Governing the Gemstone Sector:

Lessons from Global Experience

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Cover photo: Freelance miners use head-torches to search for raw jade on a company mining site in Hpakant Township, Kachin State, Myanmar. *Credit: Minzayar for NRGI.*

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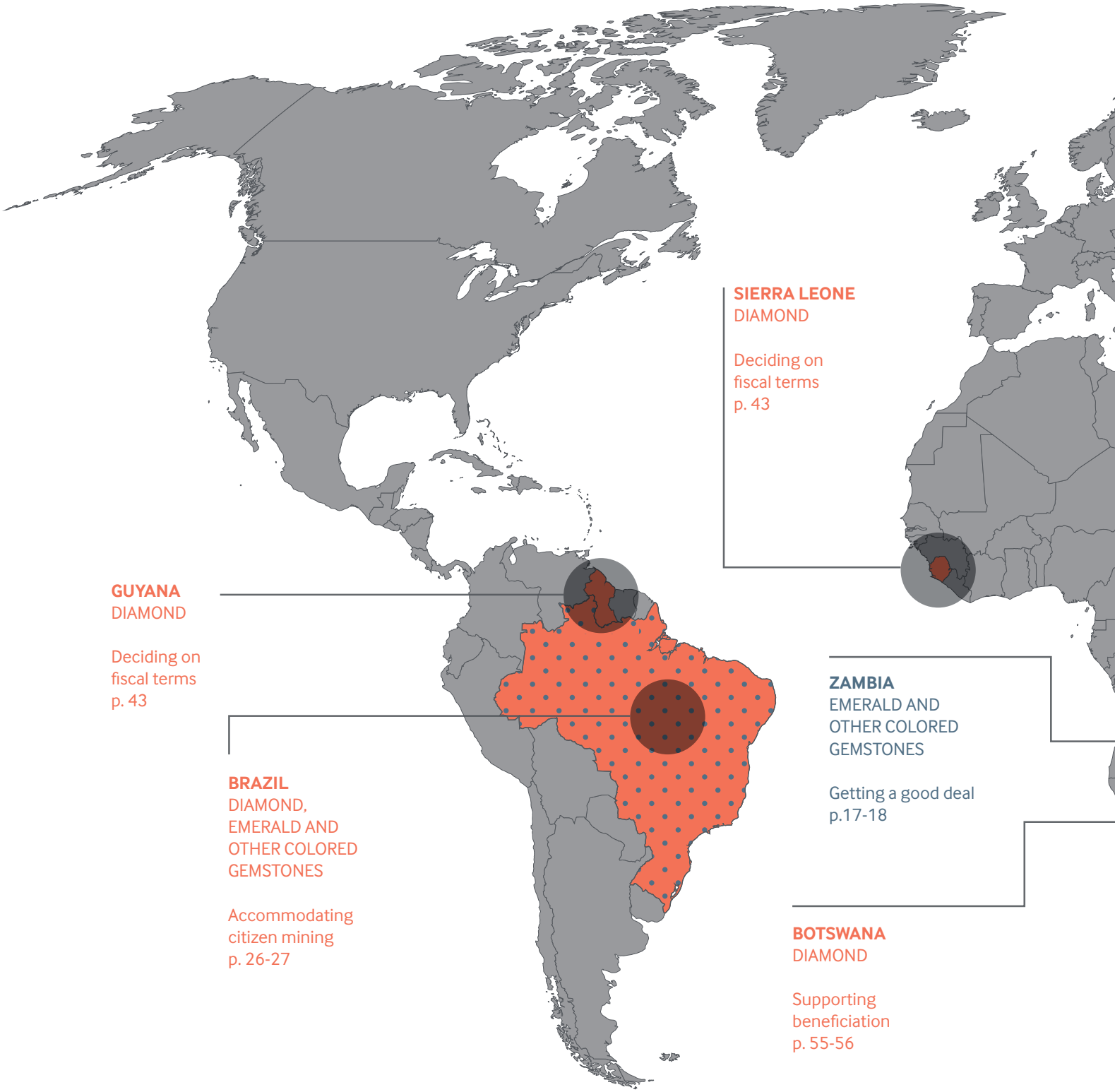

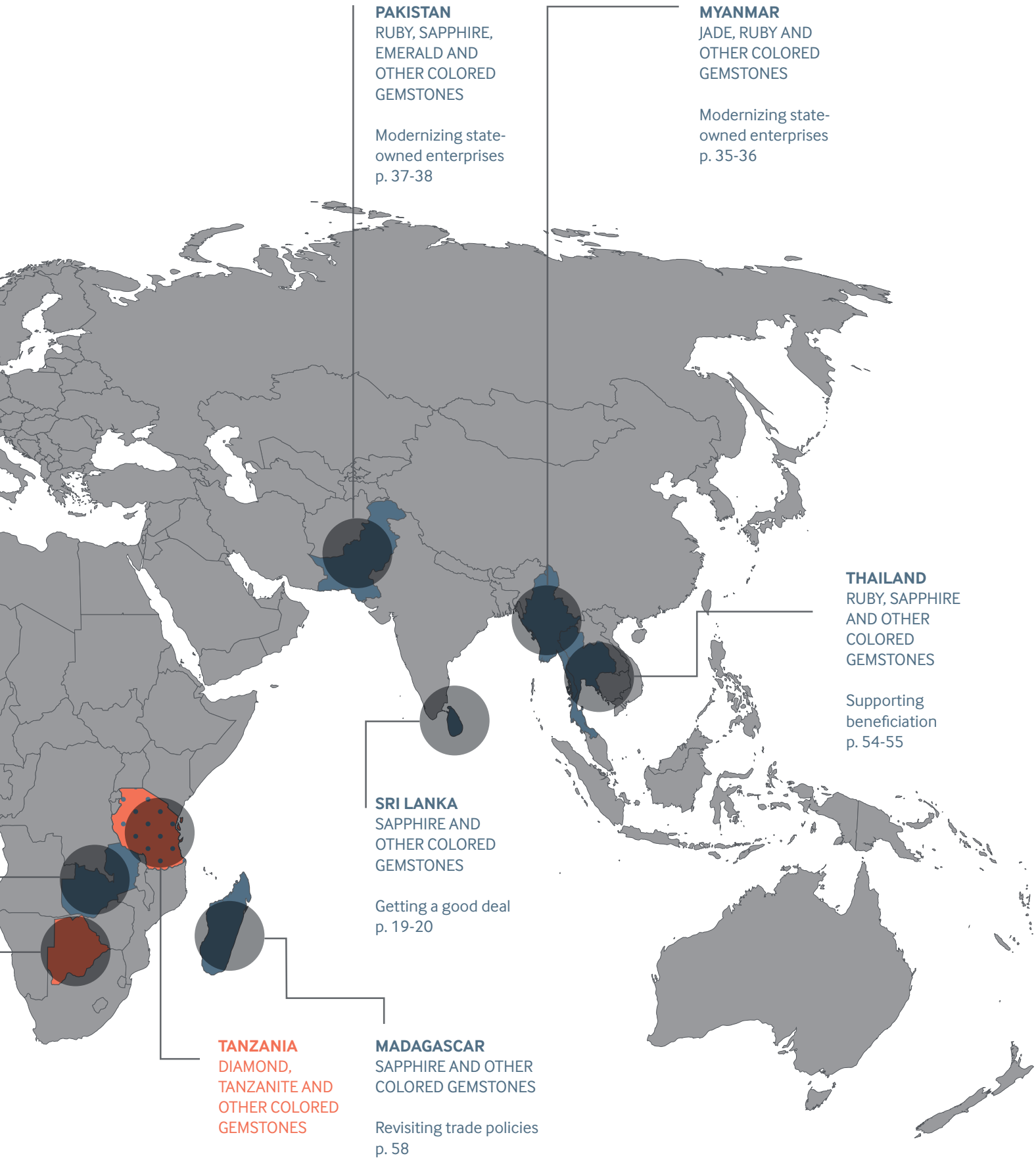
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Context and objectives

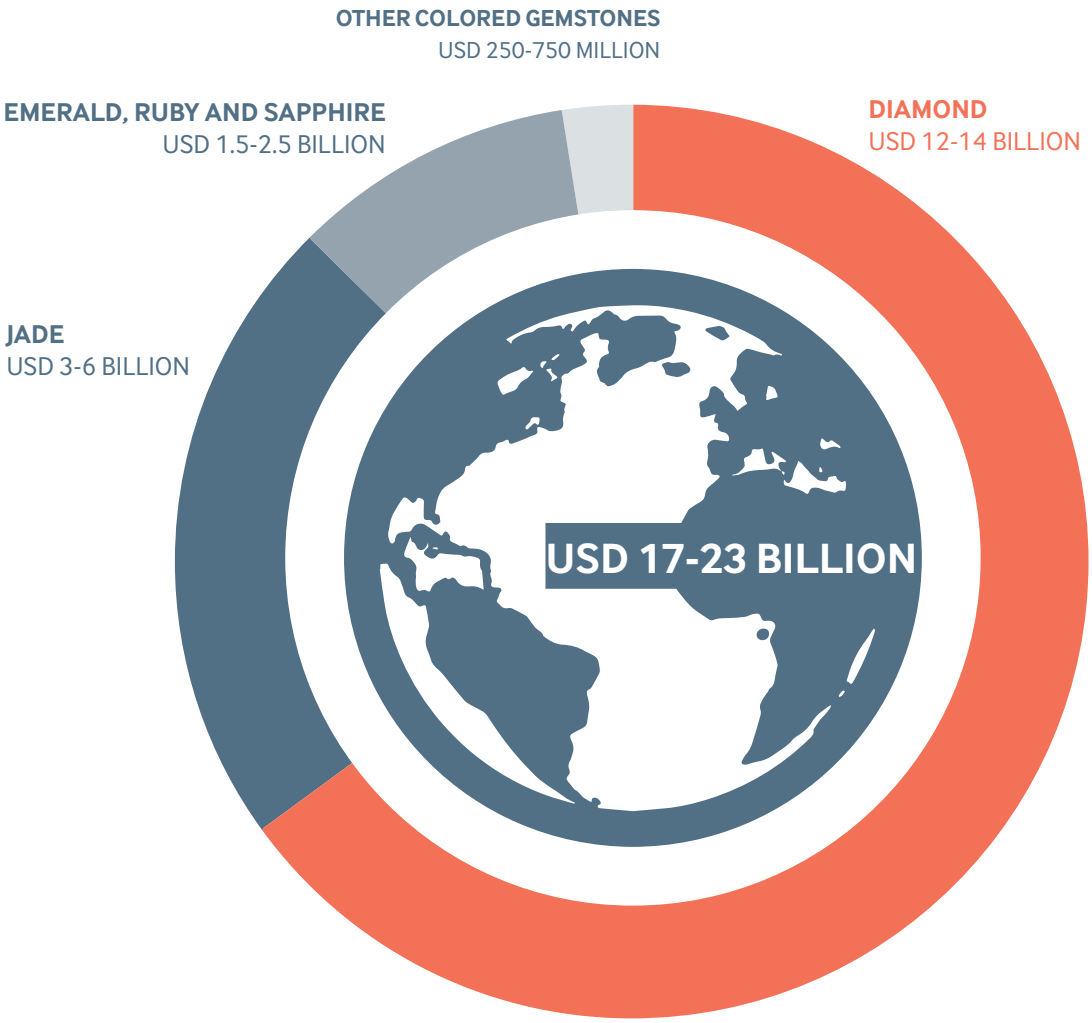
Gemstones have been prized for centuries as representations of beauty and status. In 2015, the global market for rough gemstones is conservatively estimated to have been worth between USD 17 billion and USD 23 billion (figure 2). Yet in many countries where gemstones originate, this resource wealth has only marginally supported development. The industry remains marked by:

- **Widespread illegal activity.** Many miners and traders operate outside of the formal sector, slowing the diffusion of appropriate environmental, social, and labor practices, and perpetuating linkages between the gemstone business and organized crime, internal conflict and corrupt regimes in certain countries.
- **Low revenue collection.** The gemstone industry's contribution to public spending remains constrained in many cases by the underreporting and undervaluation of production, or by government failure to negotiate a fair deal.
- **Minimal value addition.** While the cutting, polishing and processing of gemstones, and their manufacture into jewelry, represents a relatively sustainable source of skilled employment and economic growth, only a small fraction of these activities are conducted in countries where gemstones are extracted.
- **Weak oversight.** Inadequate regulation, weak traceability mechanisms, and only occasional disclosure of contracts, payments and other crucial information have limited accountability of actors throughout the gems and jewelry supply chain.

These challenges are particularly acute in countries that primarily produce colored (non-diamond) gemstones. While the dominance of international mining companies and significant attention from the international community has driven a degree of formalization and policy development in the diamond sector, the colored gemstone industry remains decentralized and de-emphasized by comparison. Less extensive research and engagement by government, private sector, academic and civil society stakeholders has limited public knowledge regarding the wide range of colored gemstone resources and their equally diverse markets.

This report considers how states may improve management of their gemstone resources, with a particular focus on colored gemstones. It seeks to highlight key lessons from international experience (figure 1) and identify policy options for governments interested in pursuing a better deal.

Figure 2. Estimated global rough gemstone sales, 2015[1]



1 Figure 2 assumes approximately USD 12-14 billion in rough diamond sales (based on Bain & Company and De Beers calculations, referenced in footnote 7), approximately USD 3 billion to USD 6 billion in rough jade production (based on emporium sales data and industry expert interviews), and approximately USD 2 billion to USD 3 billion in rough non-jade colored gemstone production (based on global retail figures and industry expert calculations). This should be considered a relatively conservative estimate, especially given that sales of diamond and jade—which together account for the lion's share of the global gemstones trade—are estimated to have fall substantially from 2014 to 2015.

COMPARING GEMSTONES AND OTHER MINERALS

Natural resources pose particular governance challenges, and many of the considerations that apply to other commodities are equally salient in the gemstone sector.[2] Yet gemstones are also distinguished by several unique qualities that have implications for their management, including:

- **High unit value.** The average rough diamond is worth approximately 15 times more than gold per unit weight.[3] This difference is significantly higher when gold is compared against "gem grade" stones (those deemed of suitable quality to be made into jewelry).
- **Variable unit value.** The price of a given type of gemstone reflects its perceived quality, whereas most minerals are priced based on quantity and purity. In 2013, for example, high quality Zambian emeralds marketed by Gemfields were worth 19 times more by weight, on average, than low-quality Zambian emeralds.[4]
- **Unique characteristics.** While the quality of certain gemstones is assessed on the basis of the "four C's" (referring to color, clarity, cut and carat weight), a range of other attributes may affect market prices, such as the presence of inclusions (materials that become trapped inside a gemstone as it forms); also, heating is commonly used to improve colour but also clarity, or quality. Many of these qualities are not easily discernable without a degree of specialist knowledge.
- **Non-physical attributes.** A stone's pedigree or other subjective qualities may influence perceptions of its value; for example, a Kashmiri sapphire may fetch a higher price than a Malagasy sapphire with similar characteristics.[5] Markets also increasingly favor stones that are "responsibly sourced," or produced in accordance with certain environmental, social and governance standards.
- **Complex processing.** "Beneficiation," the process by which rough stones are transformed into polished gems and jewelry, requires a greater degree of craftsmanship and specialization than processes for other minerals, such as smelting. A fine or poor cut, respectively, may significantly increase or reduce the potential price of a gemstone.

Key term: Valuation

"Valuation" refers to the process by which gemstones' market value is determined. Nomenclature around valuation varies somewhat from country to country. For example, the persons who conduct valuation may be referred to as a valuer (Canada), valuator (South Africa), or evaluator (Sierra Leone).

UNDERSTANDING THE GEMSTONE VALUE CHAIN

A gemstone's journey from mine to market may be divided into several discrete steps, including, production, cutting and polishing, jewelry manufacturing, and retail, often punctuated by trading between various actors. The value chain tends to be geographically fragmented; most gemstones pass through multiple jurisdictions between when they are extracted and eventually marketed to consumers.

2 Key challenges throughout the natural resource value chain are summarized in Natural Resource Governance Institute, *Natural Resource Charter*, 2nd edition (2014).
3 Based on rough diamond statistics published by the Kimberley Process Certification Scheme (see kimberleyprocessstatistics.org) and international reference prices for gold, both from 2015.
4 Based on Gemfields data, as reported in Tao Hsu et al., *A Visit to the Kagem Open Pit Emerald Mine in Zambia* (Gemological Institute of America, December 2014).
5 Rayaz Takat, a dealer in fine colored gemstones, is cited as saying that "a stone from Kashmir would be worth $100,000 per carat, while a similar sapphire from Madagascar would go for $20,000 per carat" and similarly that "an unenhanced Colombian emerald is priced five times as high as an unenhanced Zambian emerald—$200,000 per carat for the Colombian, $40,000 to $50,000 for the Zambian," in the *Gemstone Forecaster Newsletter* 34 (1) (Spring 2016).

Figure 3. Gemstone value chain

Production

Gemstones are mined in significant quantities in dozens of countries, spanning every continent except for Antarctica. It is important to note that statistics reported by volume may misrepresent a country's true production, since only a fraction of the resource extracted, is of sufficient quality (or "gem quality") to be made into jewelry.[6]

Global production of rough diamonds was estimated at between 127 million carats and 141 million carats in 2015, with a market value of perhaps USD 17.5 billion.[7] Russia remains the single largest source for diamonds by volume, while major producers in central and southern Africa collectively represent around 50 percent of supply.[8] An additional 20 million carats per year are expected to enter the supply chain between 2020 and 2030, with particularly large mines due to come on line in Angola and Canada.[9]

While quantifying the scale of colored gemstone production remains challenging due to a lack of reliable data, annual retail sales suggest that global production of rough, gem-quality colored gemstones is worth between USD 2 billion and USD 3 billion annually.[10] It is important to note that these figures exclude jade, which is generally estimated to be extracted at greater values annually than all other non-diamond gemstones combined.[11]

6 Bain & Company reports that 70 percent of global diamond output is of gem quality. For colored gemstones, one industry expert estimated that between 5 and 10 percent of reported production is of gem quality, but this share may vary substantially depending on to what degree the matrix (host rock in which gemstones are embedded) is included in the calculation.

7 Based on De Beers Group of Companies, 2016 Diamond Insight Report (2016) and Bain & Company, *The Global Diamond Industry* (2016).

8 Based on rough diamond statistics published by the Kimberley Process Certification Scheme: see kimberleyprocessstatistics.org.

9 Ibid., 7.

10 Non-jade colored gemstones are estimated to account for between 5 and 7 percent of global jewelry sales, worth USD 10 billion to USD 12 billion annually (see, for example, the BUZ Consulting Survey quoted in Russell Shor and Robert Weldon, "An Era of Sweeping Change in Diamond and Colored Stone Production and Markets" *Gems & Gemology* [Fall 2010].) These figures imply the value of polished gemstones falls in the USD 3 billion to USD 4 billion range, and the value of rough stones falls in the USD 2 billion to USD 3 billion range.

11 The volume and value of rough jade production has been widely debated, with estimates ranging from a low of USD 1 billion to USD 3 billion annually (based official emporium figures in various years, which do not take into account substantial private sales) to more than USD 30 billion (in 2014, according to Global Witness).

Leading producers of colored gemstones have shifted notably over time with the exhaustion of older reserves and discovery of new deposits. While sapphires, rubies and emeralds are each mined in multiple countries, other prized varieties—such as jade and tanzanite—are largely or wholly sourced from a single region.[12]

Geology plays a key role in determining which actors engage in production. Deeper and more concentrated primary deposits require significant investment to extract, but may deliver greater returns; these tend to be developed by companies. More dispersed and accessible secondary deposits (also commonly referred to as "alluvial deposits") may be mined by citizens using small-scale and artisanal methods.

A handful of vertically integrated international mining companies control approximately 80 percent of global diamond supply. The London-based De Beers Group exercised a virtual monopoly over the downstream diamond industry through the end of the twentieth century. While a series of anti-trust actions in recent years have reduced its share, De Beers continues to lead diamond sales by value. Together with Russian Alrosa, it accounts for between 60 and 70 percent of annual rough diamond sales. Petra Diamonds, Dominion Diamond and Rio Tinto also operate important large-scale diamond mining projects.[13]

Citizen mining (see Chapter 1) is often cited as accounting for between 70 and 80 percent of colored gemstone supply, excluding jade,[14] though the landscape has begun to shift with investment in commercial-scale projects by international players such as Gemfields, Richland Resources, and True North.[15] National mining companies also assume a leading role in certain markets, such as Colombia's emerald industry and Myanmar's jade business.

Rough trading

Although trading occurs at each stage of the gemstone value chain, the governments of gemstone-producing countries have a particular interest understanding how rough gemstones are transacted. Approaches to marketing present varying degrees of formality, competition and transparency.

The long-established method of selling diamonds developed by De Beers, and more recently replicated by Alrosa, is known as the "sightholder" system. Under this model, a limited number of long-term contracts are awarded to "sightholders"

Key terms: Citizen vs. company mining

A distinction is commonly drawn in mining parlance between small-scale and artisanal mining (ASM) and large-scale mining (LSM). No definition is universally applied across jurisdictions, and different applications of ASM/LSM may distinguish based the type or organization of actors, the techniques used in extraction, the area or production volume of a mine, or other criteria.

To avoid ambiguity that sometime accompanies uses of ASM/LSM, this paper will primarily distinguish between mines operated by unregistered individuals or groups ("citizen mining") and mines operated by registered companies of various scales ("company mining"). At times, it will further differentiate between "international companies" (generally, those that are publicly listed and maintain their center of business outside of the country where mining is conducted) and "national companies" (generally, those that are not publicly listed and maintain their center of business inside the country where mining is conducted).

12 The vast majority of the world's high-quality jadeite is mined in Myanmar's Kachin state, although significant volumes of Canadian nephrite (which shares certain properties with jadeite) are also being marketed as jade. Tanzanite is exclusively sourced from the Merelani area in Tanzania.

13 Ibid., 7.

14 Similar estimates are quoted in a variety of industry and academic sources; see, for example, Jean Claude Michelou, "Colored Gemstones from Mine to Market: Ethical Trade and Mining Certification Challenges," presented at the Rapaport Fair Trade Jewelry Conference, Basel, Switzerland, 18 March 2010. However, the share of citizen mining for colored stones in these accounts may be somewhat overstated in light of recent growth in output from large-scale projects operated by Gemfields since 2010.

15 Gemfields operates gemstone-mining concessions in Zambia (emerald and amethyst) and Mozambique (ruby); Richland Resources formerly operated the TanzaniteOne concession in Tanzania (tanzanite) and now runs the Capricorn mine in Australia (sapphire); Canadian-registered True North Gems began exploration for commercially-scalable ruby and pink sapphire deposits in Greenland in 2004, though it has since filed for bankruptcy—see "Greenland Authorities Sign Agreement Over True North Gems Unit Bankruptcy," *IDEX*, 17 September 2016.

who are entitled to buy rough diamonds in batches from producers at regular sales, known as "sight." The sightholder system effectively restricts access to a limited number of approved long-term contract holders.[16]

Gemfields, the world's leading producer of ruby and emerald, markets rough gemstones via regularly held auctions.[17] The benefits of this system include the ability to adjust sales to market fluctuations and trends, a more transparent and fair determination of gemstone value, relative ease of administration, and accessibility for a range of potential buyers.

Where gemstones are mined by citizens or smaller companies, complex and informal networks of brokers leverage relationships to match local supply with international buyer needs. In these cases, gemstones tend to change hands many times between the point of extraction and the destination where they are cut and polished.

Beneficiation

The transformation of rough gemstones into finished products is known as value-added processing or "beneficiation." Successive stages of beneficiation, including cutting, polishing and treatment (such as heating, waxing or dyeing), increase gemstone market prices by around 50 percent, on average. The manufacturing of gemstones alongside other materials into jewelry further increases the value of the product.

Diverse actors are engaged in gemstone processing and jewelry manufacturing, including large retailers, small- and medium-scale companies, and independent artisans. Certain operators specialize in one or more aspects of beneficiation, while others may be vertically integrated.

Arguably, the most defining feature of the midstream value chain is not who processes gemstones and but where this processing occurs. Low-cost Asian manufacturing hubs increasingly dominate the lapidary and jewelry manufacturing industry, with India handling as much as 90 percent of global diamond supply by weight (though less in terms of value), mostly in the city of Surat.[18] Colored gemstones tend to undergo processing in Thailand, China (often Guangzhou), India (often Jaipur) and Sri Lanka.[19] The competitiveness of these countries has increased pressure on historic centers (such as Belgium, Israel and the United States for diamonds) and heightened barriers to entry for gemstone-producing countries looking to grow their domestic beneficiation industries. (see Chapter 5.)

Key term: Beneficiation

"Beneficiation" or "value-added processing" denotes the process by which rough gemstones are transformed into finished jewelry products. Most references to beneficiation in this report refer primarily to the cutting and polishing of gemstones. However, the concept of beneficiation also encompasses gemstone treatments and their manufacturing into jewelry.

The vocabulary around beneficiation is somewhat specialized. The cutting and polishing of many colored gemstones is referred to as "lapidary," for example, and in the jade sector cutters are often referred to as "carvers."

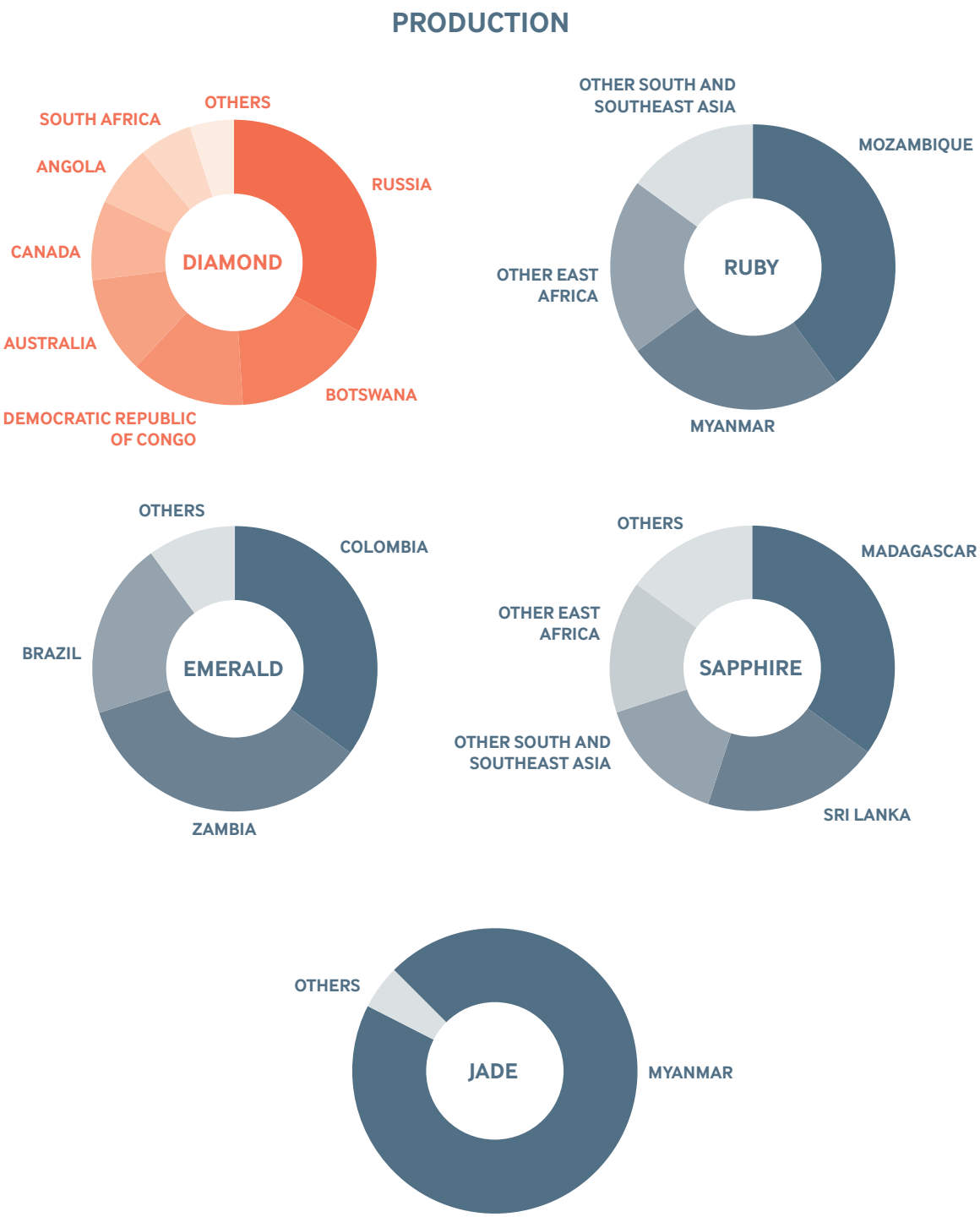
16 A current list of De Beers' sightholders and additional information is available at: www.debeersgroup.com/globalsightholdersales. Although private sales agreements continue to dominate the diamond trade, governments of several diamond-producing counties have established companies to market some (Botswana, Namibia, South Africa) or all (Angola) of production.

17 Gemfields' auctions are typically held in Singapore, Jaipur and Lusaka. Additional information regarding auction results is available at corporate.gemfields.co.uk/investors/aim-announcements.

18 Geological Institute of America, "Journey of a Diamond."

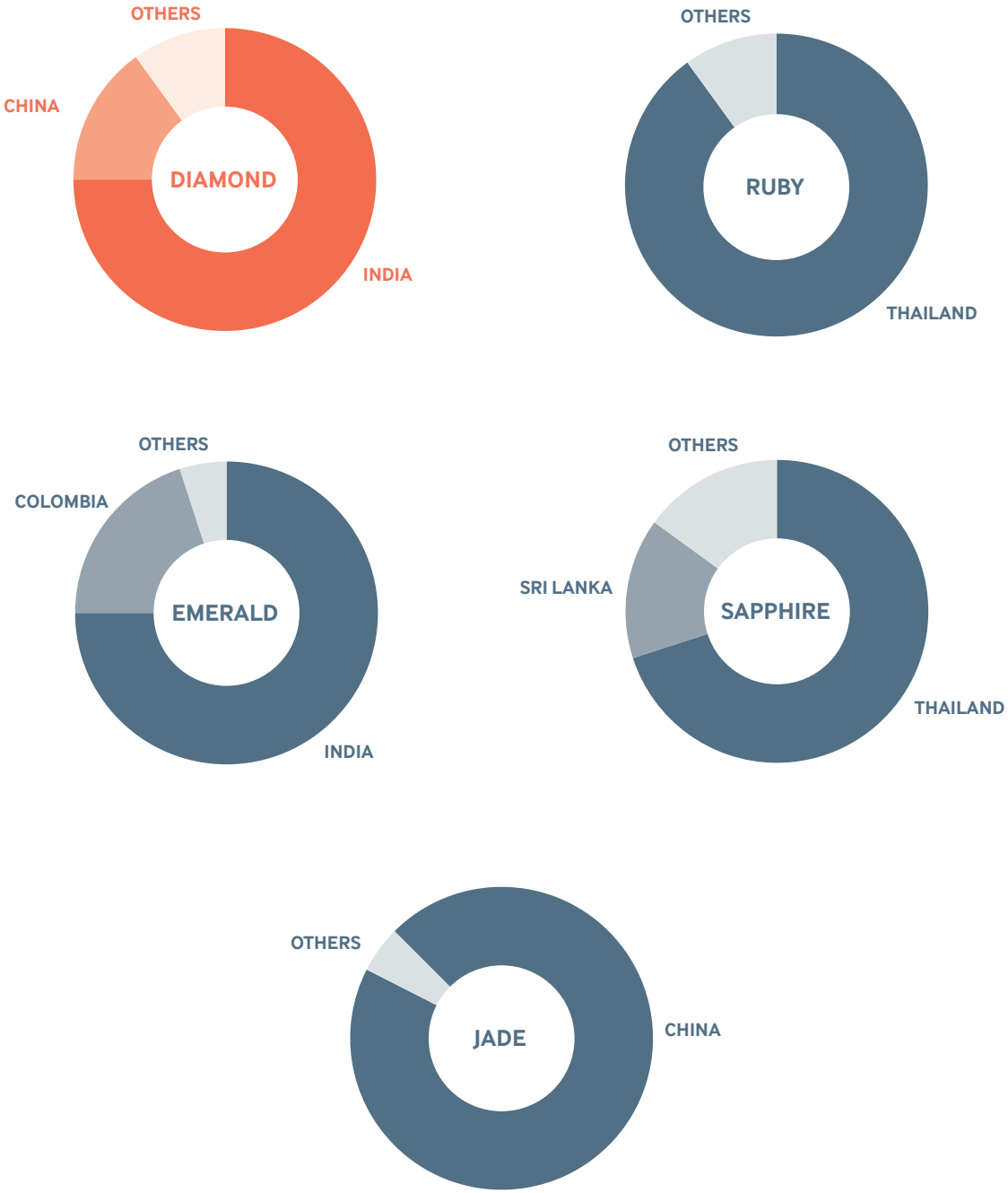
19 These hubs specialize in different varieties of colored gemstones. Jade, for example, is typically carved in China, while Thailand handles most of the world's ruby and sapphire supply (though it has lost some market share to Sri Lanka) and India accounts for the majority of the world's emerald processing.

Figure 4. Estimated geographical distribution of gemstone mining, cutting and polishing[20]



20 Figure 4 is approximate and is intended to be illustrative; it should not be cited as a definitive source of data. Diamond production shares are modeled by volume based on 2015 data released via the Kimberley Process Certification Scheme; diamond cutting and polishing shares are modeled by market value based on estimates by De Beers Company and Bain & Company. Emerald, jade, ruby and sapphire production and cutting and polishing shares are modeled based on estimated market value and are based on U.S. Geological Survey and producing country

CUTTING & POLISHING



government data, UN Comtrade data, expert interviews, academic articles and media citations. Uncertainty regarding countries' respective market share remains particularly in the colored gemstone market, given spare and contradictory information in available sources, the relatively rapid pace of development and exhaustion of critical deposits, a high degree of smuggling and underreporting, conflation between the volume and value of resource produced, and a tendency of operators to misreport stones' country of origin for commercial gain.

Retail

Gemstones are sold as luxury goods rather than traded as commodities; consumption and prices are therefore rooted in perceptions of desirability. Branding and promotion have been critical to success since the early 1900s, when De Beers stimulated sustained growth in demand for diamond engagement rings through its "a diamond is forever" campaign. In more recent decades, the rise of "responsible sourcing" (see Chapter 7) stands out as perhaps the most consequential shift in how jewelry is advertised and sold.

Global sales of diamond jewelry have averaged between USD 70 billion and USD 80 billion annually in recent years. The United States remains the single most important market for gemstones, consuming around 40 percent of diamond jewelry, though rising demand in China, India and other developing economies has diminished its share.[21]

The popularity of non-diamond gemstones has soared in recent years, resulting in price increases of more than 100 percent for many varieties of colored gemstones over the past decade.[22] Sales of colored gemstone jewelry (excluding jade) are estimated to account for between 5 and 7 percent of global retail sales, or between USD 10 billion and USD 12 billion each year. Rubies, sapphires and emeralds account for the greatest percentage of total value, though estimates of their combined share range significantly from as low as 50 percent to as high as 90 percent.[23] While particular challenges remain with regard to calculating the value of jade, annual sales of jade jewelry in mainland China alone could be worth USD 7 billion or more.[24]

The United States is estimated to account for 60 percent of non-jade sales of colored gemstone jewelry. However, significant heterogeneity exists across markets; North American and European consumers disproportionately buy sapphire, while Chinese buyers account for a relatively greater percentage of ruby sales and virtually the entire jade market.[25]

General trends notwithstanding, gemstones sharing similar features or countries of origin may traverse distinct paths from mine to market. For example, the profile of the value chain differs substantially for sapphires sourced from Malawi as opposed to Sri Lanka, for tanzanites compared with rubies mined in Tanzania, and between two emeralds produced in Colombia depending on whether they are extracted by companies or citizen miners.

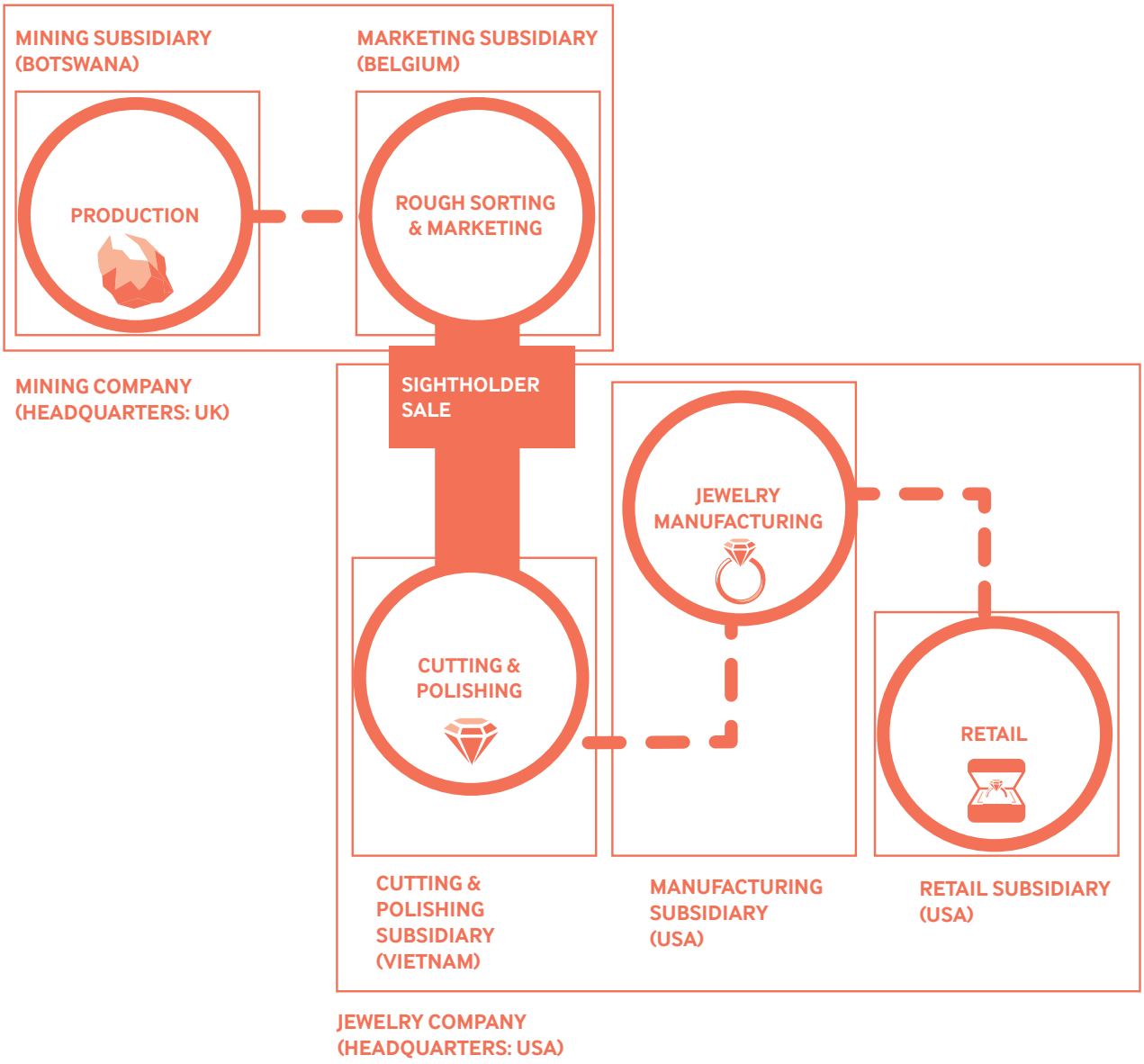
21 Ibid., 7.
22 See, for example, *Gemstone Forecaster Newsletter* 34 (1) (Spring 2016). It is important to note that bubbles may be present and volatility can push prices in both directions. While the retail values of many colored stones remain stable or continue to increase, for example, a variety of factors have significantly decreased jade prices in recent years.
23 Based on stakeholder interviews and academic and media citations. Notably, industry experts interviewed disagree regarding the relative share of leading varieties of colored stones; sapphires are cited as accounting for as much as 50 percent of total, while rubies are cited as accounting for as much as 40 percent of total. Although certain varieties, such as tanzanites and tourmalines, may fetch high prices individually, supply is too low to rival the market share of ruby, sapphire and emerald.
24 This estimate assumes that jade products account for roughly 10 percent (a highly subjective share, based on certain industry expert estimates) of Chinese jewelry sales, which totaled 454,000,000,000 yuan (or USD 71 billion) in 2012. Several factors, including growth of the Chinese jewelry market and significant jade sales via Hong Kong, could support a higher estimate.
25 Ibid., 22.

An amber miner enters a mining tunnel in Danai Township, Kachin State, Myanmar. *Credit: Khun Latt for NRGI.*

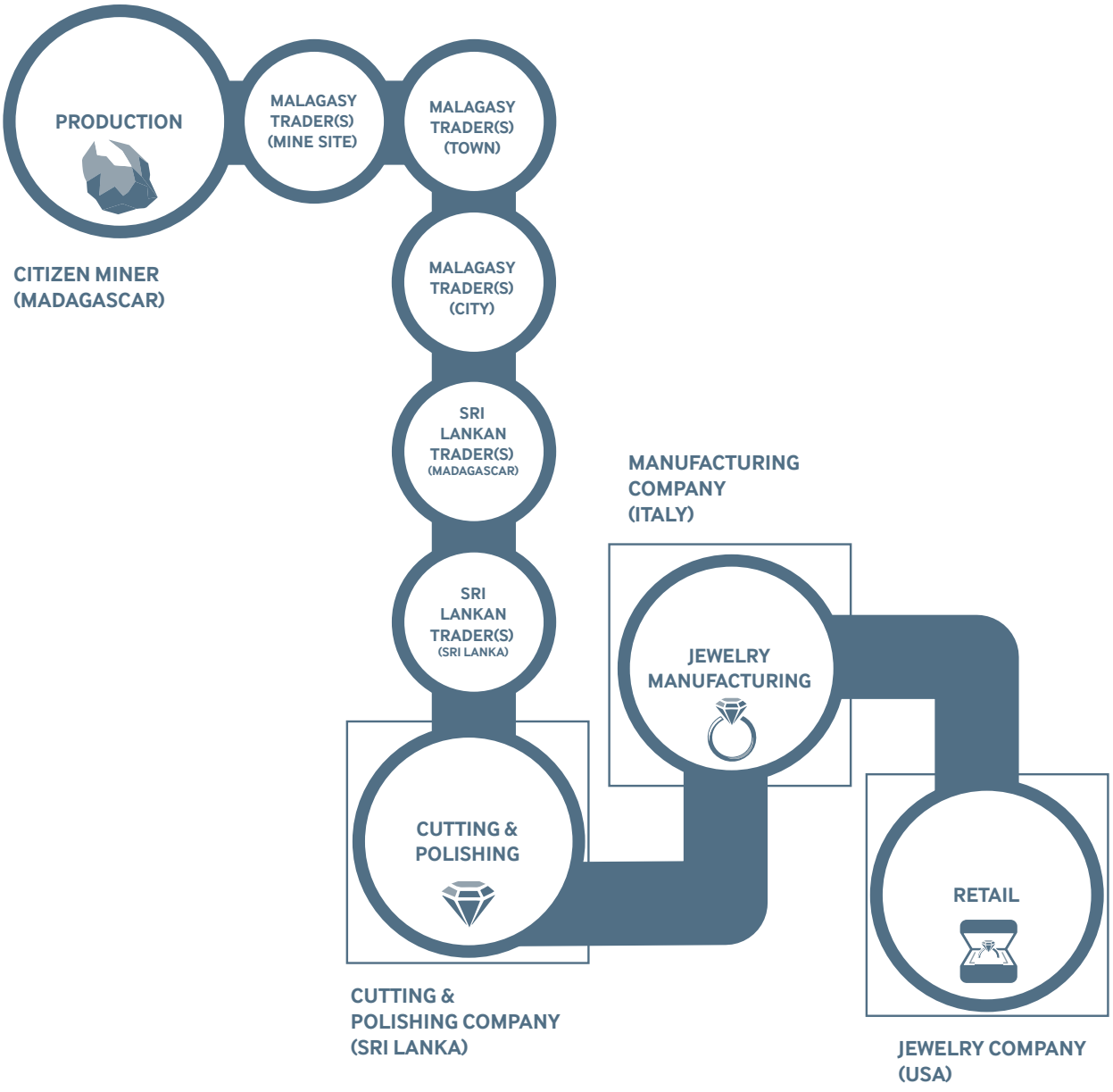
The number and type of actors involved in the gems business largely determine the transparency of the value chain. The highly centralized nature of the downstream diamond industry allows for a greater percentage of production to be tracked from mine to market. A comparable degree of traceability is rarely achieved in the colored gemstone sector, which generally remains dominated by small-scale operators.[26] A given sapphire unearthed in Madagascar, for example, may pass from citizen miners to independent buyers known as "ladies in hats," that reside in towns or camps proximate to artisanal mining areas, and then to "men with cars," who transport gemstones from the town or camp to a major city. The gemstone would likely change hands multiple times between local and international traders before being exported for processing, likely in Thailand or Sri Lanka, and then for retail (figure 5).

26 Notable exceptions include Gemfields, which operates primarily in Mozambique and Zambia; the Colombian Muzo emerald company, which mines emeralds in Boyacá, and processes and markets rough stones via additional subsidiaries in Bogota; and the Brazilian Belmont emerald company, which also domestically processes a certain percentage of its supply.

Figure 5. Comparison of value chains for Botswana diamond and Malagasy sapphire



27 Figure 5 is anecdotal; it does not accurately represent the range of potential paths for a given gemstone from Botswana or Madagascar. The Botswanan diamond value chain modeled above is based on information made available in De Beers Company and Tiffany & Co. Annual Reports. The Malagasy sapphire value chain modeled above is based on accounts by Tom Cushman, as recorded in *Governance and Development Effectiveness Review: A Political Economy Analysis of Governance in Madagascar* (World Bank, 2010), and interviews conducted with traders in Sri Lanka in February 2017.


PRODUCTION
MALAGASY TRADER(S) (MINE SITE)
MALAGASY TRADER(S) (TOWN)
MALAGASY TRADER(S) (CITY)
SRI LANKAN TRADER(S) (MADAGASCAR)
SRI LANKAN TRADER(S) (SRI LANKA)
CUTTING & POLISHING
JEWELRY MANUFACTURING
RETAIL
CITIZEN MINER (MADAGASCAR)
MANUFACTURING COMPANY (ITALY)
CUTTING & POLISHING COMPANY (SRI LANKA)
JEWELRY COMPANY (USA)

Getting a better deal

If managed appropriately, natural resources may benefit citizens and contribute to national development, including supporting employment and income growth, generating government revenues and stimulating parallel economic activities. A good deal may come in many forms, and governments play a leading role in determining how to make the most of the gemstone sector through the design of laws, policies and practices. The cases of Zambia and Sri Lanka, among others summarized, illustrate how two countries have taken distinct advantage of their resource endowments in line with national priorities.

The following sections of this report draw on the experiences of gemstone-producing countries, with a particular focus on those that mine colored gemstones. Together they outline key challenges for governance and, where possible, identify opportunities for increasing the value generated by gemstone extraction:

- The first two chapters address the conditions under which colored stones are extracted. Chapter 1 compares strategies by which governments may mitigate the negative consequences of informality among citizen miners. Chapter 2 evaluates the role of state-owned enterprises (SOEs) in managing and regulating gemstone mining operations.
- Subsequent sections are concerned with how gemstones contribute to government income. Chapter 3 considers how countries may set fiscal terms that deliver a fair share of revenues, while Chapter 4 addresses the challenges in designing effective systems for gemstone valuation.
- Chapters 5 and 6 review approaches to developing value-added processing. Chapter 5 identifies several factors key to establishing a competitive industry and discusses the role of the state in creating a favorable environment for beneficiation. Chapter 6 appraises the use of trade policies to encourage value addition in several gemstone-producing countries.
- The final chapter surveys ongoing efforts to improve transparency and traceability in the gemstone value chain, and notes the particular challenges to implementing such initiatives in the colored stones industry.

CASE STUDY: ZAMBIA

Zambia emerged as a globally important source of gem-quality emeralds in the 1970s, although commercial interest in its gemstones dates back to the 1920s. Today the southern African country is estimated to account for as much as 40 percent of global emerald supply, almost entirely sourced from the Ndola Rural Emerald Restricted Area located in the Copperbelt region.[28]

Effective development of Zambia's gemstone resources has been undermined by an ineffective regulatory framework, low capacity in the private sector and weak rule of law. In 2004, approximately 60 percent of the 345 gemstone-mining licenses issued were estimated to be inactive. This resulted, in part, from sparse geological data, a burdensome fiscal framework, poor access to credit and technology, that prevented profitable development of gemstones by small- or medium-sized local companies holding most extractive rights.[29] In 2013, government officials estimated that some 40 percent of Zambia's gemstones, worth perhaps USD 60 million annually, were mined without a license.[30]

Three large-scale concessions with mechanized production—Kagem, Grizzly and Chantete—have together accounted for much of Zambia's official emerald output over the past two decades. The largest of these, Kafubu Gemstone Mines (Kagem), was established in the 1980s as a state-owned enterprise 60-percent controlled by the government of Zambia. Following nearly 20 years of poor performance under state control, the government ceded its management responsibilities (in 1996) and majority equity (in 2006) to Indian-Israeli consortium Hagura to encourage greater investment in Kagem.[31] However, the project continued to operate unprofitably into the mid-2000s.[32]

28 Most accounts authored between 2000 and 2010 estimate Zambia's share as between 20 percent and 30 percent of global emerald production; estimates compiled by the U.S. Geological Survey, for example, suggests that Zambia accounted for 26 percent of all emeralds by volume in 2005. Zambia's share has increased with the growth of output from the Kagem mine; industry experts suggest Gemfields alone may represent 25 to 30 percent of worldwide rough emerald supply by volume. The country's share of the emerald market is likely to be greater when considered as a percentage of volume rather than as a percentage of value, as Zambian emeralds tend to be considered of lower quality than those sourced from South America.

29 Constraints facing local emerald mining companies are detailed in Whiteson James Chola Silondwa, "Constraints to the Growth of the Zambian Emerald Industry" (MBA diss., Copperbelt University School of Business, 2012). License data via the Ministry of Mines and Mining Development.

30 Finance Minister Keith Mukata, as quoted in Matthew Hill, "Emerald Thieves Brave Dogs to Sap Zambia's Gem Revenues," *Bloomberg*, 3 July 2013.

31 This move reflected a broader shift towards privatization encapsulated in Zambia's 1995 Mining Policy and later adapted into the 2013 Mineral Resources Development Policy, intended to encouraged renewed private and foreign investment in the mining sector; See Government of the Republic of Zambia, *Mineral Resources Development Policy* (2013).

32 See Pallinghurst Resources Limited, *Annual Report 2010*, and Tao Hsu et al., *A Visit to the Kagem Emerald Mine in Zambia*.

Gemfields, a U.K.-listed subsidiary of Pallinghurst, took over management of Kagem in 2008.[33] The company has capitalized the project to a scale rarely observed in the colored gemstone industry, making major upgrades to extraction and processing techniques, hiring more than 500 local employees, strengthening site security and improving environmental management. In 2016, Gemfields reported producing 30 million carats of emerald—making it the single largest source of colored gemstones (by volume) in the world.[34]

Effective marketing and promotion by Gemfields has helped Zambia to make the most of its gemstone resources. The company links production to global markets via regular global auctions. Its brand as an ethical producer and a high-profile advertising campaign have helped to increase the value of Zambian gemstones on the global market; the average price of rough emeralds per carat auctioned by the company rose more than tenfold between 2009 and 2015.[35] Kagem generated approximately USD 30 million in dividends and USD 43.7 million in taxes and royalties between 2012 and 2015.[36] By comparison, Grizzly Mining Limited (Zambia's second largest emerald producer, which reportedly produced a comparable volume of emeralds as Kagem prior to the Gemfields takeover) reported paying just ZMW 3.5 million (or USD 460,000) in revenues during the 2014/2015 fiscal year.[37]

Government engagement has been equally important in securing a good deal for Zambia. The state's 25-percent equity stake in Kagem has generated significant revenues in recent years. With the goal of maximizing the value captured domestically, the government also compelled Gemfields to hold a certain number of emerald auctions in Lusaka rather than traditional gemstone trading centers, such as Jaipur or Singapore. Although this move has been controversial—the company has argued that it makes its emeralds less competitive than those produced by competitors in Colombia and Brazil[38]—prices appear to have remained robust at Zambian auctions.

Gemfields' strategy in Zambia—one that combines long-term investment with international experience—closely resembles the approach of companies in the more centralized diamond sector. This model may increase the productivity of extraction, help to formalize a greater share of the gemstone trade and present more significant opportunities for government revenue collection. However, its success depends equally on the capacity and commitment of the state and private actors.[39] Though not without their fair share of challenges, Zambia and Gemfields have benefitted from a relationship based on mutual accountability.

33 Gemfields is also the majority owner and operator of Zambia's Kariba amethyst mine. Kariba counts for a relatively small share of Gemfields' income and government revenues accruing from the gemstone industry, and is not addressed in depth in this case study.

34 Based on Gemfields PLC, *Annual Report and Financial Statements 2016*. There is some unexplained inconsistency between Gemfields' reported production of emerald/beryl (approximately 30 million carats each in 2015 and 2016) and reported sales (approximately 3.3 million carats in 2016). It is possible that the inclusion of industrial-grade emeralds (which are considered too low quality for incorporation in jewelry) causes production figures to appear inflated.

35 Based on data available in Gemfields' annual reports and financial statements. These may be viewed in consolidated form in Tao Hsu et al., *A Visit to the Kagem Emerald Mine in Zambia*.

36 "Kagem mining pays US$14 dividend," *Lusaka Times*, 20 October 2015.

37 Based on Zambia Extractive Industries Transparency Initiative, *Seventh Report of the Zambia Extractive Industries Transparency Initiative* (for the Year ended 31 December 2014) and reporting in J.C. Zwaan et al., "Emeralds from the Kafubu Area, Zambia," *Gems & Gemology* (Summer 2005): 116-148.

38 See, for example, Andrew Bowman, "Zambia does a Botswana on emeralds," *Financial Times*, 8 April 2013.

39 A number of cases are observed where governments have been faulted for imposing unfair terms (see, for example, government expropriation of Laotian sapphire mines) or not providing adequate services for large-scale gemstone mining projects (see, for example, the exit of Richland Resources from the TanzaniteOne project in Tanzania). Conversely, international companies have been criticized for negotiating opaque or unfair fiscal terms (see, for example, Koidu in Sierra Leone) or evading taxation through underreporting (see, for example, De Beers in South Africa).

CASE STUDY: SRI LANKA

Sri Lanka's rich alluvial deposits have been informally mined for centuries and remain a source of high-quality sapphires and other varieties of colored gemstones. It exported LKR 18.7 billion (USD 141 million) of colored gemstones in 2014, of which sapphires accounted for approximately 70 percent by value.[40] Beyond its own resources, the island country has developed into a global hub for trading and beneficiation with access to supply in Madagascar, Vietnam and other producers of colored gemstones.

A predominance of low-technology methods and a ban on foreign activity has helped to support thousands of local livelihoods while moderating the overall pace of extraction. Citizen gemstone mining in Sri Lanka has evolved in parallel with the country's agricultural system, serving as a seasonal form of employment for farm workers and a supplemental source of income for landowners. Costs and profits associated with extraction are shared, with financier(s) and miner(s) each receiving 35 percent of gemstone mining income, while the remaining 20 percent and 10 percent accrue to landowners and license holders, respectively. Oversight by landowners and periodic inspections conducted by the National Gems and Jewellery Authority have limited illegal mining and encouraged the diffusion of sound health, safety and environmental practices. Mechanized activities are rarely permitted, and a deposit held by the Authority for the duration of each license encourages the backfilling of disused pits.[41]

Unlike many of its peers,[42] Sri Lanka has also developed a robust domestic beneficiation industry. Since a first generation was trained to international standards under the (now defunct) State Gem Corporation, the number of skilled Sri Lankan cutters has grown to approximately 20,000—around three quarters of which work with colored gemstones.[43] Various tax incentives have supported the country's value-added processing businesses; import and export taxes are waived for gem and jewelry products, while lapidaries and jewelers are exempted from income tax and (until recently) value-added tax. A state-administered Jewellery Development Fund finances the adoption of modern technologies in the jewelry industry.[44]

40 National Gem and Jewellery Authority, "Export Performance 2014."
41 Interviews with National Gem and Jewellery Authority officials, conducted February 2017.
42 Among countries that currently produce significant quantities of colored stones, Brazil, China and Colombia are also reported to have developed significant domestic beneficiation industries.
43 National Gem and Jewellery Authority, "Gemstone Faceting Industry."
44 National Gem and Jewellery Authority, *Annual Report 2014*.

A range of government programs has supported the country's rise as a center for processing and exchange. The gemstone industry is regulated by the National Gems and Jewellery Authority (NGJA, the Authority), a financially autonomous enterprise that provides an array of industry services, including assaying and hallmarking, training and export facilitation. NGJA cooperates closely with the Export Development Board (EDB)—which, not coincidentally, is represented on the Authority's board of directors—to conduct promotional activities in major Asian, European and North American markets. EDB also led the development of a national sapphire branding strategy, which helped "Ceylon sapphires" to gain cachet among retailers worldwide.[45]

Sri Lanka has managed to reconcile the trade-offs inherent in gemstone governance to a degree observed in few other countries; it has encouraged the development of domestic industry in both the upstream and midstream value chain, preserved citizen mining while exercising effective oversight of extraction, and cultivated an export-oriented sector that remains nationally owned and operated. Certain compromises are also inherent in its approach; for example, its liberal fiscal regime for gemstones has limited direct revenue collection from the sector and allegations of corruption have periodically surfaced.[46] However, many elements of the Sri Lankan experience—including sustained investment in building the profile and capabilities of domestic industry, collaboration across government agencies and the continued evolution of those institutions to meet the needs of local actors—may support improved gemstone governance in a variety of national contexts.

45 See "The Sapphire Branding Strategy of the Gem and Jewellery Sector in Sri Lanka" (working paper prepared for Business for Development: Implications for Export Strategy-Makers, Cancun, Mexico, September 2003).

46 See, for example, "Sri Lanka: Large-scale Gem Fraud During Last Regime: Authority," *Sri Lanka Brief*, 22 April 2016.

1. Accommodating citizen mining

Citizen mining remains a defining feature of the gemstone sector, accounting for as much as 80 percent of production of colored gemstones by volume (excluding jade) and approximately 20 percent of diamonds by volume globally.[47]

A growing number of governments are attentive to how these actors are overseen and organized, and the extent to which they interact with company mining projects. A drive towards responsible sourcing in the jewelry market has also increased interest within the industry in improving the terms under which citizen mining occurs.

The number of individuals participating in gemstone extraction is difficult to calculate with precision, but available evidence suggests that citizen gemstone miners number in the millions worldwide. The influx of citizens to a given gemstone-producing area may total in the hundreds of thousands, though these numbers tend to decline within a number of years as accessible reserves are depleted.[48] Over the longer term, countries sustain populations as small as fewer than 100 citizen miners to as large as more than 100,000 citizen miners.[49]

The nature of citizen gemstone mining varies based on a number of factors, including the type of extraction, the profile of citizen miners and whether activities are conducted individually or are collectively organized. Major discoveries tend to attract "rushes" of inward migration from other regions. Increased competition from newcomers for access to gemstone areas and government services tends to generate tension with local communities, which in many cases have traditionally mined nearby gemstone deposits as a supplemental source of income. Depending on the accessibility of the resource, citizens may mine deposits directly or extract gemstones from the waste generated by mining companies.

Diverse working relationships are observed at citizen mining sites. Those directly involved in extraction (or "diggers," as they are referred to in certain countries) usually earn less than five U.S. dollars per day and typically lack formal education, access to credit, or adequate knowledge of geology and gemology.[50] They often depend on more experienced actors, such as mine owners, landowners or local traders, to invest in infrastructure, equipment, and direct operations, and to evaluate and market the gemstones extracted.

47 See footnote 14.

48 For example, "rushes" of citizen gemstone miners have been estimated to number 50,000 (emeralds at Campos Verdes, Brazil); 100,000 (sapphires at Ilakaka, Madagascar); and 200,000 (jade at Hpakant/Lonekhin, Myanmar). The total number of citizen miners in each country is significantly greater once populations at other major gemstone mining areas are taken into account. Estimates based on Jose Antonio Puppim de Oliveira and Saleem H. Ali, "Gemstone mining as a development cluster," *Resources Policy* 36 (2011): 132-141; Rosaleen Duffy, "Gemstone Mining in Madagascar: transnational networks, criminalisation and global integration" (paper presented at "Redesigning the state? Political corruption in development policy and practice" ESRC/Global Poverty Research Group conference at Manchester University, 25 November 2005); and data presented by the Myanmar Gems Enterprise, November 2016.

49 For example, Sri Lanka's population is cited at 105,000 in several sources (see, for example, Sunil Chandrasiri, "Promoting employment intensive growth in Sri Lanka: An assessment of key sectors," Employment Working Paper No. 139 [International Labour Organization, 2013]), which appear to be based on data compiled by the National Gem and Jewellery Authority in the early to mid 2000s; SOMO estimates citizen mining numbers between 10,000 and 350,000 in various African countries, mostly based on data from 2002 (see Jamie Cross, Sanne van der Wal and Esther de Haan, *Rough Cut: Sustainability Issues in the Coloured Gemstone Industry* [SOMO, February 2010]).

50 For additional discussion and examples, see Jennifer Hinton and Estelle Levin, *Comparative Study: Legal and Fiscal Regimes for Artisanal Diamond Mining* (USAID, October 2010).

Figure 6. Estimated shares of company and citizen mining in gemstone production[51]

51 Figure 6 is approximate and illustrative; it should not be cited as definitive. See footnote 25.

However, citizen miners are unlikely to formally organize or invest in capacity building, in part because relatively few regard gemstone mining as a source of long-term employment. Individuals frequently enter the industry based on the (usually false) perception that it represents a swift route to prosperity. Many also engage in gemstone mining on a temporary or part-time basis, such as between harvesting seasons.

ADDRESSING INFORMALITY AMONG CITIZEN MINERS

The diffuse and temporal nature of citizen mining, and the generally low capacity of miners themselves, pose particular challenges for governance. Most citizen gemstone miners operate without a license or meaningful oversight. This tends to generate undesirable consequences, including:

- **Increasing opportunities for illegal activity.** Illegal mines may be complicit in local corruption or the use of child and forced labor.[52] In various cases, gemstones originating from informal operations have also helped to finance drug trafficking and organized crime, internal conflict, and international terrorism.[53]
- **Reducing revenues and other economic benefits.** Many citizen miners do not declare their production, increasing the challenges associated with calculating the value of gemstone resources, collecting appropriate revenues, and supporting the development of linked sectors and services.
- **Exacerbating negative environmental and social impacts.** Unfettered extraction may contribute to deforestation and water pollution, threaten local biodiversity and destabilize local terrain. In addition to putting greater strain on government services, citizen migration to gemstone-bearing areas is associated with greater insecurity and heightened risks to public health, such as increased use of drugs and transmission of HIV/AIDS.
- **Perpetuating exploitation of citizen miners.** Without access to adequate resource or education, citizen miners themselves may fall victim to predatory lending, unfair valuation and other forms of manipulation practiced by gemstone traders, mine owners or other powerful actors.

52 The U.S. Department of Labor lists Angola, the Central African Republic, the Democratic Republic of Congo, Guinea, Liberia and Sierra Leone among diamond-producing countries and India, Tanzania and Zambia among colored gemstone-producing countries that use child or forced labor in gemstone production: see www.dol.gov/ilab/reports/child-labor/list-of-goods.

53 Gemstones have been used as vehicles for money laundering and have helped to finance terrorist groups and oppressive regimes in Afghanistan, Angola, the Democratic Republic of Congo and Zimbabwe, among other countries. See, for example (though not exhaustive), Financial Action Task Force and Egmont Group of Financial Intelligence Units, "Money Laundering and Terrorist Financing Through Diamonds" (2013); Global Witness, "War in the Treasury of the People: Afghanistan, Lapis Lazuli, and the Battle for Mineral Wealth" (2016); and Partnership Africa-Canada, "Diamonds and Clubs: The Militarized Control of Diamonds and Power in Zimbabwe" (2010).

ADDRESSING CONFLICT BETWEEN CITIZEN AND COMPANY MINING

An increase in licensing to companies and the parallel growth of citizen mining in recent decades have resulted in overlapping claims to gemstone resources. Most company-led projects that produce colored gemstones have experienced some degree of illegal mining by citizens on company concessions, which in some cases has resulted in violent clashes between citizen miners and security personnel.[54]

Conflict between companies and citizen miners is reinforced by mutual perceptions of illegitimacy. Prior claims by unlicensed miners to gemstone resources often go disregarded by companies and governments. From the perspective of citizen miners, the displacement of informal operations, monopolization of access to gemstone resources or the benefits generated from extraction, and a lack of meaningful communication or consultation may diminish a company's social license to operate.

Particular difficulty in managing relations may arise in cases where citizen miners pick gemstones from the tailings produced by mechanized mines.[55] Such situations tend to arise as a product of negligent waste management by companies. Increasingly, operators must strike a difficult balance between the growing imperative to improve their environmental practices and the expectations of citizens who have come to depend on waste as a source income.

CONSIDERATIONS FOR GOVERNMENTS

Approximately 90 percent of the world's colored gemstones are sourced from low- and middle-income countries.[56] In regions where poverty remains acute, citizen mining of gemstones deposits is all but inevitable. However, whether these activities incur negative impacts or come into conflict with company projects depends on the degree to which governments exercise effective control and oversight.

Companies frequently demand stronger rule of law in response to illegal mining of their concessions. One approach by governments has been to limit citizen access and bolster the presence of military or other security forces in gemstone-producing areas.[57] This strategy has generally been ineffective at limiting citizen mining, and in a number of cases has increased corruption and resulted in serious human rights abuses at mining sites.

54 See, for example, Julia Symmes Cobb, "The dangerous search for emeralds in Colombia" *The Washington Post,* 9 August 2015, and Estacio Valoi, "The Blood Rubies of Montepuez," *Foreign Policy,* 3 May 2016.

55 The "handpicking" of mining wastes has been documented in numerous countries, including Colombia (emerald), Myanmar (jade) and Zambia (emerald).

56 Jean Claude Michelou, "Colored Gemstones from Mine to Market: Ethical Trade and Mining Certification Challenges" (paper presented at the Rapaport Fair Trade Jewelry Conference, Basel, Switzerland, 18 March 2010).

57 For example, under Botswana's Precious and Semi-precious Stones (Protection) Act, the President may declare a "precious stone protection area" and issue regulations regarding access or establish as "precious stone security areas," where entry is prohibited without a valid permit. Zambia has also designated emerald and amethyst mining areas as restricted, though stakeholders report that the state armed forces are often lax in providing security. In the Democratic Republic of the Congo and Madagascar, separate "mining police" forces charged with monitoring mines and curbing illegal activities related to minerals are generally considered to be poorly resourced and vulnerable to corruption.

Freelance miners sift through company waste in search of jade in Hpakant Township, Kachin State, Myanmar. *Credit: Minzayar for NRGI.*

In part due to the limitations of these approaches, there is growing recognition that improving the conditions under which gemstones are extracted also requires creating incentives for citizen miners to move from the fringes into the formal sector. The experiences of Brazil, Tanzania and other gemstone-producing countries indicate that this process requires long-term and meaningful engagement by government and companies, through measures such as:

- **Clarifying the legal basis for citizen mining.** Rules should establish a legitimate sphere of operations for citizen miners and explain how they relate to other actors, such as landowners and mining companies.
- **Ensuring access to resources.** Governments should equitably apportion gemstone-producing areas to companies and citizen miners, based principally on local geology. In cases where few gemstone deposits can be economically mined using small-scale or artisanal techniques, it may be useful for companies to subcontract citizen miners or assist these actors in accessing deposits.
- **Simplifying permitting processes.** Governments may remove impediments to formalization by establishing local or regional licensing offices, lowering fees and reviewing whether required documentation—such as mine work plans or environmental impact assessments—aligns with the capabilities of citizen miners.
- **Creating forums for dialogue.** Consultation with citizen miners as part of the licensing process for companies increases the legitimacy of large-scale projects. Forums may be useful in addressing company security issues, identifying community needs and agreeing on a system for sharing mining benefits.
- **Supporting organization and capacity building.** Cooperatives or other associations can increase citizen miners' negotiating position vis-à-vis other participants in the industry. The provision of knowledge and resources, such as lending programs or trainings in legal rights, gemology, mine safety and environmental management, may also help miners avoid the greatest risks of exploitation and encourage positive interaction with government agencies.

CASE STUDY: BRAZIL

Brazil's vast landmass, much of which remains unexplored, is believed to contain some of the world's most extensive and diverse gemstone deposits. The South American country is the third largest producer of emerald, and an important source of diamonds and the rare and valuable "Paraiba" tourmaline. While a number of mines are now operated by companies, citizen miners known as *garimpeiros* have traditionally unearthed most of the country's gemstones. The number of *garimpeiros* has fluctuated over time, reaching as high as 500,000 during gemstone rushes. Officials recently estimated approximately 80,000 citizens were engaged in gemstone mining in one of Brazil's three major emerald-producing regions.[58] Informality among these miners has generally prevented the effective provision of public services, the diffusion of adequate health and safety conditions, and reduced control of environmental impacts.

Unwieldy permitting procedures and financial constraints have restricted the participation of citizen miners in the licensing process. The system established under Brazil's Garimpeiro Laws of 1989 and 2008 oblige *garimpeiros* to undertake similar measures to those required for large-scale investors, abolishing a simple pre-existing registration system. While small-scale and artisanal miners do not need to conduct geological assessments, obtaining the range of required environmental permits (which are administered by states rather than the national government) is "well beyond the financial or managerial means of the average hand miner."[59] Miners also report that at least USD 10,000 in initial investment and an additional USD 2,500 to USD 5,000 are needed to maintain a small-scale emerald mine.[60]

Brazil's government has promoted cooperatives as a means of formalizing citizen mining, and a number of associations for citizen emerald and diamond miners have been documented throughout the country. There is evidence that these organizations have been instrumental in lowering the bureaucratic barriers to obtaining licenses, bargaining for access to land vis-à-vis the government, landowners, or private companies, and hiring technical experts to inform mining operations in various cases.[61]

58 Jose Antonio Puppim de Oliveira, "Emerald Mining and Local Development: Three Case Studies in Brazil" (University of Vermont, 2005).

59 Shawn Blore, "Artisanal diamond miners' cooperatives: What are they good for?" in *Artisanal diamond mining: perspectives and challenges*, eds. Koen Vlassenroot and Steven Van Bockstael (Ghent: Academia Press, 2008).

60 Jose Antonio, Puppim de Oliveira and Saleem H. Ali, "Gemstone mining as a development cluster," *Resources Policy* 36 (2011): 132-141.

61 See Blore, "Artisanal diamond miners' cooperatives" and Puppim de Oliveira, "Emerald Mining and Local Development."

Yet the diffusion and utility of organized citizen mining remains somewhat limited. This is partly a consequence of Brazil's underdeveloped legal framework; although the constitution grants *garimpeiros* priority access to mineral resources so long as they are formalized in cooperatives, a clear system for administering this principle has not materialized. The 1967 Mining Code and Small-scale Mining Laws of 1989 and 2008 remain ambiguous regarding how extractive rights should be allocated to small-scale actors.[62] In practice, to operate legally citizen miners must mine certain public lands or negotiate with private landowners or concession holders.

Milanez and Puppim further observe that "experience shows that…the creation of cooperatives is a mere bureaucratic act, which has no impact on customary working relations."[63] Many are led by gem traders or mine owners, and as a consequence tend prioritize the interests of these stakeholders over those of citizen miners.[64] A lack of education, health benefits or stable employment generally perpetuates informality among individual members. Certain gemstone cooperatives have also become vehicles for clientelism, allowing leaders to leverage political relationships in order to evade regulation.[65]

Brazil's experiences suggest that the creation of cooperatives may come with perverse as well as positive effects. Available evidence indicates that the organization of citizen miners may support their formalization, at least in terms of centralizing bargaining power and financial resources. However, it may also open the door for exploitation by more capacitated actors—in some cases entrenching illegality without meaningfully upgrading the livelihoods of individual members. In the case of Brazil, reforming and clarifying relevant laws, improving organizations' internal governance, and strengthening the rule of law remain essential to improving the role played by cooperatives in the gemstone sector.

62 See Government of Brazil, *Mining Code* (1967), *Small-scale mining law* (1989) and Small-scale mining law (2008).
63 Bruno Milanez and Jose Antonio Puppim de Oliveira, "Innovation for sustainable development in artisanal mining: Advances in a cluster of opal mining in Brazil," *Resources Policy* 38 (2013): 427-434.
64 Ibid., 58.
65 Stakeholder interview, conducted February 2017.

CASE STUDY: TANZANIA

Though a significant source of diamonds, rubies and sapphires, Tanzania is perhaps best known as the world's only producer of the eponymous blue gemstone, tanzanite. Citizens mine the vast majority of its colored gemstones. The country's most recent mineral policy, which laid the foundation for the 2010 Mining Act, commits the government to "facilitate, support and promote increased participation of Tanzanians in gemstone mining," including by developing Tanzania as a gemstone center of Africa, ensuring that medium- and small-scale gemstone mines are entirely owned and operated by Tanzanians, and encouraging the participation of local investors in gemstone mining.[66]

Tanzania has taken concrete steps to formalizing citizen mining since 1997, including through simplifying licensing procedures, improving access to land and expanding the resources available to citizen miners. The 2010 Mining Act establishes a "primary mining license" for citizen mining, defined as requiring less than USD 100,000 in investment and a tenure of five to seven years.[67] Procedures for obtaining a primary mining license are less demanding than those for a regular or special mining license, although they do require applicants to conduct an environmental and social investigation of the proposed site. The licenses are granted by Zonal Mines Officers rather than the Commissioner for Minerals in Dar es Salaam.[68]

Since 2004, the government has also set aside more than 2,000 square kilometers for citizen mining, including several blocks for gemstone mining. The relative concentration of mining activities in these "designated areas" allows the state to more efficiently target technical assistance, including geological mapping, the introduction of efficient techniques, and training on safety and environmental standards.[69] The government also provides financial support for small-scale miners, although the management of these funds has not been fully transparent in practice.[70]

Yet identifying and apportioning resources for citizen gemstone mining comes with its own potential downsides. Conflict between company and citizen miners has been most acutely observed in areas like Merelani, where the world's only large-scale tanzanite mine (operated as a joint venture under the name TanzaniteOne) operates directly adjacent to two "designated blocks" for citizen mining. Repeated incursions above and below ground by illegal miners into the TanzaniteOne concession prompted primary investor Richland Resources to back out of the project in 2014.[71]

66 Government of the United Republic of Tanzania, *Mineral Policy* (2009).
67 Government of the United Republic of Tanzania, *Mining Act* (2010).
68 Government of the United Republic of Tanzania, *Licensing Procedures.*
69 Government of the United Republic of Tanzania, *Mineral Division Annual Report 2014–2015.*
70 Stakeholder interview, conducted February 2017.
71 See "Richland exits tanzanite," *East African Business Week,* 7 December 2014.

While company representatives publicly faulted Tanzanian authorities for not adequately enforcing the rule of law at the TanzaniteOne site, various additional explanations for the fraught relations between TanzaniteOne and local citizen miners have emerged. Analysts note that informal citizen miners of tanzanite were forcibly evicted from prime tanzanite-bearing areas following approval of the original concession (to TanzaniteOne's predecessor, African Gem Resources), that deeper and lower-quality deposits in tanzanite "designated areas" required significant investment to extract, and that, whether accurately or not, foreign investors were perceived to monopolize gemstone resources without investing sufficiently in local livelihoods and development.[72]

By comparison, the Williamson Diamond Company has been highlighted for mitigating many of the same challenges through negotiation with local citizen miners and other stakeholders. In response to increasingly aggressive illegal mining on its concession, in 2006 the company established a multi-stakeholder group known as the Mwadui Community Diamond Partnership together with De Beers (which at that time held a controlling stake in the mine), the government of Tanzania and eight local villages. As the result of sustained dialogue, Williamson agreed to open portion of its concession to cooperatives of citizen miners, to help citizens access deposits in these areas and to invest in diamond valuation facilities, local financial institutions and health services.[73]

Although gaps remain in implementation, Tanzania's evolution reflects increasing recognition of and adaptation to the needs of citizen miners. The adoption of a relatively inclusive national strategy and more flexible licensing regime stand out among policy achievements. At the project level, there is evidence of mutual learning by companies and citizens at certain gemstone mining sites. Persistent and meaningful engagement between these stakeholders may further support progress towards the government's citizen-centric vision for its gemstone industry.

72 Morten Skåra Helliesen, "Tangled Up in Blue: Tanzanite Mining and Conflict in Mererani, Tanzania," *Critical African Studies* 4 (2012): 58-93.
73 See World Bank, *Mining Together: Large-Sale Mining meets Artisanal Mining* (2009).

2. Modernizing state-owned enterprises

State-owned enterprises (SOEs) have assumed prominent roles in the gemstone sector since the mid-1900s, when many newly-independent governments moved to consolidate management of their natural resources. State involvement is especially pronounced in the production of diamonds—with the governments of Russia, Botswana, Angola and Namibia together directly or indirectly controlling approximately half of global supply—and the production of emerald, jade and tanzanite. It is in the interest of governments that these entities mobilize resources effectively and operate to the benefit of citizens.

ASSESSING SOEs AS OPERATORS

Whether public or private, companies face high barriers to entering the gemstone mining business. Significant investment in expertise and technology is generally required to surmount the various risks inherent in project development, including a lack of geological data, variability across deposits, unique challenges to calculating the value of the resource and significant illegal mining or theft from mining sites.[74]

With the notable exceptions of Russia's Alrosa and Angola's Endiama,[75] low capacity and inefficient management have prevented gemstone SOEs from developing efficient mining operations. Companies established by governments to extract gemstones have either ceded project management to private partners or been dissolved altogether. The handful of fully government-owned companies that retain management of their operations, such as South Africa's Alexkor (for diamonds) and Tajikistan's Gubjemast Company (for colored gemstones), have been characterized as unproductive and unprofitable.[76]

Today, most gemstone SOEs participate as non-operating partners in joint ventures with private companies. In the diamond sector, this model has allowed the governments of Botswana (via its 50 percent share in Debswana) and Namibia (via its 50 percent share in Namdeb) to maintain a management stake and maximize benefits from the industry while benefitting from mining expertise of the De Beers Group. Globally significant joint ventures for colored gemstones with state involvement include Tanzania's TanzaniteOne (tanzanite), Zambia's Kagem (emerald), and the more than 300 projects between the Myanmar Gems Enterprise and private companies (jade and other colored gemstones).[77]

74 These challenges are especially pronounced in the relatively underdeveloped colored gemstone industry. For example, Canadian exploration company True North Gems, recently filed for bankruptcy despite after years of developing highly promising ruby deposits in Greenland.

75 While both have developed operational capabilities in gemstone mining, Alrosa and Endiama are far from perfect examples of SOE management. Endiama has, at times, required state support to cover its losses, while the Russian government recently partially privatized Alrosa to make up for budget deficits.

76 See, for example, "Commanding plights," *The Economist,* 29 August 2015; and "Tajikistan: Gems from the Pamir" via fieldgemology.org.

77 The future of TanzaniteOne is uncertain since former operator, Richland Resources, sold its stake to Sky Associates. Certain data regarding seleted Myanmar joint ventures for jade and other gemstones is available in Myanmar Extractive Industries Transparency Initiative, *MEITI Reconciliation Report 2013/2014* (January 2016).

ASSESSING SOEs AS REGULATORS

A number of gemstone SOEs also assume non-commercial responsibilities, such as the review and awarding of licenses, monitoring of production, environmental permitting and inspection, and enforcement of health and safety standards. Certain enterprises, such as Angola's Endiama and the Myanmar Gems Enterprise, assume these functions in parallel with their responsibilities as operators or joint ventures partners. Others, including Sri Lanka's National Gem and Jewellery Authority and the Pakistan Gem and Jewellery Development Corporation, exists solely as regulatory entities.

International experience suggests that gemstone SOEs may provide important services unrelated their operations. Concentrating expertise within one entity may also be helpful in low-capacity environments. On the other hand, this may also erode the quality of governance in cases where:

- **SOEs' responsibilities pose a conflict of interests.** Regulatory authorities act as gatekeepers for the mining sector; by determining which actors may develop mineral resources, and under what terms, they largely control the overall pace of extraction and the extent of associated impacts. In the interest of preserving the integrity of these functions, institutions responsible for awarding extractive rights and monitoring performance should generally remain separate from those responsible for or financially dependent on operations.
- **SOEs' responsibilities are poorly defined.** Uncertainty regarding the role of SOEs vis-à-vis other government institutions may open the door for conflicts of interest or abuses of power. Ambiguity may also increase coordination challenges and lead to uneven enforcement of standards by competing agencies.
- **SOEs' responsibilities do not align with their capabilities.** Government institutions should possess the resources and expertise to execute their roles effectively. In this context, vesting gemstone SOEs with regulatory authority may be less efficient than ceding those responsibilities to government bodies which already possess the relevant experience and competencies.

Figure 7. Ownership structure and roles of selected state-owned gemstone enterprises[78]

DIAMONDS

COUNTRY	COMPANY	STATE OWNERSHIP	COMMERCIAL ROLE	REGULATORY ROLE
ANGOLA	ENDIAMA	100%	OPERATOR	SIGNIFICANT
BOTSWANA	DEBSWANA	50%	JV PARTNER	NONE
NAMIBIA	NAMDEB	50%	JV PARTNER	NONE
SOUTH AFRICA	ALEXKOR	100%	OPERATOR	NONE

78 Figure 7 is compiled based on national laws and regulations, SOE annual reports, private company filings, expert interviews and media citation; in cases where available sources remain ambiguous and/or SOEs are not transparent about their activities, it may fail to fully accurately capture the range of state engagement. SOEs with "significant" regulatory responsibilities generally play a leading role in the licensing process and may assume additional roles related to monitoring and enforcement. SOEs with "limited" regulatory responsibilities are primarily engaged in service provision to other actors. Tanzania's State Mining Corporation holds shares on behalf of the state in the TanzaniteOne tanzanite mining venture; the Zambian government's shares in the Kagem Mining Corporation are controlled via the Industrial Development Corporation.

COLORED GEMSTONES

COUNTRY	COMPANY	STATE OWNERSHIP	COMMERCIAL ROLE	REGULATORY ROLE
MYANMAR	MYANMAR GEMS ENTERPRISE	100%	JV PARTNER	SIGNIFICANT
PAKISTAN	PAKISTAN GEM AND JEWELLERY DEVELOPMENT CORPORATION	100%	NONE	LIMITED
SRI LANKA	NATIONAL GEM AND JEWELLERY AUTHORITY	100%	NONE	SIGNIFICANT
TAJIKISTAN	GUBJEMAST	100%	OPERATOR	SIGNIFICANT
TANZANIA	STATE MINING CORPORATION	100%	JV PARTNER	LIMITED
ZAMBIA	KAGEM MINING LIMITED	50%	JV PARTNER	NONE

CONSIDERATIONS FOR GOVERNMENTS

Gemstone SOEs in various countries continue to evolve in response to changing political and market imperatives, assuming a wide range of commercial and non-commercial roles. These institutions may support governance through various means; to do so, it is important that they are structured in a way that encourages the efficient allocation of resources, incentivizes strict adherence to a clearly defined mandate, and reinforces transparency and accountability. The experiences of Myanmar, Pakistan and other gemstone-producing countries suggest that governments may support effective engagement by gemstone SOEs by:

- **Revisiting roles and responsibilities.** SOEs should participate in areas where they possess comparative advantage over private companies or other government institutions. Regardless of the scope of SOE responsibilities, it is imperative that laws clearly define the objectives of and limitations on enterprises' authority.
- **Eliminating conflicts of interest.** Governments should maintain clear separation between institutions with commercial roles and those with regulatory powers, as these conflicting mandates tend to undermine effective governance. In keeping with the principle that citizens are SOEs' ultimate shareholders, company activities and finances should be externally reviewed and made publicly available.
- **Investing in professionalization.** Gemstone SOEs should possess the budget and specialized expertise necessary to carry out their functions. Setting minimum requirements in terms of education and experience for board members or senior management, for example, may support informed decision-making based on technical criteria.[79]

79 For more, see the Organisation for Economic Co-operation and Development (OECD), *Guidelines on Corporate Governance of State-owned Enterprises* (2015), and Natural Resource Governance Institute, *State Participation and State-Owned Enterprises* (March 2015).

CASE STUDY: MYANMAR

Myanmar accounts for the majority of global jade production—estimated to be worth billions of dollars annually[80]—and is also known as a source of high-quality "Burmese" rubies and other varieties of colored gemstones.[81] Although the state-owned Myanmar Gems Enterprise (MGE) was established under the 1989 Myanmar State-owned Economic Enterprises Law to centralize gemstone-mining operations under state control, it has since ceded operation of many mines to private or military-controlled companies.[82] Today, MGE's principle functions include participating in joint mining ventures on behalf of the state, managing regular Gems Emporiums (auctions) and serving as the principle regulator for the gemstone sector.[83]

The challenges associated with Myanmar's jade business have been well documented. A 2015 report by Global Witness noted that the "multi-billion-dollar trade in one of the planet's most precious gemstones is tightly controlled by…military elites, US-sanctioned drug lords and crony companies," contributing to long-standing conflict between the Myanmar armed forces and ethnic armed groups in jade mining areas, while "very few revenues reach the people of Kachin State, the site of the Hpakant jade mines, or the population of Myanmar as a whole."[84] Although the root of these issues extends well beyond MGE, its vague role, lack of capacity, and clear conflicts of interest have created opportunities for mismanagement and rent-seeking.

The mandate, responsibilities and management structure of MGE are not articulated in law. MGE lacks a board of directors; although it is officially accountable to the Ministry of Natural Resources and Environmental Conservation (MoNREC), it has historically acted with an exceptional degree of autonomy.[85] Available laws and regulations do not specify how MGE should relate to other agencies that govern the gemstone sector, such as the Department of Mines and the Central Gemstone Supervisory Committee (an equally nebulous body, which serves as the official valuation authority and tenders advice to the MoNREC regarding designation of gemstone tracts, approval of licenses and setting of royalty rates).[86]

80 See footnote 11.
81 While the term "Burmese" has been employed globally to identify rubies with particularly desirable traits, usage in this context tends to overlook its political implications in Myanmar. The term "Burmese" is derived from the country's former name (lasting from British rule until 1989), "Burma," and also refers to the country's largest ethnic group. Although Burmese-majority Mogok accounts for most of the country's ruby output, another major producing area, Mong Hsu, is located in Myanmar's Shan state—and therefore the gemstones originating from this area may not be appropriately said to be "Burmese" rubies at all.
82 John C. Wu, *The Mineral Industry of Burma* (Myanmar) (U.S. Geological Survey, 1997).
83 Stakeholder interviews further indicate that MGE is engaged in the beneficiation and marketing of certain stones seized from illegal operations.
84 Global Witness, *Jade: Myanmar's "Big State Secret,"* (2015).
85 See Emma Irwin, *Myanmar EITI Gemstone Sector Review* (Myanmar Extractive Industries Transparency Initiative, 2016) and Patrick R. P. Heller and Lorenzo Delesgues, *Gilded Gatekeepers: Myanmar's State-owned Oil, Gas and Mining Enteprises* (Natural Resource Governance Institute, January 2016).
86 See Government of the Republic of the Union of Myanmar, *Myanmar Gemstone Law* (1995) and subsequent amendments.

In practice, MGE has exercised broad authority over the gemstone sector, including oversight of the licensing process (handled by the Department of Mines for all non-gemstone mining), geological data (handled by the Department of Geological Survey for all non-gemstone mining) and environmental management (generally handled by the Environmental Conservation Department). However, in the absence of adequate budget and expertise, some of these duties have been poorly executed or neglected altogether. MGE is only capacitated to monitor production for a fraction of operations—more than 21,000 active gemstone mining licenses were reported as of April 2016—and enforcement of environmental and safety standards remains largely absent. [87]

MGE's regulatory responsibilities stand at odds with its commercial involvement in joint ventures. MGE's leadership is largely composed of former military personnel, while the Myanmar armed forces maintain significant business interests in the gemstone sector.[88] Adding to these conflicts of interest, amendments to the Myanmar Gemstone Law in 2016 allocated three seats on the Central Gemstone Supervisory Committee—the body responsible for advising the government on licensing, valuation and taxation of gemstones—to the Myanmar Gem and Jewelry Entrepreneurs Association (MGJEA), the country's leading industry group.[89]

While a long-standing lack of accountability and capacity in MGE has weakened management of Myanmar's gemstone sector, elections in 2015 created an unprecedented opportunity to revisit the role of MGE. A new government, led by Aung San Suu Kyi's National League for Democracy (NLD), has announced a temporary moratorium on licensing and has committed to reshaping the gemstone industry.[90] Effective reform will hinge, in part, on whether and how MGE's engagement in the sector is addressed.

87 Ibid., 83.
88 Ibid.
89 See Government of the Republic of the Union of Myanmar, *Law Amending the Myanmar Gemstone Law* (2016).
90 Ye Mon and Kyi Kyi Sway, "Jade mining permit extensions suspended," *Myanmar Times*, 27 July 2016.

CASE STUDY: PAKISTAN

Pakistan's substantial gemstone deposits, mostly concentrated in the north of the country, yield sapphire, ruby, emerald and many other types of precious gemstones. The country's first state-owned enterprise, the Gemstone Corporation of Pakistan (GEMCEP), was created in 1974 in order to develop exploration, production and marketing of precious stones.[91] GEMCEP was only partially successful, however, and was disbanded in the 1990s to make way for private companies in the upstream sector.

In 2006, a multi-stakeholder strategic working group supported by USAID brought renewed attention to the gems and jewelry sector, assessing that Pakistan's largely small-scale and low-tech industry was "unable to significantly penetrate the international market for gemstones." Key constraints identified included limited investment in research, product development and training, low levels of technology, underdeveloped lapidary facilities and skills, poor international marketing and branding, underdeveloped designing capabilities, limited identification and certification, and lack of hallmarking.[92]

A new SOE, the Pakistan Gem and Jewellery Development Company (PGJDC) was established that same year in response to the "need for an institutional platform to implement the strategy, provide marketing, research and technical support to the sector" identified by the working group.[93] PGJDC challenges the classic conception of SOEs in the gemstone sector; unlike most of its peers, the corporation is jointly managed with members of the private sector, primarily engages downstream rather than upstream and operates as a non-profit without significant revenue streams to offset its costs.

Owned 87.4 percent by the Ministry of Industries and Production (MOIP) and 12.6 percent by the Pakistan Industrial Development Corporation (PIDC), PGJDC's objectives include raising value chain productivity, improving marketing and branding, strengthening policies for increased competitiveness, investing in workforce development and innovation capacity, and strengthening the capacity of industry institutions. The corporation's structure allows for coordination among government institutions consistent with its mandate. In addition to MOIP and PIDF, its board of directors comprises the Trade Development Authority of Pakistan (TDAP) and the Small and Medium Enterprise Development Authority (SMEDA). Local government and private sector associations are well represented, including a secretary from the Mines and Minerals Development Department and a businessperson from each region specializing in either gemstone production or marketing.[94]

91 See Small and Medium Enterprise Authority, "An Overview of Gemstone Sector - Pakistan."
92 Pakistan Gems and Jewelry *Strategic Working Group, Strategic Plan for Pakistan's Gem and Jewelry Industry* (February 2006).
93 Ibid.
94 Pakistan Gems and Jewellery Development Corporation, *Annual Report* (2015).

Since its inception, PGJDC has led the formulation of new policies for the gems and jewelry sector, including the introduction of a Hallmarking Act and a strategic plan for gem exports.[95] It has also worked to promote and formalize trading by setting up a gemstone exchange, creating assaying and hallmarking centers in Karachi and Lahore, organizing local and international gem and jewelry exhibitions, and promoting Pakistan as a regional gemstone center. In 2015 alone, 633 students attended programs from PGJDC-run training centers in Karachi, Lahore, Gilgit, Peshawar, Quetta, Sargodha and Muzaffarabad.[96] One recent assessment indicates that approximately 60 percent of students who received trainings are employed in the gems and jewelry sector or otherwise economically benefit from the skills acquired through PGJDC.[97]

In contrast to most of its peers, more than 90 percent of PGJDC's funding is received through annual budget appropriations. This level of financial dependence reduces incentives for it to maximize profits from its activities and leaves it vulnerable to changes in political priorities. On the other hand, it may allow the company to execute its functions with a greater degree of independence. PGJDC maintains a relatively high degree of transparency regarding its governance, activities and finances. The company keeps a code of ethics and publishes annual reports that include audited financial statements. Per Pakistani law, it must also demonstrate compliance with the 2013 Public Sector Companies (Corporate Governance) Rules.[98]

The gemstone sector globally is marked by clientelism, and Pakistan's industry is no exception.[99] Though important challenges remain, the design of PGJDC appears calibrated to reduce many of the overlaps in mandate and conflicts of interest apparent in certain other SOEs, including its predecessor GEMCEP. In this regard, Pakistan's state-owned enterprise—the youngest of its kind in the gemstone sector—may help to inform approaches to institutional reform.

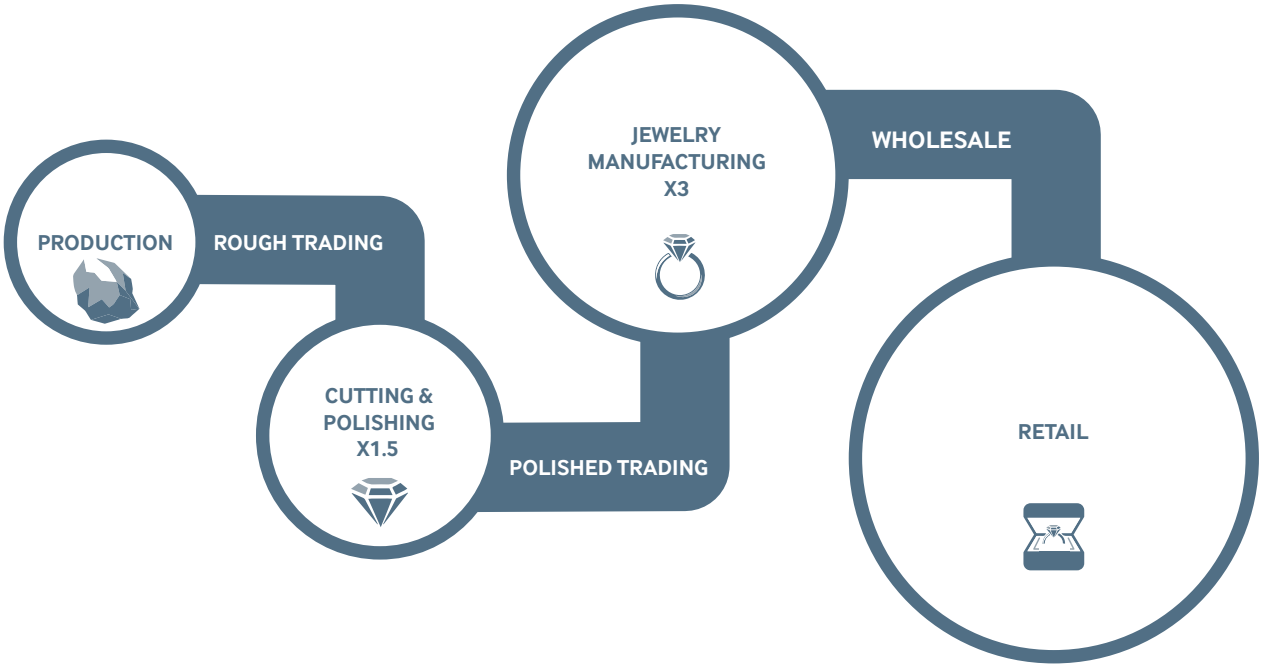
95 See, for example, "Prime Minister approves Export Promotion Strategy of Gems and Jewellery," *Pakistan Post International* (undated).
96 Ibid., 94.
97 Izhar Hunzai and Ashabullah Baig, *Development and promotion of gemstone sector policy/regulatory framework for community based fair, clean and ethical practices* (Aga Khan Rural Support Programme [AKRSP], July 2014).
98 Ibid., 94.
99 See, for example, "Why is illegal mining flourishing in Pakistan?" *Mining Technology*, 7 February 2017.

3. Deciding on fiscal terms

Resource extraction may generate significant government revenues, which—if managed appropriately—can support productive investments, improved service delivery and sound macroeconomic management. Although a handful of countries, such as Botswana (see Chapter 5) and Zambia (see introduction), receive significant income from gemstone mining, other governments and communities share the view that they are not receiving a fair share of profits.

Such perceptions may stem, in part, from falsely inflated expectations of gemstones' revenue potential. While retail sales are worth billions of dollars, colored stones themselves only represent about a third of this value (the rest is accounted for by diamonds and precious metals). The tax base available to gemstones' countries of origin is lower still; since most stones are exported in rough form they are valued at approximately 50 percent less, on average, than after cutting and polishing.[100]

Figure 8. Example of value addition throughout the gemstone value chain[101]



100 Based on industry expert estimates. The percentage of value added varies significantly based on the gemstone in question, with generally greater margins for higher-value stones.
101 Figure 8 is intended to be illustrative; it models overall trends based on industry expert approximations but does not necessarily apply in the case of any given gemstone. See footnote 100.

A black market trader in Yin Jiang, China, illuminates a jade stone estimated to be worth at least USD 40,000.
Credit: Minzayar for NRGI.

Even taking this effect into account, there is persuasive evidence that many countries are losing out on potential income as a consequence of unduly low taxation rates, or significant smuggling and underreporting of production. In conjunction with more robust monitoring and enforcement, setting balanced fiscal terms can help countries to improve revenue collection.

COLLECTING REVENUES FROM COMPANY MINING

Governments typically collect revenues from gemstone mining companies under one of two systems:

- *Tax and royalty regimes* consist of a combination between profit-based revenues (usually a corporate income tax) and production-based revenues (royalties). Of the two, royalties are considered a more dependable source of revenues, as corporate profits generally do not materialize until late in the production cycle, are relatively difficult to audit and may be subject to exemptions. Most countries calculate gemstone royalties *ad valorem*, or as a percentage of the total value of the resource extracted.[102] Although significant variation exists across countries, royalty rates for commercially mined gemstones typically fall between 5 percent and 10 percent.
- Governments may also enter into *joint venture agreements* with private companies, which establish a division of responsibilities and profits from gemstone mining. The state's equity may be "paid" (whereby the state compensates the company directly for its stake), "carried" (whereby the state's participation is paid back over time, for example by foregoing equivalent future profits) or "freely held" (whereby the state's stake is acquired without compensation). Governments usually receive revenues from joint ventures

102 One notable exception, South Africa, calculates royalties for gemstones and other minerals using a formula based on sales, company earnings and whether the commodity has been refined; see Government of South Africa, *Mineral and Petroleum Resources Royalty Act* (2008).

in the form of dividends and/or profits from the state's share of production. Companies participating in joint ventures must generally pay applicable taxes and royalties, although certain countries grant tax holidays or other exemptions as a means of encouraging investment.

Table 1. Comparison of key fiscal terms for company gemstone mining projects in selected countries[103]

Country	Commodity and company/ project name (if applicable)	Royalty rate (%)	Corporate income tax rate (%)	State equity participation (%)	State production share (%)	State profit share (%)
Botswana	Diamond (Debswana)	10	22	50	0	80.8
Colombia	Emerald (general)	1.5	25	0	0	0
Malawi	Ruby & sapphire (Nyala)	10	35	10	0	0
Mozambique	Ruby (Montepuez)	6	32	0	0	0
Myanmar	Jade (general)	20	25	0	25	0
Sierra Leone	Diamond (Koidu)	6.5	25	0	0	10
Tanzania	Tanzanite (TanzaniteOne)	5	30	50	0	50
Zambia	Emerald (Kagem)	9	30	25	0	0

Other relatively common forms of direct revenue may include signature bonuses, fees (for licensing, supervision or other government services) and surface rent (a per-area tax levied on mining areas which at moderate rates may provide incentive for timely development of mineral resources and discourages companies from holding more land than they need).[104]

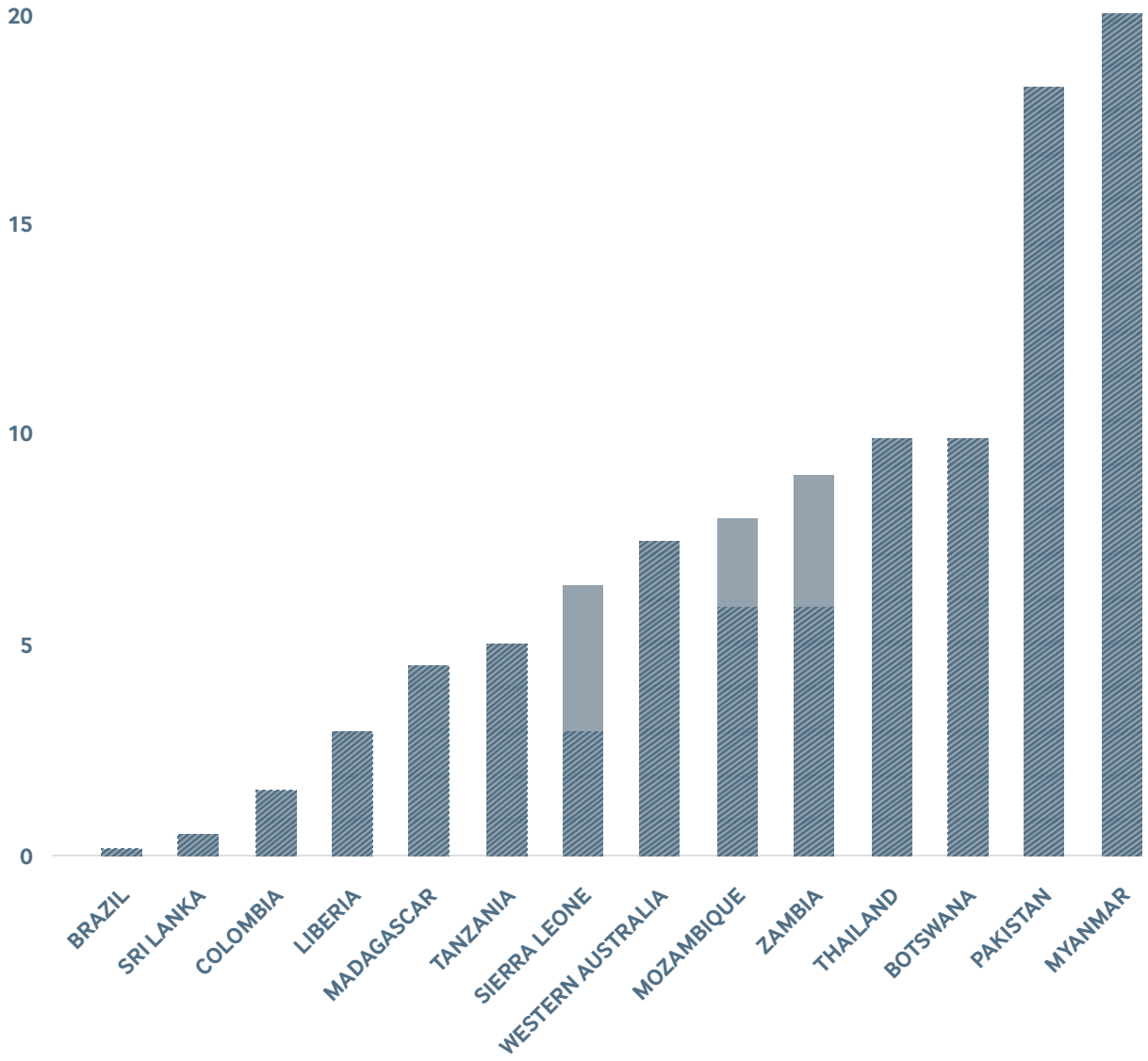
Limited capacity and transparency in government institutions can generate opportunities for unscrupulous companies to negotiate unfair agreements. In many gemstone-producing countries, the payment of bribes or other favors to secure access to resources and favorable tax rates lines individual pockets while reducing the funds available for public spending. Opaque deal-making is not limited to emerging economies; in the Canadian province of Ontario, for example, local media revealed that De Beers' diamond royalty payments to the government—kept confidential under a non-disclosure clause—amounted to just CAD 226 (USD 206) in 2014.[105] On the other hand, overly ambitious rates may encourage underreporting of production. Gemstone figures are uniquely vulnerable to manipulation due to the challenges associated with valuation (see Chapter 4).

103 Table 1 is intended to be illustrative and is based on publicly-available data; it may not capture details such as tax exemptions in undisclosed contracts, negotiated modification to company arrangements, or recent changes in national legislation in all cases. Royalty rates refer to the effective royalty applicable to all or most (limited exceptions apply) rough gemstone production; corporate income tax rates are based on contracts where available, or on the PwC Worldwide Tax Handbook; state equity participation, production share and/or profit share is based on publicly-available contracts, private company filings, and academic and media citations.

104 Certain countries also levy export duties on gemstones, in some cases with the state goal of encouraging domestic beneficiation. This approach is discussed in greater detail in Chapter 6.

105 Rita Celli, "Diamond royalties a closely guarded secret in Ontario," *CBC News,* 12 May 2015.

Figure 9. Comparison of ad valorem royalty rates for rough gemstones in selected countries[106]



106 Figure 9 is compiled based on national legislation, regulations, or other government documents. In certain countries, the effective royalty illustrated may be classified as an export tax or other form of revenue. Governments may administer a range of royalty rates based on various criteria, including the value of the gemstone, whether the gemstone is mined by companies or citizens, or whether the stone is mined from an open pit or a shaft. Figure 9 does not include cover royalty rates for gemstones that are cut and polished domestically, which in a number of countries are lower than those for rough gemstones.

COLLECTING REVENUES FROM CITIZEN MINING

The widespread, informal nature of citizen mining and the generally limited capacity of small-scale operators present significant obstacles to tax administration. Since levying taxes on citizen miners themselves tends to be costly and ineffective, most countries assess royalties on gemstones mined by citizens at the point of sale or export.

Royalty rates for citizen mining tend to be substantially lower than for company mining, with many countries maintaining rates between 1 and 3 percent *ad valorem*. The experiences of Sierra Leone and Guyana illustrate the trade-offs facing governments in determining how to collect royalties; setting higher rates maximizes revenues per gemstone but tends to encourage underreporting, while setting lower rates sacrifices some percentage of value in order to broaden the tax base.

Other forms of revenue collection, such as value-added or consumption-based taxes, may more efficiently capture the value created by citizen mining. These levies are attractive insofar as they reduce the costs and challenges associated with administering royalties or income taxes. However, the indirect nature of these taxes makes it difficult to accurately assess the gemstone industry's contribution to public finances.

CASE STUDIES

SIERRA LEONE	GUYANA
In Sierra Leone, traders pay effective royalties (technically classified as an export tax) on diamonds mined by citizens at the point of export. The country's 2009 Mines and Minerals Act created a general 6.5 percent *ad valorem* royalty rate and a 15 percent *ad valorem* "supertax" for stones valued at more than USD 500,000.[107] Diamond exports dropped significantly following passage of the Act, with the vast majority of citizen-mined diamonds by value being smuggled out of the country and exported under more favorable fiscal regimes in neighboring Liberia and Guinea.[108] By 2011, the government had reduced royalties on citizen-mined diamonds to 3 percent and entered into negotiations with other Mano River Union states to harmonize diamond royalty rates.[109]	Guyana collects a 3 percent royalty on diamonds, which is based on a standard estimated value of USD 75 per carat.[110] Citizen miners pay royalties based on their production. Calculating revenues based on a flat rate as opposed to *ad valorem* means that Guyana's government foregoes some potential revenues. However, combined with a rigorous system of registration and tracking for artisanal diamond miners, its conservative royalty rate has encouraged accurate declaration of stones and payment of taxes to a greater degree than in many other gemstone-producing countries.[111]

107 Government of Sierra Leone, *Mines and Minerals Act* (2009).
108 Stakeholder interview conducted January 2017.
109 International Monetary Fund (IMF), "Sierra Leone: Second and Third Reviews Under the Three-Year Agreement Under the Extended Credit Facility," IMF Country Report No. 11/361 (2011).
110 Government of Guyana, *Minerals Act* (1998).
111 See Diamond Development Initiative, *Guyana's Tracking System: A Model for Artisanally Mined Diamonds* (2009) and Hinton and Levin, "Comparative Study."

CONSIDERATIONS FOR GOVERNMENTS

Though arguably the most visible, revenue collection is only one of several means by which countries may benefit from their resource wealth. The design of fiscal terms should be considered alongside other national priorities, such as providing local employment and encouraging value-added processing.

Governments interested in maximizing revenues from the gemstone sector should both revisit fiscal terms and bolster the capacity of the tax administration apparatus to effectively collect revenues. A survey of fiscal frameworks for gemstones highlights several principles which may inform these processes, including:

- **Weighing the benefits of direct versus indirect revenues.** Value captured through revenue collection should be evaluated against the investment required to effectively administer the taxation system. Indirect forms of revenue collection may be particularly attractive in countries where citizen mining accounts for a significant share of production.
- **Maximizing the tax base.** Revenues are ideally collected at points of the value chain that minimize leakage due to smuggling or underreporting, usually those where fewer actors are present. Most countries collect gemstone revenues from companies close to the point of production and further downstream when mining is conducted by citizens.
- **Setting fair rates.** Governments should set royalty and other tax rates that maximize overall revenue collection without unduly impinging on the development of the gemstone industry. Lower rates may be necessary to encourage participation in contexts where enforcement capabilities are more limited than those where the state can effectively monitor production.
- **Improving fiscal transparency.** Open and transparent licensing processes, the publication of contracts and disclosure of company payments may reduce opportunities for rent-seeking and allow citizens to play a greater role in resource management. (See also Chapter 7.)
- **Strengthening oversight.** Building capacity within the tax authority and national law enforcement is a critical to maximizing long-term revenue collection from gemstones and other mineral resources. In regions with porous borders, greater international cooperation may help to reduce smuggling and tax evasion.

Managing gemstone revenues

While revenue collection remains a primary concern for many gemstone-producing countries, effective fiscal management is equally necessary to ensure that these funds support national development. Governments play a key role in determining who benefits from gemstone extraction by choosing how to spend and distribute gemstone income, including via:

Natural resource funds

Countries that collect significant revenues from gemstones extraction may consider investing a portion of the profits in a natural resource fund or other investment vehicle, which may help to smooth government spending, support specific spending priorities such as health or education and preserve the benefits of resource wealth for future generations.[112] The most relevant example among gemstone-producing countries, Botswana's Pula Fund (established in 1994), had accumulated BWP 61.2 billion (or USD 5.9 billion) in 2015.[113]

However, weaknesses in Botswana's governing framework have arguably reduced the fund's performance. It has scored a 44 out of 100 in terms of compliance with the Santiago Principles[114] and earned a 52 out of 100 on NRGI's 2013 Resource Governance Index.[115] In the absence of clear management criteria, the Pula Fund has been alternately mobilized to finance Botswana's Public Officers Pension Fund, shore up liquidity reserves and cover budget deficits.[116]

Natural resource revenue sharing

More than thirty countries have adopted distinct rules that govern the allocation of natural resource revenues between the national and subnational or local government.[117] These include several major gemstone producers:

- Colombian law sets out a detailed, percentage-based distribution among provinces and municipalities for 98 percent of emerald royalties collected. The final 2 percent are transferred to the national emerald trade association, Fedesmeraldas, for use in local development projects.[118]
- Sierra Leone's Diamond Area Community Development Fund (DACDF) was established in 2001 with the stated purposes of (1) assisting local governments to fill diamond pits created during the civil war; (2) supporting development projects in diamond mining areas; and (3) creating incentives for chiefs and other local authorities to police illegal mining and smuggling of diamonds. Funds derived from 25 percent of the country's 3 percent export tax on diamonds mined by citizens are allocated among local government units, with 20 percent going to district councils of diamond-producing areas, 20 percent to all diamond-mining chiefdoms and 60 percent to diamond-mining chiefdoms that awarded artisanal diamond mining licenses in that year. In contrast to Colombia's system, Sierra Leone shares this 60 percent of revenues proportionally based on the number of licenses issued.[119]

Revenue sharing may allow gemstone-producing regions to more equitably benefit from resource extraction and help to align budget allocation with local priorities. On the other hand, revenue sharing can diminish the efficiency and accountability of spending if not appropriately structured. Sierra Leone's DACDF, for example, has been scrutinized for ambiguity in how funds are spent and the significant latitude given to local chiefs.[120]

112 For more on natural resource funds, see Andrew Bauer, ed., *Managing the Public Trust: How to Make Natural Resource Funds Work for Citizens* (Natural Resource Governance Institute and Columbia Center on Sustainable Investment, 2014).
113 The current market value of the Pula Fund has fallen from closer to USD 7 billion in 2013, partly due to depreciation of the pula against the dollar. Botswana's diamond wealth accounts for most of these savings; however, the Pula Fund is not properly a natural resource fund since it is accumulated on the basis of total budget and foreign exchange surpluses rather than extractive industry revenues.
114 International Working Group of Sovereign Wealth Funds, "Santiago Principles" (2008).
115 Natural Resource Governance Institute, *2013 Resource Governance Index*.
116 Bank of Botswana, *Annual Report* (2015).
117 Andrew Bauer et al., *Natural Resource Revenue Sharing* (Natural Resource Governance Institute and United Nations Development Programme, 2016).
118 Government of Colombia, *Law on the National Royalty System* (2002).
119 Government of Sierra Leone, *DACDF Fact Sheet*.
120 The World Bank has recommended that DACDF funds be targeted to development projects rather than paid directly to chiefs, however, this does not appear to have been take up by Sierra Leone's government to date. See Sierra Leone Extractive Industries Transparency Initiative (EITI), *SLEITI 2013 Report* (February 2016).

4. Improving valuation processes

The basis for gemstone royalty payments and other taxes is uniquely difficult to assess and verify. Gemstone prices are based on retail expectations and the unique characteristics of each stone, which may be physical (for example, whether the blue of a given sapphire is of a desirable shade and whether that hue is the result of heat treatment) or not (for example, whether a given ruby is from Kashmir or Kenya). Valuation, the process by which a gemstone's market price is assessed, therefore inevitably has a degree of subjectivity; even among qualified gemologists estimates of a rough stone's value has been observed to vary up to 30 percent. This is especially true for colored gemstones, due to both their diverse physical features and the relatively informal and dynamic nature of their markets.

Ambiguity around the market value of gemstones creates opportunities for tax evasion. Gemstone holders may take advantage of situations where assessors (individuals who work on behalf of the government to evaluate a gemstone's market price) lack the tools or expertise to negotiate a valuation below the fair market rate. A lack of independent oversight of assessors in many countries leaves the valuation process vulnerable to bribery or extortion.

In cases where gemstone companies are vertically integrated, transacting gemstones between subsidiaries at below-market rates (or "transfer mispricing") may be used to artificially deflate tax obligations.[121] In South Africa, for example, a 2014 study suggested that "the monopoly position of the De Beers Company and their consequent ability to designate prices in various locations in the value chain" allowed the corporation to engage in "possible transfer pricing manipulation of rough diamond values."[122]

Key term: Transfer pricing

"Transfer pricing" is a business practice that consists of setting a price for the purchase of a good or service between two "related parties" (e.g., subsidiary companies that are owned or controlled by the same parent company). Transfer pricing becomes abusive when the related parties distort the price of a transaction to reduce their taxable income. This is known as transfer mispricing.

One way governments can address transfer mispricing is by passing laws that require companies to apply the "arm's length" principle, meaning that related parties price transactions as if they were transactions on an open market.

121 For additional information and recommendations regarding transfer pricing, see Alexandra Readhead, *Transfer Pricing in the Extractive Sector* (Natural Resource Governance Institute, March 2016).
122 Sarah Bracking and Khadija Sharife, *Rough and polished: A case study for the diamond pricing and valuation system* (Leverhulme Centre for the Study of Value, 2014).

DESIGNING SYSTEMS FOR VALUATION

Gemstone-producing countries have adopted a range of approaches to determining the worth of gemstone production. Their experiences highlight two key trade-offs inherent in the design of valuation processes:

- **Independence versus expertise.** To effectively contribute to the valuation process, all parties should be versed in gemology as well as how gemstones are valued in current markets. However, this skill set remains relatively rare; the participation of actors without adequate knowledge in several countries tends to reduce the quality of oversight and increase opportunities for bargaining. While some states, such as Madagascar, have developed pricing matrices intended to support officials in determining gemstone prices, these systems may reduce faith in the valuation process if they are not regularly updated or correctly applied.

Country	Commodity	Valuation process	Advantages and challenges
Madagascar	Sapphire and other colored gemstones	Madagascar's mining code requires that the Minister of Mines "annually at least or semi-annually fixes...after consultation of the specialized markets, the commercial value of the products of the mines according to a well-defined and unambiguous classification."[123] The government provides valuation offices with a guide that identifies price ranges for sapphires based on certain characteristics.	Although Madagascar's system is intended to support an independent assessment, failure to update reference prices to reflect market realities and a lack of technical knowledge among officials tends to reduce the effectiveness of valuation, often resulting in informal negotiation between officials and gemstone holders.[124]
Myanmar[125]	Jade, ruby, sapphire and other colored gemstones	Myanmar's valuation procedures stipulate that local valuation committees should comprise 12 people, including three representatives of the Myanmar Gem Enterprise, one external gemologist or gem expert, one representative of the Myanmar Gems and Jewelry Entrepreneurs Association (MGJEA), and four representatives of other relevant government agencies. The committee is expected to come to agreement on a final value after members have independently assessed a given gemstone.[126]	The participation of multiple stakeholders reflects an intent to ensure a fair assessment; however, the size of Myanmar's valuation bodies may be unwieldy, and it is unclear whether all 12 representatives participate in practice. Stakeholders report that vague rules and a lack of monitoring have enabled routine rent-seeking in the valuation process.[127]
Sierra Leone	Diamond	In Sierra Leone, citizen-mined diamonds are evaluated by a third-party appraiser in addition to the state appraiser; the higher of the two estimates is used as the basis for royalty payments. Officers from the National Minerals Agency and the National Revenue Authority are also required to be present for the assessment.[128] Sierra Leone's third-party valuator, Diamond Counsellor International (DCI), fulfills a similar function in Angola, Brazil and Guinea.[129]	The benefit of Sierra Leone's system is that it guarantees a degree of technical proficiency. However, DCI's near-monopoly over valuation—the company appraises the majority of artisanally-mined rough diamonds—has raised questions about its independence.[130]

123 Government of Madagascar, *Mining Code Amendment* (2005).
124 Interview with Tom Cushman, conducted January 2017.
125 This describes the valuation process for gemstones sold outside of the official Gems Emporium; the value of gemstones sold during semi-annual emporiums is determined by the bid price, as detailed in the case of Mozambique.
126 Ibid., 85.
127 Stakeholder interviews conducted between November2016 and February 2017.
128 Government of Sierra Leone, *KPCS Annual Report* (2011).
129 For more information, see the Diamond Counsellor International (DCI) website: diamondcounsellor.com.
130 Stakeholder interview conducted January 2017.

- **Accuracy versus ease of administration.** Valuation procedures should be adapted to the relative capabilities of industry actors. The reference pricing matrix developed by Rio Tinto and the government of Western Australia, or the auction system administered by Gemfields, may be impractical to implement in contexts where state institutions and private actors lack a comparable level of capacity. Governments must evaluate the benefits of investing resources in oversight against adopting simpler systems that may encourage participation, such as Guyana's flat royalty rate for citizen-mined diamonds.

Country	Commodity	Valuation process	Advantages and challenges
Australia	Pink diamond	In the absence of comparable prices on the global market, the government of Western Australia has worked with the mine operator, Rio Tinto, to construct a price matrix for rare pink diamonds originating from its Argyle mine. By comparing stones' final sales value with their initial appraised value in an iterative manner, regulators may identify instances of underpayment and adjust value assessments to reflect market trends.[131]	Western Australia's approach allows its government to calculate revenues with precision based on market rates. Due to its technical complexity, this approach may be difficult to implement in countries where government and company capacity remains relatively low.
Guyana	Diamond	For the purpose of assessing royalties, Guyana values diamonds produced by citizen miners at a flat rate of USD 75 per carat.[132]	Guyana's system does not maximize revenues, but it does reduce the technical barriers to administration observed in other countries. By allowing miners to profit significantly from higher-quality stones, this approach encourages accurate declaration by miners.
Mozambique	Ruby	The value of rubies extracted from Mozambique's Montepuez project is determined via regular auctions administered by the operator, Gemfields. The price at which gemstones are sold is used to determine royalties and other payments to the government.[133]	Auctions are generally considered a relatively fair and transparent means of determining gemstones' value. However, the viability of this approach depends on the efficiency of administration (in this case, by Gemfields) and whether sales can be conducted with sufficient frequency to satisfy market demand.[134]

CONSIDERATIONS FOR GOVERNMENTS

The devil is often in the details when it comes to determining gemstones' value. While many countries have established workable processes on paper, the efficacy of these systems in practice is often determined by the quality of participation by various actors and the effectiveness of monitoring in limiting abuse. Long-term institutional strengthening is therefore critical to improving gemstone valuation.

A survey of country practices reveals a range of valuation systems, each with particular advantages and risks. The profile of actors engaged in gemstone mining, technical competency of government assessors and capacity of institutions to provide stringent oversight should inform the design of procedures. Governments may benefit from:

131 World Bank, *How to Improve Mining Tax Administration and Collection Frameworks: A Sourcebook* (2013).
132 Ibid., 111.
133 See footnote 17.
134 Marketing via periodic auctions may be feasible for larger companies, but poses significant challenges for smaller companies and citizen miners and traders who lack equivalent access to credit and may face a more urgent imperative to sell their production.

A Chinese trader in Yin Jiang, China, inspects jade smuggled from Myanmar. *Credit: Minzayar for NRGI.*

- **Recruiting and training skilled assessors.** The legitimacy of the valuation process and the state's capacity to negotiate a fair deal rest, in part, on the proficiency of assessors. Governments should invest in ensuring that actors engaged in valuation possess appropriate gemological expertise and market knowledge.
- **Reducing opportunities for collusion.** Where possible, governments should opt for processes, such as auctions, that minimize bargaining between gemstone holders and assessors. Frequent rotation of assessors and the participation of technically competent third parties may also help to safeguard the valuation process against clientelism.
- **Regulating transfer pricing.** Relevant laws should encompass the concept of the "arm's length principle" in line with the OECD Transfer Pricing Guidelines.[135] In cases where comparable market transactions do not exist, governments may consider create a reference pricing system.
- **Strengthening audits.** The state should encourage actors to make accurate declarations by carrying out randomized physical and financial audits and enacting appropriate penalties. These functions can be supported by the establishment of gem laboratories and investment in specialized accounting skills necessary to make informed assessments of gemstone company finances.[136]

135 See OECD, *OECD Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations* (2010).
136 For example, the Tanzania Minerals Audit Agency (TMAA) is a specialized entity charged with monitoring payments in the extractive sector. Although capacity remains limited, TMAA has developed its own gemstone laboratory and conducts company audits: see tmaa.go.tz.

5. Supporting beneficiation

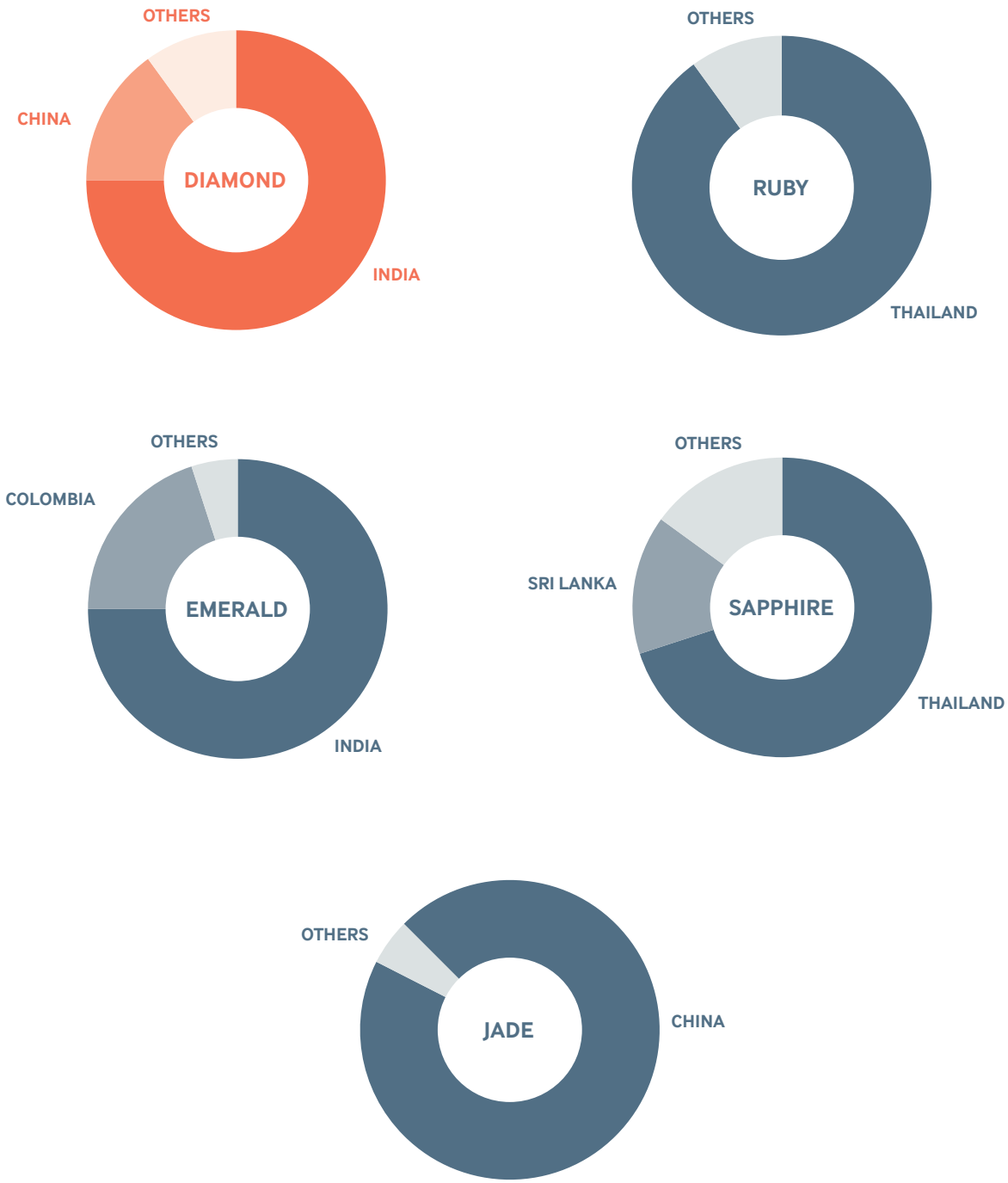
Value-added processing, or "beneficiation," represents a key step in the gemstone value chain. Cutting, polishing and/or treatment of gemstones is estimated to increase their market value by around 50 percent on average, though the margin between rough and polished tends to be more pronounced for higher-value stones. Unlike mining, value-added processing work supports skilled employment and may continue to sustain citizen livelihoods beyond the depletion of a country's own gemstone resources.

However, the countries where gemstones originate from capture few of these benefits. The majority of global gemstone supply by volume is processed in India, China and Thailand.[137] Beneficiation hubs in these countries have tended to specialize around an area of competitive advantage: Thailand is well known for handling rubies and sapphires, much of the world's emerald and tanzanite passes through Jaipur in India, and carvers in China's Guangdong province are renowned for working with jade.

A worker polishes raw amber at a workshop in Kachin State, Myanmar. *Credit: Khun Latt for NRGI.*

137 The share of these hubs is somewhat decreased when considered in terms of value rather than volume. Among sources of colored gemstones, Colombia (primarily emeralds) and Sri Lanka (primarily sapphire) in particular appear to process most of production domestically.

Figure 10. Estimated geographical distribution of gemstone cutting and polishing[138]



138 See footnote 25.

ENCOURAGING COMPETITIVENESS THROUGHOUT THE VALUE CHAIN

Governments in gemstone-producing countries increasingly recognize the advantages of domestic beneficiation. Yet supporting local value addition requires addressing significant barriers to entering an already-crowded global market dominated by more mature actors. Countries that mine rough precious stones remain uncompetitive across a number of areas, including:

- **Developing skills and technology.** Since the cutting and polishing of a gemstone directly impacts its value, the quality of value-added processing is a primary concern for traders and retailers. Even where a tradition of gemstone cutting and polishing already exists, local processing may not meet the high quality expectations of international markets.
- **Improving labor productivity.** Salaries often represent the greatest variable cost to cutting and polishing companies. This creates strong incentives to process gemstones in jurisdictions with the lowest effective cost of labor per carat. The capacity of workers in Asian beneficiation hubs to cut stones to a similar quality in less time and/or at a lower wage than their counterparts in other regions has largely driven their increase in market share in recent decades.[139]
- **Securing reliable supply.** The gemstone industry favors economies of scale; mass production of medium- and low-value stones represents much more of total value in the colored stones jewelry retail market than do individualized designs.[140] Guaranteeing a reliable stock of gemstones that aligns with buyer specifications poses a particular challenge in countries where citizen mining accounts for most production. The most successful countries in terms of value addition have generally diversified supply by absorbing gemstones produced in other countries.[141]
- **Accessing credit.** Small- and medium-scale enterprises predominate the gemstone cutting and polishing industry. Lending facilities that can support these businesses are particularly important given the level of investment typically required to establish a business, the potential of market shifts to impact profitability and significant barriers to these entities obtaining financing from state or private banks.

Smart and sustained government support is needed to transform gemstone-producing countries' nascent value-added processing sectors into a self-sustaining and productive industries. As illustrated in the experiences of Thailand and Botswana, attaining a competitive edge requires striking a delicate balance between market fundamentals (such as the wage level), economic policies (such as tax rates) and supply chain access.

139 Ibid., 7.
140 See "Analysis: State of the Majors," *National Jeweler*, 3 November 2016.
141 For example, Thai and Sri Lankan traders are highly engaged in major ruby and sapphire-producing regions in Cambodia, Myanmar, Madagascar, Mozambique, Vietnam and other countries.

CONSIDERATIONS FOR GOVERNMENTS

Stakeholders in gemstone-producing countries may infer that a robust gemstone mining industry confers advantage further down the value chain. On the contrary, dynamics in the value-added processing industry bear great similarity to those in the manufacturing sector; business tends to flow to jurisdictions with high labor productivity, significant integration with global markets and a competitive investment environment. As with any underdeveloped, export-oriented industry, governments seeking to support gemstone beneficiation should begin by:

- **Identifying areas of comparative advantage.** Countries looking to enter the competitive global market should pinpoint niches—such as specific gemstones, sizes and cuts—where they may effectively compete. The scope of countries' ambitions may expand gradually with experience and improvements in productivity.
- **Supporting skill development and technology transfer.** Governments may support the establishment of gem laboratories and training centers that operate to international standards. These institutions may help to facilitate the diffusion of skills and expertise necessary to improve competitiveness.
- **Facilitating integration with global markets.** Beneficiation hubs must maintain preferential access to gemstone supply and to buyers in consumer countries. In most positive cases, governments have played a supporting role by liberalizing trade policies and actively promoting gemstone exports—for example, through participation in international events and the development of national branding strategies.
- **Offering competitive fiscal terms.** Tax breaks allow emerging industries to maximize margins and compete more effectively on the international stage. States may support beneficiation by establishing special economic zones or fairs, creating tax incentives for polished gemstones, or waiving other taxes and duties.
- **Extending credit to industry.** Lending facilities may support small- and medium-scale enterprises in making productive investments and weathering market downturns. Certain countries have endeavored to address this need by setting up specialized "gems banks."[142]

142 Sri Lanka has operated a gem bank since the early 1990s, and there is discussion of setting up a similar institution in Thailand. However, Sri Lankan stakeholders interviewed noted challenges associated with using gemstones as collateral (as is currently the practice in that country) and indicated that reforms to address this issue are forthcoming.

CASE STUDY: THAILAND

Few countries have successfully leveraged their gemstone wealth to develop a self-sustaining value-added processing industry. Although Thailand's once-extensive ruby and sapphire reserves are now largely depleted, more than 1,600 local companies remain engaged in the beneficiation stage of the gemstone value chain. Gems and jewelry rank among the Southeast Asian country's most important exports, at an estimated value of USD 1.7 billion for diamonds and USD 1 billion for colored gemstones in 2015. Of the latter, polished rubies and sapphires accounted for approximately 50 percent of total value.[143]

Thailand has cultivated a reputation as a center for specialized knowledge and craftsmanship. Thai lapidaries are recognized for their quality, ingenuity and specialized cuts. It also boasts particular expertise in color treatment; it is estimated that 80 percent of stones receiving color enhancement are processed in Thailand.[144] Bangkok has institutions, such the public Gem and Jewelry Institute of Thailand (GIT) and a center affiliated with the Gemological Institute of America (GIA), that have solidified its place at forefront of global training and research on corundum. GIT, for example, has pioneered master sets for grading often-ambiguous color shades for rubies and sapphires.[145]

Special trade zones and exhibitions have facilitated access to global markets for Thai companies. The country's most recent Bangkok Gems and Jewelry Fair, held biannually, attracted 17,000 buyers from around the world.[146] The government also maintains "Gemopolis," a one-stop-shop industrial park for gems and jewelry located adjacent to the country's principal airport. In the coming years, Thailand plans to develop special gems and jewelry export zones (SEZs) on its borders with gemstone-producing Myanmar and Cambodia.[147]

A range of financial incentives also support competitiveness. For example, the country's Board of Investment has approved exemptions on duties for machinery and raw materials and value-added tax for the country's annual Bangkok Gems and Jewelry Fair. Benefits for investors operating in these SEZs include exemption of corporate income tax for eight years and a 50 percent reduction of corporate income tax for five years thereafter, the waiving of import duties on machinery and raw materials, and permission to employ foreign unskilled labor.[148]

143 Thailand Gem and Jewelry Institute, *Thailand Colored Stone Industry Review 2015* (2015).
144 See Thailand Board of Investment, *Thailand Investment Review: Gems and Jewelry* (undated).
145 Ibid., 143.
146 Bangkok Gems and Jewelry Fair, "Global Jewelry Trendsetter the 59th Bangkok Gems & Jewelry Fair sees 18.80% increase of international visitors," Press Release (2017).
147 See Thailand Board of Investment, *A guide to investment in the Special Economic Zones* (2015).
148 Ibid., 143.

It is important to note that the growth of value-added processing in Thailand has been supported by active and coordinated engagement from various government institutions, including the Board of Investment, Gems and Jewelry Industries Center of the Ministry of Industry, the Department of International Trade Promotion of the Ministry of Commerce, and the Gem and Jewelry Institute of Thailand. Industry groups—including the Thai Gem and Jewelry Traders Association, the Thai Diamond Manufacturers Association, and the Thai Gem and Jewelry Manufacturers Association—have been equally instrumental, successfully lobbying for tax concessions and the establishment of a "gems bank" to support small- and medium-scale enterprises in the gems and jewelry business.[149]

Thailand has served as a rough blueprint for other countries seeking to expand downstream activities, but its industry will need to continue to evolve in order to maintain its favored position in the market. Thai businesses face increasing competition from countries, like India and China, with high productivity and the ability produce to scale. At the same time, emerging rivals like Sri Lanka benefit from local supply, more coherent branding, competitive wages and increasing expertise in processing a range of colored gemstones.[150]

CASE STUDY: BOTSWANA

Diamond mining has underpinned impressive and sustained growth in Botswana, where per capita incomes increased 7 percent annually between 1966 and 1999 and around 4 percent annually between 2000 and 2008.[151] Analysts such as Michael Lewin have addressed many of the instrumental factors in the country's unusual success, including respect for property rights, consultation with local tribal leaders, and prudent trade and fiscal policies.[152] Perhaps most important of all has been the government's unique relationship with the De Beers Company, which until the 1990s exercised a virtual monopoly over the global diamond market.[153]

Since large-scale production began in the 1970s, Botswana has generally accounted for the majority of De Beers' supply and profits. This has given the country unprecedented leverage to seek progressively more favorable deals vis-à-vis the company. Botswana's government has successfully bargained to increase its equity in its joint mining venture with De Beers, known as Debswana, from 15 percent to 50 percent, increased its production share of diamond sales to 85 percent and secured the right to independently market up to 15 percent of diamonds produced by Botswana's mines. The state appoints half of Debswana's board of directors as well as two members of the board of directors of its parent company, De Beers.[154]

149 Gems, Jewelry and Precious Metal Confederation of Thailand (GJPCT), *Newest Tax Exemptions* (2015).
150 Stakeholder interview conducted March 2017.
151 African Development Bank, *Botswana's Mineral Revenues, Expenditure and Savings Policy* (2015).
152 See, among others, Daron Acemoglu, Simon Johnson and James A. Robinson, "An African Success Story: Botswana," MIT Department of Economics Working Paper No. 01-37 (July 2001) and Michael Lewin, "Botswana's Success: Good Governance, Good Policies, and Good Luck" in *Yes, Africa Can: Success Stories from a Dynamic Continent*, eds. Punam Chuhan-Pole and Manka Angwafo (World Bank, 2011).
153 Although Botswana has generally garnered praise for its management of the mining sector, its close relationship with De Beers has also been criticized for opening the door for undue influence by industry and marginalizing civil society and community representatives. The Bench Marks Foundation, for example, notes that: "the Botswana government's 'marriage' to the leading diamond-mining corporation creates the perception of a dominant relationship at the expense of communities, human rights, the environment and sustainable local economic development." See David van Wyk, *De Beers, Botswana and the Control of a Country* (Bench Marks Foundation, 2009).
154 Based on De Beers' financial statements and media citations.

However, Botswana faces an increasingly urgent imperative to diversify its economy; as known diamond deposits dwindle, the country's 10th National Development Plan identifies the development of value-added industries as a strategic priority.[155] Again taking advantage of its unique ties to De Beers, the state used periodic renegotiation of its contract to secure the transfer of the company's global sorting and valuation operations from London to Gaborone. In parallel, it invited globally renowned cutting and polishing companies to establish factories and transfer their cutting and polishing skills to local employees. A Diamond Academy was also established to provide in-depth technical training on all aspects of rough and polished diamonds, boosting local employment by several thousand.[156]

By 2014, Botswana already boasted many of the advantages of leading diamond cutting markets, including a consistent supply of rough diamonds and connectivity to global markets, access to global expertise and investment, a growing pool of skilled labor trained to international standards and competitive labor costs. It was, however, unprepared to compete on global markets. Despite similar wage and skill levels, Botswanan workers were highly inefficient compared with those in India, where approximately 90 percent of the world's diamonds by value are cut.[157] Indian cutters reportedly produce 2 or 3 times more, per dollar of investment, than those in Botswana.

This became increasingly evident as a narrowing between the price of rough and polished diamonds beginning in 2012, combined with a collapse of diamond prices globally between 2014 and 2015, eroded margins in the midstream value. Many companies chose abandon their relatively inefficient cutting and polishing operations in southern Africa as a result; the value of rough diamonds supplied to cutting and polishing factories in Botswana dropped from USD 936.36 million in 2014 to USD 502.16 million in 2015.[158] Although Botswana is taking steps to further support local beneficiation—in July 2016, for example, the Overseas Private Investment Corporation in collaboration with the local banking sector agreed on a USD 125 million loan (as part of a bigger USD 250 million loan) to providing cutting and polishing companies with access to long-term financing[159]—whether the country can maintain a favorable position in global markets remains uncertain.

Botswana's trajectory underscores the challenges inherent in transitioning from a mining-based economy to a manufacturing-based one, where competitiveness rests more on the productivity of local labor and the attractiveness of the investment climate than on the resource base. The country's long history of pragmatic policy-making and unique relationship to diamond superpower De Beers have made it uniquely successful among diamond producers. Yet its experience suggests that, while these factors may be useful or necessary to support domestic value-added processing, they alone are not sufficient. Countries with ambitions similar to Botswana's must not only implement correct policies but also focus on developing clear comparative advantage relative to experienced gemstone processing hubs.

155 Government of Botswana, *10th National Development Policy* (2009).
156 "Skills Implications of Botswana's Diamond Beneficiation Strategy," Policy Note 4 (World Bank, 2010).
157 Bain & Company, *The Global Diamond Industry* (2016).
158 Mathew Nyaungwa, "US unveils credit facility to Botswana's diamond cutting, polishing industry," *Rough & Polished,* 27 July 2016.
159 Ibid.

6. Revisiting trade policies

Among the policy tools available to governments, restrictions on trade may appeal as a means of encouraging domestic value-added processing. In recent years, Ethiopia, Kenya, Madagascar and Tanzania have each imposed export bans on rough gemstones for this stated purpose. A number of gemstone-producing countries also impose higher export duties on rough stones than polished stones.

While such measures are theoretically justifiable, most countries lack sufficient control over the gemstone trade to implement these policies as envisioned. Particularly in the colored gemstone sector, significant discrepancies between export figures reported by public agencies in gemstone-producing countries, import figures reported by their trade partners, and government or independent estimates of gemstone output indicate a significant degree of smuggling and underreporting.[160]

EVALUATING EXPORT BANS

As highlighted in the cases of Madagascar and Tanzania, gemstone export bans for rough stones generally do not bring about their intended aims, while negatively impacting the sector through:

- **Failing to increase domestic value addition.** Unless domestic industry can process a major influx of new supply to international quality in a cost-effective and timely manner, governments will face challenges in stemming the outflow of stones to more productive centers. Countries that have implemented bans to date have generally lacked significant absorptive capacity.
- **Encouraging informality.** Prohibiting trade is unlikely to prevent gemstones from leaving the country but increases the likelihood that they will be exported illegally. Pushing transactions into the informal sphere may help to solidify illicit networks, allowing actors to more easily circumvent formal processes even beyond the lifting of the ban.
- **Suppressing economic activity.** Wholesale bans tend to dampen activity throughout the gemstone value chain, requiring the government and companies to forego potential revenues and operating income. Negative impacts are disproportionately borne by actors operating within the formal system.

160 For example, United Nations Comtrade data for 2015 indicates that total global exports of colored gemstones were worth USD 8.9 billion, approximately 25 percent lower than reported value of global imports of colored gemstones (USD 12.1 billion).

CASE STUDIES

MADAGASCAR	TANZANIA
In 2008, Madagascar imposed a total ban on rough gemstone exports. This remained in place until a coup d'état in 2009. The ban was ordered by the president after failing to reclaim a rare emerald specimen of personal interest that had been legally shipped to Réunion. The government later argued that the ban would support the development of local value-added processing.[161] Previously, the World Bank's Mineral Resources Governance Project had included the establishment of a gemological institute, lapidary school and gem laboratory, overseen by International Colored Stone Association Ambassador to Madagascar Tom Cushman. Over the course of ten years, the school had trained more than 400 Malagasy lapidaries, and its graduates had gone on to start approximately 100 businesses.[162] Unfortunately, many of these enterprises closed as a result of the ban. The consequent exodus in foreign buyers was estimated to have cost Madagascar over USD 39 million in lost earnings while reducing incomes for approximately 1.5 million citizen miners.[163]	From 2010, Tanzania has banned the export of rough tanzanite stones weighing more than one carat. Consistent with the country's 2009 Mineral Policy, the ban was intended to support domestic beneficiation and promote Tanzania as a "gemstone center of Africa."[164] The ban has been undermined by weak enforcement and low capacity to process gemstones to international standards. Although a Tanzania Gemological Centre has been established, it did not hold its inaugural class until 2014—four years after the implementation of the ban.[165] In 2015, Tanzania's Minister of Energy and Minerals Minister noted that "larger stones of Tanzanite have continued to be smuggled outside the country and found in major gem shows in Tucson, Bangkok and Hong Kong."[166]

EVALUATING EXPORT TARIFFS

Differential export tariffs for rough and polished gemstones may be preferable to bans, as they are less apt to push operators into the informal sector. Tariffs are also more likely to improve performance over time as actors adapt to new incentives, while bans tend to become increasingly ineffective the longer they are in place.

However, striking an appropriate balance in incentives may prove difficult through adjustments in the tariff rate alone. More favorable terms for polished stones tend to appear more attractive on paper than in practice, as value added through beneficiation at least partially offsets the decrease in the tax rate.[167] And although increasing tariffs may increase financial incentives to process stones domestically, very high export taxes have tended to function similarly to bans in cases where domestic industry lacks capacity to process additional volume.[168]

161 Ibid., 124.
162 World Bank, *Implementation Completion and Results Report: Madagascar Mineral Resources Governance Project* (December 2012).
163 See Tom Cushman, "Madagascar's Minister of Energy announces the end of Madagascar's ban on rough gemstone exports," (accessed via Pala Gems) and Diana Jarrett, "Madagascar Mess" (Rapaport Diamond Report, January 2010).
164 Ibid., 66.
165 See "Tanzania Gemological Centre" via jewellerytechnology.com.
166 Mathew Nyaungwa, "Illegal tanzanite mining, smuggling: the twin evil facing Tanzania," *Rough & Polished*, 15 May 2015.
167 For example, if a given stone mined in Namibia appreciates by 50 percent due to cutting and polishing then the exporter will only save 25 percent even though the government charges twice as much for rough stones (10 percent *ad valorem*) as it does for polished stones (5 percent *ad valorem*).
168 See, for example, the impact of Sierra Leone's high export tax rate, as discussed in Chapter 3.

Raw ambers is sold at a road-side market in Kachin State, Myanmar. *Credit: Khun Latt for NRGI.*

CONSIDERATIONS FOR GOVERNMENTS

Governments implementing trade restrictions on gemstones have generally done so without providing adequate support to the local value-added processing industry or adequate consideration of how policies will impact operators' decision-making. The experiences of Madagascar, Tanzania and other countries underscore several considerations for the administration of trade policies, including:

- **Avoiding export bans.** Wholesale restrictions on gemstone exports, particularly without adequate warning and preparation, tend to reduce productive activity throughout the value chain and encourage growth of the informal sector.
- **Developing domestic capacity.** Bans and tariffs are unlikely to increase domestic beneficiation if the local beneficiation industry lacks the capability to process a significant volume of gemstones to international standards. Ideally, any trade-related measures should be implemented only after addressing local gaps in skill and expertise.
- **Standardizing rates.** In regions where the state lacks effective control over trafficking across national borders, working with neighboring countries to set uniform taxation rates may reduce incentives for smuggling.
- **Enhancing inter-agency cooperation.** Close coordination between customs authorities and institutions responsible for developing the gemstone industry (such as government ministries or state-owned enterprises) may improve information sharing regarding existing weaknesses and consolidate the state's approach to enforcing trade policies.

7. Strengthening accountability

Consumers increasingly recognize a degree of responsibility for conditions under which the goods they purchase are being produced, and are more likely to modify their behaviors as a result. This trend has generated burgeoning demand for gemstones that are "responsibly sourced" in accordance with certain standards—for example, those that are produced without the use of child or forced labor, poor or unsafe working conditions, ties to conflict or corruption, or significant impacts on the environment, indigenous groups or other vulnerable communities. As gemstones' provenance impacts their commercial value, many retailers are working to establish fully traceable supply chains.[169]

The reorientation of the jewelry industry towards responsible sourcing has sparked a proliferation of initiatives, most notably including the Kimberly Process Certification Scheme for rough diamonds and the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas. However, additional attention is needed to improve the implementation of these systems and translate lessons learned to the colored gemstone industry, which has lagged behind diamonds and most other mineral commodities in adopting accountability standards.

THE KIMBERLEY PROCESS CERTIFICATION SCHEME

The Kimberley Process Certification Scheme (KPCS) is a government-led, state-to-state certification system for rough diamonds established by a United Nations resolution in response to growing controversy over the role of "conflict diamonds" in the civil wars of Angola, the Democratic Republic of Congo, Liberia and Sierra Leone. More than 80 countries, representing diamond producers as well as major trading hubs and retail markets, currently participate.[170]

All rough diamonds covered by KPCS must be accompanied by a government-issued Kimberley Process Certificate verifying that they are "conflict-free." Further downstream, KPCS participants self-regulate using a "system of warranties," developed by the World Diamond Council, which requires all buyers and sellers of both rough and polished diamonds to certify that the shipment stones comply with United Nations resolutions. Member countries must also meet certain minimum requirements, which include passing national legislation, implementing export, import and internal controls, and committing to the transparent exchange of data and information. Although KPCS is officially comprised of governments, the Kimberly Process Civil Society Coalition—which has observer status within the initiative—has been particularly instrumental in documenting violations.[171]

169 However, it is important to note that the growth of responsible sourcing is asymmetrical; consumer demand for transparent supply chains is highest in the United States and other western markets, but lower in countries like China and India that account for much of global demand growth.
170 Additional information is available via the Kimberley Process website: kimberelyprocess.com.
171 Ibid.

Several features of the process have drawn criticism, including:

- **Narrow scope.** The KPCS focuses exclusively on diamonds in conflict situations. The narrow definition of conflict recognized by the scheme precludes consideration of links between diamonds and human rights abuses, as well as other aspects of how gemstones are produced.
- **Ineffective administration.** Governments in many producing countries have failed to effectively manage the certification system; a 2006 KPCS evaluation of Brazil, for example, indicated that approximately one third of all certificates—representing nearly half of diamond exports by value—were fraudulent.[172]
- **Weak enforcement.** Global Witness, a key founding member of the scheme's civil society coalition, pulled out of the process in 2011 due to the scheme's failure to control the flow of rough diamonds from certain regions, most notably the Central African Republic and the Marange diamond fields of Zimbabwe where gemstones have financed armed forces implicated in human rights abuses.[173]

Certification for colored gemstones

In 2013, the United Nations Interregional Crime and Justice Research Institute (UNICRI) established a partnership with the Vienna International Justice Institute and the International Colored Gemstone Association with the goal of setting up a verifiable global certificate of origin system for colored gemstones based on governance, environmental and social performance indicators. Initial meetings included representatives from several producer countries, including Brazil, Colombia, Kenya, Mozambique, South Africa, Sri Lanka and Tanzania.[174] This process appears to have stalled, however, and the initiative has since been amended to focus on precious metals for the initial phase.

OECD DUE DILIGENCE GUIDANCE FOR RESPONSIBLE SUPPLY CHAINS OF MINERALS FROM CONFLICT-AFFECTED AND HIGH-RISK AREAS

The OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas was developed in 2010 by a multi-stakeholder group of government, the United Nations Group of Experts on the Democratic Republic of Congo, companies and NGOs, to assist companies in assessing and mitigating risks in global mineral supply chains. It lays out a five-step approach that includes (1) establishing strong company management systems; (2) identifying and assessing risk in the supply chain; (3) designing and implementing a strategy to respond to risks identified; (4) carrying out independent third-party audit of supply chain due diligence at identified points in the supply chain; and (5) publicly reporting on supply chain due diligence. The guidance is accompanied by specific supplements addressing the tin, tungsten, tantalum and gold supply chains, though it is designed to apply to all minerals.[175]

172 Kimberley Process Certification Scheme, *Report of the Review Visit to Brazil* (2006).
173 Global Witness, "Global Witness leaves Kimberley Process, calls for diamond trade to be held accountable," 2 December 2011.
174 United Nations Interregional Crime and Justice Research Institute, "Expert meeting to discuss a new initiative on coloured gemstones traceability and certification of ethical origin," 11 April 2014.
175 See OECD, *Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas* (April 2016).

The guidance has emerged as the prevailing standard for responsible supply chain management, serving as the basis for government-mandated due diligence requirements (such AS stipulations that companies to undertake due diligence in line with the OECD Guidance passed by legislatures in the Democratic Republic of Congo and Rwanda)[176] and voluntary mechanisms adopted by the private sector.

While the guidance allows for a more comprehensive approach to responsible sourcing, which may extend to human rights, community relations, labor standards, environmental impacts and product disclosure, its utility depends on the degree to which it is fully integrated into countries' legal frameworks. Laws that only require conducting and disclosing due diligence, and thereby leave companies to determine acceptable levels of risk, are less effective at improving practices than those which mandate compliance with standards set out in the guidance.

Due diligence for colored gemstones

An informal international multi-stakeholder working group known as the Precious Stones Multi-Stakeholder Working Group (PSMSWG), which originated from the OECD due diligence drafting process, met regularly between 2010 and 2015 to discuss how the guidance might be applied to gemstones—including the possibility of creating a supplement specific to precious stones similar to that for tin, tungsten, tantalum and gold. The PSMSWG published a report examining opportunities and challenges relating to the responsible sourcing of colored gemstones in 2016,[177] though the group has since been inactive and it remains unclear how this resource will be utilized in future.

The U.K.-based Responsible Jewelry Council, a non-profit standards organization, also announced in March 2016 that it was extending its certification system for member companies to include colored stones. The new standard is under development and will be based on the OECD guidance.[178]

176 Joint Civil Society Briefing to European Parliament, *Ensuring robust EU legislation on responsible mineral sourcing* (July 2014).

177 See James Evans Lombe et al., "Due Diligence for Responsible Sourcing of Precious Stones" (Estelle Levin and Sustainable and Responsible Solutions, 2015).

178 However, the Responsible Jewelry Council mechanisms are not up to the standard of the OECD Guidance, and have been criticized in some corners for reportedly failing to limit company behavior—see, for example, IndustriALL, CFMFU, USW, Earthworks and Mining Watch Canada, *More Shine than Substance: How RJC Certification Fails to Create Responsible Jewelry* (May 2013). More information regarding the Responsible Jewelry Council's activities is available on its website: www.responsiblejewellery.org.

DISCLOSING PAYMENTS, CONTRACTS, AND OWNERSHIP INFORMATION

The publication of contracts, payments, and ownership information helps to keep stakeholders throughout the value chain answerable for their activities:

- The *Extractive Industries Transparency Initiative (EITI)* is a global initiative to promote the open and accountable management of oil, gas and mineral resources and address the key governance issues along the value chain of the oil, gas and mining sectors.[179] A number of implementing countries include gemstones to some degree; however, the confined scope of disclosures in many countries limits their usefulness. In Myanmar's first EITI report, for example, the Independent Administrator recommended "extending the coverage of the Gems and Jade sub-sector revenues by including all revenues collected and not only those received from emporium."[180]
- Separately, several countries have enacted legislation mandating greater financial transparency for extractive companies. In November 2013, the EU Transparency and Accountability Directives, which apply to all extractive companies listed on EU stock exchanges, formally entered into force. Companies are required to report all payments over EUR 100,000 they make to governments on a project-by-project and country-by-country basis from 2015 onwards. Similar legislation is observed in Canada, Norway and Switzerland.[181]
- An increasing number of countries have also agreed make public extractive industry contracts, including licenses, concessions and service agreements.[182] States that have disclosed some or all major contracts pertaining to the gemstone sector include Cameroon, Democratic Republic of Congo, Guinea, Liberia, Malawi and Sierra Leone.[183]

179 Member countries of EITI commit to disclose payments, ownership information and other data related to the natural resource sector, a process that is then managed and overseen in each country by a national multi-stakeholder group made up of government, industry and civil society representatives. An International Secretariat based in Oslo manages the process at the international level and certifies countries based on their compliance with the EITI Standard. For more information, see the EITI website: eiti.org.

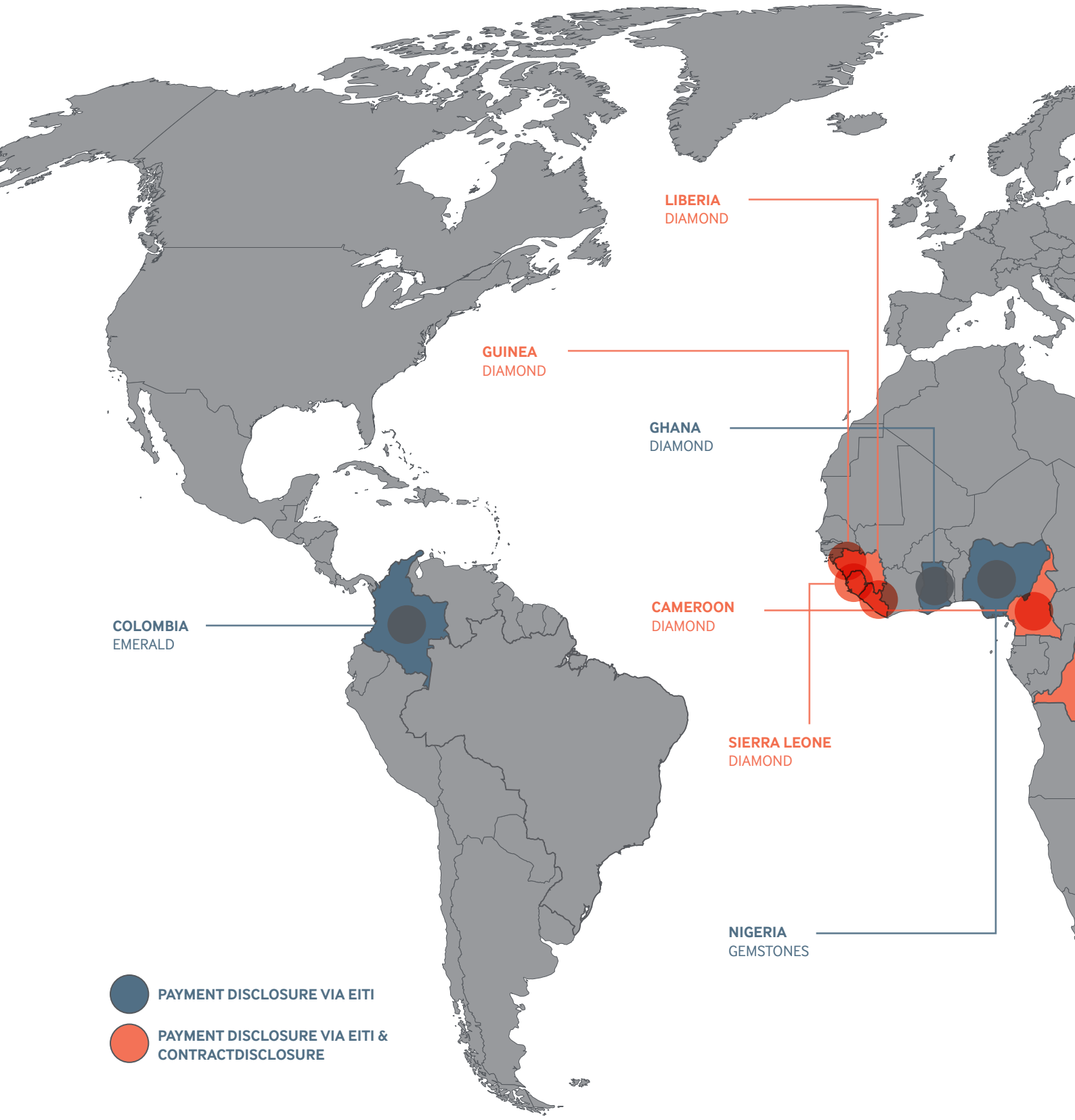
180 Myanmar Extractive Industries Transparency Initiative, *MEITI Reconciliation Report 2013-2014* (January 2016).

181 Until its repeal in early 2017, Section 1504 of the Dodd Frank Wall Street Reform and Consumer Protection Act (Cardin-Lugar Amendment) also required U.S.-listed companies to publicly report all payments over USD 100,000 made to host governments for the extraction of oil, gas or minerals on an annual basis to the U.S. Securities and Exchange Commission.

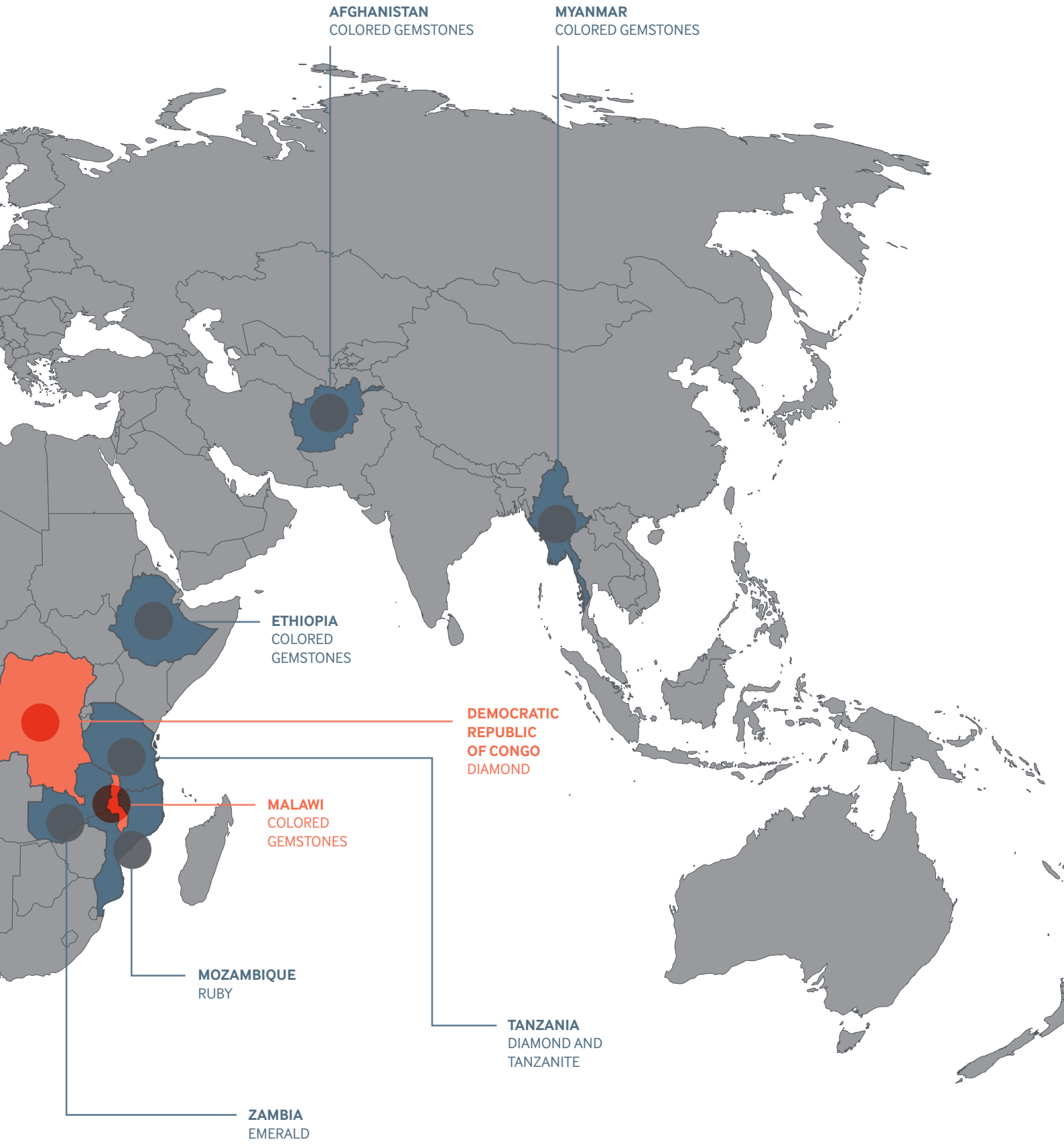
182 For additional information see Don Hubert and Rob Pitman, *Past the Tipping Point? Contract Disclosure within EITI* (Natural Resource Governance Institute, March 2017).

183 Individual contracts are available at resourcecontracts.org.

Figure 11. Payment and contract disclosure in major gemstone-producing countries[184]



184 Figure 11 is based on information available via the Extractive Industries Transparency Initiative (EITI) website (eiti.org) and country reports and contracts published via resourcecontracts.org. While their participation in either or both initiatives is a positive step, most countries



listed have not fully disclosed company and payment information through EITI, or published all contracts relating to gemstones. Figure 11 may not include member countries of EITI that are not globally significant producers of gemstones.

CONSIDERATIONS FOR GOVERNMENTS

The rise of responsible sourcing has the potential to dramatically restructure the gemstone sector. Growing demand for transparent supply chains has put particular pressure on traditional ways of doing business in the colored gemstone industry; the small-scale players that have traditionally dominated the sector rely on informal relationships and a significant degree of secrecy to maintain competitive advantage. Although retailers have incentives to choose to source gemstones from larger, vertically integrated companies with lower costs and fewer impediments to effective supply chain due diligence, it is important to note that the presence of small-scale actors in the supply chain does not preclude traceability *per se*. U.S.-based company Columbia Gem House, for example, helps to link retailers to citizen-run mines around the world and works with operators to implement and monitor best practices.[185]

As stakeholders contemplate how to improve accountability in the gemstone sector, the Kimberley Process, OECD guidance, EITI and others highlight the potential advantages and risks associated with various mechanisms. These systems are by no means mutually exclusive; in fact, they are likely to complement one another in practice. The governments of gemstone-producing countries may engage with and support such processes by:

- **Evaluating national opportunities and challenges.** Multi-stakeholder working groups may assess how supply chain accountability may be improved and adapted to local context. Dialogue in these forums should inform the design of new mechanisms, including those based on the OECD guidance.
- **Harmonizing domestic laws with international frameworks.** By adopting policies that mandate contract disclosure and compliance with the Kimberley Process, OECD guidance, or the EITI Standard, governments may improve company practices and encourage sustainable, citizen-oriented development of countries' gemstone resources. Investing in rigorous enforcement is equally necessary for successful implementation.
- **Supporting compliance by local stakeholders.** Governments should provide guidance to companies and citizens engaged in the gemstone value chain and assist these actors in abiding by relevant certification and/or due diligence requirements. This may be most efficiently accomplished with collaboration other stakeholders, including civil society and the international community.

185 For additional details, see Columbia Gem House, *Quality Assurance & Fair Trade Gems Protocols* (November 2005).

Looking forward

The gemstone industry may benefit citizens and support economic development if prudently managed, and global experience showcases diverse approaches to capturing the value generated by gemstone extraction. The governments of Botswana (in the case of diamonds, see Chapter 5) and Zambia (in the case of colored gemstones, primarily emeralds, see Introduction) have maximized their share of global production while negotiating a significant share of revenues and other benefits through large-scale mining ventures with experienced international companies. While citizen mining is often associated with informality, Guyana (in the case of diamonds, see Chapter 3) and Sri Lanka (in the case of colored gemstones, see Introduction) provide examples of how small-scale operations may be effectively controlled while supporting local employment and income growth.[186] A limited number of others, such as Thailand (see Chapter 5), have also acquired comparative advantage in gemstone beneficiation, marketing, and other value-added activities.

Yet a good deal remains elusive in many cases; states tend to lack meaningful oversight of mining and trading by citizens, fail to collect a fair share of revenues from the sector, and have yet to develop significant capabilities in the midstream and downstream value chain. Particularly in the case of colored gemstones, entrenched patterns of clientelism and exploitation by foreign actors sap many countries of potential benefits accruing from the gemstone industry.

Governments may take important steps towards mitigating these challenges by strengthening laws, policies and practices in the gemstone sector. Designing an effective governing framework requires both weighing competing stakeholder demands and addressing significant gaps in knowledge throughout the value chain. Several emerging trends bear particular significance for future engagement, such as:

- Growth of the colored gemstone industry. Burgeoning interest in many varieties of colored gemstones, and parallel price increases, have piqued public and private interest in non-diamond gemstone markets. An unprecedented degree of corporatization in the production phase, led by the likes of Gemfields, Richland Resources and True North Gems, has created greater competition for the small-scale and informal actors that have traditionally dominated the industry.
- Market shift towards responsible sourcing. Growing demand for ethically-produced jewelry, particularly among younger consumers, has altered incentives throughout the gemstone supply chain. The rise of responsible sourcing has driven the development of certification systems (such as the Kimberley Process) and of rigorous due diligence practices (such as those based on the OECD guidance), although the effectiveness and penetration of these mechanisms has varied in practice.

186 Approaches emphasizing company and citizen mining are not mutually exclusive; in Sierra Leone (diamonds) and Tanzania (diamonds and various colored gemstones) among others, international companies operate large-scale mines while citizen mining of secondary deposits remains prevalent.

Additionally, several cross-cutting challenges will continue to bear on the future of gemstone governance. These include:

- Under-prioritization of the gemstone sector: Relatively few states have invested in formulating a national strategy for gemstones, improving monitoring and data collection and implementing reforms to relevant laws and institutions. [187] Multilateral initiatives remain limited in their scope (such as the Kimberley Process) or have not explicitly addressed challenges specific to gemstones (for example, EITI or the OECD guidance).
- Misalignment between national objectives and policies. Addressing some of the most common and pernicious challenges in the gemstone sector – including, among others, informality among citizen miners or low domestic capacity to cut and polish gemstones domestically – requires sustained and strategic investment. "Quick fixes" expected to more swiftly deliver results, such as strengthening the military presence at mining sites (intended to reduce informal mining) or banning the export of rough gemstones (intended to encourage domestic beneficiation), are often ineffective at achieving their proposed aims and may ultimately reduce the overall quality of governance. It is imperative that the expectations of the government and other stakeholders be accurately calibrated to industry needs, as well as to the utility and limitations of available policy levers.
- Gaps in available information. Gemstones' geology, markets, and governance remain poorly understood. Particularly in the case of colored gemstones, much of existing research has been generated by a handful of industry, academic and civil society actors. Few opportunities have been identified to discuss country experiences in comparative context.
- Fragmentation of relevant stakeholders. A clear divide between markets and political mechanisms for diamonds and other (colored) gemstones has arguably slowed the diffusion of information and experience between the two industries. Particularly in the colored gemstone industry, interaction between governments, the private sector and civil society organizations remains limited.

Given the diversity in activities and stakeholders that constitute the global gemstone sector, it is neither practical nor desirable to generate more specific recommendations within the scope of this report. While significant strides have been made in several areas, [188] more detailed work is needed at both the country and topic level to improve public knowledge regarding the gemstone sector. New and emerging research should be mobilized to support inclusive dialogue regarding the future management of this resource wealth.

187 Among the case studies included in this report, for example, vague legal frameworks and poor implementation of existing statutes have particularly undermined effective governance in Brazil, Myanmar, and Pakistan.

188 At the country level, scoping has been conducted in countries including Ethiopia [see Yolande Kyngdon-McKay et al., *An Analysis of the Commerial Potential of Ethiopia's Coloured Gemstone Industry* (World Bank: June 2016)] and Namibia [see Government of Namibia (Ministry of Industrialisation, Trade and SME Development), *Growth Strategy for the Namibian Jewellery Industry and Coloured Gemstone and Associated Value Chains* (2016).]. Important work has also recently been conducted on specific topics including responsible sourcing (see the 2016 study commissioned by the PWMSG in footnote 177), and by Saleem Ali and Laurent Cartier in conjunction with the University of Vermont and the University of Delaware (ongoing).

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