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Ben James, Managing Director, Baobab Resources plc

Ben James of Baobab Resources talks about the realities of operating in Mozambique.

Ben James, Managing Director of Baobab Resources, talks to Global Business Reports about the development of their projects in Mozambique, why their Tete iron ore project is potentially world-class, and the business environment for mining companies in Mozambique.



Can you give a brief overview of your five projects in Mozambique?

The Tete property was originally picked up to explore for base metals and platinum group elements. However, the existence of iron ore deposits came to light after an early literature review and we quickly recognized the unique opportunity of having iron ore immediately adjacent to some of the largest undeveloped coal deposits left on the planet and down river from southern Africa's single largest source of hydro-electric power.

In 2008 a preliminary aeromagnetic survey confirmed excellent tonnage potential, and in March 2009 we collared our discovery hole and quickly gained interest from funding institutions and our liquidity escalated. Since the discovery hole we have drilled approximately 80,000 m and have a resource-base of 725 million mt, 0.5 billion mt of which is concentrated in a 2.5 sq km area; the grade of this concentration is over 36% iron. The resource is a vanadium-rich titanomagnetite, a similar iron ore to that found in the Bushveld complex South Africa only substantially thicker (the average thickness of the magnetite horizons in the Bushveld is around 5 m, up to 40 m in places, while the average thickness at Tete is around 100 m, up to 180 m in places); like any magnetite deposit the material must be upgraded to a commercially viable concentrate for export (generally grading between 58% and 64% Fe). However, with a titanomagnetite, although there is a vanadium credit, the concentrate will also contain a titanium penalty. The Tete project's strategic access to iron and steel making raw materials provides the

opportunity for us to turn this penalty into a profit by smelting a high value/high demand pig iron and vanadium and titanium slag by-products at the mine mouth.

Pig iron is used along side scrap iron to produce steel products. The pig iron is highly sought after due to its consistent chemistry and density that dilutes the deleterious impurities of the scrap iron.

Including the Chinese market, there is a massive global appetite for pig iron, which Baobab is looking to service. Brazil is the world's largest pig-iron producer and its cost of production is \$380/mt to \$390/mt pig iron (FOB); Baobab's estimated cost of production FOB at its Tete property will be around \$225/mt, presenting a fantastic opportunity to compete globally in the pig-iron and arguably the scrap iron space. Tete would support production of up to 4 million mt/y over a mine-life of 35-plus years; anything over 2.5 million mt/y would elevate Baobab to the world's largest pig-iron producer. The Tete project has the potential to be not just world class, but world first and at first quartile production costs.

Have the benefits of your Tete project been recognized by the market?

When we completed the scoping study in 2011 we failed to appreciate the massive margin between our competitors' cost of production on pig iron and our cost of production. Our pre-feasibility study will show extensive market research clarifying the gap between our prices and our competitors, \$225 before credits versus Brazil's \$390. The vanadium could contribute a credit of up to \$60/t of pig iron; particularly if we refine the primary slag to high value products such as vanadium pentoxide flake or ferro-vanadium alloy.

How do you compare Mozambique to other global mining locations?

Mozambique is an untapped geological source with world-class resources. There are operational challenges; however, the government is proactive, accessible, mining-friendly and, along with oil and gas, recognizes that mining will form the cornerstone for the new Mozambique economy. With limited historical mining activity, it is a big learning curve for the government. Securing skilled personnel is a major issue but training initiatives will overcome this problem. Not all governmental departments are as proactive as the Mines Department, i.e. the Ministry of Labor who is slow to accept the necessity of the 12-hour shift in large-scale operations and the quota of expatriate workers needs to be more flexible; albeit not for Baobab as we have only three expatriates within our 60-plus workforce, but when we enter the development stage that demands specialized expertise, we will need to have discussions with the government on these numbers. Infrastructure is currently an issue; we are confident that by 2016 we will have access to well-scheduled rail corridors and refurbished port facilities at Beira and Nacala to accommodate the transportation of initially 1 million mt/y of our pig iron increasing to 2 million mt/y in short order.

What reflections can you add on the opportunities provided by mining companies in Mozambique; and do you feel you have learned any new lessons in your time here?

The real benefit of mining operations to Mozambique is in the form of royalties and corporate tax. We are still quite a few years away from seeing full production in either the mining or gas sectors, but the revenue forecasts are impressive. There will be a very real onus on the government to responsibly utilize and distribute this capital. Mining also brings employment and education: the platform on which to build a stable economy.

At grassroots level the mining fraternity can make a significant and positive contribution in the areas they operate. Never underestimate the multiplier effect around a mining operation. Our project area is isolated and thinly populated. Although we are only 50 km from Tete, there are no public roads, no schools and no clinics. The community within which we work has one overriding concern; safe access to safe water. We are starting from a very low base and will be working with our project partner, the IFC, to implement long-term sustainable initiatives as the project matures.

From what I have learned about Mozambique, one should expect the unexpected. The country is on a steep development curve and, with it, a steep learning curve. I have been visiting Mozambique since 2006, there has been exceptional growth since then and I look forward to seeing the lay of the land at the end of the decade. There's a sign on the door and it says "open for business".

What goals does Baobab have in Mozambique in the next three years?

In three years' time we would like to see the Tete pig iron project commissioned and producing its first tonnes of pig iron. There have been marked advances in Mozambique over the last six years and Baobab would like to be very much a part of the future as we continue to unlock the iron and steel wealth of this magnificent country.

The above interview was conducted as part of our research on Mozambique's mineral industry. The final report, which appeared in Engineering & Mining Journal, can be viewed [here](#). Related articles and interviews on the GBRoundup can be viewed below:

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