



INVESTMENT OPPORTUNITIES IN THE COAL SECTOR

INVESTOR FACTSHEET



Overview Of Botswana

Botswana is strategically located in the heart of the Southern African Development Community (SADC) – a region with more than 250 million people. Underpinned by good governance and a zero-tolerance to corruption, it is one of the most stable and investor-friendly economies in Africa. Although its economy has been anchored on resource endowments, particularly diamonds, the country is lauded as a developmental success story on the continent.

Botswana has created an enabling environment for capital and business to thrive and support its strategic focus to diversify the economy into value-adding sectors that will serve a fast-emerging regional market. As a result it is the fourth most competitive economy in Africa, and one of the easiest African countries to do business in on the continent.

Botswana: Quick Facts

| Indicator | |
|----------------------------------|---|
| Population | 2.1 million |
| Area | 581,730 Km ² |
| Capital | Gaborone |
| Business language | English |
| GDP/capita | U\$ 7,136 (PPP) |
| Nominal GDP growth | 5.9% (2013) 4.9% (2014) 4.2% (2015) |
| Change in CPI | 7.9% (2012) 5.9% (2013) 4.4% (2014) |
| Corruption Perception Index Rank | 31 (out of 175 countries) |

Source: IMF, 2015, Transparency International, 2015, Bank of Botswana, 2015 & BITC

LEAST CORRUPT COUNTRY IN AFRICA

SOURCE: TRANSPARENCY INTERNATIONAL, 2015

BEST SAFETY AND RULE OF LAW IN AFRICA

SOURCE: HERITAGE FOUNDATION, 2014

2ND FREEST ECONOMY IN AFRICA

SOURCE: TRANSPARENCY INTERNATIONAL, 2015

COMPETITIVE CORPORATE TAX RATES, INCENTIVES

SOURCE: TRANSPARENCY INTERNATIONAL, 2015

3RD EASIEST PALCE TO DO BUSINESS IN SADC

SOURCE: ILAG, 2014

3RD BEST GOVERNED COUNTRY IN AFRICA

SOURCE: ILAG 2014

5TH MOST COMPETITIVE ECONOMY IN AFRICA

SOURCE: WEF, 2015

4TH HIGHEST HUMAN DEVELOPMENT IN AFRICA

SOURCE: ILAG, 2014

OVERVIEW OF THE BOTSWANA MINING SECTOR

The Botswana mining sector ranks among the highest in Africa on investment returns and policy perception. Botswana remains at the top of BMI's Mining Risk/Reward Index with a score of 59.6 out of 100 in 2016. The country's high score in the index is due in large part to the difficulties being experienced by rival mining markets. The country is expected to remain one of the best regulated and strongest performing in mining in Africa over the coming years as the country's overall position was 13 out of the 122 jurisdictions. This sector is led by the diamond industry, though other metals and minerals are increasing in prominence, including Coal, Soda Ash, Copper and Nickel. The mining sector's attractiveness is demonstrated by the presence of high profile international operators that have invested in Botswana, taking advantage of the conducive mining investment climate in the country.

COAL SECTOR IN BOTSWANA

Botswana has large untapped resources of semi-bituminous coal in various parts of the country estimated at 212 868 million tons of which reserves constitute 50 to 60% of this resource, making Botswana the 2nd largest after South Africa. Botswana coals occur within the Karoo Basin which covers an area of about 70% of the entire country.

The spread of coalfields is sparse, covering, Dukwi, Foley, Serule, Bobonong, Morupule, Moiyabana, Mmamabula, Mmamantswe, Letlhakeng Dutlwe and Ncojane, with total deposits at Letlhakeng and Dutlwe at over 70 000 tons (mt) each. Shallow coal seams distributed along the eastern side of the country, allow cost-effective open-pit mining. While the western side of the country has deep seams that have Coal Bed Methane (CBM) potential. Botswana's coal resources quality compares favorably with other coal available in the market and is suitable for export markets, with high quality resources in the East. This eastern side is well positioned with respect to: existing railway line, power, road and planned railway to ports making coal mining even more feasible. Through new mining houses, Botswana has the opportunity to raise production to between 50 and 100mt/annum especially for power generation (tapping into the SAPP) and export.

COAL INVESTMENT OPPORTUNITIES

Botswana will remain attractive to foreign investment, particularly from China, as China will continue to seek to plug its supply deficit in copper and coal. Given our expectation that mining costs in South Africa will rise considerably over coming years, Botswana could gain a regional competitive advantage.



Strong demand and growth for coal in China and India will allow Botswana to export coal onto the seaborne market over the long term. In the medium term, coal will be utilized for electricity generation domestically. Coal is starting to play an increasingly important part in Botswana's energy mix, with the country positioned to become an electricity exporter by 2018. The government is exploring opportunities for coal beneficiation, which would see coal supplies converted into products such as liquid energy.

OPPORTUNITY 1: EXPLORATION & MINING FOR EXPORT

Botswana has extensive, and largely unexploited, coal resources which when developed can form part of the Government's effort to diversify the economy.

- The demand for coal-for-energy has increased significantly nationally, regionally and internationally
- A number of coal licenses have already been issued to some investors. Additional licenses may be granted for further exploration and mining under the new tendering dispensation
- 24 new mines are possible to open, possibly stepping production up to 100 million tons /yr.
- Coal washing to improve quality for export markets and residuals (middling) for power generation
- Quality of Botswana's coal is suitable for export market
 - It is in-line with international requirements
 - Might also be accepted in Europe market
 - Compares favourably with South African Exports
- The market studies concluded that the global demand for seaborne thermal coal will continue to grow strongly as domestic demand in a number of key countries outstrips supply.
- The growth in demand will be driven by the developing nations of Asia, especially China and India. Demand for seaborne thermal coal grew from 250 Mt in 1995 to 650 Mt by 2010, an annual growth rate of nearly 6.7%.
- This growth is expected to continue, with demand reaching nearly 1,100 Mt by 2025.
- Europe will continue to be a large importer of coal but only limited growth in demand is expected.

OPPORTUNITY 2: ENERGY PRODUCTION

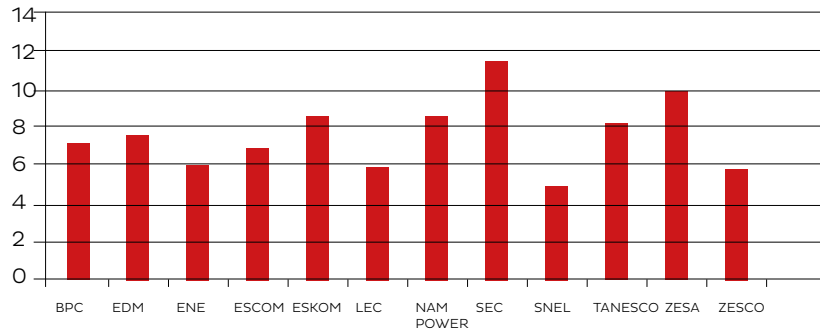
(a) Electricity Generation

The Botswana Government has passed legislation allowing for the participation of independent power producers in the electricity sector. The government is focusing on developing coal fired power as its main source of electricity generation due to abundant reserves of coal, as it is a cheap source of fuel for electricity generation. The opening of the Zizabona Power Interconnector in the next few years will greatly increase the opportunity for cross-border trade in electricity with Zambia, Zimbabwe, Botswana and Namibia. In the South-Saharan Africa, Botswana has better electrification rates; with an overall electrification rate of 77 per cent. Quality of Electricity Supply (Value) is 2.7/7, and Quality of Electricity Supply (Rank) is 119/140.

Botswana has a major opportunity of becoming an energy hub for the region; as the region is in high demand of power. There are already ongoing projects such as refurbishment and extension of existing Morupule Power Station and coal bed-methane projects in exploration. Opportunities to build Greenfield coal fired power stations are abundant for domestic and regional power requirements in SADC, COMESA and EAC. Below is an indication of the current high demand for electricity.

| No | Country | Committed Generation Capacity, MW | | | | |
|--------------|------------|-----------------------------------|--------------|--------------|--------------|---------------|
| | | 2013 | 2014 | 2015 | 2016 | Total |
| 1 | Angola | 389 | 640 | 550 | 1,246 | 2,825 |
| 2 | Botswana | 600 | - | - | 300 | 900 |
| 3 | DRC | 55 | - | 580 | - | 635 |
| 4 | Lesotho | - | - | 35 | - | 35 |
| 5 | Malawi | 64 | - | - | - | 64 |
| 6 | Mozambique | - | 150 | 300 | 300 | 750 |
| 7 | Namibia | - | - | 120 | 50 | 170 |
| 8 | RSA | 923 | 3,105 | 2,543 | 1,322 | 7,893 |
| 9 | Swaziland | - | - | - | - | - |
| 10 | Tanzania | 60 | 160 | 500 | 1,110 | 1,830 |
| 11 | Zambia | 230 | 180 | 435 | 494 | 1,339 |
| 12 | Zimbabwe | - | 300 | 30 | 300 | 630 |
| Total | | 2,321 | 4,535 | 5,093 | 5,122 | 17,071 |

Average Electricity Tarri, USc/kWh



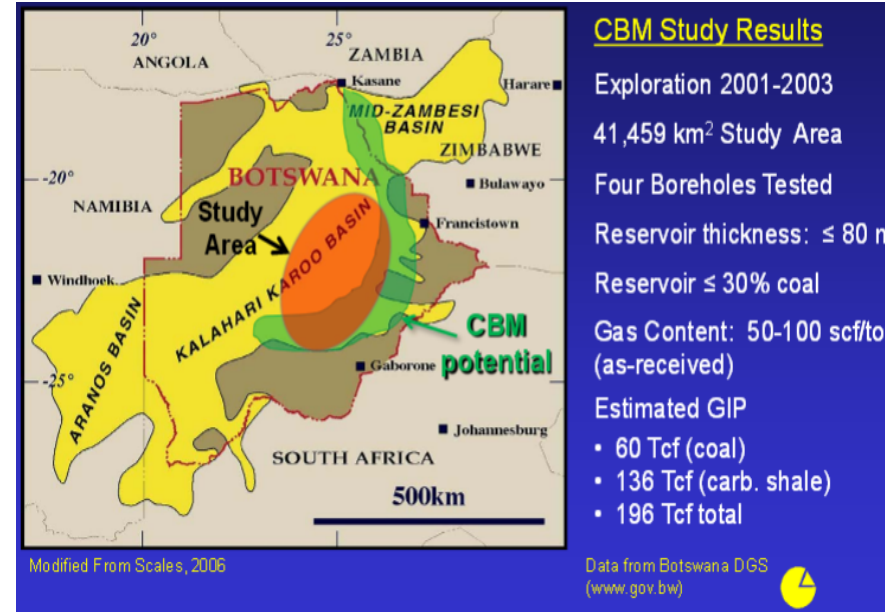
sequence can be up 80m in thickness and contains up to 30% by volume of coal. Reservoir modelling of the results obtained indicates that a reasonably large percentage (15-20%) of Coalbed Methane (CBM) gas in place could potentially be developed at a gas price of \$2.00/thousand cubic feet at the wellhead.

Coal-fired generating technologies & Investment Cost

| Country | Technology | Net Capacity (MWe) | Electrical Conversion Efficiency (%) | Overnight Cost (USD/kWe) | Investment Cost (USD/kWe) | | |
|--------------------|--------------------------|--------------------|--------------------------------------|--------------------------|---------------------------|-------|-------|
| | | | | | 3% | 7% | 10% |
| Belgium | Ultra-supercritical | 750 | 46 | 2 307 | 2 448 | 2 648 | 2 807 |
| Germany | Hard coal | 700 | 46 | 1 643 | 1 744 | 1 887 | 1 999 |
| | Lignite | 900 | 43 | 2 054 | 2 180 | 2 358 | 2 499 |
| Japan | Ultra-supercritical | 704 | 41 | 2 496 | 2 649 | 2 866 | 3 037 |
| Korea | Pulverised (PC 1000) | 960 | 43 | 1 218 | 1 289 | 1 386 | 1 463 |
| | Pulverised (PC 800) | 766 | 41 | 1 252 | 1 317 | 1 407 | 1 477 |
| Netherlands | Ultra-supercritical | 1 070 | 46 | 1 620 | 1 720 | 1 860 | 1 971 |
| | Ultra-supercritical | 777 | 46 | 2 746 | 2 914 | 3 152 | 3 341 |
| | Ultra-supercritical | 1 554 | 46 | 2 660 | 2 823 | 3 054 | 3 237 |
| Portugal | Pulverised | 605 | 51 | 3 067 | 3 255 | 3 521 | 3 732 |
| | Pulverised | 605 | 46 | 2 533 | 2 689 | 2 909 | 3 083 |
| United States | Supercritical pulverised | 750 | 43 | 2 496 | 2 609 | 2 765 | 2 886 |
| Non-OECD countries | | | | | | | |
| China | Ultra-supercritical | 1 000 | 45 | 813 | 863 | 933 | 989 |
| South Africa | Pulverised | 4 693 | 40 | 2 222 | 2 222 | 3 157 | 3 652 |

(b) Coal Bed Methane

Botswana's mining industry is heavily reliant on heavy fuel oil / diesel. Diesel cost ~ gas equivalent ranges from AUD 25/GJ to AUD 30/GJ. Strong incentive for companies to convert to gas. Coal beds within the study area contain an estimated gas-in-place resource of 60 trillion cubic feet (Tcf). The associated carbonaceous shales are estimated to contain an additional 136 trillion cubic feet resulting in combined 196 trillion cubic of gas in place. The highest development potential is along the eastern margin of the basin, where the carbonaceous



OPPORTUNITY 3: COAL TO LIQUIDS (CTL)

The low price of coal compared to the high price of other fuel sources, whether oil (currently trading at \$600 per ton), 'unconventional' oil, or gas, provides a degree of longer term investment certainty that has generated a significant amount of interest in CTL fuels worldwide (World Coal Institute, 2015).

- CTL plants are one of the most cost effective of the alternative fuel, particularly when overall operating costs and the low cost of coal are considered.
- Through ongoing technological development the capital cost of CTL plants is expected to decrease.
- CTL provides one of the most affordable alternatives to conventional petroleum production.

- In Sub-Saharan Africa; South Africa has been operating CTL for many years, a broadening and growth of the market will drive both existing providers and new entrants to develop more efficient and cost effective processes to gain the market advantage
- CTL capital investment costs range around \$50, 000 - \$70,000 per barrel of daily capacity, compared to \$100,000 - \$145,000 per barrel of daily capacity for biomass to liquids plants (World Coal Institute 2006).
- In collaboration with Pyro Carbon Energy (PCE), BITRI has taken the opportunity to explore Botswana's coal to add value to the country's natural resource Liquid fuels from coal provide ultra-clean transport fuels for use in the existing supply infrastructure, and cooking fuels;
- Funders of a 4.2 billion dollar coal-to-liquids plant in Botswana will start construction in 2016, which aims to tap the country's more than 200 billion tons of coal resources to reduce reliance on petroleum product imports.
- The 20 000-barrels-per-day project, which will also produce fertilizer, is funded by Botswana's unlisted Coal Petroleum and South African private company Kumvest. It will run over three phases from 2016 until 2020.
- Botswana imports all its liquid fuel to meet the country's annual consumption of 1.2 billion liters. The plant will require 4.3 million tons per year of coal, which it will source from the country's operating coal mine, Morupule.
- The project, which is set to create more than 9 000 jobs, is expected to have a positive 830 million dollar impact on Botswana's balance of trade.

Market Potential

There are currently few alternatives to liquid fuels, which make CTL the best and profitable option. There is a strong growing demand in developing economies. As an alternative source of liquid fuel from oil liquid, coal derived fuels can play a significant role.

- In the transport sector, as consumers purchase more vehicles and oil prices and as more stiff environmental measures are to be called for.
- Health impacts and local air quality concerns, have driven for clean cooking fuels. Coal-derived dimethyl ether (DME) is one of a suite fuel that can be produced in the CTL process. It is has great promise as a domestic fuel. DME can also be used as an alternative to diesel for transport.

Top Importers of Crude oil (Value imported in 2015 USD' 000)

| | |
|---------------|-------------|
| - China | 134,341,241 |
| - USA | 132,595,566 |
| - India | 72,321,670 |
| - Korea | 55,132,262 |
| - Japan | 44,998,801 |
| - Germany | 36,441,624 |
| - Netherlands | 35,411,906 |

Source: ITC

CTL Opportunity

CTL can be beneficial to countries that rely heavily on oil imports and are abundant with coal reserves. Botswana has high abundance of coal and this opportunity is very lucrative and has to be fully exploited. There are a number of developments already been undertaken;

OPPORTUNITY 4: COAL DOWNSTREAM ACTIVITIES

- Coal to gas: production of gas and coal combustion products like fly-ash for cement production
- Fertilizer production-of nitrogen based fertilizers complementing downstream activities in agriculture. Nitrogenous fertilizer market expected to reach US\$113,998.2 million by 2018. FAO highlights that 'Africa region likely to remain a major exporter of phosphate, followed by Nitrogen
- Provision of Services and Equipment to growing Coal Industry
- Clean Coal technologies – opportunities for R&D
- Development of Infrastructures; mainly rail way line to reach the market. The alternative options are :
 - Through Zimbabwe to Mozambique in East (complex)
 - Trans-Kalahari through Namibia (simpler) at an estimated cost of BWP136 billion (US\$15billion)
 - Through South Africa's (Waterberg area) and use existing infrastructure (limited capacity).

Robust Investment Incentives



Botswana offers many incentives for investors. These include:

- No foreign exchange controls; remittance and full repatriation of profits and dividends
 - No restrictions on business ownership
 - Duty-free import of machinery and equipment for manufacturing purposes
 - Customs duty exemption on raw materials for goods going outside of SACU
 - A liberal tax regime: 22% corporate and 25% personal tax, with 15% corporate tax for manufacturing and IFSC- registered companies (lowest taxes in the SADC region)
 - Negotiable tax holiday (up to 10 years maximum)
 - Deductible training rebate of 200%
- Beyond incentives and as one of the most business-friendly and stable countries in the region, Botswana provides investors with a conducive and welcoming operating environment. A high degree of safety and security as well as a strong focus on the rule of law gives Botswana an edge over its regional peers.

Go Further With Your Investment

Botswana Investment and Trade Centre (BITC) is an integrated Investment and Trade Promotion Authority with an encompassing mandate of investment promotion and attraction; export promotion and development including management of the Nation Brand.

The organisation plays a critical role of driving Botswana's economic growth through attraction of FDI, domestic investment, facilitation of expansions and further spearheads the growth of exports by promoting locally manufactured goods to regional and international markets. BITC drives wealth creation for Botswana by creating platforms that will ensure increased citizen participation in the economy and create sustainable job opportunities.

Of great importance within the role of the BITC is building and maintaining a positive and impressive image of Botswana locally and internationally.

Through this encompassing mandate, BITC is committed to assist you through a one-stop-shop with the following services to ensure your ease of setting up and doing business in Botswana:

- Company and business registration
- Trade and business license applications
- Entry visas, work and residence permits
- Work permit exemptions
- Connection of utilities e.g. power, telecommunications and water
- Income tax and VAT registration
- Access to industrial and commercial land
- Facilitation of construction permits
- Allocation of BITC factory space (subject to availability)
- Environmental Impact Assessment (EIA) compliance
- Provision of information on the Botswana business climate, regulatory regime and investment opportunities
- Opening a bank account



Contact Details

BITC is ready to facilitate your investment. For further information and inquiries related to Botswana and opportunities in the Leather and Leather Goods Sector sector please contact:

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