

Mining in Tanzania

Africa's Golden Child.

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This report was researched and prepared by Global Business Reports (www.gbreports.com) for Engineering & Mining Journal.

Editorial researched and written by Andrea Stucchi, Jolanta Ksiezniak and Sarah Hussaini.

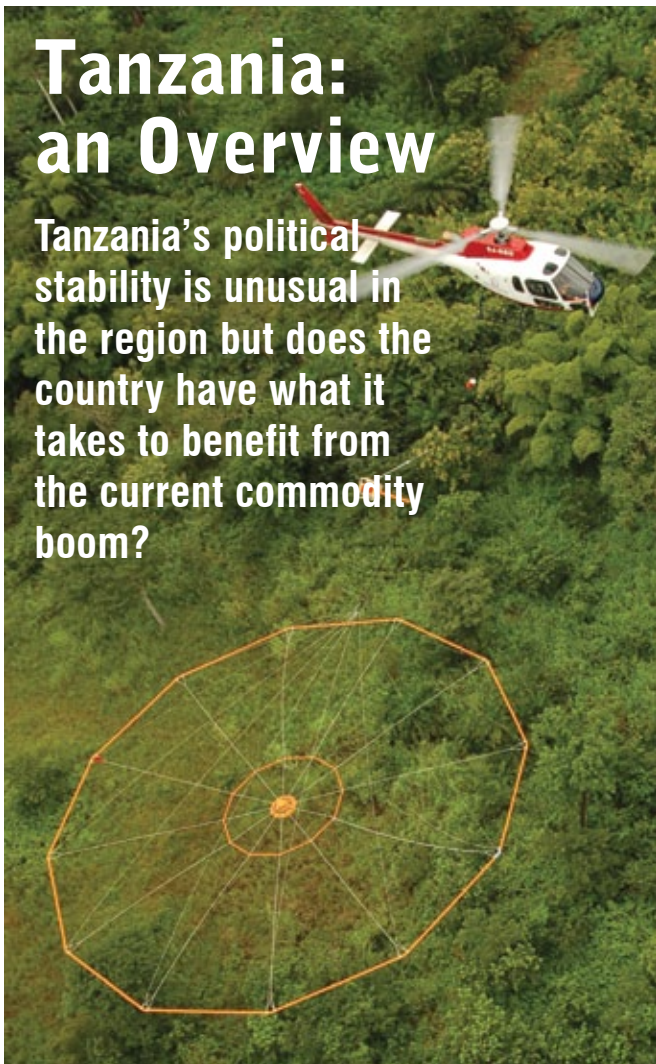
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Tanzania: an Overview

Tanzania's political stability is unusual in the region but does the country have what it takes to benefit from the current commodity boom?



VTEM system currently operating in Tanzania. Photo courtesy of Geotech Airborne System.

Mining, particularly for gold, forms part of the heritage of Tanzania. In 1894, during the German colonial period, gold was discovered around Lake Victoria and in 1909 Sekenke became the first operating gold mine in the region.

The Sekenke mine became the largest producer of gold in the pre-war period of the late 1930s, when gold mining in the country experienced a boom. The mine was developed as an underground mine, reaching up to 200 m below surface and produced 140,000 oz of gold. The Sekenke gold mine closed in 1959 after having produced an average of 15.4 g/mt of gold and 2.5 g/mt of silver in its 50 years of operation.

At that time Tanzania was also the country of Julius Nyerere, a Tanzanian politician who served as first President of Tanzania and previously as Tanganyika's first Prime Minister. Nyerere, known by the Swahili name of Mwalimu or "teacher," his profession prior to becoming a politician, outlined a socialist vision that came to dominate his policies between 1962 and 1985.

Julius Nyerere effectively defined Tanzania's sense of self after independence, and his legacy still affects business, and indeed the mining industry today. Through his legacy, Nyerere gave Tanzanians a sense of national identity that still gives the country a stability unusual in the region. Yet, on the other hand, his socialist policies

mean that, in terms of economy and infrastructure, companies still face enormous challenges. In fact, following Nyerere's socialist experiment, Tanzania was left as one of the poorest, least developed and most foreign aid dependent countries in Africa.

Later, in 1992, the Africa Strategy for Mining Technical Paper developed by the World Bank and the International Monetary Fund were instrumental in financing and developing a blueprint for the mining sector in Tanzania through a mineral sector development program. The aim of this was to oversee the privatization and liberalization of the state-controlled mining sector to facilitate the entry of foreign mining corporations.

The mining department was restructured to accommodate these changes and the Mineral Policy Act of 1997 and later the Mining Act of 1998 reflected the direction charted by the reform process. Commenting on the government's mineral policy of 1997, Alistair Smith, managing director of Tanzoz Uranium Ltd., an exploration company focusing primarily on uranium, gold and coal exploration activities in the country said: "The government's mining policy in the 1990s focused on private sector led mineral development and market orientated economic management: this opened up the country [...] to foreign investments and exploration activities in Tanzania. After 40 years of mineral development stagnation [...] we are very fortunate to be the current beneficiaries of ["these reforms"]."

Mining in Tanzania was being reformed as a priority economic sector, targeted to grow to 10% of GDP from 1.5%. A strong, vibrant, well-organized private sector was envisioned to enable this process.

Emmanuel D. Ole Naiko, former president of the Tanzanian Investment Centre and current executive director of Stesta Consultancy Co., was one of the minds behind the revival of the private sector in the 1990s. "Throughout the first part of the 1990s, Tanzania relied on an investment act that was very myopic, limiting certain sectors of the economy to Tanzanians, foreigners or the government. The Tanzanian Investment Act of 1997, of which I was an architect, removed these barriers. I participated in writing a cabinet paper, defended it in cabinet and drafted the legislation with parliamentary adjustments," said Ole Naiko. "Parallel to the Investment Act, Tanzania was also developing a Mining Act in 1998 [...]; before that, with the advent of socialism, people did not want to invest in Tanzania. In 1997, the government opened up the mining sector for investment. In addition, it promised mining companies that the available investment incentives could not be changed after consultation providing investors with the necessary safeguards. Consequently, in 1998 [Tanzania] got [its] first [modern] gold mine. There are now more than six gold mines operating in Tanzania and, until Mali recently overtook us, we were the third biggest gold producer in Africa."

Today, Tanzania remains gold focused and ranks as Africa's fourth largest producer after South Africa, Ghana and Mali. Production jumped to 40.4 mt/y in 2011 from 35.6 mt/y in 2010. According to the Central Bank of Tanzania, earnings from gold exports in 2011 rose 47% to \$2.226 billion with gold representing the lion's share of revenue from mining contributing for 59.1% of Tanzania's total non-traditional exports.

Aside from simple production capacity, several challenges emerged, such as the low contribution of the mining sector to the country's overall GDP and the inadequacy of the infrastructure to support its growth. Other challenges include the increasingly negative public perception of mining in respect to its low social and economic contributions. The new mineral policy of 2009 and the amended mining act of 2010 address these issues, but progress in the aforementioned areas remains nonetheless tenuous.

The Reformed Mining Code

The reform addressed some of the weaknesses that had weighted down the development in previous years.

As with other sectors of the economy, the mining industry in Tanzania has turned to economic reforms and restructuring which have marked a clear shift in favor of private sector development and market oriented management.

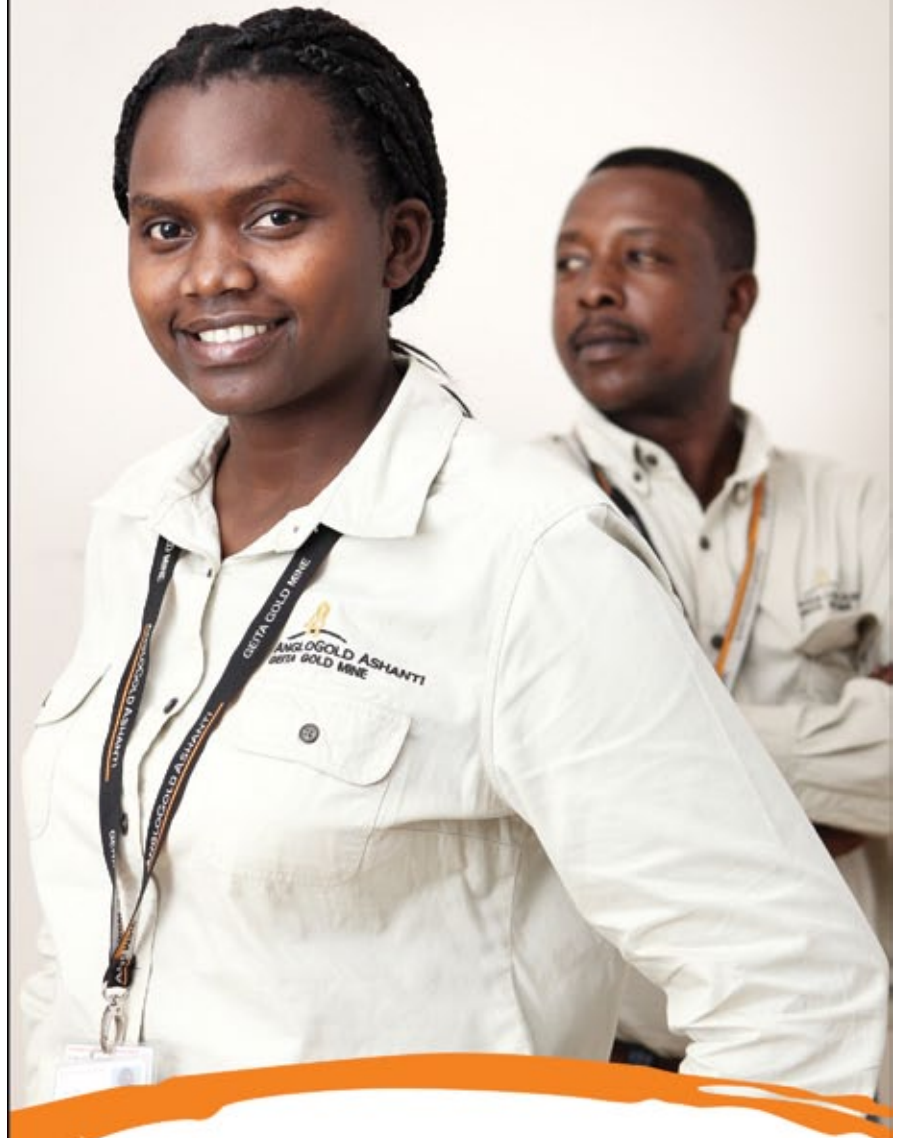
The mineral policy formulated in 2009, tried to address some of the contemporary challenges affecting the mining industry, such as the low contribution of the sector to the country's GDP. As a result, the government drew a set of amendments to the 1998 mining act that were accepted and passed by parliament in April 2010.

One of the main focuses of the new rules fell on the issue of the government's participation in mining projects, as a means to extract economic benefit and provide a measure of control and knowledge transfer. Under the 2010 act, the government may now negotiate with any mineral right to acquire free-carried interest and state participation in any mining operations (with no obligation to contribute to development or operating expenses) under a special mining license.

The level of government's free-carried interest is not set by the 2010 act; the ownership in future mining projects will therefore be based on the level of investment in each individual joint venture. Asa Mwaipopo, managing director of Mantra Tanzania, commenting on the updates introduced by the new mining act, said: "Possibly we will be the first large-scale commercial mine to go through the new legislation, and we are going through some teething problems. The new framework still encourages domestic and foreign private investment but also introduces new government participation in the form of free-carried interest, which is subject to ongoing negotiations."



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Richard Beazley, managing director at Peak Resources.

According to Richard Beazley, managing director at Peak Resources: "The carried-interest law in the latest mining act is something new, at least from an Australian perspective, but we can fit in with the model without a huge amount of grief. The government has been very accommodating in opening discussions with us. If it becomes an imposition up front, we will be given some room to negotiate around how we manage the carried-interest to create a workable solution."

Another notable amendment consisted in an increase in the royalty rates. Under the old law, royalties were charged on net



R.B. Rwechungura, managing partner at CRB Africa Legal.

back value, effectively deducting certain processing and transportation costs.

The new act now imposes a mining royalty of 5% of gross value, in the case of rough gemstones and uranium; 4% of gross value, in the case of gold and metallic minerals; and 3% of gross value for other minerals.

Samuel K. "Kiki" Gyan, managing director of African Assay Laboratories said: "The review was in line with the government's objective of increasing revenue from the mining industry and increasing royalties achieved that objective. We still see the regulatory framework as stable, al-

though investors will have to see the government's point of view and work with it."

One of the ongoing debates amongst industry players is whether the increases in royalty rates will actually confer tangible benefit to Tanzanian nationals.

Charles R.B. Rwechungura, managing partner at CRB Africa Legal, one of the architects of the 1998 mining act, said: "To the extent that the country will receive more revenues, yes there is a benefit to Tanzanian nationals from the royalty increase. However, mining generates local spinoffs that are even more important than government revenue: school projects, water, roads infrastructure and power. More can be done in these areas, but the little that is happening has definitively had an impact on the communities around mines."

Apart from the specific royalties applied to mining operations, the basic corporate income tax rate levied on business profits in Tanzania is 30%, while dividends are subject to a 15% tax. No restrictions apply to the repatriation of profits from mining operations and a depreciation allowance of 100% is set on capital expenditure. As far as a Value Added Tax (VAT), an exemption of duty is set on equipment and essential materials up to the first anniversary of the start of production (thereafter a 5% cap applies).

The amendments on free carry interest and the increases on royalty rates were just some of the changes introduced by the new mining act. Other changes include the requirement that small-scale mining (including gemstones) is now reserved to Tanzanians nationals (non-Tanzanians are allowed to participate when the development of the gemstone resource requires high levels of investment and specialized skills) and the co-existence of mineral rights (for example, a primary mining license for building materials being granted in an area subject to a mining license for other minerals than building materials).

The industry's reaction to the amendments introduced by the 2010 act are mixed. Arguably, some of the act's provision (such as the increase in royalty rates) reduce the country's competitiveness and therefore the ability to attract further foreign investments.

However, if the sector's participants take into consideration other mining investment parameters such as income tax rates and the right to carry forward losses and import custom duties, Tanzania remains relatively comparable in its investment regime.

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Mining in Tanzania

A stable mining climate attracts investments from the majors while emerging explorers use Tanzania as a launch pad to achieve producer status.

With gold prices remaining above \$1,600/oz, Tanzania has an opportunity to capitalize upon its gold potential and position itself as a mining-friendly, low-risk destination for capital. Gold is undoubtedly the Tanzanian industry's mineral of choice: the country contains six large-scale gold mines with average production of around 40 mt/y, and with the new medium-scale mine in south-western Tanzania now entering into production the figure is set to increase.

Commenting on the importance of gold to the mining industry in Tanzania Gyan said: "Gold offers one of the best areas for investment. The drilling samples taken from ores or concessions vary in their purity, which normally ranges between nothing and, for example, 20 g/mt. Sometimes higher concentrations are recorded depending on the gold distribution in the sample(s)."

Tanzania's top gold producers are Barrick Gold which controls four operating mines in northwestern Tanzania; South Africa-based gold producer AngloGold Ashanti, owning the Geita open-pit mine located in the Geita District in the Mwanza Region; Resolute Mining, operating the Golden Pride mine; Shanta Gold Ltd., with its new Luika Mine now entering into production; Canaco Resources Inc. and Lake Victoria Mining Co.

Barrick, through its African subsidiary, African Barrick Gold ("ABG"), has dominated the country's mining sector for more than a decade accounting for a large part of Tanzania's gold production and a significant share of government's exports.

The Bulyanhulu gold mine in the Kahama district, Shinyanga, is owned by ABG through an operating vehicle, Bulyanhulu Gold Mine Ltd. Production at Bulyanhulu commenced in 2001. The mine has a gold reserve of 10,632,000 oz which is expected to span for 30 years with current rates of production. The North Mara mine in the Tarime district, also owned by ABG through North Mara Gold Mines, was acquired by Barrick through the takeover of Placer Dome in 2006. This mine went into production in 2002, under the ownership of Afrika Mashariki Gold Mines and has gold reserve of approximately 3,485,000 oz and consists of three open-pit. ABG also operates the Buzwagi and Tulawaka open-

pit mines. The former proven and probable gold reserves are of 2,915,000 oz while Tulawaya's reserves are of 64,000 oz.

Anglogold Ashanti operates the Geita Gold mine, which opened in 1999 as a joint venture between Anglogold and Ashanti Goldfields, before the merger between the two companies. "Today, Geita Gold mine is Anglogold Ashanti's biggest mine worldwide. Correct asset management strategies and operational improvements turned the mine into a huge success story [...] Geita has turned around from being a cash drain of \$120 million to \$150 million per year, to a cash generator. Geita is currently responsible for north of \$350 million per year. Our story highlights the need for mining companies to take a long-term view of investment return," said Richard Duffy, executive vice president (Continental Africa) at AngloGold Ashanti.

Through its Tanzanian subsidiary, Resolute operates the Golden Pride mine which has produced in excess of 2.07 million oz of gold since commissioning in 1998 with the 2011 financial year producing 122,921 oz/y (down from the 148,675 oz/y produced in 2010) at a cost of \$708/oz (up from \$514/oz in 2010) per oz. Closure of the Golden Pride mine is expected for mid 2013 after 15 years of production.

Canaco's key asset is the Magambazi gold project, discovered by the company in 2009. Magambazi is estimated to contain an indicated mineral resource of 15.2 million mt grading 1.48 g/mt gold and containing 721,300 oz, as well as an inferred mineral resource estimate of 6.7 million mt grading 1.36 g/mt gold and containing 292,400 oz.

Completing the list of Tanzania's top gold miners is Lake Victoria Mining, focused on acquiring, exploring and developing gold



MANTRA TANZANIA LTD IS AT FINAL STAGES OF PERMITTING FOR THE DEVELOPMENT MKUJU RIVER PROJECT



Mantra Tanzania's planned Uranium Mine at the Mkuju River Project, Ruvuma Region is set to position Tanzania as the 3rd largest Uranium producer in Africa.

After Tanzania emerging successful in the application for the minor boundary modification of the World Heritage status of the Selous Game Reserve at UNESCO's World Heritage Committee meeting, in order to allow for the development of Mkuju River Project, Mantra Tanzania Ltd is now pursuing the necessary permits and licenses in-country for commencing the development of Mkuju River Project. Environmental Impact Assessment Certificate, Special Mining License, Mining Development Agreement and Consent to Operate in the Game Reserve are the necessary Licenses for a full permitting of the Project. These are at different stages in various Ministries. Once these are obtained, then Mantra Tanzania Ltd and its investors will embark on development of a Mine which will take approximately two years before the starting production of Uranium Oxide (U₃O₈) known as Yellow cake. While continuous improvement is the right way forward, Mantra sees the existing Regulators and Regulations in place for extraction of radioactive materials, to be similar to other countries where extraction of uranium oxide has been ongoing for years. Mantra therefore is confident that Uranium extraction at Mkuju River will be done to the International standards and best world practice while fully compliant to the Tanzanian regulations.

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MINING IN TANZANIA

deposits in the Lake Victoria region. Lake Victoria Mining has to date accumulated a property portfolio of eight gold projects consisting of 34 prospecting licenses and 84 primary mining licenses.

Emerging Producers and Exploration

Tanzania's output is set to grow substantially over the next five years. Eight out of the nine large-scale operating mines (six for gold and one each for coal, diamonds and tanzanite) have relatively long projected lives with substantial options for growth. In addition to brownfield growth, new projects look set to change the landscape, with a new gold mine now into production, projects in advanced stages of development and a particularly active exploration sector.

Tembo Gold, a Canadian gold exploration and development company listed on the Toronto Stock Exchange, is currently developing the northeastern extension of ABG's Bulyanhulu mine. The company's flagship asset, the Tembo Gold property located in the Lake Victoria gold district is a 100km² contiguous area consisting of 33 active licenses and five under application, adjacent to ABG's Bulyanhulu mine.

"Tanzania is still underexplored, particularly for gold. It has been contended that

the exploration industry is mature, but the history of any goldfield shows that people continue to make discoveries 100 years after everything was thought to have been found," said David Scott, president and CEO of Tembo Gold.

Handeni Gold, an exploration stage company, expanded its exploration interests to include the Lake Victoria granite/greenstone gold mineralized region of Tanzania. The company is conducting due diligence on several properties with high potential for gold mineralization, including the Handeni gold project. "At the moment the company is completely focused on the Handeni project. There was a long period of negotiation with the local population in trying to secure the 200 km² Magambazi hill deposit, but unfortunately Handeni Gold did not exist at that point and the asset eventually went to Canaco. We subsequently got hold of the surrounding 800 km². As the terrain there is highly vegetated, we embarked on geophysics," said Reyno Scheepers, director, president and CEO at Handeni Gold.

The company mandated the council for Geoscience in South Africa to do an airborne fixed-wing magnetic and radiometric survey over the area, and used the results to generate 12 targets. "We selected two of these; at Kwandege and Magambazi East as our focus,



Asa Mwaipopo, managing director of Mantra Tanzania.

and carried out soil geochemistry and very detailed geophysical groundwork there. The outcome was our decision to drill 5,000m on both targets, the latest results of which were published in June. Kwandege has now been upgraded from target to project status. During the same period, we embarked upon a helicopter-based electromagnetic survey with Fugro, which identified another five targets. Handeni Gold has just published very promising soil geochemistry results on target five. The plan is to prioritize other targets for drilling campaigns," said Scheepers.

Shanta Gold is also emerging as a new producer in Tanzania. Recently, the com-

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pany announced the commencement of gold production at the New Luika mine in south-western Tanzania.

The Shanta Gold story illustrates that Tanzania is not just the domain of powerful multinational mining houses and that the country has the environment required for juniors to succeed.

Uranium

Unlike most metals that are mined for multiple uses and markets, uranium's main use is as a nuclear fuel in power generation. Today, approximately 20% of the world's electricity is generated from nuclear reactors.

While the Fukushima incident had an unsettling short-term effect in uranium demand, through a reduction in the number of reactors in operation around the world, and long-term downward pressure on both the price of uranium and the stock market values of publicly listed uranium companies, experts are confident that given the future projected growth in demand, the industry will return strongly.

Commenting on the recent drop in uranium prices, Mwaipopo of Mantra Tanzania, said: "The price of uranium is now recovering after taking a hit from the Fukushima incident. Analysts think the near and long-term fundamentals of uranium are strong, and price forecasts seem to be rising, with nuclear reactors foreseen as a clean and reasonably safe form of alternative energy to meet the energy needs of the future."

For Smith of Tanzoz Uranium: "Fukushima media frenzy had an unsettling effect on the uranium market, bringing a return to reality after the earlier overheating, but there are signs of a slow and steady recovery. While the price has not risen, people who need supply in eight to 15 years' time are starting to make serious enquiries about where the product will come from. There is no doubt that in 2020 uranium will be in short supply," he said.

Several companies are now exploring for uranium in Tanzania. Canada's Uranium One is in the final stages of permitting on its Mkuju river project, in Tanzania's southern Ruvuma region. The project was commenced by Mantra Resources, which was taken over by ARMZ in mid 2011 for \$1.16 billion allowing Uranium One (51% owned by ARMZ) to take over development of the project and other exploration activities. "The Mkuju River project has gone through exploration to the feasibility phase, and is in the final stages of permitting. Part of the property is located right on the border of the Selous game reserve, a UNESCO World Heritage site. For this reason, there was an engagement process by the Tanzanian government with UNESCO. It was a lengthy process but was completed at a meeting in St. Petersburg this year, which concluded in favor of a minor boundary change of the World Heritage site, bringing the project area outside of the park with a surrounding buffer zone. Mantra is now continuing with other processes, which include obtaining environmental, and social impact assessment certification, a special mining license from the Ministry of Energy and Minerals and consent to operate in the game reserve from the Ministry of Natural Resources and Tourism. In parallel, we are in discussions with the government over the development agreement. Our feasibility study was completed in March last year; it was lodged together with the application for a special mining license," said Mwaipopo.

Commenting on Mantra Resources recent sale to Uranium One, Smith of Tanzoz Uranium added: "Mantra's Tanzanian success and sale to Uranium One is very good for Tanzania, bringing the country under the spotlight of the international mineral investors' community."

Close to Uranium One's Mkuju river project and with similar geology, Australia's Uranex NL is developing its Mkuju uranium project. Rod Chittenden, acting chief executive officer at Uranex, said: "Our

main focus is the Mkuju uranium project, down in the southwest near Songea. It is a similar setting to Mantra's large deposit, and has interesting uranium anomalies."

Uranex has identified five key radiometric anomalies in the area. The most interesting anomaly, the Likuju north prospect, has recently confirmed and extended the known uranium mineralized zone.

Finally, in the southeast of Tanzania, East Africa Resources is also investigating its Madaba-Mkuju sandstone roll-front deposits, while Uranium Resources expects to complete a maiden resource estimate for its Mtonya project in 2013.

Rare earths

China is the world's largest supplier of REE, accounting for more than 95% of the world's production. However, China's recent efforts to protect its domestic consumption, through the imposition of export quotas, are leading countries to stockpile rare earth resources and are bringing exploration companies to consider alternative mining sites.

In this respect, Peak Resources announced in February 2012 that their Tanzanian based Ngualla project contained one of the largest deposit outside of China. "Peak Resources now owns the fifth largest rare earth deposit in the world outside of China, but the grade is even more important; there is an area in the weathered zone of about 38 million mt at 4.1% REO. The board wants to take the deposit right into operation, hence my appointment in January this year. Since then, Peak has undertaken several metallurgical tests programs and continued with infill drilling to upgrade the geological knowledge of the site. We are now close to getting our first product produced in the laboratory, to demonstrate we can produce rare earth mixed carbonates from the ore feed," said Beazley of Peak Resources.



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An Evolving Market Place

To unlock the potential of its future generations the government needs to quickly address the shortcomings of its marketplace.

Tanzania could be a miner's dream. However, the infrastructure and the support services of the country in which companies operate are as essential as the minerals themselves. In this regard, Tanzania's reputation is still mixed.

One of the main challenges for the mining sector in the country lies with human resources. "As the country develops, there will be more demand for skilled labor and if AngloGold Ashanti, the mining industry and the government do not work together to expand the supply pool we are all in danger of losing our resources," Duffy said.

Duffy's words were echoed by Gyan of SGS: "Our business also depends on having the right people occupying the positions [for which] we need to deliver quality services. Skills are a challenge: [...], we need chemical and metallurgical engineers to run our laboratories at a high level; these are not readily available and so we have to scout or head hunt around the world. Most of our laboratory managers are Ghanaian, South African, Filipino or Zimbabwean but we do



Richard Duffy, executive vice president (Continental Africa) at AngloGold Ashanti.



Gary Davies, managing director at AngloGold Ashanti – Geita Gold Mining.

have some Tanzanians graduates trained by us that we are using outside the country."

To mitigate the challenges created by skills shortages in the country, companies are appointing expatriates to cover more senior roles, where skills become essential. "Whilst education [...] is still not as developed as elsewhere, we can manage and mitigate these problems. Peak will use a number of expats in key areas—perhaps Australians, but more likely Kenyans and Zambians, who tend to currently have higher skill levels than Tanzanians. Going forward however, as part of our corporate social responsibility initiatives, we will be training nationals. It is not correct to have a team of expats running a local project, nor does it help the country itself," said Beazley of Peak Resources.

While many echo these complaints, Kym Jones, project manager of Buzwagi for Komatsu Panafrican Mining Services Tanzania said: "We are very proud of our workforce and have developed several local employees to positions that were previously filled by expats. Our current Field Service Manager and Workshop Manager are both local employees. When local employees fill senior positions, the workforce respects them more and we have had great success with human resources reporting under this model."

The picture that emerges from the interviews held is that of a country that needs to invest more in its labor force to support the needs of an expanding mining sector and unlock the potential of its future generations.

On an infrastructural level, Tanzania remains underdeveloped. The port in Dar es Salaam is severely congested, the result of inadequate investments in infrastructure and slow clearing and forwarding procedures. "The storage capacity of the Dar es Salaam port is about 11,500 containers which is 100% density. But only 65% ["density"] has been the maximum storage capacity lately, beyond which the port becomes congested," said Darren Toyne, finance manager of Panafrican Mining Services.

The insufficient infrastructure at the port in Dar es Salaam is leading some to use the port at Mombasa instead. Ashish S. Pattni, director at Allied Mining Services, a local supplier that sources and stocks a wide range of products from Australia and



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South Africa, said: "Logistics is a challenge as we experience delays clearing customs. Allied Mining Services utilizes the ports in Mombasa and Dar-es-Salaam as its points of entry to the continent. Unfortunately, the port in Dar-es-Salaam is very congested at the moment and clearing our goods can take several weeks. On the other hand, resorting to Mombasa can be expensive, because of the road freight, but eventually works out better as we have the products ready for timely delivery to our clients."

Extending the discussion to transport by road, Smith of Tanzoz Uranium explains how the situation has improved considerably in recent years: "If you are dealing with gemstones or gold, which do not require massive road and rail infrastructure, it is easier to operate here. The country is not ready for bulk commodities like coal or iron ore—more investment is needed on this front. However, you would not believe how much infrastructure has improved in the last five years," he said.

Speaking from the north of the country, in the Lake Victoria region, Jamie Armitage of Capital Drilling said: "The infrastructure here has grown but is still inefficient, so we must attempt to maximize passing freights through it while minimizing the associated costs. My job is to ensure that not only are we charging competitive service prices, but also executing the right processes. We all understand the fun and challenge of working in Africa, but getting the fundamentals right allows you the time and capacity to respond quickly to the daily challenges of operating from this continent."

From an energy point of view, Tanzania's power sector remains dominated by a single vertically integrated national utility, Tanzania Electricity Supply Co. (Tanesco). Tanesco's total installed generation capacity was 1,219 MW in 2011 with a national electricity connectivity of 14% and connectivity in rural areas falling to just

3%. Needless to say, the country's mining industry is also facing serious challenges in ensuring a steady supply of energy.

The government is working to encourage investments in the energy sub-sectors and is looking to develop local energy resources such as coal. Going forward, there will be a significant opportunity in Tanzania for coal producers to play an important role in supplying fuel for power generation.

One coal project of interest is currently being developed by Intra Energy Corp. (IEC), a producer of thermal coal in east Africa listed on the Australian Stock Exchange.

IEC's flagship asset in Tanzania is the Mbalawala mine in the Ngaka coalfield where the company is mining and supplying coal to customers from its 423 million mt resources base. Commenting on the development in the coalfield Rwechungura said: "We have long held the view that coal should become one of the fast growing mining sub sectors in Tanzania in the coming years... I am reliably informed there are very good deposits in the south of the country."

Apart from the improvements with road infrastructure, the general sentiment is that increased commitment from the government is required to overcome infrastructural obstacles and push development forward. Adequate infrastructure is a concern common across African countries and correctly managing and addressing this issue will be key to unlock the success of Tanzania's mining industry.

Despite the aforementioned challenges, Tanzania is commencing to offer an increasingly sophisticated and vibrant market for services. This is mainly due to the entry of new international firms, the vast majority of whom are staffed almost exclusively by Tanzanians, and most importantly, new local firms willing and prepared to service the expanding mining sector.



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The Support and Service Sector

Support services strive to adapt to meet the industry's demand.

The expansion of the mining industry in Tanzania has enabled the service industry to grow its business and participate in projects that were previously in the hands of the mine owners themselves. However, there is currently only limited participation within the mining service sector by companies based in Tanzania as the majority of mining inputs is still being imported in the country. While there are costs involved in developing further the local supply base, mining companies, local businesses and local communities would have much to gain from the benefits of increased local procurement in the country.

Equipment providers

Despite the numerous challenges of operating in the country, some of the world's largest mining equipment suppliers have decided to establish a presence in Tanzania. Caterpillar, Komatsu, Atlas Copco, and Volvo are well established, mainly through local distributors.

The presence of international mining equipment suppliers ensures the technological quality of the products on offer. Competitive advantage is therefore often based on the additional services a given company is able to offer. This service-focused approach has led several companies to establish a presence throughout the country's major mining sites, offering maintenance activities. "Panafrican is physically present on client mine sites, which is essential to our business. For our customers, any downtime is a delay in production; we need to be there to help customers avoid any stoppages outside of the scheduled down time," said Toyne of Panafrican Services.

Despite the presence of international mining equipment suppliers the potential for established players to expand their operations and, more importantly, for new entrants to join the market was noted by Pattni of Allied Mining Services: "Tanzania is working hard to open up to foreign in-

vestments... Overall the fiscal treatment is favorable compared to other jurisdictions and this is essential to continue to attract foreign investments in the long term. However, the country's service sector still has room for improvement. There are not enough local service providers to the mining industry. Lead times are also very important, to be able to provide the product in a timely manner," he said.

Drilling services

Tanzania's mining industry is dominated by a handful of international drilling service companies. In terms of market share, Layne, Capital Drilling, Major Drilling and Ausdrill dominate the market.

Whilst mining companies with larger operations have guaranteed a steady workflow, the financial difficulties on international financial stock markets currently faced by juniors are worrying drilling operators. "ABG has done a lot of exploration around the Lake Victoria region;

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AngloGold has focused its efforts around Geita and worked to expand it. The juniors here tried to get moving, but many have been pushed back by the high costs. Once upon a time their market was booming, but the process slowed after tax exemptions were removed in 2010. For a while there was uncertainty over who would lose what, but everything has faded out now. Even though juniors may be exempt, the firms they have to contract are not, making everything 20% to 30% more expensive. Exploration in 2013 will be tight, with big mining houses turning machines off and juniors winding rigs down," said Armitage of Capital Drilling.

Armitage assured that Capital Drilling has good expertise in difficult-to-drill locations (since drilling at Geita and North Mara the company has diversified sending rigs to the south of the country, where infrastructure remains a problem). "Capital Drilling has 88 rigs worldwide, around 71 of which are running right now. We cover all facets of drilling and now even have rigs in coal and methane drainage. If you need any type of drilling done, no matter how difficult, we will have a go at it," Armitage said.

Exploration consultancies

The recent expansion of the mining industry has attracted some of the world's largest consultancy firms to Tanzania. SRK for instance, established a presence back in 2005. However, the forecasts of the industry's continued future expansions are now also promoting smaller local start-ups which compete to develop technologies aimed at overcoming the challenges present for miners in the country.

Rwelu Minerals Consultancy is an excellent example of a local company working to develop sustainable solutions to the wide range of environmental and social pressures faced by miners in the country. The consultancy, based in Mwanza, primarily offers services in geological exploration, for mapping in the field, geophysical surveying and general mining services. "We help exploration companies write technical reports and feasibility studies, and support them in all related matters. We work with companies from the early stage of projects up to the point where they are about to commence mining operations. Writing feasibility reports is our most popular service, with initial geological investigations also frequently requested," said Abiel Kyamanywa, 'an independent senior geologist at Rwelu Consultancy.

As the country witnesses a shortage of mining engineers, local consultancies often find themselves competing to find qualified labor. "Our geological work is yielding positive results, with many junior explorers demanding our services, but competition to find qualified labor is certainly increasing. Finding experts is a problem; the level of education in Tanzania does not meet international standards and very few people are graduating in mining, compared to geology. This is why we are still looking for someone who can fill the mining engineer related position," said Kyamanywa.

Interactive Earth Imaging is another example of a local exploration consultancy establishing a presence on the local service market. The company has the technical expertise to provide evaluation and data management as well as operation support related services. Interactive, like several other local consultancies, strives to evaluate the latest trends in the marketplace and continuously expand its services to meet the needs of its customers. "My company has grown from data management holder to exploration support including project evaluation. When companies arrive in the country, they have to seek out available data, deal with governmental

authorities and outsource services. This is when Interactive comes into the picture," said Gosbert Kagaruki, CEO at Interactive Earth Imaging.

According to Kagaruki, there is potential for the mining market in Tanzania to become more autonomous and therefore less dependent on research and development undertaken overseas. "While working for Rio Tinto and African Barrick Gold, I noticed that the mining industry in the country was lacking consultancy services. These services were obtained from abroad as very little was ["available"] in Tanzania. I therefore realized the potential for setting up my own quality mineral consultancy service provider and founded Interactive Earth Imaging back in 2006," he said.

Aeromedical services: safety first

The increased mining activities in the country are working as a development catalyst for many sectors, including the development of an aero medical service. The accidents that occur on mine sites usually demand quick response; the sheer size of the country and the lack of infrastructure mean that aero medical rescues can be the only solution to save the lives of critically injured miners.



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MINING IN TANZANIA



Healthcare. Photo courtesy of Whirlwind Aviation.

Whirlwind Aviation Tanzania is currently the only helicopter company offering aero medical rescue services in Tanzania. "Whirlwind Aviation's main purpose here is aero medical. Tanzania is enormous and lacking in infrastructure, many people die unnecessarily as rescue services in the country struggle to cover the distances between places," said Chief Pilot Neels van Eijk.

Whirlwind utilizes helicopters adapted to work as air ambulances and equipped

with intensive care unit levels comparable to those found in hospitals. "All our medical equipment is modern, approved by the oil and gas industry, with the latest technology. We have all our drugs on board and can stabilize a patient during the flight. Most of my flying experience and most of my paramedic's experience is in West African and Middle East warzones, so we are equipped and trained to handle serious trauma cases," said Neels van Eijk.

Whirlwind's plan involves placing dedicated air ambulances with state of the art equipment and advanced life support paramedics on board throughout Tanzania in the future. "My dream for the next two years is to have dedicated air ambulances in five cities: Dar es Salaam, Arusha, Mwanza, Mbeya and Mtwara. These would cover the whole country and bring first-class aeromedical services within an hour of everywhere," said Neels van Eijk.

The Whirlwind medical rescue membership plan (not insurance) eliminates the challenges of pre-authorization and critical medical assessments to their members. Several mining companies are signing up to be part of Whirlwind's medical evacuation and rescue programme. "Most managers in the mining industry have personally signed up to the Whirlwind Aviation membership scheme launched three months ago. By paying a monthly fee we offer aeromedical services to the mining industry," said Neels van Eijk.

Whirlwind's aeromedical service works in collaboration with the trauma centre in Dar es Salaam where patients can be transferred but depending on the seriousness of the accident, patients can be transferred to Nairobi.



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Small scale miners: the financing challenge

Liberalization of the economy in Tanzania has seen both local and international banks entering the financial markets, but the provision of banking facilities to small-scale miners remains tenuous.

According to the Ministry of Energy and Minerals, during the period 2010 to 2012 the government granted loans totaling 625 million Tanzanian shillings (the equivalent of \$423,000 at today's exchange rates) to indigenous local companies, mainly for the purchase of SSM equipment. However, for a sector that attracts 670,000 workers (by way of comparison, the large scale mining sector in Tanzania employs 12,000 workers) the loans provided by the government are also not enough.

"Financing is a major challenge facing current and prospective SSM's in Tanzania. Most investors looking at the country want to enter into partnerships with local SSM's, and require full geological reports on their properties. It is very expensive to obtain a full geological report on the geological value in your area and this is only possible for larger companies with greater financial capabilities," said Thomas Joseph Kisusi, managing director at Tom Diamond.

Tom Diamond is a local SSM company with a license to operate in the Shinyanga region, in Southern Tanzania. The company currently mines for diamonds, gemstones and base metals and is an excellent example of the difficulties that local SSMs are facing. "Local miners contribute more than 40% in terms of revenues to Tanzania's mining industry. If the government and large companies do not support small-scale miners, they cannot continue their activities and companies like Tom Diamond will end up selling their concessions," said Kisusi.

The existence and growth of the SSM sector in the country was triggered by several factors including the closure of privately owned mines during the 'social experiment' of the 1970's. For a sector which today accounts for a substantial part of the national mining industry's revenues and employs thousands of workers, the government needs to do more.

"Tanzania has great potential for different types of minerals, including gemstones, diamond, gold and industrial minerals. However, generally the government's policies do not favor local Tanzanian miners. Local miners do not have access to the funding needed for purchasing mining equipment. One of the great challenges facing Tanzania's mining sector



Laboratory at Mwanza. Photo courtesy of SGS.


is capital rising for plant and equipment purchases. We encourage the government to change policies in favor of small-scale miners, to provide them with the opportunity to develop themselves into more substantial players," said Kisusi.

However, as emphasized by Kyamanywa, the problems of the SSM sector are not only related to the unavailability of finance: "Tanzania has small-scale miners looking for gold almost everywhere.

They have been operating for centuries, but most have no formal education. Unfortunately, the informal nature of artisanal mining activities promotes unsafe mining practices and adverse environmental impacts. It is vital that the largest mining companies, with greater financial resources, contribute to raising the awareness of the destructive and dangerous practices that are commonplace within the industry," he said.

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Corporate Social Responsibility

Tanzania's alternative development initiatives.

Tanzania's mining sector has been one of the fastest growing sectors in terms of export production, comprising 52% of the country's total exports. Despite this achievement, there are consistent and growing complaints about the industry, as host communities believe that investments are not of benefit to the country, but are instead being used to transfer the country's resources elsewhere. Given that mining companies CSR initiatives are already going well beyond window dressing in Tanzania, more novel methods of interaction with host communities need to be devised to ensure that Tanzanians benefit from and appreciate the value of the work-taking place around them.

In Tanzania, AngloGold Ashanti has aligned its sustainability strategy within the Millennium Development Goal framework, a list of goals devised by the United Nations to encourage development by improving social and economic conditions in some of the world's poorest countries. "AngloGold Ashanti is trying to replace the dependency that is created around mines, which are typically rural and fairly impoverished areas, by leveraging alternative economic development initiatives," Duffy said. "This is very different from the traditional approach to community development which tended to focus on building one-off schools and hospitals without a sustainable, long-term view."

With total community investments at \$4.3 million in 2011 (substantially up on that of \$1 million in 2010), AngloGold is one of the companies most readily associated with CSR initiatives in Tanzania. The South African based company is currently working on the Geita town water project, developed in partnership with the government. This project will deliver a water supply system for the new Geita municipality. Gary Davies, managing director at AngloGold Ashanti—Geita Gold Mining said: "AngloGold Ashanti is also continuing to add infrastructure to the country. We have built a new surgery and maternity ward in the hospital, and dispensaries in some of the local villages. These are typical of the things mining companies do, but we want to go further by providing clean drinking

water to 100,000 people in Geita. The first phase of this project will come to fruition by the end of 2012. We want to take a more holistic, long-term view to distribute benefits and are working closely with the government to realize their development goals, as well as achieving the Millennium Development Goals."

The importance of involving local communities around mining projects, by leveraging on alternative development initiatives was further rendered by Mwaipopo of Mantra Tanzania. "Mantra has a team that has participated in many development centers across Africa; we learnt some of the good things done by players in the industry, and others that could have been done better. Putting infrastructure for hospitals and schools is a good thing, and we will be doing it, but the way for the community to really appreciate you is to make them feel part of your business. We are therefore trying to encourage them to see opportunities from our project, by targeting business linkages. It is up to us to prepare the community to do business with us", he said.

ABG has established a development fund (the Maendeleo fund) to deliver on community development initiatives administered by ABG's newly established investment committee. The board at ABG has recently approved a \$10 million annual contribution to the fund, which also incorporates ABG's current direct community spending.

The community relations teams at ABG work closely with host communities to create and implement integrated development programmes that take local priorities, concerns and needs into account, and focus on long-term sustainable development. ABG's operations seek to tackle the ongoing challenges of poverty, illegal activity and inadequate social service provisions.

Handeni Gold instead appears to have aligned its community initiatives with its environmental sustainability ambitions. "Handeni Gold is supplying water to the local communities, and also planting trees to combat deforestation which is having a huge environmental impact on the area. We feel very strongly about this aspect: at the current rate all trees here will be gone in 10 years," said Scheepers of Handeni Gold.

Conclusion

To unlock the country's mineral potential, policy makers and politicians will need to break with the past.

Many of the mining companies active in Tanzania assist the local communities with development of sustainable projects, such as this market garden project in Likuyu sponsored by Uranex. Photo courtesy of Uranex.

The mining market in Tanzania is one of vast potential. Some of the challenges of operating from the country are similar to the challenges of some of the world's leading mining economies: skilled labor shortages, a requirement for improvement in infrastructure and lack of reliable and cheap energy resources.

However, Tanzania also faces more unique challenges such as those presented by the growing discontent of the local

population towards the mining industry. Economic liberalization in the country involved the privatization of public institutions, industries and parastatals and the average Tanzanian still believes that he derives no benefits from the investments into the country.

Despite this, prospects for growth are good. Gyan of SGS said: "Tanzania's economy has been expanding at 6% to 7% over the last couple of years and even the global

financial crisis only reduced growth to 5%... these [figures indicate] a healthy economic outlook for the country and therefore Tanzania sits well with our overall strategy."

Gyan's words were echoed by Pattni of Allied Mining Services: "Allied Mining Services has a strong foothold in Tanzania and is looking to gain new mining related customers... Several of these investors will be coming from China. For other investors wishing to invest in the country the time has come: Tanzania's political and economic stability will provide them with an unprecedented opportunity to grow by capitalizing on their investments," he said.

It will however be important for mining companies and government officials to work together less antagonistically and for the mining industry to change its generally negative perception.

In our report in November, entitled "Canada's territories: The Emerging North", there were two mistakes. i) the caption of Cobalt Construction image on page 104 should have read "A dozer carries out reclamation work." and ii) the caption of Robert Boyd's image on page 81 should have read "president, CEO and director, Endurance Gold." Global Business Reports would like to extend our apologies to the readers, Cobalt Construction and Endurance Gold for any inconvenience this may have caused.

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