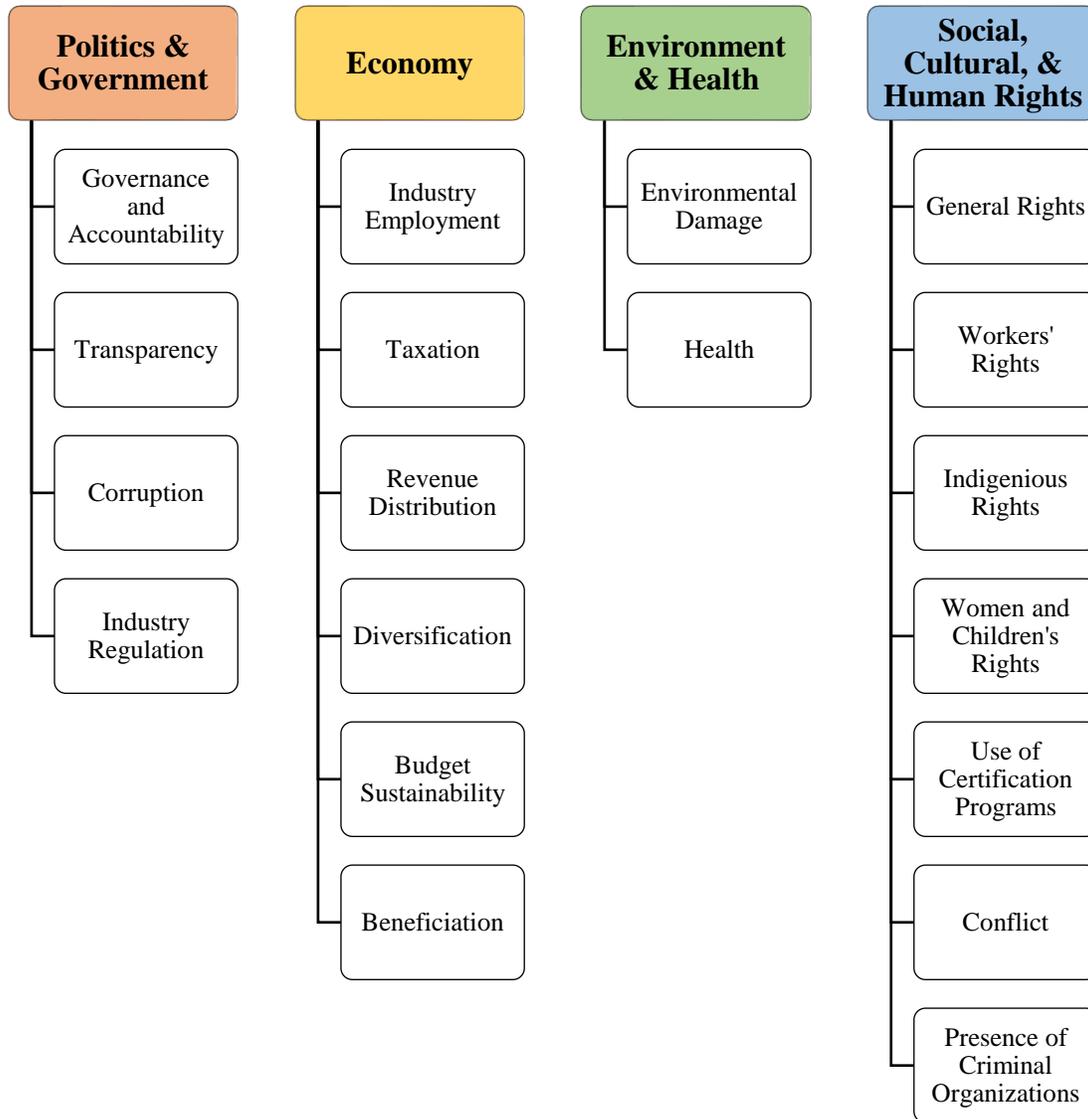
Chapter 9: Lessons for the Jewelry Development Impact Index (JDII)

The ultimate purpose of this comparative case study was to (1) create a framework for the future development of a Jewelry Development Impact Index, (2) identify existing indexes and measurements of industry impacts, and (3) highlight gaps in the available information.

9.1 JDII Framework Proposal

To capture the widest range of jewelry industry impacts along the value chains in these two countries for our comparative case study, we structured our initial research, and our report, into six thematic categories: social and cultural, political, human rights, economic, environmental, and health. As can be seen in our report, some of these categories were further divided into sub-categories, indicating impacts that were found to be relevant during our research. While this structure naturally developed through the course of our comparative case study, we recommend some changes for the framework of the JDII moving forward.

First, some of the categories should be combined as they are sufficiently related, and it would enable a more equal distribution of sub-categories. The recommended categories for the JDII are: (1) Social, Cultural, and Human Rights, (2) Politics and Government, (3) Economy, and (4) Environment and Health. Additionally, some of the sub-categories from our report have been reframed or re-categorized to create potential indicators for each category. The following graph illustrates the recommended framework, with the categories representing the four main headers and the potential indicators listed underneath them:



Furthermore, it is clear that the jewelry industry plays an important role in the economic development of host states and the livelihoods of individuals that are directly or indirectly employed through the sourcing, mining, and production of these jewelry industry products. While it is important to measure the impacts of the industry on host countries to further expand on positive impacts and mitigate the negative ones, it is also important to keep in mind that the scoring mechanism itself could have negative impacts if developed in a way that greatly incentivizes the reduction of industry investment or operations in countries that perform poorly rather than fostering government and industry collaboration to improve the situation. Therefore, future development of the JDII should consider these concerns, in collaboration with local NGOs and civil society, when creating a framework for assessment. For example, the development of the JDII methodology should consider whether ranking countries based on the level of improvement or deterioration in performance over time or creating a score in which countries are not directly ranked against each other but are instead assessed according to an objective standard alleviates this risk.

9.2 Application of the Recommended Framework

Although not all of the above findings have been identified with the level of specificity or according to a directly comparable scale (impacts “weighted” according to the size of the product industry in a host country and consideration given to the characteristics of different products), which are necessary to achieve precise and actionable results using the framework, the following illustrates where Botswana and Peru might fall within the categories, according to the information provided in the above report and the findings of indexes listed in ‘Annex 1,’ in order to illustrate the basic application of the framework.

Below, for each indicator under the four categories, we assess which country experiences better (green) or worse (red) impacts from the jewelry industry. When there is no discernable difference based on our research and the indexes and measurements from ‘Annex 1,’ we identify that they are roughly the same (grey).

9.2.1 Politics and Government: Botswana likely experiences more positive jewelry industry impacts than Peru.

Governance & Accountability

Peru		Botswana
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Peru has greater diversity and a less navigable topography than Botswana, making it difficult for the government to project its authority and effectively govern some more remote mining regions. On the other hand, Botswana has a long history of democratic governance and stability. Additionally, our determination is supported by the determinations of the World Bank Governance Indicators (‘Annex 1’), in which Botswana outperforms Peru in all areas except regulatory quality, in which they performed the same.

Transparency

Botswana		Peru
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Botswana has been critiqued for its secrecy and lack of transparency in the mining industry. Peru has performed better, at least at the central government level, through efforts to increase budgetary transparency. Our findings and determinations are supported by the findings of the Open Budgets Index (‘Annex 1’), which finds that Peru has “Substantial Budget Transparency” while Botswana has “Limited Budget Transparency.”

Corruption

Peru		Botswana
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Though both Peru and Botswana have documented instances of Corruption Perception Index and the World Bank Governance Index’s Control of Corruption indicator featured in ‘Annex 1’ in which Botswana rates positively compared to Peru.

Industry Regulation

Peru		Botswana
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While both Peru and Botswana have invested in creating industry-friendly regulation that balances social and environmental concerns, Peru still struggles to address high levels of

informality and illicit gold mining operations, whereas Botswana has formed one of the most successful partnerships in the world with its diamond industry partners. Therefore, according to our findings Botswana performs better in terms of industry regulation than Peru. This finding is supported by the Fraser Institute’s Policy Perception Index, listed in ‘Annex 1,’ which surveys mining companies (not gold or diamond specific) on the ‘policy attractiveness’ of jurisdictions.

9.2.2 Economy: Botswana and Peru experience roughly the same overall impacts from the jewelry industry.

Industry Employment

Peru		Botswana
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According to our findings, each country experiences unique negative employment impacts: notably the informal and illicit sectors in Peru, and potentially unsustainable indirect government employment in Botswana. However, because in Botswana the mining sector is the third highest compensated sector, there are higher levels of enforcement and regulation of worker’s rights, and the longstanding evidence that the diamond industry has participated in training and capacity building for its employees indicate that Botswana experiences more positive impacts than Peru.

Taxation

	Same	
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Progressive taxes that target resource rents are considered best practice for the extractive industry, and both Peru and Botswana seem to have implemented effective regimes. Our research uncovered no major criticisms of either system. While the Resource Governance Index does measure taxation, it does so in terms of transparency, and thus, does not measure the optimization of returns or the impact on the levels of foreign investment in the industry.

Revenue Distribution

Peru		Botswana
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Peru and Botswana use two distinct revenue distribution mechanisms; Peru uses the more common derivation-based intergovernmental transfer method, while Botswana uses a National Development Plan process that relies on local consultation and centralized development goals to determine the use of industry revenue. While Botswana’s system is showing signs of increasing tension between urban and rural development goals, in Peru there is concerning evidence of conflict between mineral-rich and non-mineral-rich regions, rising clientelism, and a lack of accountability and transparency of the use of funds. The newly released Resource Governance Index is one of the only measurements that addresses the distribution of mineral resource revenue, which it measures within its Revenue Management score. However, the index only measures whether or not a state has a sub-national resource distribution system, and, according to this index, Botswana does not have a sub-national resource distribution system. Therefore, these scores, which appear very close, do not actually meaningfully compare Botswana’s and Peru’s revenue distribution systems.

Diversification

Botswana		Peru
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Botswana has made some progress in reducing its dependence on diamonds, and continues improving on these efforts. However, attaining the level of economic diversification necessary to offset diminishing mineral resources remains a prominent economic concern. On the other hand,

gold makes up a much smaller percentage of Peru’s GDP, and thus, the specific jewelry-industry impacts on the composition of Peru’s economy are significantly smaller. This finding is supported by the Herfindahl-Hirschman Index and Diversification Index measurements, which are detailed in ‘Annex 1.’

Budget Sustainability

	Same	
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To ensure budget sustainability, Botswana has developed a Budget Sustainability Index and Peru utilizes spending limits. However, under Botswana’s index, health and education expenditures are considered investments instead of recurrent costs. Additionally, Peru’s spending limits do not indicate the amount of resource revenue spent in relation to recurrent expenses in a given year making it difficult to compare the sustainability of its budget. Like diversification, because gold’s contribution to Peru’s economy is so much smaller than diamonds in Botswana, it is difficult to make a direct comparison of the specific product’s impacts. Until data is available to apply a uniform measurement across countries and weighted for the specific products, our current research indicates that both countries have implemented safeguards to ensure budget sustainability that perform roughly the same.

Beneficiation

Peru		Botswana
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According to our findings, there are many examples of positive diamond industry efforts to provide lasting positive benefits to Botswana, while in Peru, our research yielded less positive examples and also indicate conflict with local communities regarding environmental and social community needs. As a result, we believe that jewelry industry beneficiation has had more positive impacts on Botswana. However, we also acknowledge that our limited Spanish ability may have impacted this assessment. Additionally, there is no standard measurement or definition of beneficiation, which makes specific comparisons challenging; although, we identified a potential measurement, discussed in sections 8.2 and 9.3, that could have the potential to be adapted to the jewelry industry.

9.2.3 Social, Cultural, and Human Rights: Botswana likely experiences more positive jewelry industry impacts than Peru.

Worker’s Rights

Peru		Botswana
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Debswana offers its workers in Botswana great benefits, though they are restricted by the constitutional prohibition on striking. Despite this, Botswana fares better than Peru, due to the chronic safety hazards, manipulation, and abuse found in Peru’s illicit and informal gold sectors. Though our example index from the International Trade Union Confederation rates Botswana and Peru the same in terms of workers’ rights, when tailored to the jewelry industry, our research supports Botswana over Peru.

Indigenous Rights

	Same	
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While no indexes exist to analyze the impact of the jewelry industry on both Peru and Botswana’s indigenous populations, this study finds that they both perform similarly poorly. Botswana’s diamond industry has contributed to mass evictions of and discrimination against the

native San people, while Peru’s informal and illicit gold sectors continuously exploit indigenous groups.

Women & Children’s Rights

Peru		Botswana
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Although Botswana ranks lower than Peru in several of the relevant indexes in ‘Annex 1,’ this stems from a societal problem rather than a jewelry industry problem. Indeed, our research finds no evidence of women or children’s rights abuses in Botswana’s diamond sector. Peru, on the other hand, suffers from a severe child labor issues and sexual slavery within its illicit and informal sectors.

Use of Certification Programs

Peru		Botswana
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In both the diamond and gold industries, there are certification regimes to ensure that the products are conflict-free, though it must be noted that many of these certifications rely on self-reported data. While Peru faces greater complications due to the existence of the informal and illicit sectors, a number of gold industry members follow the Conflict-Free Gold Standard to prevent the distribution of such minerals. However, Botswana has been a member of the Kimberley Process since its inception and the entire industry is covered by the certification standard. Therefore, Botswana performs better in certification compliance.

Conflict

Peru		Botswana
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According to our report, Peru fares worse than Botswana because of group grievances, ethnic compilation, factionalized elites, and uneven development. This finding is supported by the World Bank Governance Indicator on Political Stability and Absence of Violence, included in ‘Annex 1.’

Presence of Criminal Organizations

Peru		Botswana
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As our research indicated no evidence of criminal organization operations in Botswana’s diamond industry, it does not experience this negative impact. However, as discussed in section 8.1, Peru has a significant presence of criminal organizations conducting gold mining operations with severe social and environmental impacts.

3.2.4 Environment and Health:

Environmental Damage

Peru		Botswana
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Botswana has implemented the proper environmental safeguards to protect its environment, thereby decreasing the negative impacts of the diamond industry. On the other hand, Peru has yet to identify a sustainable solution to rectify the mercury and deforestation issues that illegal alluvial small-scale mining has caused. While this determination is reflected in the Environmental Performance Index, as seen in ‘Annex 1,’ we believe that the differences in scores would be more extreme if the index was narrowly tailored to jewelry industry impacts.

Health

Peru		Botswana
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Botswana and Peru both have health issues that have a direct effect on their populations and their respective mining operations in general. According to our research, Botswana mitigates the negative impacts of the jewelry industry better than Peru. Peru's health matters are expanding as the government struggles to contain both illegal gold miners and the by-product consequences of mercury drain-off into many of the Madre De Dios communities; resulting in high concentrations of mercury in fish species as well as the local populations.

9.3 Existing Indexes and Measurements

To aid in the future development of the JDII, we provided a list of existing measurements or indexes for each of our proposed indicators in 'Annex 1' below. This table indicates the category and indicator(s) of existing measurements or indexes. Additionally, the table includes the scores for both Botswana and Peru (if available), and whether or not we believe that the measurement or indicator can be adapted to be industry targeted. While many of the indexes could not be easily targeted to the jewelry industry or specific jewelry industry products, in the later development of the JDII, it is possible that the measurements will still be valuable for consideration or the indexes could be useful resources when designing the JDII's methodology.

While many of the indexes and measurements are created and compiled by NGOs or international organizations and focus on the host countries, a few of the indexes included in 'Annex 1' are industry-centric. The Policy Perception Index (PPI) surveys mining companies about government policies that affect investment decisions, such as "uncertainty concerning the administration of current regulations, environmental regulations, regulatory duplication, the legal system and taxation regime, uncertainty concerning protected areas and disputed land claims, infrastructure, socioeconomic and community development conditions, trade barriers, political stability, labor regulations, quality of the geological database, security, and labor and skills availability."⁴³⁷ The PPI then compiles the information on all these issues into one score. While this index targets the mining sector broadly, a similar survey could be used to specifically target the jewelry-industry. Additionally, the Higg Index, a standardized supply chain measurement tool that all apparel industry participants can use to understand the environmental and social and labor impacts of making and selling their products and services,⁴³⁸ is a private-sector initiated index that was developed by and for the apparel industry and illustrates an example of what could be developed and implemented by the jewelry industry.

It should also be noted, that many of the indexes included have components that could fit under multiple categories. For example, the Resource Governance Index which measures extractive industry governance across three main components: value realization, revenue management, and enabling environment.⁴³⁹ While many of its indicators match our recommended Economy indicators, such as licensing, taxation, local impact, national budgeting, and subnational resource sharing, this index also includes measurements for our Politics & Government and Social, Cultural & Human Rights categories, such as open data, political stability and absence of violence, corruption, rule of law, regulatory quality, government effectiveness, and voice and accountability.⁴⁴⁰

Finally, ‘Annex 1’ does not include any of the certification schemes or industry standards. However, the use of and compliance with these measures is also an important indicator to assess the jewelry industry’s impacts on host countries. These are discussed above in section 5.7 on ‘Certification Programs’ and section 8.2 on ‘Beneficiation.’

9.4 Gap Analysis and Limitations

Due to the highly fragmented nature of the jewelry industry and the diversity of products involved, one of the main challenges to creating an effective cross-country comparison, and ultimately a global index, is finding reputable, consistent, and comparable product-specific data.

Even for seemingly simple measurements, such as a jewelry-industry product’s share of a state’s GDP, exports, or employment (for the Contribution to Growth and Industry Employment indicators), finding data can be challenging, as oftentimes the numbers are reported broadly for “mining” activities. For example, while the World Gold Council provides amount of gold produced by state in tons,⁴⁴¹ in order to determine the percentage of a country’s exports, the price of the amount of gold must be calculated using gold prices for that year and then this share must be divided out of the state’s total value of exports. On the other hand, the Kimberley Process provides the value of exports of diamonds per state,⁴⁴² so this value must simply be calculated as a share of a state’s total exports. Relatedly, finding reliable and comparable measurements of illicit or informal industry activities may also be challenging.

Substantively, there was also a lack of information available to measure the jewelry-industry related activities of certain impacts. For example, while our report uncovered no existing index to assess the relationship between unequal or ineffective resource distribution and increased levels of conflict, both conflict with the government or with the extractive industry, this would be an important measurement of the impact of the jewelry industry on host countries. However, in Peru, several studies have linked increased outbreak of conflict in the subnational regions that receive revenue through the Canon Minero. Arellano-Yanguas observed that “mineral prices and the consequent increase in Canon Minero transfers have had a tendency to multiply the incidences of conflict in mining regions that receive large amounts of revenue from the Canon Minero.”⁴⁴³ Similarly, Ponce and McClintock examined the causes of increased protests in areas of natural resource extraction, and found that “social conflict is provoked by both the negative externalities of mining, such as environmental impacts, but also by revenue from mining.”⁴⁴⁴

Additionally, while beneficiation is an important concept to measure in order to assess industry impacts, there is no existing index or cross-country measurement available. It may also be challenging to create a measurement because of the term’s broad and varied meaning and application. For the creation of the JDII, beneficiation may have to be defined more specifically as the amount of total investment or value of completed infrastructure projects. However, one interesting method for assessing beneficiation was attempted in Liberia. Some countries, like Liberia, are now granting concessions to foreign investors contingent upon the foreign companies providing public goods—“by building and rehabilitating roads, power plants, and health and education systems—in or near the communities where their natural resource sector investments are physically sited.”⁴⁴⁵ The ultimate goal of these policies is to “maximize the

economic multiplier effects that can be generated by infrastructure financed and supplied by concessionaires—in particular, mining concessions.”⁴⁴⁶ Brookings, in partnership with the International Growth Center and Humanity United, completed a geospatial impact evaluation to analyze whether this investment management and coordination strategy is working in Liberia.⁴⁴⁷ Similar methods may be adapted to measure these types of impacts in other countries.

In addition to a challenge in finding industry-specific information, in some cases there is a total lack of information available. Government and industry transparency in Botswana, in particular, was a challenge. To illustrate this point, in its Resource Governance Index, the Natural Resource Governance Institute reported that while “Debswana appears to have good corporate governance structures in general, the rules describing how the company operates are less clear than those of most other [state operated enterprises] evaluated in the [index]. Particularly, Debswana does not disclose the transfers of funds to the government and details relating to the sale of diamonds. Furthermore, while the company provides much information in its annual reports, our researchers could not find the core financial details that analysts require to provide effective independent oversight of the company.”⁴⁴⁸ Local health reports in mining areas were also lacking.

Finally, it should also be mentioned that none of the authors of this report are fluent in Spanish, which could have affected the quality and depth of the information collected for Peru.

Annex I

Category	Indicator	Source Measurement or Index (M/I)	Web address	Description	Botswana	Peru	Industry Targeted
Politics & Government	Governance, accountability	Ibrahim Index of African Governance (IIAG) (I) ⁴⁴⁹	http://static.moibrahimfoundation.org/u/2015/10/02/201308/04_Botswana.pdf	A tool that measures and monitors governance performance in African countries by assessing the states' provision of political, social, and economic public goods and services that every citizen has the right to expect from their state. It focuses on: safety and rule of law, participation and human rights, sustainable economic opportunity, and human development.	Ranked 3rd (out of 54, however, experiencing "increasing deterioration")	X	N
		World Bank: The Worldwide Governance Indicators (I) ⁴⁵⁰	Follow: http://info.worldbank.org/governance/wgi/#reports and click download full dataset	The World Bank "reports aggregate and individual governance indicators for over 200 countries and territories over the period 1996–2016, for six dimensions of governance: (1) Voice and Accountability, (2) Political Stability and Absence of Violence, (3) Government Effectiveness, (4) Regulatory Quality, (5) Rule of Law, [and] (6) Control of Corruption."	1 – 59 2 – 90 3 – 71 4 – 70* 5 – 71 6 – 80 (percentile rank) (2016) ⁶	56 41 49 70* 34 43 (percentile rank) (2016)	N
		Afrobarometer (M) ⁴⁵¹	http://afrobarometer.org/sites/default/files/publications/Policy%20papers/ab_r6_polICYpaper030_de_mocracy_in_botswana.pdf	Afrobarometer is a "pan-African, non-partisan research network that conducts public attitude surveys on democracy, governance, economic conditions, and related issues across more than thirty countries in Africa."	✓	X	Could be adapted (by conducting independent survey data or partnering with the organizations)
		Latinbarometro (M) ⁴⁵²	Page 14 : https://www.bti-project.org/fileadmin/files/BTI/Downloads/Reports/2016/pdf/BTI_2016_Peru.pdf	Corporación Latinobarómetro is a non-profit NGO based in Santiago de Chile that investigates the development of democracy, the economy and society , using indicators of public opinion that measure attitudes, values, and behaviors.	X	✓	
Corruption	Transparency International:	Botswana: https://www.transparency.org/en/cpi/2016?id=BS	Transparency International's Corruption Perceptions Index aggregates data from a number of different sources that provide perceptions of business people and country	60 (2016)	35 (2016)	N	

⁶ The numbers correspond to the indicators listed in the "description" section. Additionally, Botswana scores higher than Peru on all indicators except for "(4) Government Effectiveness," in which they are tied. Therefore, the green and red coloring takes into consideration the scores overall.

Category	Indicator	Source Measurement or Index (M/I)	Web address	Description	Botswana	Peru	Industry Targeted
		Corruption Perception Index (I) ⁴⁵³	sparency.org/country/BWA - Peru: https://www.transparency.org/country/PER	experts of the level of corruption in the public sector. Scored 0-100 (most-least corrupt).			
	Industry Regulation	The Fraser Institute: Policy Perception Index (I) ⁴⁵⁴	https://www.fraserinstitute.org/sites/default/files/survey-of-mining-companies-2016.pdf	The Fraser Institute's Policy Perception Index is a composite index that measures the overall policy attractiveness of the 104 jurisdictions in the survey of mining companies. The index is composed of survey responses to policy factors that affect investment decisions. Policy factors examined include: uncertainty concerning the administration of current regulations, environmental regulations, regulatory duplication, the legal system and taxation regime, uncertainty concerning protected areas and disputed land claims, infrastructure, socioeconomic and community development conditions, trade barriers, political stability, labor regulations, quality of the geological database, security, and labor and skills availability. Scores are between 0-100 (least to most attractive policies).	91.79/100 (2016)	69.54/100 (2016)	Could be adapted
Economy	Budget Sustainability	Budget Sustainability Ratios (M) ⁴⁵⁵	N/A	A budget sustainability ratio, which measures the ratio of total government expenditure to non-resource revenue, can help to determine when a state is dependent on non-renewable revenue (including from the jewelry industry) to fund recurrent budget expenses.	✓	X	Could be adapted
		Spending Limits (M) ⁴⁵⁶	N/A	States can set a spending limit based on annual forecasts of resource and non-resource revenue and can be assessed based on capacity to meet limits.	X	✓	Could be adapted
		Permanent Income Hypothesis (M) ⁴⁵⁷	N/A	To assess budget sustainability, you can "apply the lifecycle approach and the permanent income hypothesis to assess natural resource-related revenue." To do so, you estimate the resource revenue, take the net present value of financial assets generating permanent income, and then estimate the income that the "government can spend without eroding its long-term financial position."	X [Used in some IMF/World Bank reports]	X [Used in some IMF/World Bank reports]	Could be adapted
		Natural Resource Government Institute and Fiscal Responsibility	https://www.internationalbudget.org/2017/03/overseeing-budget-sustainability/	Tool is being developed to assess the sustainability of policies over the long term (30-year baseline). Will have a mineral sector block, which will help users to assess the economic ramification of megaprojects, and allow examination of specific sectors or issues.	N/A (piloted for Mongolia in 2016)		Could be adapted

Category	Indicator	Source Measurement or Index (M/I)	Web address	Description	Botswana	Peru	Industry Targeted
		Institute Budapest: Macro Fiscal Modeling (M) ⁴⁵⁸					
		International Budget Partnership: Open Budget Index (I) ⁴⁵⁹	Botswana: https://www.internationalbudget.org/search/Botswana/ Peru: https://www.internationalbudget.org/summaries/peru-5/	Assesses budget transparency and accountability and ranks countries according to their average scores (0-100) received from survey results.	47 (Limited Budget Transparency) (2015)	75 (Substantial Budget Transparency) (2015)	N
	Diversification	Herfindahl-Hirschman Index (M) ⁴⁶⁰ (Also called the Concentration Index) ⁴⁶¹	Concentration Index Column : http://unctadstat.unctad.org/wds/TableViewer/tableView.aspx?ReportId=120	The Herfindahl-Hirschman Index measures the degree of diversification of exports across industries. The index ranges from 0-1, with 1 indicating the most concentrated (or least diverse) and 0 indicating the least concentrated export portfolio (or most diverse).	0.80 (2015)	0.25 (2015)	Could be adapted
		Diversification Index (M) ⁴⁶²	Diversification Index Column: http://unctadstat.unctad.org/wds/TableViewer/tableView.aspx?ReportId=120	The diversification index is computed by measuring the absolute deviation of the trade structure of a country from world structure. The diversification index takes values between 0 and 1. A value closer to 1 indicates greater divergence from the world pattern. This index is a modified Finger-Kreinin measure of similarity in trade.	0.91 (2015)	0.75 (2015)	Could be adapted
	Taxation, Revenue Distribution	The Natural Resource Governance Institute: Resource Governance Index (I) ⁴⁶³	http://resourcegovernanceindex.org/compare?country1=PER_mining&country2=Botswana_mining	The Natural Resource Governance Institute, through its Resource Governance Index, measures three main components, one of which is value realization, which assesses the allocation of extraction rights, exploration, production, environmental protection, revenue collection and state-owned enterprises. ⁴⁶⁴	40 (Value Realization) 62 (Revenue Management) 81 (Enabling Environment)	68 (Value Realization) 57 (Revenue Management) 62 (Enabling Environment)	Could be adapted

Category	Indicator	Source Measurement or Index (M/I)	Web address	Description	Botswana	Peru	Industry Targeted
Environment & Health	Environmental Damage, Pollution, Social, Labor	The Higg Index (I) ⁴⁶⁵	https://apparelcoalition.org/the-higg-index/	The Higg Index is a standardized supply chain measurement tool that all apparel industry participants can use to understand the environmental and social and labor impacts of making and selling their products and services and “achieve the environmental and social transparency that consumers are starting to demand.”	N/A (Apparel industry tool included as a potential model for jewelry industry)		Could be adapted
		Yale’s Environmental Performance Index (I) ⁴⁶⁶	Page 18: http://epi.yale.edu/sites/default/files/2016EPI_Full_Report_opt.pdf	Yale’s Environmental Performance Index (EPI) ranks countries’ performance on high-priority environmental issues in two areas: protection of human health and protection of ecosystems. Provides overall rankings, and issue-by-issue assessment.	79 (out of 180 countries) (2016)	73 (out of 180 countries) (2016)	N
	Food Security	The Economist’s: Global Food Security Index (I) ⁴⁶⁷	http://foodsecurityindex.eiu.com/Home/DownloadResource?fileName=EIU%20Global%20Food%20Security%20Index%20-%202017%20Findings%20%26%20Methodology.pdf	The Global Food Security Index considers the core issues of affordability, availability, and quality across a set of 113 countries. The index is a dynamic quantitative and qualitative benchmarking model, constructed from 28 unique indicators, that measures these drivers of food security across both developing and developed countries.	52 (2017)	53 (2017)	N
Social, Cultural & Human Rights	General Rights	Freedom House: Freedom in the World (I) ⁴⁶⁸	Botswana: https://freedomhouse.org/report/freedom-world/2017/botswana Peru: https://freedomhouse.org/report/freedom-world/2017/peru	Using annual surveys, Freedom House assesses political rights and civil liberties, and then uses the results to create a freedom rating system.	72 (Free) (2017)	72 (Free) (2017)	N
		CATO Institute Human Freedom Index (HFI) (I) ⁴⁶⁹	Botswana (pg. 45) and Peru (pg. 143): https://object.cato.org/sites/cato.org/files/human-freedom-index-files/human-freedom-index-	The Human Freedom Index (HFI) is the most comprehensive freedom index so far created for a globally meaningful set of countries. The HFI covers 159 countries for 2014, the most recent year for which sufficient data are available. The index ranks countries beginning in 2008, the earliest year for which a robust enough index could be produced. On a scale of 0 to 10, where 10 represents more freedom.	6.70/10 (2016)	7.36/10 (2016)	N

Category	Indicator	Source Measurement or Index (M/I)	Web address	Description	Botswana	Peru	Industry Targeted
			2016-country-profiles-update-4.pdf				
		United Nations: Universal Human Rights Index (UHRI) (M) ⁴⁷⁰	http://uhri.ohchr.org/	The UHRI provides easy access to country-specific human rights information emanating from international human rights mechanisms in the United Nations system: The Treaty Bodies, the Special Procedures, and the Universal Periodic Review (UPR).	✓	✓	N
	Indigenous Peoples' Rights	Council on Hemispheric Affairs: Indigenous Peoples Index (I) ⁴⁷¹	http://www.coha.org/indigenous-peoples/	The Council on Hemispheric Affairs provides a comprehensive list of abuses against indigenous populations as well as the existing population statistics.	X	✓	N
	Workers' Rights	International Trade Union Confederation: ITUC Global Rights Index 2017 (I) ⁴⁷²	Botswana (pg. 15) and Peru (pg. 16): https://www.ituc-csi.org/IMG/pdf/survey_ra_2017_eng-1.pdf	The International Trade Union Confederation (ITUC) is the global voice of the world's working people. Their index highlights violations of human and trade union rights.	Rating 4 (Systematic violation of rights)	Rating 4 (Systematic violation of rights)	N
	Women and Children's Rights	KidsRights Foundation: The KidsRights Index (I) ⁴⁷³	http://www.kidsrightsindex.org/	The KidsRights Index is the annual global index which ranks how countries adhere to and are equipped to improve children's rights. It comprises a ranking for all UN member states that have ratified the UN Convention on the Rights of the Child and for which sufficient data is available, a total of 165 countries.	104 (2016)	62 (2016)	N
		Humanium: Realization of Children's Rights Index (I) ⁴⁷⁴	Botswana: https://www.humanium.org/en/botswana/ Peru: https://www.humanium.org/en/botswana/	Humanium is an international non-government organization focused on children rights. The Realization of Children's Rights Index (RCRI) is a grade between 0 and 10 that shows the level of realization of Children's Rights in a country. The lower the RCRI is, the lower the realization of Children's Rights in the country. The	7.21/10	7.63/10	N

Category	Indicator	Source Measurement or Index (M/I)	Web address	Description	Botswana	Peru	Industry Targeted
			manium.org/en/peru/	higher the RCRI is, the more Children's Rights in the country are real and respected.			
		United Nations Human Development Reports: Gender Inequality Index (I) ⁴⁷⁵	http://hdr.undp.org/en/composite/GII	The GII is an inequality index that measures gender inequalities in three important aspects of human development—reproductive health, measured by maternal mortality ratio and adolescent birth rates; empowerment, measured by proportion of parliamentary seats occupied by females and proportion of adult females and males aged 25 years and older with at least some secondary education; and economic status, expressed as labor market participation and measured by labor force participation rate of female and male populations aged 15 years and older.	0.435 /1.00 (Medium human development)	0.385 /1.00 (High human development)	N
		World Economic Forum: Global Gender Gap Index 2016 (I) ⁴⁷⁶	http://reports.weforum.org/global-gender-gap-report-2016/rankings/	First, the Index focuses on measuring gaps rather than levels. Second, it captures gaps in outcome variables rather than gaps in input variables. Third, it ranks countries according to gender equality rather than women's empowerment. A 0 signifies parity, while a 1 signifies parity.	0.715/1.00	0.687/1.00	N
		OECD Development Centre: Social Institutions & Gender Index (I) ⁴⁷⁷	https://www.genderindex.org/country/peru/	The OECD Development Centre's Social Institutions and Gender Index (SIGI) is a cross-country measure of discrimination against women in social institutions (formal and informal laws, social norms, and practices) across 160 countries.	X	Category: Low	N
	Conflict	Global Conflict Risk Index (GCRI) (M) ⁴⁷⁸	http://conflictrisk.jrc.ec.europa.eu/	The GCRI is an index of the statistical risk of violent conflict in the next 1-4 years and is exclusively based on quantitative indicators from open sources. With the assumption that structural conditions in a country are linked to the occurrence of violent conflict, the GCRI collects 24 variables in 5 dimensions (social, economic, security, political, geographical/environmental) calculates probability and intensity of violent conflict. It has been developed through a collaborative effort between the Joint Research Centre, the Conflict Prevention, Peacebuilding and Mediation Instruments Division of the EU External Action Service (EEAS)	✓	✓	Could be adapted

Category	Indicator	Source Measurement or Index (M/I)	Web address	Description	Botswana	Peru	Industry Targeted
		Uppsala Universitet: Uppsala Conflict Data Program (M) ⁴⁷⁹	Botswana: http://ucdp.uu.se/#country/571 Peru: http://ucdp.uu.se/#actor/21	Data collection on organized violence and information on armed conflict since 1946 and making it publicly available through its annual report, <i>States in Armed Conflict</i> . The UCDP collects data on organized violence (e.g., fatality statistics, georeferenced event data, and armed actor and conflict descriptions).	✓	✓	Could be adapted
		The Fund for Peace: Fragile States Index 2017 (M) ⁴⁸⁰	http://global.ffdforpeace.org/#	It is a critical tool in highlighting not only the normal pressures that all states experience, but also in identifying when those pressures are pushing a state towards the brink of failure. By highlighting pertinent issues in weak and failing states, The Fragile States Index—and the social science framework and software application upon which it is built—makes political risk assessment and early warning of conflict accessible to policy-makers and the public at large.	✓	✓	Could be adapted

Conclusion

This report has illustrated a first iteration analysis of the jewelry industry in two different country contexts. As this piece details, the jewelry industry is an important catalyst for growth in its host countries, and it has both negative and positive effects. The jewelry industry influences micro politics amongst people and creates varying power relationships underwritten by history and culture, and it also creates and maintains macro level politics because of its financial influence.

The jewelry industry is a dynamic entity that involves multiple stakeholders at different steps along the value chain. Though the industry is such an influential player in its host countries, more can be done to understand how its dealings affect the country and how they could leverage their influence for greater domestic benefit. This piece has provided suggestions to create positive change on the part of the jewelry industry on Peru and Botswana and will hopefully inform a future Jewelry Development Impact Index.

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