

## 6

## Extractive Industries



Tanzania is endowed with large mineral and fossil fuel deposits. It is known for its high-grade gold reserves (which have been mined since the precolonial era) and its gemstone deposits that include tanzanite (uniquely found in the country), diamond, ruby, garnet, tourmaline, sapphire, topaz, and emerald. Further, metallic mineral deposits include iron ore, copper, cobalt, and silver. Industrial minerals, such as clay, limestone, and gypsum, are being consumed by local industries, and granite can be found in various regions. In 2010, Tanzania grabbed the headline news with the discovery of around 47 trillion cubic feet (tcf) of offshore gas deposits in the southern part of the country, adding 8.1 tcf of onshore gas reserves (Uongozi Institute 2015).

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The extractive industries (EI) sector in Tanzania is made up of large-scale mining (LSM) projects, gas projects, and artisanal and small-scale mining (ASM). The LSM sector is composed of nine mines that are currently in operation: six gold mines (Geita, New Luika, North Mara, Buzwagi, Bulyanhulu, and Biharamulo), one tanzanite mine (TanzaniteOne), one diamond mine (Williamson), and one coal mine (Ngaka) that primarily supplies the domestic cement industry. Most of the gold projects are located in the northern part of the country (see figure 6.1) and are owned by foreign investors. The remaining projects in figure 6.1 are in preproduction stage (Kabanga nickel mine, Liganga iron-ore mine, Mkuju uranium mine, and Mchuchuma coal mine). The onshore gas fields in Songo Songo and Mnazi (in shallow waters along the east coast of Tanzania and are linked via pipeline to Dar es Salaam) already produce gas for industrial use. In addition, to become economically viable, the offshore gas deposits require the construction of a liquefied natural gas (LNG) facility to process the gas for export purposes.

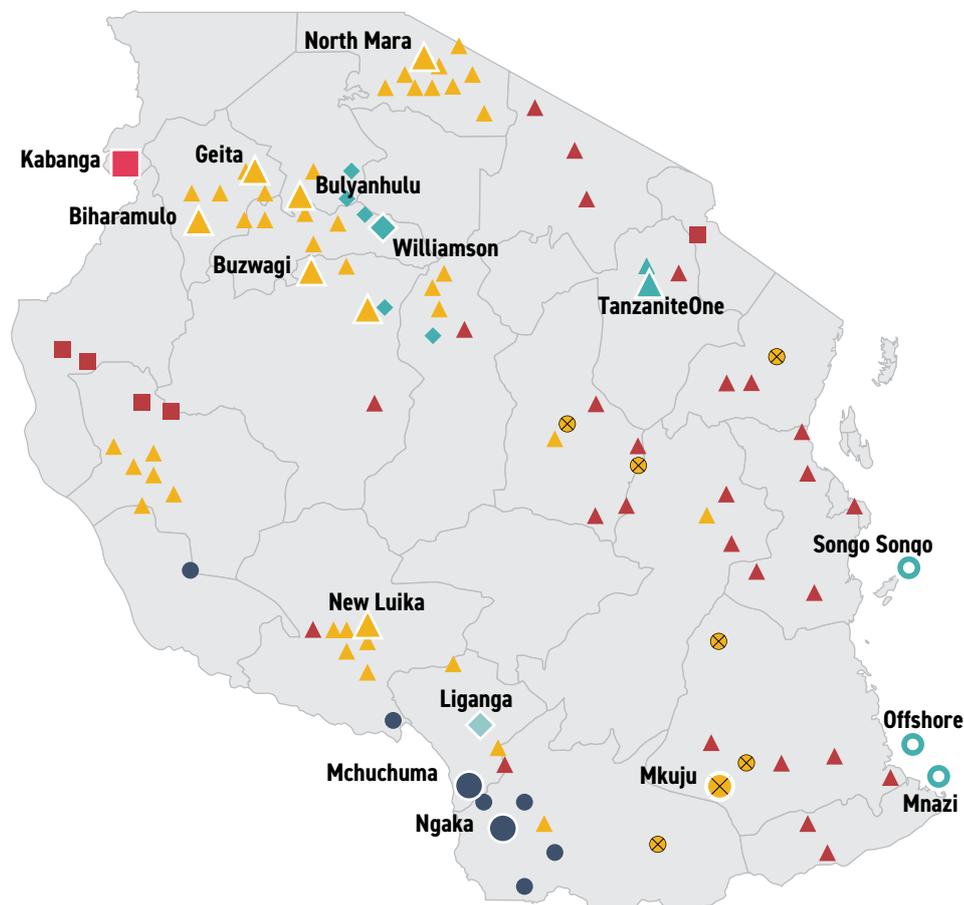
Although minerals make up Tanzania's largest export earnings, it only accounts for a small share of gross domestic product (GDP) and revenues. In 2015, minerals accounted for 24 percent of Tanzania's total exports.<sup>1</sup> Of the precious mineral exports, gold is by far the country's largest export by value. Tanzania is the fifth-largest gold producer in Africa, following South Africa, Ghana, Mali, and Sudan. The existing gas projects are currently supplying the domestic market only, but if the offshore gas deposits are to be developed, LNG will become a major export commodity. In 2015, mining contributed 4 percent to GDP. The LSM sector paid T Sh 381 billion worth of taxes and royalties in 2015,<sup>2</sup> or about 4 percent of the country's total internal revenue.<sup>3</sup>

The ASM sector is a significant source of income for a large proportion of the population, is key for poverty reduction, and provides employment for women. According to the 2012 census, around 680,000 people were employed in the ASM sector, with 27 percent

being women. This compares with only around 7,300 national employees in the LSM sector,<sup>4</sup> highlighting the importance of the ASM sector plays in Tanzania. ASM activities are mainly clustered around the gold and precious stone-producing regions in the northern part of the country. Clashes between LSM companies and ASM miners are common. Although the ASM sector is estimated to produce about 10 percent of total gold production in Tanzania, much of it is not declared and therefore bypasses the authorities.<sup>5</sup>

Falling international commodity prices have also affected Tanzania. The World Bank Metals and Minerals index has fallen by 41 percent and gold prices by 25 percent since 2011.<sup>6</sup> Apart from having an adverse impact on government revenues from operating mines, the price downturn also meant that no new projects have come onstream in the last four years. This follows a global trend of mining companies looking to cut costs by reducing operating expenses, slashing exploration

**FIGURE 6.1:** Extractive Industries in Tanzania



Source: Reprinted with permission from the Tanzania Minerals Audit Agency.

budgets, and delaying capital expenditures. LNG prices have fallen by around 50 percent since peaking in 2014.<sup>7</sup> This could further delay the final investment decision by BG Group and Statoil to develop the offshore gas deposits until long-term LNG prices are more certain.

This chapter focuses on three subsectors: gold, tanzanite, and natural gas. These subsectors were selected because gold is currently Tanzania's largest export by value; gas will potentially become an important export commodity if the offshore deposits are developed; and tanzanite is uniquely found in the country, which has resulted in the government imposing export restrictions on rough stones. Special attention is also placed on the ASM sector given its importance in the Tanzanian context, as well as on the specific constraints affecting women in small-scale and artisanal mining.

This chapter is structured as follows: Section 1 outlines the institutional framework of the EI sector in Tanzania. Section 2 is an overview of the current market structure and trends. Section 3 highlights key challenges that the country needs to overcome to benefit from the opportunities along the value chain of the three subsectors. And, finally, section 4 provides priority recommendations to the Tanzanian government on how the identified challenges may be overcome.

## Institutional Framework

This section provides a brief overview of the most recent policies, regulations, and the main government agencies involved in the mining and the gas sectors.

The Mining Policy of 2009 and the subsequent Mining Act of 2010 are the principal documents guiding the mining investments in Tanzania. Major international investments in Tanzania are regulated through mineral development agreements (MDAs) signed between the Ministry of Energy and Minerals (MEM) and the mining companies. These are negotiated on a case-by-case basis. Two state-owned companies were set up during and after independence (which continues to play an important role today):

- **National Development Corporation (NDC).** Established in 1962 to finance critical development projects and take over the Colonial Development Corporation. Its mission is to implement strategic industrial

development projects through partnerships with the private sector. It is a joint-venture partner in the development of industrial minerals, such as coal, iron, nickel, and uranium.

- **State Mining Corporation (STAMICO).** A public parastatal under the MEM that was created in 1972 to take over selected mining projects from the NDC. Today, STAMICO is a joint-venture partner of TanzaniteOne (the largest tanzanite mine). TanzaniteOne has 100 percent ownership of several gold and coal mining projects, and has a role to support ASM miners.

Another important player in the mining sector is the Tanzania Minerals Audit Agency (TMAA), which was established in 2009 under the Minerals Department of the MEM. This semi-autonomous institution is responsible for conducting financial and environmental audits, and to support the Tanzania Revenue Authority (TRA).

The Mining Act of 2010 has strong local ownership requirements:<sup>8</sup>

- A "primary mining license" (PML) holder for the ASM sector will only be granted to Tanzanian citizens, or to a company whose members and directors are exclusively Tanzania citizens.
- A "mining license" (with a capital investment between US\$100,000 and US\$100 million) may be granted to a foreigner, so long as at least 50 percent of the mining license is held directly by a Tanzanian citizen.
- A "special license" (with a capital investment above US\$100 million) requires holders to, in consultation with the MEM, offer shares to the public through a listing with the Dar es Salaam stock exchange.

In the oil and gas sector, the Petroleum Act of 2015 is the primary legislation guiding upstream and midstream investments. In preparation for the potential LNG developments, in 2015, the Tanzanian government passed the Petroleum Act, the Oil and Gas Revenues Management Act, and the Transparency and Accountability Act. The Petroleum Act creates the Petroleum Upstream Regulatory Authority (PURA), which is responsible for monitoring and regulating the upstream segment. The Petroleum Act also makes the Local Content Policy for Oil and Gas Industry of 2014 binding, which aims to increase employment and domestic value addition along the petroleum value chain. The required participation of the Tanzania

Petroleum Development Corporation (TPDC)—the national oil company—is also made explicit in all oil and gas investments going forward. Tanzania has a model production sharing agreement (PSA), which provides the basis for negotiations between the international oil companies (IOCs) and the TPDC.

To develop the gas-related midstream and downstream activities, Tanzania has developed the National Natural Gas Policy of 2013, which subsequently led to the Natural Gas Utilization Master Plan (NGUMP) of 2015 under the National Energy Policy of 2015. The NGUMP provides preliminary gas demand estimates based on household demand projections and potential industrial projects that could be developed using the natural gas resources. These estimates are meant to guide negotiations with the IOCs regarding how much of the gas should be reserved for domestic use. The downstream activities, including those by the TPDC, are regulated by the Energy and Water Utilities Regulatory Authority (EWURA). Finally, the Tanzania Electric Supply Company (TANESCO) plays a central role in the gas sector given that the national power utility company will be the main off-taker of the gas for power generation.

Tanzania is a compliant member of the Extractive Industries Transparency Initiative (EITI), and is committed to further increase transparency in the sector. Tanzania joined the voluntary EITI in 2009, which requires the disclosure of revenues from the extraction of its natural resources (mining, oil, and gas). The country became a compliant member in 2012, and published its 5th and 6th annual reports in November 2015. The drive for transparency was solidified through the passing of the Extractive Industry Transparency and Accountability Act (EITAA) of 2015, which requires for concessions, contracts, and licenses to be published, and foresees for the disclosure of beneficial ownership. It will be necessary for subsequent regulations to clarify some of the requirements in the EITAA to avoid room for misinterpretations and to align the definitions with other legislations.

Apart from the national legal framework, Tanzania is also a signatory to the World Trade Organization (WTO) and 20 bilateral investment treaties (BITs). As highlighted in subsequent sections of this chapter, these international commitments may be in conflict with some of Tanzania's upstream and downstream policies.

## Market Structure and Trends

To understand the current institutional framework outlined in section 1, with its strong local content provisions, one has to trace how the EI sector developed over time. This section provides a brief overview on how the market structure evolved, and explains what links have been created along the value chain of the gold, tanzanite, and gas sectors. Given their structural differences, LSM and ASM are discussed separately.

### Large-Scale Mining

#### LSM Gold Mining Sector

Gold mining is the largest EI sector in Tanzania. It traces its history back to the country's colonial era, and was put under state control through the state-owned company STAMICO after independence.<sup>9</sup> LSM gold mining activities gradually declined thereafter, and ASM emerged as the main gold production method, which was further supported by the Mining Act of 1979 that allowed mining permits in designated areas.<sup>10</sup> With the 1986 structural adjustment program and the ensuing National Investment Promotion Act of 1990, the Tanzanian government opened up the mining sector to foreign investors. MDAs signed in the 1990s, the Mineral Policy Act of 1997, and the Mining Act of 1998 provided generous tax incentives to attract international companies to explore mineral deposits and develop mines. The MDAs also included stabilization clauses, which provided investors with guarantees that the fiscal regime would remain unchanged for the lifetime of the project.<sup>11</sup> This led to an explosion in gold exploration by foreign junior mining companies, and, between 1998 and 2003, six major gold mines were commissioned (APPP 2011). The legislation prioritized foreign direct investment, which resulted in major clashes between international investors who were awarded concessions where ASM miners had been operating.

The expected benefits from the LSM sector were not met. Government revenue receipts from the sector were lower than expected due to the fiscal incentives granted under the MDAs. Tax leakages due to abusive transfer pricing mechanisms and limited capacity to audit the mining companies were reported.<sup>12</sup> Links to the domestic economy were limited due to the country's lack of experience and expertise in providing goods and services to the mining sector at a standard required

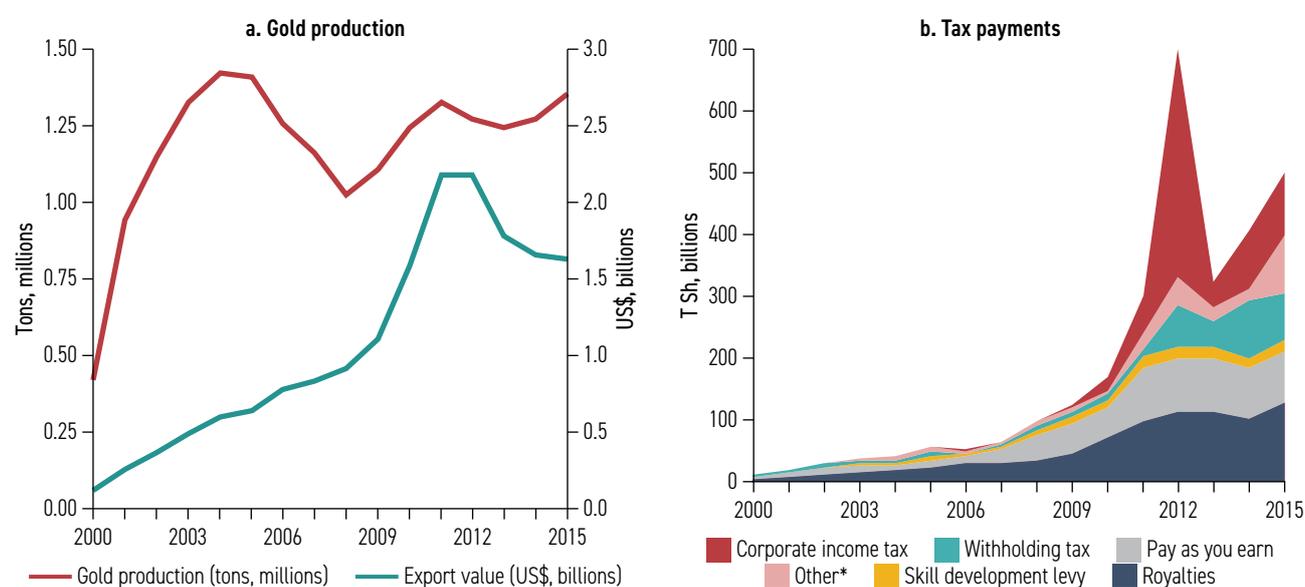
by international investors. Ultimately, this resulted in the passing of the Mining Policy of 2009 and the ensuing Mining Act of 2010, which only increased the fiscal burden and placed more importance of local content regulations on the LSM sector. While previously signed MDAs did include stability clauses that exempt existing LSM projects from having to abide with new regulations, public pressure led to some of the terms being renegotiated.<sup>13</sup> For example, higher royalty rates were introduced that were charged at gross value instead of netback value as stipulated in the MDAs. Because of these changes, increasing gold prices, as well as increased auditing capacity through the creation of the TMAA in 2009, tax receipts increased significantly after 2010). Figure 6.2 shows all payments by companies including royalties, the pay-as-you-earn on incomes of its employees, skill development levy, withholding tax on dividends, corporate income taxes, and other taxes (value added taxes, import and excise duties, and service levies).

The increased fiscal burden puts Tanzania on par with its peer gold-producing countries. One of the arguments to justify the increase in taxes in the Mining Act of 2010 was that Tanzania had established itself as a gold mining jurisdiction, and hence could increase the fiscal burden to be in line with peer gold-producing jurisdictions. A recent assessment by the International Mining for Development Centre suggests that the average effective

tax rate of Tanzania is comparable to peer developing-country fiscal regimes in Africa and Latin America, and should therefore not be too onerous on investors.<sup>14</sup> Changes regarding the valuation point of royalties (from netback value to gross value) and the introduction of ringfencing requirements that disallows companies from offsetting costs from one project to another were also introduced to reduce the opportunities for tax leakages. While the latter may have a dampening impact on further exploration given that these costs cannot be offset against producing projects, a World Bank study on transfer pricing in the African mining industry confirms that ringfencing is common in the majority of jurisdictions where the EI sector is active.<sup>15</sup>

Although only one LSM has come onstream since the Mining Act of 2010 was passed, the interest in the sector does not seem to have been negatively affected. Figure 6.3 shows that there was a peak of prospecting licenses being awarded in 2012, and a sharp drop thereafter. This pattern closely follows the international exploration budget spending, which saw an increasing trend until 2008, when the financial crisis caused a short slump in spending before peaking again in 2012.<sup>16</sup> With the sharp fall in commodity prices thereafter, exploration budgets of mining majors were cut across the board. It should be noted, though, that since the passing of the Mining Act, only one LSM gold project—the New Luika gold mine—has been commissioned in 2011.

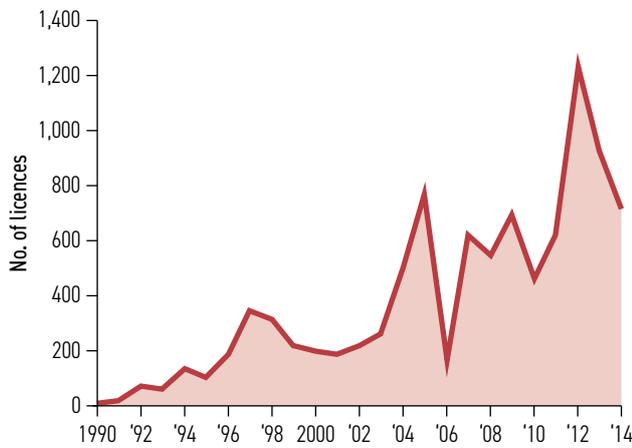
**FIGURE 6.2: Gold Production and Tax Payments, 2000–15**



Source: Derived from the Tanzania Minerals Audit Agency.

\*Other taxes are made up of value-added taxes, import and excise duties, and service levies.

**FIGURE 6.3:** Awarded Prospecting Licenses, 1990–2014



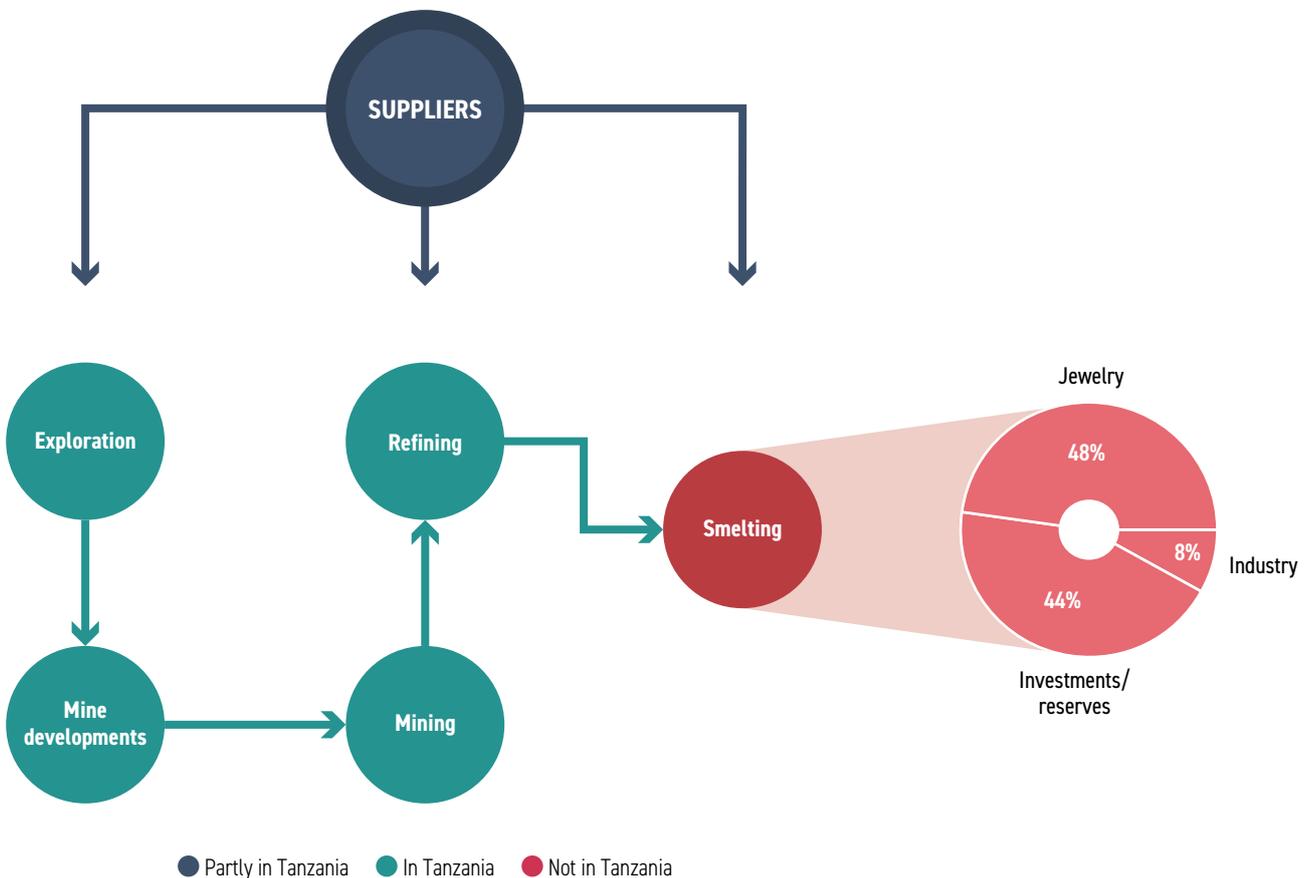
Source: Derived from MEM (2014).

Today, gold production in Tanzania is dominated by Acacia Mining (previously African Barrick Gold) and AngloGold Ashanti. In 2015, Acacia (operates 3 mines) and AngloGold Ashanti (operates the largest gold mine) produced 53 and 40 percent of Tanzania’s total gold exports by value, respectively.<sup>17</sup>

The gold value chain encompasses activities related to mining, with no smelting, or further downstream beneficiation occurring in the country. As figure 6.4 indicates, exploration, mine development, mining, and refining are undertaken in Tanzania. The gold output of the mine site is processed into gold concentrate and gold doré. In 2014, these outputs were exported to smelters in South Africa (47 percent), India (37 percent), Switzerland (9.6 percent), and Australia (5.8 percent).<sup>18</sup> It was estimated that, in 2013, 48 percent of global gold output went to jewelry production, with the largest consuming countries being India and China. This was closely followed by investment demand and central bank reserves with 44 percent. 8 percent of the gold output was used for industrial purposes due to its characteristics of electrical conductivity, malleability, and resistance to corrosion.<sup>19</sup> Past the refining stage, Tanzania is not significantly involved in any of these downstream production sectors.

Apart from government revenues, the biggest potential contribution of the LSM gold sector in Tanzania is to

**FIGURE 6.4:** Gold Value Chain in Tanzania



provide a springboard to a vibrant supplier sector in the country. In 2015, Acacia estimated that 80 percent of its total value creation (US\$889 million) went to goods and services payments. This compares to US\$54 million payroll taxes, US\$38 million royalty payments, and US\$16 million of other tax payments to the government in the same year.<sup>20</sup>

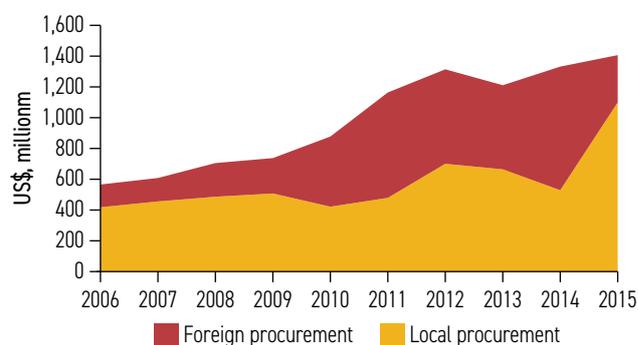
Both the Mining Policy of 2009 and the Mining Act of 2010 recognizes the importance of creating upstream links. To promote integration of the mineral sector in the domestic economy, the Mining Policy stipulates the requirement for mining companies to procure goods and services locally, with the government supporting and promoting Tanzanians to supply the required quality standards. It also states the objective of promoting research and development (R&D) and training, with both companies and the government having to support training centers to upgrade the skills necessary for the sector. The ensuing Mining Act requires companies to submit local employment, training, and procurement plans when applying for prospecting or mining licenses.

However, the integration of the LSM gold mining sector into the local economy through supplier links, to date, has been limited. Supplies required for exploration, mine development, and mining and refining operations have increasingly been sourced from companies that are registered in Tanzania (which explains the increase in local procurement in the national local procurement statistics shown in figure 6.5). However, these companies often only act as trade intermediaries with little value added to the domestic economy. Local value added is limited to few goods and services given that there is a scarcity of domestic suppliers that can satisfy the high-standard requirements of LSM companies. During the exploration phase, local firms have provided services in clearing access to sites, catering, vehicle rentals, and supply and management of camps. During the operational phase, domestic companies are primarily engaged in catering, security, transport services, and camp management. Where possible, mining companies have tried to outsource these activities to nearby communities of the project to create employment opportunities and gain the social license to operate.<sup>21</sup>

### LSM Tanzanite Mining Sector

Tanzanite is a rare gemstone known only to be found in a small area near Mount Kilimanjaro in the Manyara

**FIGURE 6.5: LSM Foreign and Local Procurement, 2006–15**



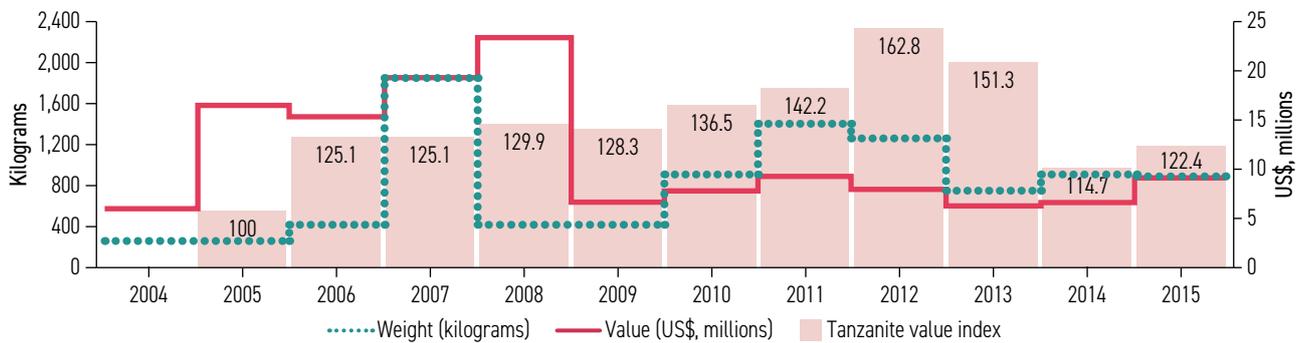
Source: Derived from the Tanzania Minerals Audit Agency.

region of northern Tanzania. It has been mined in the region since the 1960s. With STAMICO taking control of the mining sector in 1971, production records decreased resulting from falling grades and theft. (It is estimated that by 1989, 30,000 artisanal miners were working in the area.) In 1990, due to the rise in artisanal miners, the Tanzanian government demarcated the area into four blocks: Block A was awarded to a medium-sized local private firm (Kilimanjaro Mines), blocks B and D were awarded to ASM, and block C was awarded to STAMICO.

Due to STAMICO's lack of means to develop block C, the license was sold to private investors. After continued exploration and feasibility studies, in 2001, African Gem Resources Limited started its mine production in block C. Then, in 2004, TanzaniteOne Limited acquired the company. In 2013, to comply with the Mining Act of 2010 (which requires that at least 50 percent of shares must be owned by Tanzanians in the gemstone sector), the owner of TanzaniteOne—Richland Resources—entered into a 50:50 joint venture with STAMICO to renew the mining license for a further 10 years. In 2014, Richland Resources sold its 50-percent share in TanzaniteOne to national investors Sky Associates Group Limited.

Tanzanite makes up the bulk of registered gemstone production in Tanzania, with TanzaniteOne being responsible for about 40 percent of the declared output.<sup>22</sup> With the exception of a peak in 2007, TanzaniteOne's tanzanite production has increased gradually over the years (see figure 6.6). However, the grade of the tanzanite produced has fallen, and, with it, the value of the gemstones. This explains why the value of tanzanite production has fallen, even though its price increased.<sup>23</sup> The mining project has been plagued with conflicts, with ASM entering the mining concession. This has restricted plans

**FIGURE 6.6: TanzaniteOne Production, 2004–15**



Source: Derived from the Tanzanian Ministry of Energy and Minerals and Gemval.

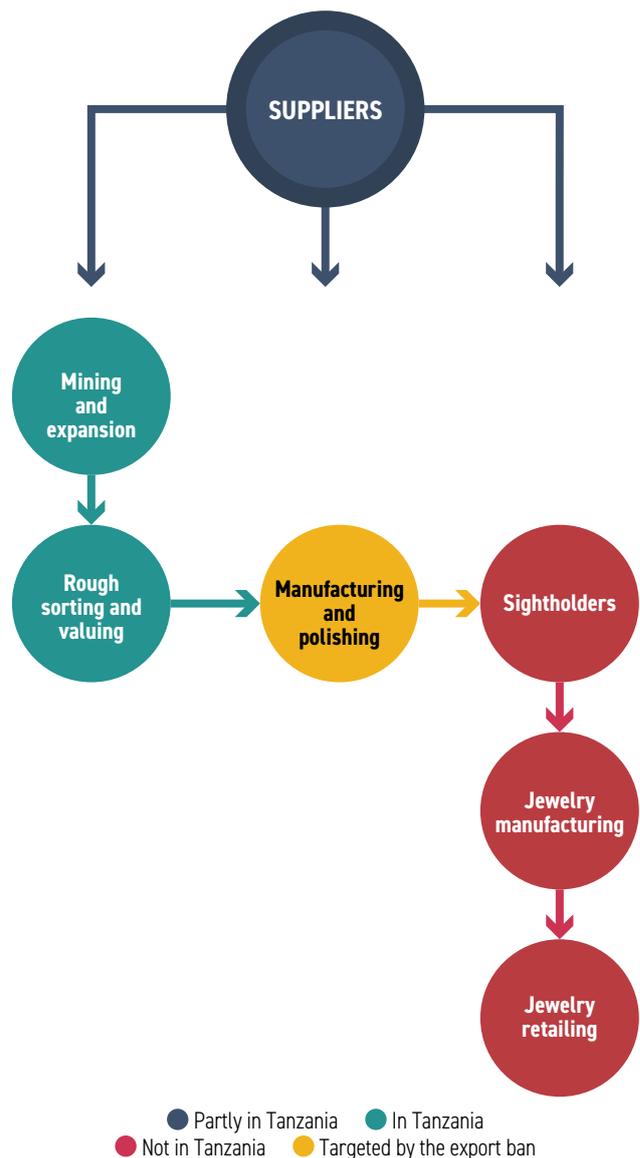
to access high-grade deposits within the concession. In 2013, Richland Resources declared a loss of US\$4.5 million “primarily as a result of the severe impact of the illegal mining on mining infrastructure and production quality.”<sup>24</sup> In its 2014 annual report, Richland Resources also cited the lack of support from the Tanzanian government in addressing the security situation, and loss of property due to conflicts with ASM as some of its primary reasons for selling its shares of the project and exiting the Tanzanian market.

In 2010, the Tanzanian government imposed an export ban on rough tanzanite over 5 grams (or 1 carat) in size to move downstream in the value chain and build up its cutting and polishing industry. It has been estimated that cutting and polishing of tanzanite can increase the price of the gemstone by 30–300 percent, depending on the quality.<sup>25</sup> To further incentivize value addition in the country, the government charges a lower royalty rate of 1 percent for cut tanzanite compared with 5 percent for rough tanzanite (only relevant for tanzanite below 5 grams in size). Dealers are also required to own at least two cutting machines.

Figure 6.7 illustrates the tanzanite value chain: the green squares represent the activities that are currently being undertaken in the country, the orange square represents the activities that were targeted by the export ban, while the red squares represent the activities that are primarily occurring outside of Tanzania. The value chain commences at the mine site. Given that Tanzanite has only been found in a 7-square-kilometer area around Mount Kilimanjaro, it is unlikely that there will be more opportunities for mine development in the near future (unlike in the gold value chain). The focus of TanzaniteOne is to expand production into areas that are

thought to have high-grade tanzanite pockets within its concession. The reserves are estimated to extend the

**FIGURE 6.7: Tanzanite Value Chain in Tanzania**



life of the mine for a further 15 years. Sorting and valuation are done on site. Prior to the export ban, tanzanite were sold to a number of large sightholders who are able to make long-term sourcing commitments. Due to the export ban, Richland Resources built a new lapidary factory at Merelani with a capacity of 200,000 stones per year—sufficient to process all the company’s production, subject to the export ban.<sup>26</sup> As a result, the company established new sightholder agreements to supply jewelry manufacturers with polished and cut tanzanite. It is estimated that around 80 percent of tanzanite’s final retail market is based in the United States, with China’s market growing rapidly in recent years.<sup>27</sup>

### Artisanal and Small-Scale Mining

The ASM sector is a major employer in rural Tanzania, and its importance has increased over the years. According to the censuses, the population of ASM miners has increased consistently from 150,000 miners in 1987, to 550,000 in 1996, and 680,385 in 2012. About 58.2 percent of the ASM population worked in gold production, followed by building materials (23.6 percent), and colored gemstones (12 percent). Other mineral commodities including copper, diamonds, and salt, accounted for 6.1 percent. The rapid increase can be attributed to the economic restructuring in the 1980s that saw a lot of people being laid off from work.

A significant portion of goods and services for ASM is sourced locally. Handheld tools (such as picks, chisels, hammers, crowbars, and other working tools) are fabricated on site or sourced locally. Rudimentary grinding mills are also fabricated in dedicated centers close to the mining sites. More advanced drilling equipment, reagents used for processing purposes, and generators are imported from abroad. In terms of services, pit owners tend to contract-out blast services. Timbering works in all underground excavations are also often outsourced to specialized groups. An emerging, major area of contractual work is courier service, whereby young men (and a woman) are hired to manually carry bags of ore from the pits downhill to the distribution centers. Other services include catering for mine workers. At times, these services are paid for by mineral proceeds rather than money.

The Mining Act of 2010 highlight efforts by the Tanzanian government to formalize the ASM sector. To address problems related to conflicts with the LSM sector,

environmental degradation, health and safety, and increasing revenue collection from ASM activities, the government has embarked on formalizing the sector. The Mining Act simplifies the process for obtaining an ASM license. Unlike in the previous mining legislation of 1998, where ASM mineral rights were issued through a centralized system, the Mining Act of 2010 has decentralized the system. All PMLs can be issued from the Zonal Mines Offices (ZMO). ASM mineral rights applicants can also make their applications through the District office, which is then forwarded to the ZMO for evaluation and issuance of a license. The requirements to obtain a license are not onerous, and the procedure for application has been simplified. The required payments include a registration fee of T Sh50,000 (US\$23) and preparation fee of T Sh50,000.

The Mining Act includes provisions for mineral rights reserved for the ASM sector. According to the budget speech of the Minister of Energy and Minerals on May 19, 2016, the MEM has set aside two areas of 7,731 hectares for ASM activities. In addition, the government is planning to set-aside ASM areas, selected in collaboration with other mining and exploration companies, of up to 12,000 hectares during the financial year 2016–17. The Mining Act also provides licenses for processing, smelting, and refining (which were not covered by the Act of 1998). These licenses allow people who do not have mineral rights to get involved in ASM activities. Furthermore, better guidance were included for broker and dealer licenses.

### Women in Mining: ASM Gender Considerations

Women accounted for 27 percent of people engaged in the ASM sector. They are mostly laborers—carrying, crushing, and sieving ore. In search of left over gold and trash gemstones, women also sieve mud, or process old tailings and crushed rock, which are often contaminated with mercury.<sup>28</sup> Support services, such as water and food retailing and accommodation are dominated by women.<sup>29</sup>

Women are less likely to be working in the pits digging for ore. Although some may express interest in being considered for such employment, high risks associated with working in the pits—such as threats of exploitation by mine owners, underground harassment and sexual assault, occupational risks, and frequent fights among male miners—tend to act as strong deterrents.<sup>30</sup>

Women are increasingly owning mineral rights—that is, acquiring PMLs or concessions, as well as working as pit owners or managers (leased by PML holders) and as brokers or dealers. However, women’s ownership of mineral rights in Tanzania tends to remain significantly lower than men’s, because of limited understanding of PML application rules and requirements, lack of capital, poor mining and entrepreneurship skills, and cultural or traditional values. The latter, is especially strong in certain areas: a 2010 case study on gender and ASM in Mererani<sup>31</sup> (tanzanite-mining site located near Arusha) showed that, even when women do hold PMLs for ASM plots, they usually require the services of a “shemeji” (brother-in-law) for protection, site management, and underground-supervision purposes. As a result, many female PML holders face the risks of being cheated or robbed by their own shemejis, managers, and workers. And, indeed, the study revealed that the risk of tanzanite theft in Mererani is greater for women than their male counterparts. More generally, women covered by the study indicated that, even if they own a PML, sometimes, their husbands make final decisions concerning the mine site and its related benefits. Cases of women having their ASM plot or license contested following the death of their male partners by family members were also cited. This is due to cultural beliefs that prohibit women from inheriting their spouse’s properties.

### ASM Gold Mining Sector

There are big discrepancies between mineral production figures declared by ASM to the Tanzanian government with those estimated by independent studies. Figure 6.8 shows the officially-declared gold production and associated values by the ASM sector for the years 2004–15. However, a recent baseline survey carried out in the Geita region, which is home to the largest-ASM production center, estimated that official statistics only account for 2.5 percent of actual production in 2012.<sup>32</sup> The majority of ASM gold operations in the Geita region were found to be illegal, and PML holders were under-declaring their production figures to avoid paying royalties. Consequently, official statistics underestimate the actual total quantity of gold produced in the country by ASM.

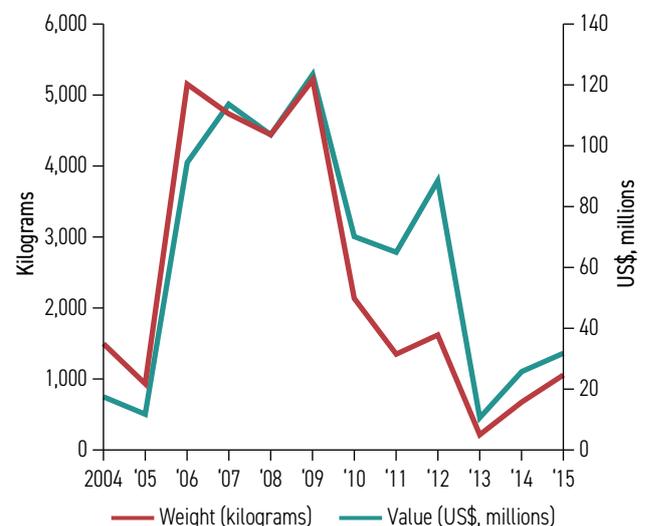
The value chain and level of organization among licensed and unofficial ASM operations are similar. Figure 6.9 shows an example of the value chain and trading routes of the ASM gold operations in the Geita

region. Top-level organization revolves around the PML holder. The PML holder, either an individual or a company (mainly limited liability companies), is the overall controller of the operations, and divides the area into small parcels. These parcels are then leased to the so-called “pit owners” who hire the workers, and are in charge of all mining operations in the pit. Claim holders employ security guards (in most cases, relatives) to make sure pit owners do not understate their production figures. Earnings are obtained through a sharing scheme whereby the claim holder takes 30–40 percent of the earnings as royalty. An additional 30 percent of the proceeds are charged where the PML holder is also the provider of working tools and meals for the workers. Leaving the rest of the proceeds (30–40 percent) to be shared among the workers.

The recovered ore is manually crushed, then ground using mills and concentrated by washing on sluice boxes. It is then panned and amalgamated to obtain a gold-mercury mixture. These activities are performed at processing centers located near the mining pits. In most cases, mine workers do not have enough capital to cover these services and therefore sell some of their ore to financiers (measured in sacks weighing 50 kilograms). The financiers are composed of PML holders, mill owners, licensed brokers, or individual business people.

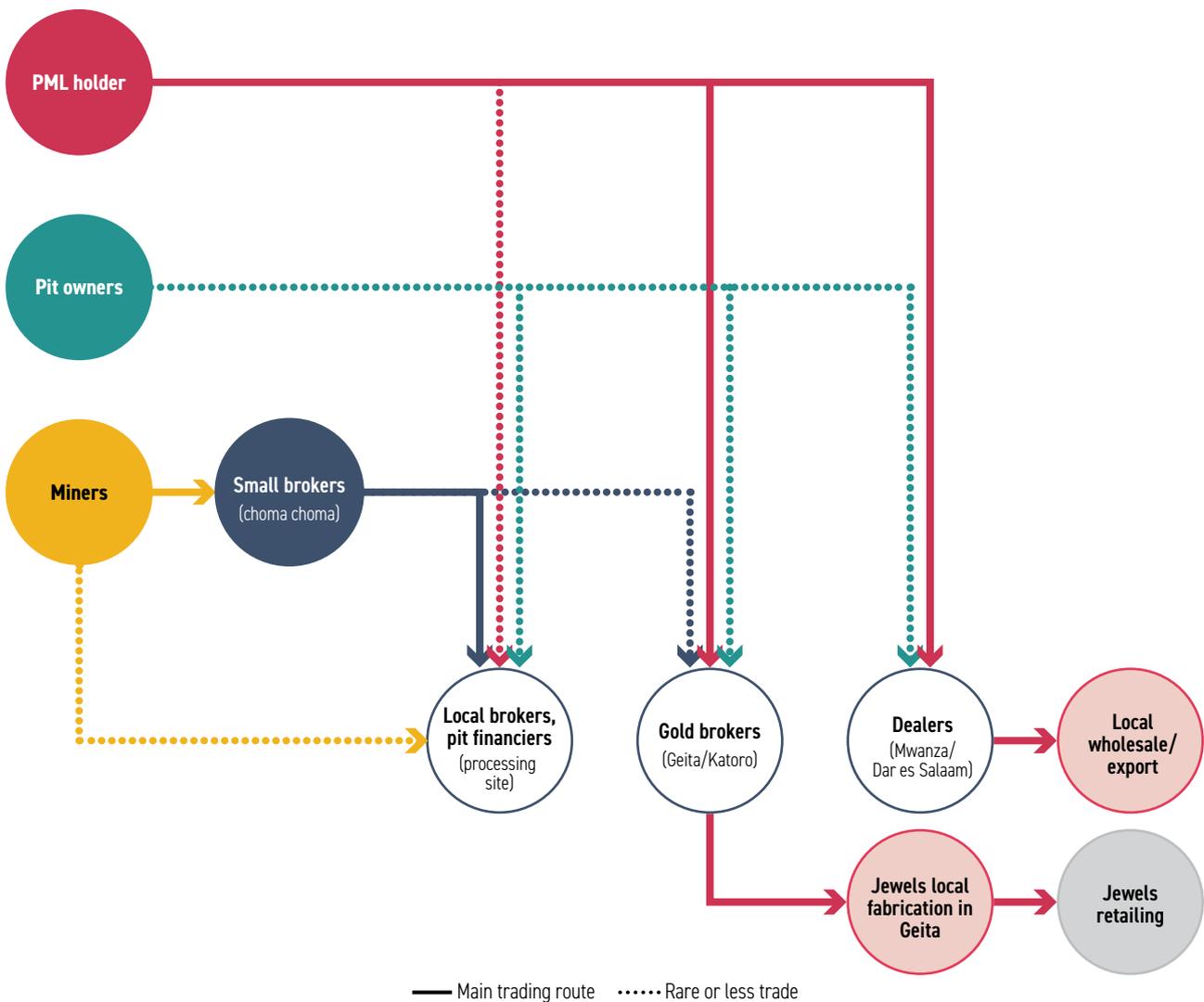
Royalties are collected from dealers and traders rather than at the mine level—which creates a strong incentive

**FIGURE 6.8:** Declared ASM Gold Production, 2004–15



Source: Derived from the Tanzanian Ministry of Energy and Minerals.

**FIGURE 6.9: Typical Value Chain of ASM Gold Sector**



Source: Derived from MTL (2013).

Note: ASM = artisanal and small-scale mining; PML = primary mining license; and DSM = Dar es Salaam.

for under-reporting by this group. There are three types of buyers. Unlicensed small buyers that travel to remote mine sites to buy gold, who are supported by larger brokers, which may or may not have a license. In the Geita region, it was estimated that in 2013, there were around 4,500 small buyers, 1,600 unlicensed brokers, and 155 licensed brokers.<sup>33</sup> This shows the importance of the role that small buyers play in the ASM gold value chain. The number of unlicensed brokers is also a testimony to how much gold is traded informally. The third group of buyers is made up of traders and dealers, who export gold.

Mwanza, Dar es Salaam, and (to a lesser degree) Zanzibar are the three main trading centers for gold in Tanzania. In Dar es Salaam, there were 22 registered

gold dealers in 2013. Only 4 of the 11 registered gold dealers in Mwanza renewed their licenses for the year 2013–14. There is little information available about how much gold from the ASM sector goes through official channels. Even for official dealers and traders, there is a strong incentive to under-report purchases and sales, as the royalty rate of 4 percent is applied at this level. There is anecdotal evidence that the Zanzibar route is used for exports to Dubai, which is the favored export route by those looking for less strict customs inspections.

The gold price along the ASM value chain is determined by the international market. Big dealers in Dar es Salaam are said to pay a price of around 3–4

percent lower than the London Bullion Market prices for 22-carat gold. This further suggests that under-reporting is a common practice, given that a 4 percent royalty would wipe out any profits. Major upcountry gold dealers, who receive credit from Dar es Salaam, make their margin from purchasing gold from miners based on the price recommendations from the buyers in Dar es Salaam on that particular day.

**Tanzanite ASM Sector**

As in the ASM gold sector, the ASM tanzanite sector employs significantly more people than the large-scale operator TanzaniteOne. It is estimated that around 4,000 people are directly employed in the ASM areas compared with 600 at TanzaniteOne under the operation of Richland Resources (Mayala and others 2016).

The ASM-tanzanite sector is more organized than the ASM-gold sector, but production and revenues are even more volatile. In tanzanite mining, one can easily distinguish between “artisanal” miners and “small-scale” miners. Most of the small-scale tanzanite miners are formal entities (registered, licensed), and are in the Tanzanian government’s taxation network. The majority of artisanal-mining participants are informal and work in collaboration with small-scale mining firms.

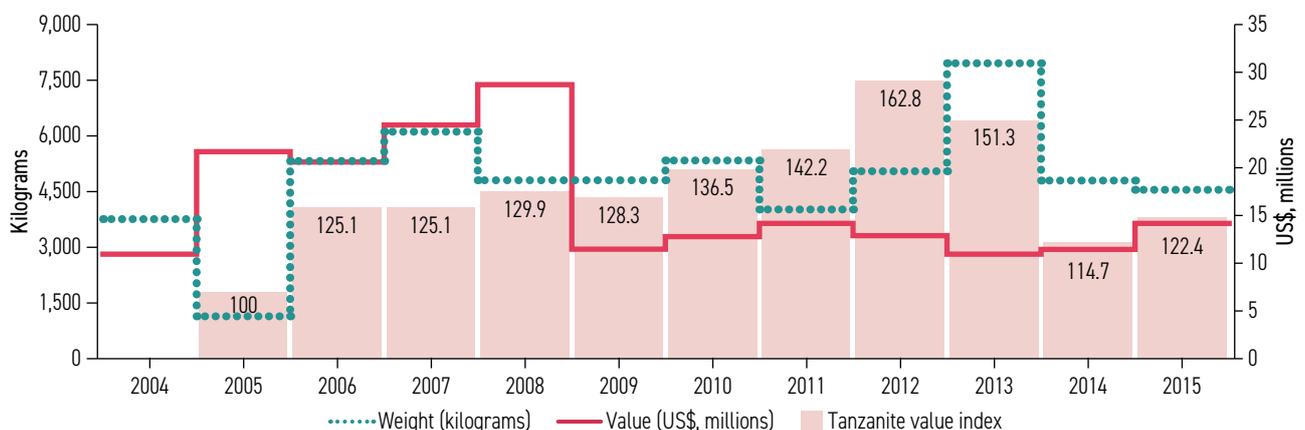
ASM in Mirerani is restricted to blocks B and D. Although these two blocks employ almost the same number of people, production from block B represents more than 95 percent of the total ASM tanzanite production. This can be associated with the fact that mining started in block D, and the pits have gone very deep,

thus affecting the overall production of the poorly-equipped small-scale miners.

Production is very volatile as tanzanite mineralization is found in “pockets.” Operations among pits vary significantly depending on the mining equipment used and the number of labor employed. Similarly, prices for tanzanite vary as these are dictated by the uniqueness of the particular stone or gem. This explains the volatile nature of tanzanite production by the ASM sector outlined in figure 6.10.

Significant value addition can be achieved by the tanzanite ASM sector with minimum capital investment. At the pit level, the organizational aspects of tanzanite production by the ASM sector is similar to that of gold. The differences become apparent at the sales, processing, and trading stages. Miners have a right to sell to anyone who can offer the best price for a particular stone rather than entering into a price agreement with financiers. Rough tanzanite is sold directly by operators to brokers and dealers. For these groups, the only processing involved is the sorting of stones to grade them according to quality, which determines the selling and buying price. Gemstone cobbing (the process of trimming rough gemstones to remove attached rocks or cracked parts) is practiced by several brokers and dealers in the course of sorting and grading, which may increase the value of the stones by 45–200 percent.<sup>34</sup> Care must be taken not to destroy the good-quality stones thereby reducing its market value. About 30 percent of the brokers in Dar es Salaam and 60 percent in Arusha practice cobbing of tanzanite before selling.

**FIGURE 6.10: Declared ASM-Tanzanite Production, 2004–15\***



Source: Derived from the Tanzanian Ministry of Energy and Minerals.  
 \*Because of frequent underreporting and smuggling, this figure should be analyzed carefully.

Price signals for the tanzanite sector are less transparent than for gold. Licensed owners still use the traditional approach of presenting gemstone samples to big brokers and dealers in search of market indicative prices. Despite this approach by the lease owners, it was established by a baseline survey in 2012 that miners with erratic (or unreliable) production usually have problems selling their products, and, in most cases, they end up getting lower prices from local gemstone brokers. While most mine workers and brokers sell their tanzanite in rough form, most PML holders and mineral dealers have established lapidaries in Arusha for cutting and polishing before exporting. Arusha is the main gemstone-trading center in East Africa; it buys up the majority of tanzanite from the ASM sector.

### Gas Sector

As of April 2016, gas initially in place in Tanzania is 57.25 TCF; it is composed of 10.12 TCF in onshore discoveries and 47.13 TCF in deep offshore discoveries.<sup>35</sup> Natural gas is currently produced in Songo Songo Island and Mnazi Bay with more than 80 percent being used for power generation. The Songo Songo gas field (operated by PanAfrican Energy) delivers gas to Dar es Salaam via a 225-kilometer pipeline that was completed in July 2004, when the project started commercial production. The 150 million cubic feet (MMCF) of gas produced per day is primarily used for power generation at Songas Ubungo power plant in Dar es Salaam.<sup>36</sup> The plant generates about 180 megawatts (MW). Some of the gas also supplies a local cement plant (Wazo Hill), as well as 34 other industrial companies and power plants in Dar es Salaam (see annex 6A).<sup>37</sup> Gas production at the Songo Songo gas field is expected to increase to 185 MMCF per day once Orca Exploration Group finishes its infrastructure work on the Songo Songo offshore platform.<sup>38</sup>

The Mnazi Bay gas field (operated by Wentworth Resources Ltd. and Maurel & Prom Co.) started production in 2006, and supplies the Mtwara power plant. In September 2014, a US\$1.3 billion transnational pipeline was completed to connect the Mnazi Bay gas field to Dar es Salaam. As a result of increased off-take opportunities, production has increased and is about to reach 70–80 MMCF per day to supply TANESCO's power plants in Dar es Salaam (Kinyerezi I, Ubungo II, and Symbian).<sup>39</sup> With this project, the Tanzanian government aims to address the current power shortages.<sup>40</sup> According to TANESCO, in 2015, Tanzania's installed capacity was

1,516 MW (out of which gas-fired power amounted to 711 MW, thermal power 243.4 MW, and hydropower 561 MW).<sup>41</sup> The national strategic plan for energy targets 2,000 MW of new gas-fired electricity power generation by 2018.<sup>42</sup>

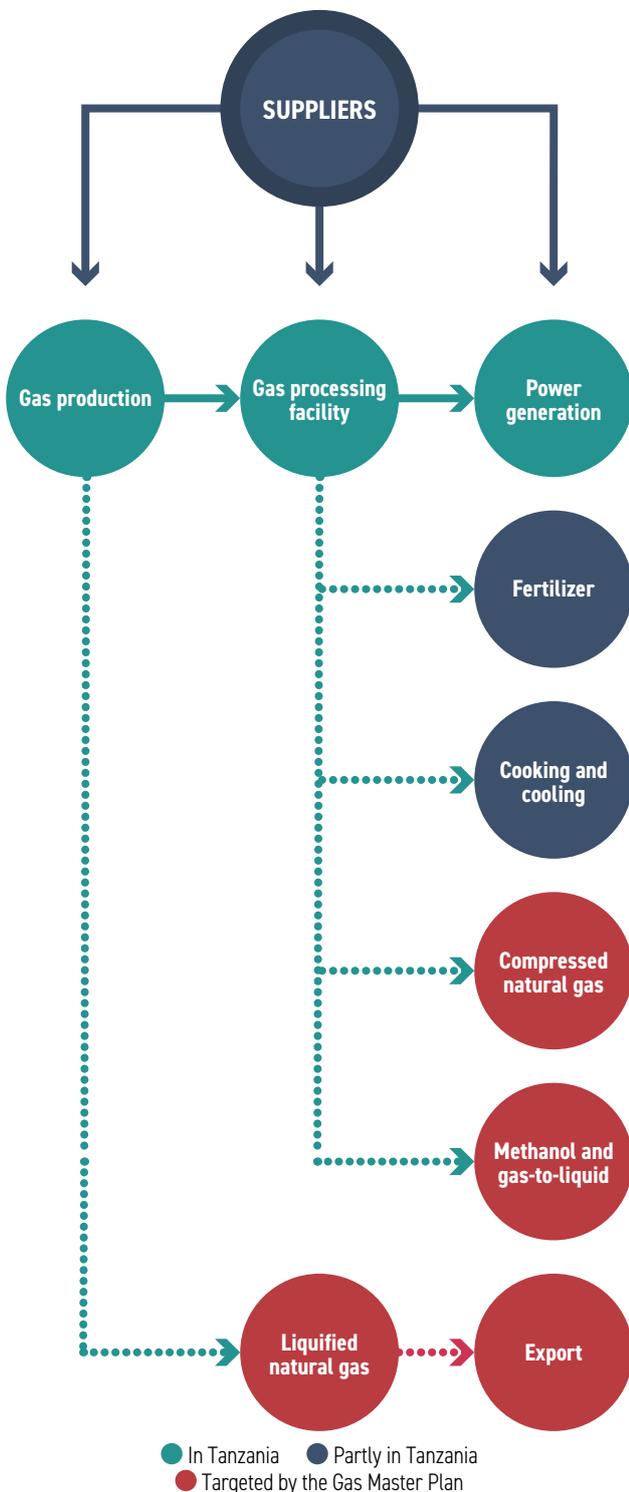
In 2010, significant offshore gas resources were discovered in southern Tanzania. The BG Group, in partnership with Ophir Energy and Pavilion Energy, discovered about 17 TCF of recoverable gas resources. Statoil, in partnership with ExxonMobil, discovered about 22 TCF of natural gas in the same area.<sup>43</sup> A consortium of these IOCs have proposed to build a 10-million-tons-per-year (MTPA) LNG plant in partnership with the TPDC to develop the gas fields.<sup>44</sup>

Originally, gas production was set to start in 2020, but regulatory roadblocks and the fall of international gas prices have delayed the final investment decision. Since 2014, LNG prices have plummeted due to numerous gas exporting projects coming onstream and lower than expected demand from major Asian customers like China and Japan.<sup>45</sup> As a result, several LNG projects worldwide were abandoned or put on hold. Against this backdrop, Tanzania's LNG project is unlikely to come onstream within the originally planned timeframe.<sup>46</sup>

The potential upside of the delay in gas production coming onstream provides Tanzania with more time to prepare its economy to take advantage of potential opportunities along the gas value chain. (Figure 6.11 visualizes the gas value chain in Tanzania.) Although there are suppliers to the current oil and gas operations, the upstream links are few and shallow, similarly to the mining sector. The majority of gas is currently being used for power generation and (to a lesser extent) for cooking and for the production of fertilizers. LNG, compressed natural gas (CNG), methanol, and gas-to-liquid (GTL) are industries currently not present in Tanzania but are targeted by the Gas Master Plan.

Preparing the economy to benefit from both upstream and downstream links takes time. Upstream links to suppliers require a careful assessment of the gas supply chain opportunities and support mechanisms to prepare local businesses to meet the standards required by the IOCs. Promoting downstream links to make use of the gas domestically requires a careful assessment of the economic feasibility and extensive coordination and

**FIGURE 6.11:** Gas Value Chain in Tanzania



negotiation with potential investors. Further, construction of the required infrastructure (such as connecting pipelines) will also take time to be built.

There is significant potential for the domestic economy to benefit from the construction of the LNG plant.

According to a World Bank-European Union-UKAID funded study,<sup>47</sup> construction of the LNG plant will result in the creation of a significant number of direct, indirect, and induced jobs. Majority of these jobs are expected to be created in the areas (Mtwara, Lindi) near the construction site, and will be composed mainly of unskilled and semi-skilled labor. Certain support services will likely be based in Dar es Salaam and other urban centers. The study estimates the cost of the LNG project to be around US\$15–20 billion over 7 years, with the bulk of the procurement spending occurring between the 3rd and 6th years. The potential for local content (under current capacity) is estimated at around 8 percent of the total project cost. With targeted technical support to small- and medium-sized enterprise development, this local capture may approach 20 percent, generating approximately US\$800–1,100 million in domestic value added (profits plus labor payroll), approximately US\$750–1,000 million in locally purchased goods, and an average of 4,000–5,000 local jobs during the project’s life (with a peak of 6,500 in the 4th year). Eleven sectors were identified in the study as having the highest potential for local content. In terms of goods sourced domestically, the largest potential lies with the supply of bulk materials, such as sand, aggregate, and cement. Industries that already exist in the country (such as food production, catering, and business support services) could supply the gas projects if they are supported to increase their organizational and technical capacities to be able to comply with the stringent quality and delivery standards. The study also identifies some high-skilled opportunities for local subcontracting in the fabrication and installation of supporting infrastructure for the LNG trains and tanks. The study concludes that the objective of a local content strategy should be to develop transferable skills that suppliers can apply beyond the construction phase of the LNG plant and which will help diversify the economy.

The construction of the Uganda-Tanzania oil pipeline may provide an opportunity to scale-up locally procured goods and services prior to the development of the LNG facility. As previously mentioned, the potential upshot of the delay in the investment decision of the IOCs is that it provides additional time to develop skills to increase local content during the construction of the LNG plant. In March 2016, Uganda chose the Tanzania export route for its oil. The 1,400-kilometer long pipeline will connect Uganda’s western oil region with Tanzania’s Tanga

port. The project estimated to cost around US\$4 billion and is expected to create around 15,000 jobs during the construction phase.<sup>48</sup> This project could create sufficient demand for Tanzanian businesses to scale-up production and invest in skills and technology upgrading. These capabilities could then serve the LNG and domestic gas businesses. However, if both projects were to be developed simultaneously, there would likely be a significant shortage of businesses that could service them. This would drive-up prices for in-country services and reduce the opportunities to maximize local content.

On the downstream side, Tanzania's Gas Master Plan considers several domestic uses for the gas to spur economic development. Natural gas has been used for power generation and industries since 2004, and, to a much lesser extent, by institutions and households starting in 2009. Ninety percent of Tanzania's energy requirement for cooking and heating are supplied from traditional fuels, mostly biomass involving firewood and charcoal, which contributes to a high-deforestation rate of around 350,000 hectares per year. Tanzania also imports fuel for energy and transportation, methanol (50 tons per year) for the petrochemical industry, and 90 percent of its fertilizers (with only 10 percent being produced domestically).<sup>49</sup> Thus, while LNG exports are the preferred option for the IOCs' given off-take and price certainty, the Tanzanian government aims to reserve natural gas for domestic use as an opportunity to reduce deforestation, lower its reliance on imports, improve access to energy, and foster economic development by attracting industries that use gas as a primary input. There are various projects listed in the Gas Master Plan including a fertilizer plant, a methanol plant, a dimethyl ether plant, a CNG plant, a GTL plant, and a methanol-to-gasoline plant. Furthermore, the Gas Master Plan outlines the opportunity of an iron-steel complex using direct-reduced iron process. In its 30-year demand analysis (see table 6.1), the Gas Master Plan includes all domestic projects, and estimates that total domestic demand will be higher than LNG (considering 2 LNG trains of 5 mtpa each) and regional pipeline exports.

## Development Challenges

Tanzania faces a number of challenges that prevents the EI sector from further contributing to the country's economic development. The key challenges outlined in

this section are: (1) a weak business-enabling environment that constraints the EI sector and its links; (2) an unclear regulatory framework for upstream links; (3) downstream beneficiation policies that may have unintended consequences; (4) state-owned companies that have conflicting roles and are lacking financial self-sustainability; (5) difficulty to formalize the ASM sector; and (6) the lack of regional coordination and integration.

### Weak Business-Enabling Environment Constraints in the EI sector and its Links

The uncertainty of government reimbursements constrains financial planning for EI companies in Tanzania. Key obstacles for the mining sector raised by the Tanzania Chamber of Minerals and Energy include the erosion of fiscal incentives, the lack of stability and predictability of duties and tariffs, and protracted reimbursements.<sup>50</sup> Although the effective tax rate resulting from the Mining Act of 2010 are in line with international gold-producing jurisdictions, as previously highlighted in section 1, unpredictable duties and reimbursements are problematic. According to the MDAs, the mining sector benefits from value added tax (VAT) exemptions and fuel levy reductions, which is not uncommon for the sector. However, mining companies have had protracted disputes with the TRA regarding delayed and contested reimbursements. According to the industry,

**TABLE 6.1: Gas Demand Projections in the Gas Master Plan, 2015–45**

User	Demand (tcf)
<i>Domestic</i>	
Electricity	8.0
Households	0.5
Institutions	0.1
Compressed natural gas vehicle	0.6
Industries	3.6
Petrochemicals	
Fertilizer/Ammonia	0.7
Methanol	1.1
Gas-to-liquid	1.8
Dimethyl ether	0.3
Methanol-to-gasoline	0.4
<b>Total</b>	<b>17.2</b>
<i>Export</i>	
Liquefied natural gas	11.1
Pipeline	3.1
<b>Total</b>	<b>14.2</b>
<b>Total domestic and export demand</b>	<b>31.4</b>

Source: Derived from Tanzania's Gas Master Plan, 2015.

Note: TCF = trillion cubic feet.

the reimbursement decisions are slow and inconsistent with arbitrators and law courts that cannot be relied upon. This has created uncertainty, and the disputes have led to increasing hostility between the Tanzanian government and investors. The reimbursement claims are significant as highlighted in the recent corporate tax payment agreement between the TRA and Acacia Mining, which puts VAT reimbursements for the company at US\$80 million.<sup>51</sup>

Unreliable power supply has increased operating costs for mining projects. Even mining projects that are connected to the power grid have installed backup generators due to power outages. In 2011, African Barrick Gold estimated that power-related problems resulted in a loss of production of 35,000–40,000 ounces of gold due to plant downtime and additional maintenance. As a result, heavy fuel oil power generation capacity were installed at the mine sites.<sup>52</sup> The Geita mine produces its own power, with fuel costs making up a significant percentage of its total operating costs.<sup>53</sup> It is estimated that if TANESCO were able to guarantee mining companies reliable power access, the average mine would be able to save around US\$15 million per year, and new mines would become more competitive.<sup>54</sup> These mining projects could provide important anchor customers for TANESCO to further develop Tanzania's electricity sector. However, for this to occur, TANESCO needs to improve its precarious financial situation and regain the trust of the private sector.

Skills deficiencies and the lack of access to infrastructure and finance, constrains the opportunities in the EI sector and its links. Tanzania's educational system is weak, which has resulted in severe skills shortages. There is a particular shortage of certified artisans and technicians. Among the existing suppliers, business management skills are deficient in terms of bookkeeping, financial management, tax compliance, reporting, documentation, and tendering. Suppliers also suffer from restricted access to finance; poor access to infrastructure; noncompliance with health, safety, and environmental standards, as well as industry and product standards.<sup>55</sup> This has led to late deliveries (or no deliveries at all), poor quality of deliveries, and inability to honor contracts, which in turn has increased the cost of doing business for the mining and gas companies operating in Tanzania.

Clear and transparent property and mining rights encourages investment. Equal treatment for all investors and due process for removing or amending mining licenses and property rights are essential building blocks for attracting direct foreign investment. Recent developments regarding the revoking of a mining license from Tancoal and reallocating it to Dangote Cement raise concerns over possible special treatment and risk a deterioration in the business environment. While the agreements with Tancoal and TPDC are not in the public domain, and it is not clear whether appropriate compensation and tariffs will be paid, however, the apparent special arrangements for an individual company is concerning. Specific details are outlined in box 6.1.

### Unclear Regulatory Framework to Create Upstream Links

The local content legislation for the mining sector lacks a definition of what is meant by "local content," and there are no targets, monitoring mechanisms, incentives nor sanctions to achieving local content plans. This lack of definition may result in different interpretations regarding the development of upstream links and lead to potential misunderstandings among stakeholders. The high proportion of local content in figure 6.5 suggests that TMAA's definition includes all products that are sourced from companies that are registered in Tanzania. However, it could be argued that value addition in Tanzania is necessary to qualify as being local. This would lead to a very different picture regarding the proportion of domestically-sourced goods and

#### BOX 6.1: Coal Mining License Reallocation

On March 11, 2017, the Ministry of Minerals and Energy awarded a ten-square-kilometer coal mining license to Nigeria's Dangote Cement after President John Magufuli had issued an ultimatum to government officials in order to secure an area in the coal rich region of Ngaka. The concession was part of Tancoal's license, which is a joint venture between Australian Intra Energy Corp (70 percent) and the state owned National Development Corporation (30 percent). This comes after Dangote Cement had suspended operations at its new Mtwara cement plant in December due to high power costs. The president has also ordered the Tanzania Petroleum Development Corporation to supply the cement plant with gas from its nearby developments. Negotiations were unsuccessful prior to the president's directives, but it was reported that consensus has been reached shortly thereafter.

Source: Aziana Post (2017).

services. Furthermore, without a framework in place to implement increasing local content, it will be difficult to achieve the objectives of such policy.

The Petroleum Act of 2015 provides the legal framework for local content in the gas sector, but some provisions need clarifications, and various legislations need to be aligned. In preparation for the LNG developments, the Tanzanian government passed the Petroleum Act of 2015, which makes the Local Content Policy for Oil and Gas Industry of 2014 binding. However, there is a lack of alignment between the two documents, and it is unclear how they are compatible with the PSAs signed with the IOCs in 2013. The requirements and principles are more extensive in the Local Content Policy and in the PSA model than in the Petroleum Act. For instance, in the Petroleum Act, the license holder and contractor must submit various planning documents “in accordance with an approved local content plan.” However, the local content plan itself is not specified. In contrast, the model PSA describes (clearly) what needs to be included in the local content plan—details of the procurement of Tanzanian goods, materials, and services; a detailed plan and program for recruitment, employment, and training of Tanzanian nationals; and a plan for the transfer of skills, knowledge, competence, and know-how to Tanzanian nationals—and stipulates that the plan should be submitted to the TPDC for approval. Similarly, the Local Content Policy outlines a collaborative exercise with the industry to develop baseline information on current capabilities for Tanzanian-owned companies to become suppliers. The Petroleum Act could refer to the Local Content Policy and indicate that the procurement plan should be based on the results of this exercise, which is key to any successful implementation of local content requirements. The Local Content Policy also makes clear that preference should be given to goods “produced” in Tanzania by local companies while the Petroleum Act includes goods “available” in Tanzania. Consequently, the Petroleum Act allows the procurement of imported goods to meet the local content obligations of the contractor.

There are conflicting trade policies that may hinder domestic procurement. Foreign investors in the EI sector benefit from VAT and import duty exemptions or reductions. However, these are not extended to potential local suppliers. Thus, locally-fabricated supplies have a competitive disadvantage over internationally-sourced

supplies.<sup>56</sup> While the Mining Act of 2010 has increased the import duties after the development stage of a project, these rates are still lower than those paid by local companies.

The joint-venture provision (a type of local content measure widely seen as effective in promoting domestic value addition) is convoluted in the Petroleum Act. Sections 220 (2) and (3) stipulates that when goods and services are not available in Tanzania, “such goods shall be provided by a company which has entered into a joint venture with a local company,” which shall own a share of at least 25 percent of the joint venture. However, according to subsection 220 (9), the definition of a local company implies that it can be a joint venture whose Tanzanian participation is at least 15 percent. The combination of these provisions could result in a 15 percent joint venture, which itself only has a 25 percent interest in a joint venture providing the goods and services.<sup>57</sup>

#### **BOX 6.2: Joint Ventures: A Policy Tool to Create Upstream Links**

A World Bank-European Union-UKAID (2015) study recommends joint ventures as a way to leverage opportunities in the construction of the liquefied natural gas facility. Specifically, opportunities lie in concrete works, electrical works, equipment hire, and scaffolding. The study suggests for local firms to team up with globally-recognized concrete manufacturing companies where the local firm could finance its equity, be committed to an operational role in the contract delivery, and, possibly, acquire capital assets after the delivery of the project.

Encouraging joint ventures is also the approach that Trinidad and Tobago—a country that is often considered as having successfully increased local content within its oil and gas sector—has adopted. In its Local Content and Local Participation Policy Framework of 2004, implemented through product-sharing contracts signed with an international oil company (IOC), Trinidad and Tobago requires that when an IOC wants to conduct design engineering work in the country, an international engineering firm is invited to incorporate in Trinidad and Tobago through a joint venture with a local engineering firm.

In Malaysia, foreign companies who want to supply goods and services to the upstream sector are required to do so through an agency agreement or through a joint-venture agreement with a local company. In the agency agreement, the local company is less committed financially and operationally than in the joint-venture agreement, but, in turn, benefits less from capacity development.

*Sources:* World Bank-European Union-UKAID (2015) and World Bank (2016).

Such result would go against the intended outcome of a local content provision that is deemed to be of great importance to increase domestic value addition.

The WTO commitments and BITs Tanzania signed up to constrains the policy space for the government to impose binding local content regulations. Tanzania's domestic legal framework is subject to international law, which is regulated by the WTO agreement and by bilateral and multilateral agreements. WTO's Trade-Related Investment Measures (TRIMs) prohibit: requiring companies to purchase or use products of domestic origin; limiting the amounts of imported products that an enterprise may purchase or use depending on the volume or value of local products that the enterprise exports; restricting foreign exchange necessary to import (for example, restricting the importation by an enterprise of products used in local production by restricting its access to foreign exchange); and restricting exports through quotas. As a least-developed country, Tanzania is required to implement TRIMs by 2020, to the extent consistent with its individual development, financial and trade needs, and administrative and institutional capabilities, subject to notification to the General Council.

Tanzania has signed 20 BITs of which 11 are in force. The 2013 BIT with Canada is the most restrictive.<sup>58</sup> It prevents Tanzania from requiring foreign investors from Canada and beyond<sup>59</sup> "(a) to export a given level or percentage of a good or service; (b) achieve a given level or percentage of domestic content [undefined<sup>60</sup>]; (c) purchase, use or accord a preference to a good produced or service provided in its territory, or purchasing a good or service from a person in its territory; (d) relate the volume or value of imports to the volume or value of exports or to the amount of foreign exchange inflows associated with that investment; (e) restrict sales of a good or service in its territory that the investment produces or provides by relating those sales to the volume or value of its exports or foreign exchange earnings; (f) to transfer technology, a production process or other proprietary knowledge to a person in its territory; or (g) to supply exclusively from the territory of the Party a good that the investment produces or a service it provides to a specific regional market or to the world market."<sup>61</sup>

Tanzania cannot make advantages (undefined) conditional on the realization of b, c, d, e, either; it, however,

can make advantages conditional on the realization of training and R&D programs.<sup>62</sup> Lines b, c, and f are particularly relevant to Tanzania, and can prevent the implementation of several local content-related requirements of the Mining Act (Art. 10(4)(e), 29 (3)(e), 34 (l)(f), 41(4)(g-h), 42(1)(d), 44(d)(f), 49.2(f-h), 50.1 (c), 52), the 2013 Petroleum Model Production Sharing Agreement (Art 19-21) and the Petroleum Act (Arts. 220-222).

### **Downstream Beneficiating Policies May Have Unintended Consequences**

The Tanzanian government is particularly interested in creating downstream links from its tanzanite and prospective gas resources. The major challenge related to the enforcement of tanzanite value addition domestically is that it may lead to increased smuggling. As for the development of the natural gas reserves, one of the key negotiation points with the IOCs will be how much of the gas needs to be allocated to the domestic economy. This will be a fine balancing act to encourage the IOCs to move ahead with their proposed investments, which will primarily be based on LNG exports, and leveraging the gas for power and diversification purposes domestically.

### **Tanzanite Export Ban May Result in Smuggling and Requires Government Support Initiatives**

Although the Tanzanian government has a strong leverage to develop the cutting and polishing industry in Tanzania (see box 6.3), downstream processing requirements for tanzanite come at a cost. The necessary infrastructure and skill base to cut and polish tanzanite are costly and will have to be funded by the government, by the investor, or by a combination of both. The Tanzanian government has received donor financing to develop the Tanzania Gemological Center in Arusha to offer various courses on lapidary, gemology, jewelry design, jewelry manufacturing, and gem carving. As noted before, TanzaniteOne has built a cutting and polishing facility to process its share of tanzanite. In both cases, costs are at least partly borne by the state. Donor funding could be allocated elsewhere, and the investments by TanzaniteOne are tax deductible, thereby reducing the company's tax payments. The bigger concern, however, is the impact of the export ban on illegal smuggling. No royalties are paid on smuggled stones. Furthermore, these are sold at a discount thereby affecting global market prices for tanzanite. The additional requirement to cut and polish tanzanite domestically may push miners to smuggle larger tanzanite out of the country.

**BOX 6.3: Policy Options to Move Downstream in the EI Value Chain**

Apart from improving the general business environment that may make it profitable for downstream activities to develop organically, there are three policy measures available to governments that want to encourage downstream beneficiation extractives industries. These include export restrictions, such as the rare-earth export restrictions by China); making downstream processing a determinant for allocating concessions, such as assigning a certain proportion of the cutting and polishing of diamonds domestically to renew DeBeer's diamond concessions in Botswana; and using incentives to make downstream industries viable, such as incentives granted by Mozambique to attract the Mozal Aluminum smelter). The first two

policy measures are likely to make the jurisdiction less attractive to potential investors and should therefore only be pursued by countries that have strong leverage—either because of a large domestic market for the product, or because the resources are so attractive that investors will continue to be interested, or both. The tanzanite sector has good prerequisites to pass this test, given that the tanzanite cannot be found in other countries, and because gemstone demand is thought to be inelastic and therefore less price sensitive than other commodities.

*Source: CCSI (2016).*

Since the export ban took effect, more tanzanite is cut in Tanzania, but the impact on smuggling is unclear. It is still too early to make assessments on the impacts of the tanzanite-export ban. Up to now, the number of gem cutters has increased to 350 in 2013, compared with 180 in 2003.<sup>63</sup> Most gem cutters are self-employed, offering their services to mineral brokers, who in recent years have started to sell cut and polished gemstones. The majority of lapidaries are found in Arusha. Exports of certified cut stones have also increased since the ban. However, a baseline survey found that nearly 95 percent of all mined gemstones were still being exported in rough form in 2013,<sup>64</sup> suggesting that the introduction of the certificate of origin and declaration of Mirerani as a controlled area seem to have had a limited impact on the smuggling of tanzanite.

Supporting policies to develop the cutting and polishing sector that also address the smaller players, needs to be put in place. Now, there is only one small gem-cutting training school in Arusha, which does not have the capacity to train sufficient people to cut and polish the rough tanzanite being produced. While TanzaniteOne has a direct government stake in the project through STAMICO, and is therefore likely to benefit from support initiatives, smaller players may not qualify. It was reported that import duties on cutting and polishing equipment, for example, are still in place. Furthermore, labor laws to employ foreigners have recently become more stringent, making it more difficult to employ gem-cutting expertise from abroad to teach Tanzanians. The Botswana experience shows that supporting policies are likely going to be required for a long time to make the downstream sector more competitive. Even after significant support by Botswana's government for

the last 22 years since the original agreement with DeBeers to allocate a proportion of output for domestic processing, it is estimated that it is still two to three times more economic to cut and polish diamonds in India than in Botswana.<sup>65</sup>

Tanzania's export ban on rough Tanzanite may be at odds with its WTO commitments. The WTO prohibits quantitative restriction on exports, which includes bans. A recent example of a ruling against export restrictions in the EI sector is the case of China. In 2012, the United States, the European Union, and Japan filed a complaint against China for its measures related to the exportation of the rare earths tungsten and molybdenum. In 2014, the WTO ruled against China and, as a result, the export quotas had to be removed. While the tanzanite sector may be of less strategic importance than rare earths for importing countries (which makes it less likely for another country to take Tanzania to the WTO appellate body), the Tanzanian government should still be aware that this is a risk of this policy.

Recently introduced export bans on exporting unprocessed ores aimed at encouraging downstream processing may have an unintended negative economic impact on investment and growth for both large scale and artisanal mining. The 2011 feasibility study commissioned by the Tanzania Minerals Audit Agency (TMAA), outlines several constraints that make a copper concentrate project in Tanzania economically unviable<sup>66</sup>. If this is the case export bans aimed at kick-starting in-country processing may not result in the expected benefits in terms of value addition and employment. For small scale miners, without large balance sheets the ban could result in the companies going under. Furthermore,

smelting requirements may render marginal projects unviable resulting in less exploration and investments in the affected sectors. There is also the possibility that three large-scale nickel projects, that are scheduled to commence in the next few years, may be affected<sup>67</sup>. Furthermore, a decline in investor confidence may have a longer lasting impact on the wider economy. See box 6.4 for a more specific outline of the new regulations.

### Domestic Allocation of the Offshore Gas Deposits Will Be One of the Key-Negotiating Points with the IOCs

The offshore gas reserves in Tanzania will be developed based on off-take agreements made for the export of LNG. The projects will not be viable when only relying on national demand because there are several risks for the IOCs in supplying the domestic economy. First, domestic gas demand can fluctuate if local power plants and distribution lines are not operating reliably at the contracted capacity. Second, local long-term demand projections are often aspirational. As such, there is the risk of these estimates not materializing. Third, domestic prices are often controlled by the Tanzanian government. Usually there are no take-or-pay clauses in the sales contract with government-agency buyers, and gas companies are reliant on the utilities to pay on time.

Even if there were such clauses, they would not be easily enforceable. Fourth, international financiers will be hesitant to finance a project with unallocated gas supply given that they require sale guarantees that warrant the back-payment of the loans.

The domestic gas allocation needs to be agreed in advance and should not be altered thereafter. Egypt's case (see box 6.5) illustrates that when IOCs sell LNG through long-term contracts, governments should not try to capture gas for domestic use, which in the original investment agreement was allocated for export. Governments should commit to a certain portion of gas (whether quantified in volume or percentage)<sup>68</sup> for domestic use and off-take this gas for the agreed compensation. These issues need to be agreed upon before the final investment decision, when flexibility is highest. If domestic gas is to be increased over time on a sliding-scale basis to accommodate the progressive increase in demand, the transporting infrastructure will have to be developed for a larger capacity than initially needed, which will affect the economics of field development. In exchange of such flexibility, investors usually request subsidies and incentives. Alternatively, the government could choose to build up domestic gas infrastructure at

#### BOX 6.4: Copper and Gold concentrate export ban

On March 3, 2017, Tanzania imposed an unexpected ban on unprocessed copper, nickel and silver ores to "...make sure that mineral value-addition activities are carried out within Tanzania."<sup>a</sup> AngloGold Ashanti's Geita and Acacia's North Mara mines are unaffected by the ban, as these sites export gold doré. Although, 45 percent of Acacia's Bulyanhulu and 55 percent of the Buzwagi mine revenues are banned from export, resulting in an estimated revenue loss for the company of US\$1 million a day.<sup>b</sup> This comes at an inopportune time for Acacia mining, which has been in merger negotiations. Endeavour mining has withdrawn from merger talks since.<sup>c</sup> It is estimated that the export ban could shut in 240,000 ounces or more of gold production in 2017. The ban would make Bulyanhulu unprofitable and materially affect Acacia's financials as a whole.<sup>d</sup> Apart from Acacia mining, small-scale mining companies that export concentrate were hit by the ban. At least 60 containers of copper and seven containers of nickel from small-scale companies have been seized by port authorities resulting in large losses according to Tanzania Small-Scale Miners Association chairman.<sup>e</sup>

While the ban suggests a long-term government measure to pursue downstream beneficiation domestically, the prime minister's recent statement indicates that this is a temporary measure to "satisfy ourselves if the tax we get from the business is what we actually

deserve"<sup>f</sup> and may be used to increase the government's bargaining power in the protracted tax dispute with Acacia mining, which is the main company affected by the ban.<sup>g and h</sup> A special investigation of mineral concentrate found in containers at the Port of Dar es Salaam, Inland Container Depot and the mine sites found significantly higher levels than had been declared to the Tanzania Minerals Audit Agency. In light of the large under declaration of concentrate and the related tax loss, a special committee recommended to maintain the ban on concentrate. Acacia mining has committed to cooperate with the government to resolve this issue.

The result of this measure, however, will not only affect Acacia mining, but also small-scale miners and potential future investments. It is therefore recommended that such trade policies are not used for negotiation purposes with individual companies.

a. URT (2017)

b. Morcombe (2017).

c. Yeomans (2017).

d. West (2017).

e. Citizen (2017).

f. Citizen (2017).

g. Sanderson, Hume, and Aglionby (2017).

h. Reuters (2016).

### BOX 6.5: Why Domestic Gas Allocation Should Not Be Changed after an Agreement: The Case of Egypt

Egypt provides an example of liquefied natural gas (LNG) projects being shut down due to not meeting the international oil companies' (IOC) and buyers' contractual demands. In 2005, the country started exporting LNG from a two-train plant operated by the Egyptian LNG (ELNG) consortium, which was composed of the BG Group and the state-owned Egyptian General Petroleum Corporation. However, the rise in domestic demand caused the Egyptian government to progressively divert gas from LNG exports to the domestic market. This led to the shutdown of the Damietta LNG plant,<sup>a</sup> which prevented the plant from honoring its export contracts. The fall in LNG exports resulted in declining export revenues and with the country subsidizing the gas for the domestic market, it soon ran short of money to pay the agreed offtake price. In response, the IOCs reduced exploration and production activities. In 2014, ELNG shut down entirely.

Source: U.S. Energy Information Administration (2015).

a. The Damietta Plant is owned and operated by Segas, a joint venture of the Spanish utility Unión Fenosa (40 percent), Italian oil company Eni (40 percent), and the Egyptian companies Egyptian Natural Gas Holding Company and Egyptian General Petroleum Corporation (10 percent each). Until the shutdown, the plant was only being supplied with gas from the Egyptian grid.

a later stage from revenues received from LNG exports. Disregarding the approach used, it is important to retain the LNG attractiveness. Extensive discussions, consultations, and negotiations are needed to agree on the best course of action about the domestic gas use.

To be well equipped for the domestic gas allocation negotiations, the Tanzanian government needs to review gas demand projections, and assess under which minimum gas allocation for exports the IOCs will be willing to move ahead with its investments. The Gas Master Plan of 2015, with its demand projections based on population growth and potential industrial projects is a step in the right direction, but further in-depth feasibility studies are needed given that the plan is aspirational. This is recognized in the Gas Master Plan. According to the current gas demand and supply analysis, which assumes that 70 percent of the discoveries will be recovered (about 38.6 TCF), the available reserves can suffice to serve both the export and domestic demand envisioned by the Gas Master Plan for 30 years in almost all scenarios. The Gas Master Plan concludes that it is important to "promote development of discovered reserves and investment in the infrastructure to deliver natural gas to the identified market." While the development of infrastructure will certainly enable the use of the gas by the domestic economy, the Tanzanian

government should also assess under which minimum gas allocation to LNG exports the IOCs will accept to operate. By some accounts, an allocation of 11.1 TCF (out of 31.4 TCF) might not be sufficient for IOCs to achieve economies of scale out of a dry gas field (the presence of liquids would have improved the economics of the project).<sup>69</sup>

In its analysis, the Tanzanian government will also need to prioritize gas monetization projects. Currently, the Gas Master Plan lists a number of projects that would increase power demand. The government should prioritize the projects that would have larger positive impacts on the economy along with a review of its viability. Power-generation projects have several advantages over other domestic gas uses. First, electricity production projects tend to have the second best netback value after LNG.<sup>70</sup> Second, the availability of competitively priced and reliable power source is critical to improve the business environment and attract other industries (including those proposed in the Gas Master Plan). Third, the populations in the gas-rich regions of Mtwara and Lindi are among the poorest with the lowest access to electricity rates. Securing access to power will be fundamental to attain the social license to operate and mitigate the risk of production disruptions.<sup>71</sup>

CNG projects have the advantage of being viable at smaller scales, thereby creating an opportunity to progressively replace expensive and polluting alternative fossil fuels. PanAfrican has, for instance, piloted application of CNG to vehicles, hotels, and industries. CNG is also an interesting gas option for transportation that travel distances up to 2,000 kilometers.<sup>72</sup> Mozambique has piloted it with the Matola Gas Company delivering CNG to industrial customers via trucks.<sup>73</sup> Some of the

TABLE 6.2: Gas Demand Scenarios versus Discovered Reserves

Scenario	Consumption (tcf)		Against 38.5 tcf (%)	Remaining reserves/ production - 2045 (years)
	2015-35	2015-45		
<b>Base case</b>				
2 trains	14.9	31.4	81	3.82
3 trains	16.9	36.1	94	1.28
4 trains	17.8	39.8	103	(0.66)
<b>High case</b>				
2 trains	15.9	33.4	87	2.57
3 trains	17.9	38.2	99	0.19
4 trains	18.9	41.8	108	(1.63)

Source: Tanzania's Gas Master Plan, 2015.

Note: TCF = trillion cubic feet

other projects in the Gas Master Plan are only likely to be commercially viable if planned at the regional level (see regional section).

### **The State-Owned Companies' Conflicting Roles and The Financial Self-Sustainability is Not Guaranteed**

As highlighted in the institutional framework section, the state-owned companies and the regulators that are particularly relevant for Tanzania's EI sector are STAMICO and NDC in mining, TPDC and PURA in the upstream and midstream gas sectors, and EWURA and TANESCO in the downstream gas sector. Because NDC is not involved in the gold, tanzanite, and gas subsectors, this study has not closely reviewed the state-owned company. However, the challenges regarding its conflicting roles as a commercial entity and as a regulator also seem to be relevant, as highlighted in the Natural Resource Governance Institute's (NRGI) recently published transfer-pricing study.<sup>74</sup>

STAMICO's conflicting responsibilities may adversely impact the economic benefits obtained from the projects it is involved in. STAMICO's objectives include:

- To increase investment in the mining industry and promote corporate services and image;
- Increase provision of exploration and drilling services as a tool to identify prospective areas for mining and income generation;
- Transform the ASM sector into a well-organized, mechanized, productive, and environmentally responsive subsector;
- Improve human resource management and administration; and
- Address the cross-cutting issues including, but not limited to, HIV/AIDS pandemic, environmental conservation, and gender mainstreaming in the mining activities.

These objectives conflict with one another. For example, owning 50 percent of TanzaniteOne and being the operator of the only large-scale tanzanite mine, STAMICO should aim to run operations as efficiently and profitably as possible. At the same time, the state-owned company is meant to support the ASM sector. One of the main constraints faced by TanzaniteOne has been regular trespassing of artisanal miners into block C, leading to loss of value and endangering operations for both TanzaniteOne employees and artisanal miners.

Furthermore, production and marketing should be streamlined—as is done in the diamond sector—by limiting the release of tanzanite and influencing its market prices. Although TanzaniteOne has long had an interest in regulating tanzanite sales by acting as an intermediary that buys up rough tanzanite from surrounding mines, there is little incentive for the ASM miners to promote TanzaniteOne as a monopoly buyer and seller. By bypassing the government and smuggling undervalued tanzanite out of the country, these unlicensed-tanzanite sales have had an adverse impact on licensed sales.<sup>75</sup> These conflicting interests and roles by STAMICO will make mediation between the two parties difficult.

STAMICO is subsidized by the Tanzanian government. The budgetary allocation for the state-owned company has increased over the last years to support mining operations that are running at a loss. Employment numbers at TanzaniteOne have doubled since STAMICO took over its operations.<sup>76</sup> Although STAMICO's strategic plan for 2014–15 to 2018–19 foresees that “the sources of finance for the corporation include government subventions, loans from financial institutions, and own revenue from investments. Government subventions are provided in an interim period to help STAMICO take off and eventually become a self-sufficient corporation which will contribute to the government basket,”<sup>77</sup> the government has yet to define on what basis these subventions will be reduced. The efficiency of state-owned companies is highly dependent on where the funding comes from, given that there is less of an incentive to run profitably when the state will buffer potential losses. Furthermore, clear rules regarding revenue streams are critical to lower opportunities for revenue mismanagement. STAMICO scores low (31st out of 45 state-owned companies) in NRGI's 2013 Resource Governance Index, which measures the institutional and legal setting, reporting practices, safeguards and quality controls, and the enabling environment.<sup>78</sup>

The Petroleum Act of 2015 enables the TPDC to focus on commercial functions, but there are still provisions that attribute noncommercial roles. The Petroleum Act separates the commercial function from the regulatory function, both of which were held by TPDC prior to the Act. This has been welcomed by the IOCs.<sup>79</sup> However, there are some provisions that need clarification. There is an unclear use of the word “exclusive” about TPDC's powers, which creates a risk of conflicting interpretations

of the roles of TPDC, PURA, and EWURA, and may lead to accountability challenges.<sup>80</sup> Section 10(2) grants TPDC “exclusive rights over natural gas midstream and downstream value chain,” while Section 45 gives TPDC “exclusive right over all petroleum rights granted.” These are conflicting statements. It is also unclear how TPDC can be a license holder and partner in oil projects with no conflict of interests and without hurting the effectiveness of PURA.<sup>81</sup> Furthermore, the requirement for state participation is also unclear due to the contradiction between Section 219 and Section 45. The former suggests a participating interest of 100 percent, while the latter 25 percent. Even a 25-percent interest might be high given “(i) the current human and financial capacity of TPDC, (ii) the practice with existing offshore gas projects, and (iii) other financial obligations, including the royalty and the profit oil/gas split.”<sup>82</sup>

TANESCO's precarious financial situation has increased costs to do business for the mining sector and may be a key constraint when negotiating the domestic gas allocation with the IOCs. As outlined in the business-enabling environment subsection (section 3), the mining sector has had to invest in backup-power generation due to unreliable power supply, which has resulted in increasing capital and operating costs. TANESCO's poor financial situation is one of the main contributors for deficient maintenance and investment in the Tanzanian-power generation and transition infrastructure, which has led to insufficient power supply and load shedding.<sup>83</sup>

TANESCO's reliability and financial sustainability will also play a key role when negotiating the domestic allocation of gas with the IOCs. Successful utilization of gas for domestic power generation assumes that TANESCO will be a credible and financially-sustainable utility offering reasonable prices for the gas (as closer to market price as politically feasible), paying on time, investing in distribution and generation infrastructure and maximizing the certainty of revenues to the gas companies. This requires TANESCO to regain the trust of the private sector and address its financial deficits and operating loss, which amounted to US\$139 million in 2012, bringing cumulative losses to US\$503 million or 2 percent of GDP.<sup>84</sup>

### **Formalization of the ASM Sector is Proving Difficult**

Conflicts between the LSM companies and displaced ASM communities have been chronic and long lasting. Hostilities between these two groups date back to

the 1990s, when concessions were awarded to foreign investors and resulted in evictions of artisanal miners. Acacia's and AngloGold Ashanti's mining projects have been at the center of violent conflicts with artisanal miners trespassing the concession areas. Multiple deaths have been reported over the years. For the LSM sector, these conflicts have resulted in loss of property, disrupted production, higher operating costs due to security reasons, and international reputational damage. At the Luika gold mine, an average of 2–6 mine stoppages are experienced per year due to ASM conflicts. In 2009, African Barrick Gold claimed that illegal mining resulted in the loss of 2,400 hours' worth of production.<sup>85</sup> An ICM study concluded that ASM conflicts are “possibly the single most important factor that negatively colors attitudes to the international mines.”<sup>86</sup> Reputational risk is primarily related to security-related incidents and environmental impacts, which are difficult to trace back to the source. For example, there have been allegations of mercury pollution by the LSM sector, though, their processing facilities do not use mercury as an input.

The Sustainable Management of Mineral Resources Project by the World Bank is currently working together with Acacia and AngloGold Ashanti to improve the relationship between the LSM and ASM sectors. Among other activities, the project supports ASM geological, processing, health and safety, responsible supply chain, and gender mainstreaming activities for registered ASM operations in areas surrounding the LSM concessions.<sup>87</sup>

Environmental and health problems related to the ASM sector are devastating. While the pits are small and individually may not have a significant impact, at the cumulative level, ASM regions present a major environmental and health concern. To access the mining areas and service its operations, large areas of forests have been cut down. Water contamination results from leakages of heavy metals from the processing areas. The use of explosives also contributes to contamination of surface and groundwater. The amalgamation of gold is often carried out in open, and leads to mercury being disposed directly into soils. With most of the mining areas being surrounded by major rivers and lakes that provide fish for neighboring and downstream villages, these practices have also raised health concerns for people not directly involved in ASM. The health impacts on those directly working in the ASM sector are even more severe. Underground drilling, ore loading, and

surface crushing and grinding are all dry processes that generate dust, which can lead to respiratory problems and lung disease. The direct exposure to mercury vapor may be fatal.

ASM operations have been linked to negative social impacts and human rights violations continue. Most ASM areas have high rates of crime and violence. Local authorities are ill-equipped to respond with increased pressures on welfare services and policing requirements leading to self-regulation. There have been extensive reports of human rights violations in the form of child labor. In 2003, it was found that 2,723 children, between the ages of 12 and 15 years, were working in the tanzanite mines of Mirerani (ILO-IPEC 2003 and Urassa 2007). The majority of children were employed in the reprocessing of tailings, manual crushing and grinding, and washing on sluice boxes. These activities are thought to have the worst health impacts with exposure to mercury. Although there have been improvements following intervention and awareness campaigns by various stakeholders, child labor continues to be a major concern.

The ASM sector faces a chronic shortage of capital. The numerous requirements, such as collateral, exploration results, a project feasibility study, and a registered business name cannot be met by most miners. Whilst financial institutions have expressed willingness to provide such services; no programs are tailored to meet the financial needs of the ASM sector. The lack of direct access to credit finance, poor business and project management skills, makes investment very difficult. The previous administration tried to address this by providing loans to individual groups, such as equipment purchase loans or hire-purchase schemes. Three companies were provided with such loans in Chunya (in southern Tanzania), Singida (in central Tanzania) and Geita (in north-western Tanzania). Although ASM equipment has been imported for these schemes, to date, none of them are working and this facility has been closed. The failure of these schemes can be traced back to a lack of knowledge in dealing with ASM operators, the lack of miners being able to pay the hiring rates, poor infrastructure in mining areas and vandalism.

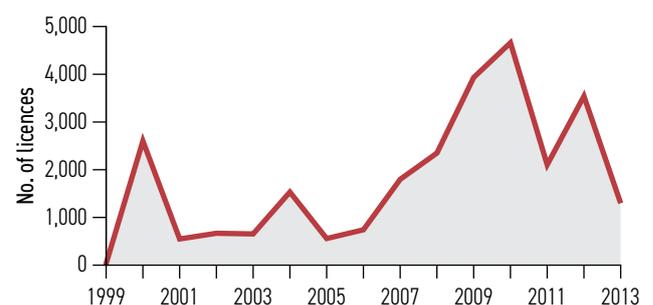
Although the number of licensed ASM activities have increased over the years due to the changes in the Mining Act of 2010, the number of new entrants into the

sector outweighs the capacity to formalize. According to the censuses carried out in 1996 and 2011–12, between 1996 and 2012, an average of 8,200 people per year entered the sector, and a total of 25,723 PMLs were issued to ASM (an average of 1,600 licenses per year); thus, for every formalized miner, an additional 4 informal miners enter the ASM sector (figure 6.12). The fact that licensed miners do not develop their areas (instead, they lease it out to individuals who in turn hire teams to mine and pay royalty to the license owners) complicates the formalization process. With the legislation not binding license holders to invest into the operations, they instead hire other people to carry out mining and give them a share of the production. This leads to exploitation of those who are hired by licensed mineral rights holders and force them to seek higher earnings from informal operations.

As such, despite the increase in the number of licenses issued, most operations on the ground are still regarded as being informal, because they do not follow safety, occupational health, or environmental regulatory requirements. In addition, the chaotic nature within a licensed area due to a large number of pits run by individual investors in an uncoordinated manner, makes it difficult for the government to collect the due rent. Based on these scenarios, it can be concluded that more than 50 percent of the ASM operations can be categorized as informal operations.<sup>88</sup>

While the Mining Act of 2010 could be improved in some areas (particularly on the environmental provisions),<sup>89</sup> the major problem of formalization is limited awareness and lack of enforcement of the rules. Whilst the conditions for the formalization of ASM activities have been simplified and are not difficult, there is a general lack of awareness of the procedures necessary to achieve this.

**FIGURE 6.12: Primary Mining Licenses Issued, 1999–2013**



Source: Derived from the Tanzanian Ministry of Energy and Minerals.

Furthermore, given the limited number of auditors responsible to enforce the Mining Act, activities go unmonitored. The holder of a broker's and dealer's license, for example, is to keep full and accurate records of all transactions undertaken, and they must submit them to the relevant authorities, according to the law. There are also clear regulations that foresees the nonrenewal of these licenses if there is lack of compliance. The environmental regulations set a number of standards that limits pollutant discharging, limits the use of cyanide leaching, rehabilitation requirement prior to abandonment, and sets a fine of up to T Sh1 million (US\$465), or imprisonment for a period not more than six months for breaching these standards. However, the enforcement of these provisions has been poor, thus allowing dealers to only declare the minimum returns required to maintain their licenses, and environmental degradation and health impacts still being a major concern in the sector.

Artisanal mining and small-scale mining activities are not distinguished, which results in plot allocations for artisanal miners being too large and makes policy targeting difficult. Artisanal miners are thought to employ manual, low-technology mining, while small-scale miners use some degree of mechanization. As such, small-scale mining activities tend to be larger operations with greater sophistication and higher revenues. The Mining Act of 2010 stipulates that the maximum plot size covered by a PML is 5 hectares for building materials and 10 hectares for other minerals. This plot size is comparable to other countries for small-scale activities, but is too large for artisanal mining. As a result, artisanal license holders (including women) often divide their plot into several smaller pits, and subleasing them to (unlicensed) pit operators, from whom they informally collect royalties. Due to staffing constraints and/or to the remoteness of certain artisanal sites, the government is unable to closely monitor those arrangements—as a result, it may fail to collect royalties itself thus facing significant revenue losses.

A number of challenges specifically affect women miners. Many women do not hold PMLs but are employed as mine workers: sometimes in activities within formal enterprises of PML holders such as established small-scale mines, or as individual operators who must link with other actors along the mineral value chain such as crushers or mineral brokers. As a result, women do

not have a secured tenure, nor the capital or the necessary technologies to access high quality and mineable resources; they also cannot use their mineral rights as collateral to access credit, or to enter into joint ventures with larger, more established (licensed) partners. Finally, they tend to be excluded from strategic policy interventions such as government-funded credit schemes (which generally target formal ASM miners in possession of a license), and are thus condemned to operate in a trap of informality, subsistence-level profits, and very limited growth opportunities. This, in turn, severely limits their ability to contribute to government revenues through royalty payments. Policy interventions aimed at regulating and formalizing the ASM sector, and related services such as credit, technology, and environmental safety support, would need to ensure that the entire range of ASM operators is reached, including artisanal miners that are unlicensed—especially women. Short of this, those interventions run the risk of only benefitting the more established ASM entrepreneurs, whilst leaving (female) operators behind.

Beyond formalization, other difficulties currently affecting Tanzanian women in ASM: First, they usually exhibit limited education and poor mining and entrepreneurial skills, including budgeting (financial skills) or the ability to prepare a business plan—this forces many, including PML holders, to rely on others—especially men—for support, and subsequently exposes them to cheating. In addition, mineral transactions in ASM rural sites are often not transparent, with limited information on value and prices available to miners, which is particularly damaging for women, who are usually not skilled in the grading of minerals, are unable to meet the cost of accessing more reliable markets, and therefore may have to settle for unfairly low prices. Limited ownership of and/or control of resources and assets (capital, land, house, tools, and so on) also affects women miners' ability to access credit, making them more vulnerable to exploitative arrangements in the mining site. For instance, because of the dependence on ball mills for ore processing, many women are forced to share the proceeds instead of payment for the costs involved. Health risks are also particularly alarming for female ASM miners. For instance, lack of modern equipment or protective gear exposes them to dust in ore processing, or to hazards associated with the direct handling of mercury for gold amalgamation. Finally, ASM women face double vulnerability in case of resettlement or reloca-

tion due to LSM projects, because they often do not have formally-recognized land and/or mineral rights, they are usually exposed to exclusion without compensation.

### **Lack of Regional Coordination Limits the Opportunities to Create Links from the EI Sector**

More upstream links could be captured at the regional level with increased integration. Countries in the Southern African Development Community (SADC) and the East African Community (EAC) have put in place (or are working to develop) local content policies for the EI sector. Although the 2012–32 EAC Industrialization Policy and the 2015–63 SADC Policy, indicate an industrial development roadmap for the region, the strategies fall short of providing mechanisms to coordinate national local strategies in the EI sector. This is a missed opportunity given that the Regional Economic Communities (RECs) in Africa could enable access to larger markets for suppliers and make regional procurement more viable for EI companies. Alignment in the definition of local content, for example, could simplify the operating requirements imposed on EI companies in the region. Allowing EAC suppliers to count towards the local content targets of its member states could reward local content achievements at the regional level. This would require countries to steer away from a local definition that refers to “local-local” or national level, and enter in reciprocal agreements, which often only RECs can broker.

RECs could also play an increasing role in trade and investment negotiations. International trade agreements often ban the recourse to local content provisions to improve the domestic economy. By negotiating those agreements on behalf of its member states, RECs could increase individual states’ collective bargaining power and ensure that trade agreements do not contravene development policy objectives.<sup>90</sup>

Lastly, RECs could help build a pool of workers at the regional level that companies could draw from by: promoting the harmonization of training curricula and certification across the region, the creation of technical partnerships between countries to ensure the exchange of technical experts, the co-financing of R&D and technology centers, and the facilitation of labor mobility through less bureaucratic labor law and work permit procedures.<sup>91</sup>

Regional coordination is required to address tanzanite smuggling. International control mechanisms such as the Kimberley Process and the conflict minerals provisions, track diamonds, gold, tungsten, cassiterite, and wolframite. Other minerals such as gemstones and tanzanite are left out. Tanzania has introduced a certificate of origin for tanzanite to curb smuggling. However, without the recognition of other countries for the certificate and proper enforcement, this effort will not have its intended outcome. Given that a lot of tanzanite is being smuggled through Nairobi, the Tanzanian government, through the MEM and its Kenyan counterpart, are discussing ways to address the smuggling of tanzanite. Apart from recognizing the certificate of origin, the two governments discussed the alignment of royalty rates charged on rough stones that do not have a certificate of origin. An agreement on these points would make it less attractive to smuggle tanzanite through Nairobi.

The East African Power Master Plan notes that member countries have built their power systems in isolation from each other. Although there are some interconnectors, the volume of power trade is negligible and “exporting parties have frequently been unsuccessful in their commitments to deliver the power in accordance with their contractual obligations because of deficits in their systems.”<sup>92</sup> Significant cost savings can be achieved by cooperating with neighboring countries on regional power projects. The power-infrastructure funding gap of Tanzania is estimated to be around 1–5 percent of its GDP.<sup>93</sup> Pooling energy resources through regional power trade can reduce this funding gap. Operating cost savings in the South African Power Pool (SAPP) and East African Power Pool (EAPP) are estimated to be in the order of 5 percent and 6 percent, respectively, if energy trade occurred whenever the benefits outweigh the costs associated with system expansion.<sup>94</sup> These cost savings result from cheaper hydropower making up a larger proportion of the energy mix, a reduction of losses due to power outages, and greater diversification of the energy mix reducing the potential for disruptions. These costs savings would result in the interconnector investments being recovered in under a year in the SAPP, and over a 3 to 4 year period in the EAPP.<sup>95</sup> Box 6.6 highlights the importance of Tanzania role in the Zambia-Tanzania-Kenya interconnector project.

### **BOX 6.6: The Zambia-Tanzania-Kenya Interconnector: To Facilitate Power Trade Between the SAPP and the EAPP**

The interconnector is proposed to connect Pensulo (in Zambia) and Isinya (in Kenya), covering a distance of 1,600 kilometers, with a capacity of 400 megawatts. This initiative is led by the Common Market for Eastern and Southern Africa-East African Community-Southern African Development Community tripartite body. In 2014, the energy ministers from Kenya, Tanzania, and Zambia signed a memorandum of understanding that outlined key milestones to ensure the completion of Phase I of the Zambia-Tanzania-Kenya interconnector by the end of 2016, and the commissioning date for Phase II for December 2018.

The memorandum requires each country to build the power infrastructure within their borders, with Zambia being responsible for the overall coordination of the project. The countries are also required to establish trading mechanisms. In December 2015, Zambia commissioned the 381-kilometer Kasama-Pensulo section for a cost of US\$153 million. The construction of the 442-kilometer Singinda-Iringa (Tanzanian) section is expected to be completed in June 2016. However, progress for other sections of the transmission line has been slower. There is still lack of funding for the Iringa-Mbeya-Tunduma (Tanzania) Nakonde-Kasama-Pensulo-Kabwe (Zambia) sections.

*Source:* Trademark Southern Africa 2012.

*Notes:* SAPP = South African Power Pool; EAPP = East African Power Pool.

At the regional level, there may be sufficient gas demand at competitive prices to warrant investment in a transnational pipeline transmission network. By analyzing the potential costs of a gas backbone transmission network across eight countries (Mozambique, Malawi, Tanzania, Kenya, Uganda, Rwanda, Burundi, and Ethiopia) originating in the gas fields of Mozambique and Tanzania, and modeling gas prices that are competitive with what is currently being paid by consumers in the region, Demierre and others (2014) suggest that “demand projections, estimates of infrastructure cost, and consumption estimates offer market opportunities for gas at prices competitive to LNG exports.”

For the baseline scenario, the required capital investment is estimated at US\$57 billion for an infrastructure system that brings gas to the city gate at a cost of US\$8 per million British Thermal Units. The study recognizes that the system would take time to fully develop, but even at a 25-percent penetration rate as a primary resource in the energy system, the pipeline infrastructure is projected to be economically viable. When fully developed, the system could deliver 2.9 TCF per year to the 8 countries in the region and an additional 1.3 TCF

to South Africa. The study asserts that while it is possible to build the infrastructure incrementally to keep overall initial investments low, the longer-term total costs of this solution would be higher, and the gas producers would not be assured long-term bulk markets. The study thus asserts that (1) the regional demand helps make the business case for a substantive allocation of the gas to East African domestic markets, and (2) the materialization of this regional demand will come from the construction of a regional backbone transmission network.

Some of the projects identified in the Gas Master Plan of Tanzania are only likely to be commercially viable if these investments are coordinated at the regional level. The Gas Master Plan includes investments in a GTL plant to save on fuel imports. However, GTL plants are very expensive projects, which have only been implemented in Qatar, Malaysia, and South Africa. As such, they require a large demand to be viable that only the regional market can meet. Apart from the demand question, the viability of a GTL plant is dependent on high oil prices, which makes these projects unfeasible in the current price scenario even at the regional level. While there is technological progress to build small modular GTL reactors to satisfy the demand of small markets, the profitability of these still need to be proven.

Similarly, fertilizer projects need to be coordinated given that many neighboring countries also hope to attract large investments. Tanzania produced fertilizer in Tanga, but this project shut down in 1991.<sup>96</sup> The availability of increased gas reserves has renewed interest in operating an ammonia-based fertilizer plant in Kilwe. Wentworth Resources and Maurel & Prom have shown interest in a combined methanol and urea plant in Mtwara.<sup>97</sup> Neighboring Mozambique is also looking to attract investors in fertilizers as set out in its Gas Master Plan, and Kenya is already producing fertilizer.

As for methanol production, both Tanzania and Mozambique are considering such plants, as they can promote industrialization by serving as a feedstock for the petrochemical industry. In Mozambique, Insitoc of Mozambique (25 percent) and GigaMethanol of Germany (75 percent) have put together a US\$3.5 billion proposal to produce 3.5 million tons of methanol per year.<sup>98</sup> This is enough to cover Mozambique’s needs and leave a surplus for exports.

While the previous paragraphs highlighted the potential opportunities that arise from regional integration to further develop the EI sector and upstream or downstream links in Tanzania, cooperation at the regional level is often hampered by political economy constraints. Energy security issues are a big constraint to the development of regional pipelines and interconnectors, given that countries do not want to depend on their neighbors for energy supply. In the context of regional-content policies, countries with a less-developed supplier base, such as Tanzania, will face competition from countries that have more experience in supplying the EI sector, such as Zimbabwe, Zambia, Kenya, and South Africa.<sup>99</sup> Over time, these countries have built more sophisticated skills; the mining companies operating in Tanzania often have long-term relationships with suppliers situated in those countries, which has been facilitated by the lowering of transportation costs.<sup>100</sup> There is also stiff competition for large-scale downstream industrial projects, which makes agreement as to where it should be built difficult.

Progress at the regional level is slow and, often, only occurs when national interests of the most powerful countries within the region align. The “implementation of regional initiatives takes place when in line with key ‘national interests’ as defined by the ruling elites”<sup>101</sup> of the regional hegemon. Within the EAPP and the Intergovernmental Authority on Development (IGAD), Ethiopia is a key stakeholder, while South Africa plays a dominant role within SADC. The alignment of interests is also dependent on the areas of cooperation. Peace and security, for example, has been more successfully driven at the IGAD and the African Union given that political leaders understand that inaction can lead to constant instability and violent conflicts. In contrast, regional integration in the areas of trade, industrialization, energy, and gender remains aspirational and appear less urgent. While potential electricity exports often see the long-term benefits of regional energy pools such as the EAPP and SAPP, priority is placed on the development of their domestic energy sectors in the short-term. However, there are successful regional gas infrastructure initiatives such as the West African Gas Pipeline that connects Nigeria, Benin, Togo, and Ghana, or the gas pipeline from Mozambique (Temane and Pande) to South Africa (Secunda). As highlighted in box 6.7, the Mtwara Development Corridor may be a project where interests align and which may help to drive regional integration.

## Addressing the Constraints

This section provides recommendations to address the identified constraints previously outlined. Apart from recapping the identified constraints and the suggested actions to address them, the entities responsible, potential indicators to measure success, the difficulty and potential payoff of implementing the suggested actions, and existing initiatives are listed in table E.1.

### Recommendations

Implement a transparent and predictable taxation regime and revenue management system. While the effective tax rate from the Mining Act is in line with Tanzania’s peer gold-producing countries and therefore should not be too onerous for the gold LSM sector, the government should streamline VAT and duty reimbursements to guarantee financial predictability and clarity of processes. The government should continue its drive to increase transparency of the sector and its efforts to improve audit capacity.

Coordinate with the EI sector and implement support policies backed by resources to accomplish the objectives set out in the policies. In order to achieve intended results of the local content regulations and the export ban on tanzanite, the Tanzanian government needs to work closely with the EI sector to determine which targets are viable and how they can be achieved. Skills development and vocational training programs, access to finance schemes, and other support programs have to be backed by resources. Regulations without the backing of financed support services that builds a skilled industrial base will result in EI companies preferring to pay fines for not meeting local content targets and traders to smuggle tanzanite. Within the gas sector, capacity should be built to benefit from the pipeline and LNG construction. While the fall in international gas prices may delay the investment decision for a LNG plant, the government should move forward with support programs to prepare domestic suppliers given that it takes significant time to build the necessary expertise. The strategy should be based around building transferable knowledge and skills that can also be used in other sectors post-LNG construction phase. The recent decision of Uganda to move forward with the Tanzania-gas-pipeline export route may provide an opportunity to sequence these investments and provide continuous opportunities for trained workers.

**BOX 6.7: The Mtwara Development Corridor: A Potential Driver for Regional Integration**

The corridor-based approach helps stakeholders pool resources, and partner behind a narrowly defined corridor system. Components of a corridor include hard infrastructure, soft infrastructure, and rules of operation. If successful, such initiatives can build trust and cooperation among participating countries, create opportunities leading to "spillovers" for broader transport sector reforms, and lead to the harmonization of transport programs. The Mtwara Development Corridor is regaining momentum due to the offshore gas developments, which foresees the expansion of Mtwara port.

The corridor involves the governments of Tanzania, Mozambique, Malawi, and Zambia, and impacts around 14 million inhabitants. In addition to servicing the gas industry, the corridor could service

Wentworth Resource's prospective gas-based methanol and urea plant, the proposed iron and coal projects in Mchuchuma and Liganga, and the offshore oil and gas developments in Northern Mozambique, as well as serve as a transit point for timber exports from Malawi and copper, gypsum, and manganese exports from Zambia (table B6.5.1). The Tanzanian government is exploring the idea of turning Mtwara's Economic Development Zone into a Special Economic Zone to develop Mtwara as a regional hub. As discussed previously, the success of this corridor will depend on the alignment of interests between regional champions and between public and private interests. By itself, the Tanzanian government cannot ensure the success of this corridor; however, it can facilitate conversation and coordination among the actors that will benefit from this it.

**TABLE B6.5.1: Cargo Assessment for Mtwara Port**

Existing cargoes	New cargoes		
	Confirmed with stakeholders	Potential	Not viable
<ul style="list-style-type: none"> <li>• Container – cashew</li> <li>• Offshore supply base cargo</li> </ul>	<ul style="list-style-type: none"> <li>• Container – import general cargo</li> <li>• Cement exports</li> <li>• Gas-related cargoes – Methanol and urea plant exports</li> <li>• Nickel</li> </ul>	<ul style="list-style-type: none"> <li>• Construction and project cargoes</li> <li>• Gas-related cargoes – liquefied natural gas exports</li> <li>• Gypsum</li> <li>• Transit traffic</li> <li>• Container transshipment</li> <li>• Uranium/gypsum/copper</li> </ul>	<ul style="list-style-type: none"> <li>• Biodiesel – Jatropha</li> <li>• Woodchips</li> <li>• Hard wood</li> </ul>

Source: URS analysis.

Note: Table cells with red text are cargo flows included in the cargo forecasts to form basis of the Financial and Economic Appraisal of the project while the cells with green text are future cargo flows to be considered for later phases of development at Mtwara port.

Sources: Interview with Bruce Byiers and Jan Vanheukelom, August 2012 Feasibility Study for the Expansion of the Existing Port at Mtwara, October 2012.

Restructure TANESCO to ensure that the private sector regains trust in the public utility company. TANESCO plays a critical role in reducing energy costs for the LSM sector, and increasing power reliability for companies along the EI value chain. It will be crucially important for the negotiations of the domestic gas allocation with the IOCs given that it will be the off taker for power generation. TANESCO will need to improve its dire financial situation for it to be considered a credible offtaker.

Clarify the local content regulations. The local content legislation for the mining sector does not define what is meant by local content, and there are conflicting provisions between the local content policy and law for petroleum when it comes to joint ventures and the submission or implementation of local content plans. These policies need to be aligned in the updated regulations currently being drafted to avoid misunderstandings and achieve the intended policy objectives.

Align trade policies with local content and downstream-beneficiation policies. Domestic suppliers should not pay higher import duties for items that the international EI companies (or international suppliers) are exempted from—such duties will make domestic supplies less competitive. Furthermore, the Tanzanian government should not impose tariffs on goods that are required for cutting and polishing tanzanite to support the policy objective of domestic processing. The aim should be to make processing as competitive as possible to make smuggling less profitable.

Ensure that local content policies do not conflict with international commitments. Tanzania is part of the WTO, and it has signed numerous BITs that restrain it from using certain local content measures and export quotas. In particular, the Canada-Tanzania BIT has several restricting provisions. Given that the performance requirements are extended to investors "of a nonParty

in its territory," the treaty could be used by investors from other jurisdictions. The Tanzanian government should aim to either renegotiate the Canada-Tanzania BIT, or make local content regulations not binding to avoid the possibility of companies taking Tanzania to court through this BIT.

The Tanzanian government should assess the viability of the proposed downstream projects within its Gas Master Plan. One of the most important negotiating points between the government and the IOCs is how much gas will be reserved for the domestic market. If the government asks for too much, the IOCs will not move forward with the investment, but if it asks for too little, it will be a missed opportunity to drive economic development. Therefore, it is of the utmost importance to study the viability of the projects proposed in the Gas Master Plan, regional supply opportunities and decide on a negotiating strategy with the IOCs.

Minimize the potential for conflicting interests within and among state-owned companies, and put in place clear financial rules for these companies. STAMICO's numerous objectives will make it difficult to become a profitable entity. To the extent possible, commercial, national development, regulatory, and policy roles should be separated. This also applies to NDC and—to an extent—to TPDC (although the Petroleum Act aims at separating TPDC's commercial and regulatory functions). Given the limited human and financial resources, as well as the overlapping roles in the mining sector, the Tanzanian government should review whether to merge the mining entities within NDC and STAMICO. With increasing amount of money flowing through the state-owned companies, it will also be increasingly important to ensure that clear financial rules are put in place.

Make a legal distinction between small-scale and artisanal mining activities. This will help target government support to these two groups with very different capabilities and needs. Price differentiations for licenses and smaller plot area sizes may also help with the formalization of artisanal miners. Factors for differentiation could include size of the area of mineral right holding, capacity, knowledge, asset ownership, equipment, and organizational capabilities.

Awareness-raising campaigns should be rolled out to increase formalization of the ASM sector. Although

current procedures to access mineral rights are simple, they are not known to the majority of Tanzanians. The Zonal and District offices that are strategically located to reach the participants are usually poorly resourced and are therefore not effective. A program could be aired on Swahili radio, television, and through newspapers targeting the wider public. Such mechanisms could also be used to raise awareness around health, gender, and environmental issues, as well as informing tanzanite miners about pricing trends. Support services, such as training, credit and ASM equipment leasing schemes, as well as improved geological information access in designated areas, should be offered to reward formal operations that comply with the regulations.

Enforcement mechanisms should be decentralized to improve monitoring and oversight of ASM activities. Enforcement of ASM regulations should be decentralized to be effective. Currently, the sector is administered from the office of the Commissioner for Minerals in Dar es Salaam through its regional and District offices. Although there are more than 20 offices throughout the country that are close to the ASM areas, it disassociates the sector from the decentralized local government structure. Most local governments consider the ASM sector as a central government issue, yet security problems in mining areas, environmental management and monitoring, safety issues, immigration into local communities and its impacts, are all impacts felt at the local level. Under the formalization program, efforts should be made to decentralize the sector and involve the local governments in its administration (for monitoring and enforcement purposes). The Zonal and District offices can remain, they can provide guidance and training for the local government mining managers (or officers). Decentralization of monitoring tasks may also reduce smuggling and underdeclaration of profits given that local authorities are more likely to know who is operating in their constituency.

Targeted policy measures are necessary to address the specific needs of women in ASM—many of whom operate informally. It is important to develop clear guidance on how to mainstream gender equality concerns into the country's ASM governance structures, giving attention to the different categories of women engaged along the entire ASM value chain. For that purpose, it could be useful to set national targets for the empowerment of women in ASM, including, for example, number of female

PML holders, number of ASM plots owned and managed by women, number and value of loans disbursed to female ASM applicants. This, in turn, might require strengthening the capacity of the MEM, especially its Gender Desk, in areas such as gender mainstreaming into policy design, gender-disaggregated data collection and gender-sensitive monitoring and evaluation.

Finally, it may be appropriate to develop or finalize the proposed National Corporate Social Responsibility Policy to guide LSM-ASM collaborations, and incorporate a clear gender clause that entails skills and technology advancement specific for women in ASM. ASM and LSM collaborations already exist in Tanzania, mostly on capacity building for ASM miners provided by larger operators, however, these collaborations are usually left to the discretion of the LSM players, and rarely include measures that address the specific needs of women miners.

The regional perspective provides significant opportunities for Tanzania. Many of the proposed downstream gas industrial projects will only be viable at the regional level:

- Electricity cost savings are to be expected from a regional power pool approach, regional markets may provide significant off-take demand for gas,
- A regional content strategy may facilitate LSM investment and provide additional market opportunities for Tanzanian suppliers, and
- Smuggling of minerals will only be achieved if coordinated with neighboring countries.

However, implementing successful regional projects requires participating countries to address challenging political economy issues. If Tanzania wants to become a prominent actor of regional integration in East Africa, Tanzanian policymakers must consider the interests of key national stakeholders beyond the formal mandates of the RECs. It will be important "to distinguish where regional organizations play a major role in terms of political legitimacy, and where they can play a more practical role in terms of implementation."<sup>102</sup> In identifying sectors, partners, and scope of regional interventions, the country will have to determine priorities for implementation in areas where there is a clear coalition of interests and incentives, building on national concerns, and on "where there are identifiable key national

and regional champions, such as regional hegemons, charismatic leaders, and private sector interests."<sup>103</sup>

## Notes

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13. African Barrick Gold (2013).
14. Trench and others (2015).
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16. SNL Metals & Mining's exploration budget database.
17. TMAA (2015).
18. [http://atlas.media.mit.edu/en/visualize/tree\\_map/hs92/export/tza/show/7108/2014/](http://atlas.media.mit.edu/en/visualize/tree_map/hs92/export/tza/show/7108/2014/)
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22. TMAA (2010).
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47. WB-EU-UKAID (2015).
48. BBC News Online (2016).
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52. African Barrick Gold (2011).
53. Doya (2012).
54. Banerjee and others (2015).
55. WB-EU-UKAID (2015).
56. Hansen (2013).
57. NRGi (2016).
58. Available here: <http://investmentpolicyhub.unctad.org/Download/TreatyFile/636>.
59. The treaty prevents performance requirements "*in connection with the establishment, acquisition, expansion, management, conduct or operation of an investment of an investor of a Party or of a non-Party in its territory.*" Through this clause, investors from other countries may use the Most-Favoured National Treatment Clause, which all BITs have to gain access to the Canadian BIT provisions.
60. Domestic content is undefined making it subject to interpretation by the tribunal and the scope of domestic content can be become wide-ranging under the liberal interpretation. It can include employment and training requirements for instance.
61. Tanzania – Canada BIT, Article 9(1)
62. Tanzania – Canada BIT, Article 9(4)
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## Annex 6A

TABLE 6A.1: List of Companies Connected to Natural Gas and Consumption

Company name	Natural gas consumption (mmscfd)	Company name	Natural gas consumption (mmfscd)
<b>a) Industries</b>		<b>b) Institutions</b>	
Bautech - 1	0.002	Keko Prison	0.006
Said Salim Bakhresa	0.005	Movernpick Hotel (Tanruss Investment)	0.032
Soap and Allied Industries Limited	0.011	TPDC Estate	0.001
Bora Industries Ltd.	0.014	<b>c) Power plants</b>	
Tanzania Cutleries	0.018	Ubungo Turbines (UGT 6)	41.390
VOT Tanzania Ltd.	0.026	Ubungo I	17.820
Simba Plastic Ltd. (SILAFRICA)	0.039	Symbion B	4.724
Dar Brew	0.042	Tegeta (45 megawatts)	7.850
YUASA Batteries (GAIA ECO SOLUTION)	0.055	Ubungo II	14.580
A-One	0.058	Symbion DSM	16.420
Namera industries	0.060	Kinyerezi I	12.900
MMI Steels - 3	0.066		
MMI Steels - 2	0.068		
Tanpack Tissues	0.079		
Azam Bakeries Limited	0.083		
Iron & Steel	0.089		
Serengeti Breweries	0.093		
OK Plast Limited	0.097		
SBC Limited - PEPSI	0.098		
Steel Masters	0.103		
Kamal Steel Ltd.	0.109		
Aluminium Africa Ltd.	0.120		
MMI Steels - 1	0.153		
TZ-CHINA TEXTILE (URAFIKI)	0.170		
Murzah 1	0.223		
Tanzania Cigarette Company	0.298		
Murzah 2	0.325		
Tanzania Breweries Ltd.	0.400		
NIDA TEXTILE	0.408		
Murzah 4	0.450		
Murzah 3	0.457		
Nampak Tanzania Ltd.	0.268		
East Coast Oils & Fats	0.477		
Kioo Limited	2.244		
TPCC (Wazo Hill)	10.000		

Source: Tanzanian Ministry of Energy and Minerals.  
Note: MMSCFD = million standard cubic feet per day.