

# Tormont50 Research

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Research Type: **Emerging**

Timeliness: **Current**

Date: **May 14, 2019**



## Black Iron Inc. BKI

**\$0.065**

TSX Exchange | OTC:BKRIF | Market Cap \$12M

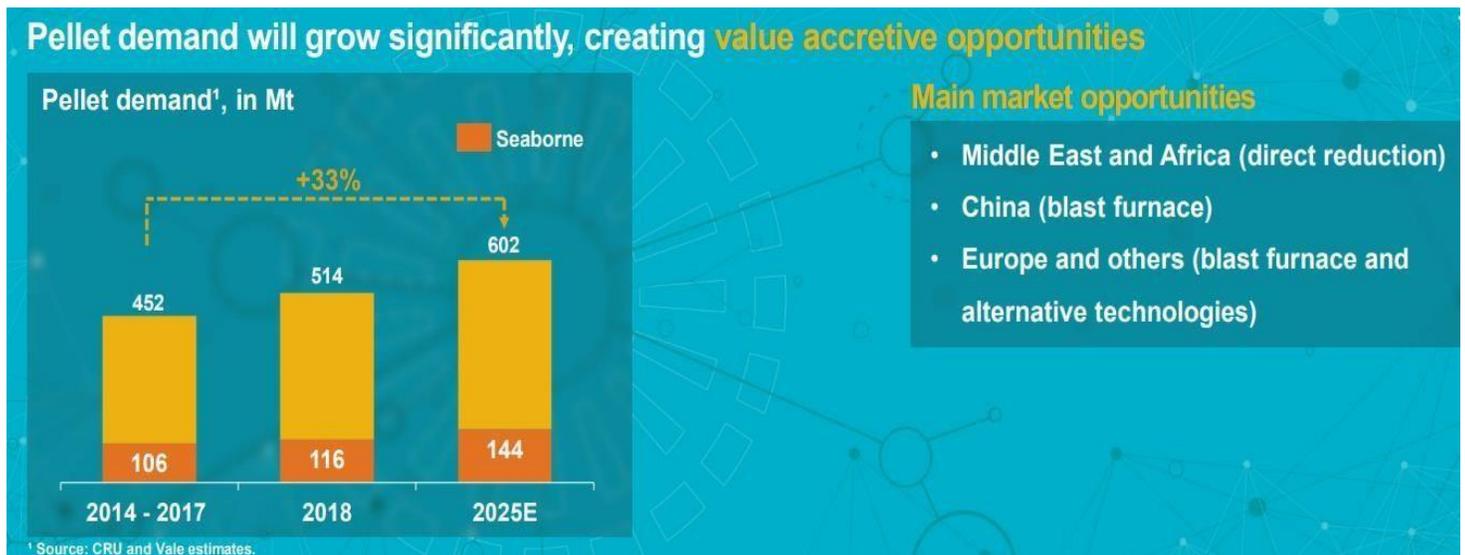
**Description:** Black Iron Inc. (BKI) is the developer of the compelling Shymanivske iron ore pellet feed project located in the Ukraine. BKI will produce an ultra-high-quality iron ore pellet feed that ranks in the top 4% globally and is in strong and growing demand by international steel mills. BKI is uniquely placed to realize very competitive operating and capital costs. Unlike nearly all other start-up iron ore mines, **all necessary infrastructure is in place and readily accessible**; BKI has already signed letters of intent (LOI) for necessary capacity of power and water for processing, rail for haulage, and deep draft port facilities for shipping product to international markets, plus an offtake in exchange for construction funding memorandum with Glencore plc (LSE: GLEN). BKI's infrastructure and low operating and capital cost advantage has been recognized by international industry analysts such as CRU and Wood McKenzie as the top-rated undeveloped iron ore pellet feed project.

BKI's cost advantage translates into excellent financial returns under very reasonable assumptions, including a US\$62 per tonne long-term iron ore price for 62% Fe CFR China. (Note that the current benchmark 62% Fe iron ore price is in the US\$95 per tonne range.) The Shymanivske Project should generate an after-tax internal rate of return (IRR) of 36% over its mine life, as well as an after-tax net present value (NPV) of US\$1.7 billion, versus an upfront capital construction cost of US\$436 million, equivalent to a profitability index of about 4x. A profitability index of one or greater is generally considered to be a good project, and two or more is labelled great. An index level above 2.5x is rarely seen.

More importantly, demand for the company's iron ore pellet feed promises to increase significantly over the short, medium and longer terms (see Figure 1), which in turn could allow BKI to realize operating cash flow of around US\$385 million in a few years. Producing iron ore companies are typically valued using a 4.0-6.5x EBITDA multiple, resulting in a potential enterprise value for BKI in excess of US\$2 billion. Since BKI's

current enterprise value is only about US\$9 million, there is massive potential upside for the share price to rerate as investors become aware of this great investment opportunity.

**Figure 1. Projected Worldwide Iron Ore Pellet Demand Growth**



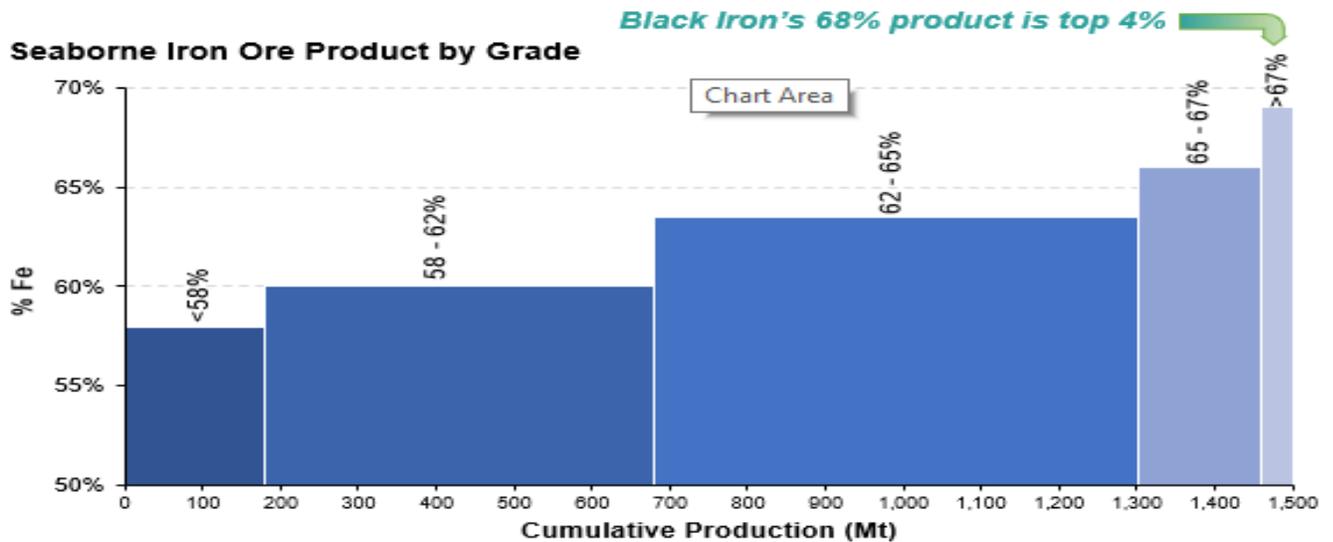
Iron ore pellet feed is sold to iron ore pelletization companies, which in turn compress or mold the feed into the shape of a pellet with a diameter of 0.25 to 0.625 inches. The pellets, which usually include additives like the fluxing agent limestone and the binding agent bentonite, are inserted into blast furnaces or direct reduction furnaces to make steel.

Shymanivske is located in the KrivBass iron ore district in central Ukraine, 330 kilometers southeast of Kiev and 450 kilometers west of the frontline of the war in the Donbass, where Ukraine's government has been fighting Russian-backed rebels since early 2014. That front line has not moved in five years.

**Black Iron's Ultra Premium 68% Iron Ore:** The company's product would rank in the top 4% of worldwide iron ore in terms of iron, or Fe, content. Only about 60 million tonnes of iron ore with 67%+ Fe content is produced worldwide in a 1.5-billion tonne iron ore market. See Figure 2. A steel maker which utilizes higher Fe-content iron ore requires less metallurgical or coking coal in the steel making process, which generally increases blast furnace productivity and reduces both costs and carbon emissions.

**Figure 2. Black Iron's Ultra Premium Product**

**68% GRADE PRODUCT IS ULTRA PREMIUM**



Data source: CRU 2017

**Benefits of higher iron grade products include:**

- Less emissions generated per tonne of steel produced = environmentally friendly
- Increased steel blast furnace productivity = lower cost to produce steel

Source: Black Iron Inc.

**Direct Reduction Iron:** Most Middle East steel makers use the direct reduction (DR) process primarily because of the availability of cheap natural gas. The direct reduction of iron ore fines and pellets refers to a single-stage process which reduces iron oxides to metallic iron at temperatures below the melting point of iron. The resulting product is called direct reduced iron. For example, Bahrain Steel imports large quantities of 67%+ Fe content iron ore pellet feed so that it can produce high-quality DR grade iron oxide pellets. Bahrain Steel's pelletization plants have a design capacity of about 12 million tonnes per year, but its capacity utilization rate is only slightly above 50% because it cannot source sufficient suitable iron ore. We note that BKI's close geographic proximity to the Middle East will allow the company to deliver product to that region at low shipping costs.

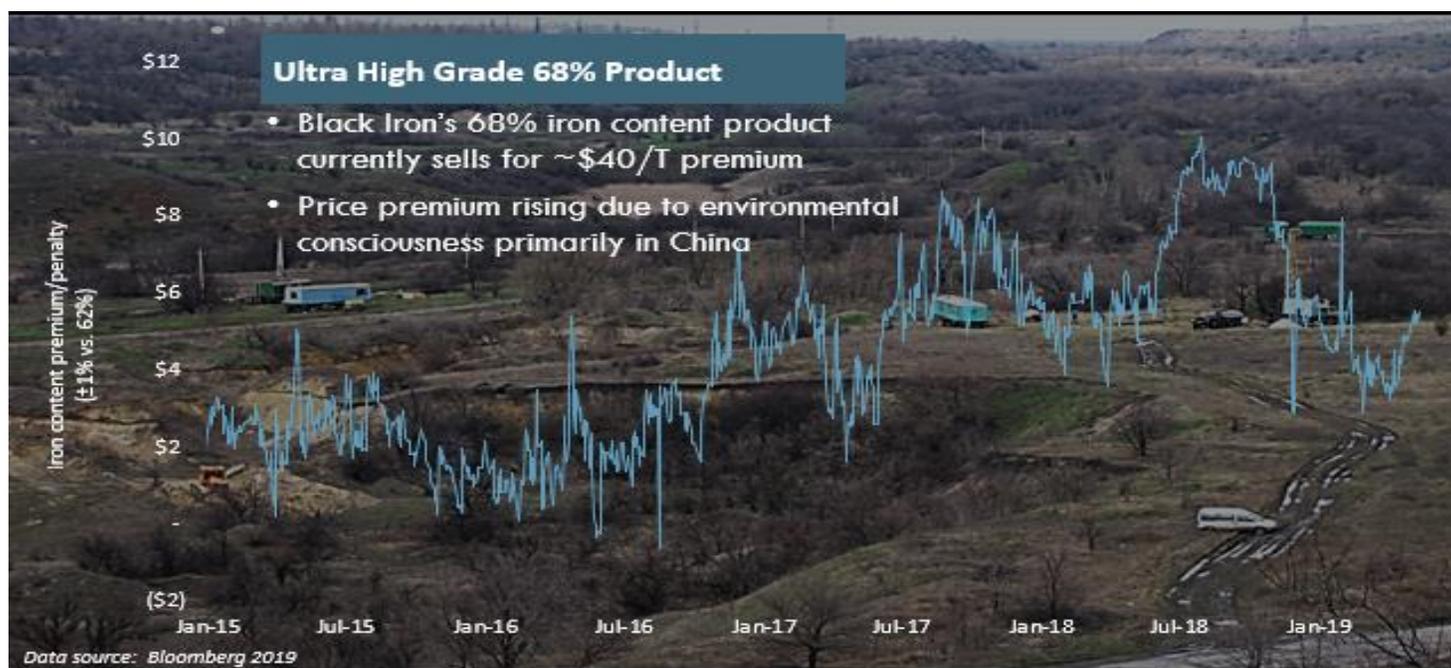
**Blast Furnace Iron Production:** By contrast, in the two-stage blast furnace process, iron ore or sinter first reacts with hot coke to produce pig iron. In the second stage, alloying metals are added to produce steel.

Sintering -- the compacting and forming of a solid mass of material by heat or pressure without melting it into a liquid -- is the most pollutive part of steelmaking, and this is avoided by using pellets.

**China’s Crackdown on Pollution Has Dramatically Boosted the Premium for Black Iron-Quality Iron Ore:** In 2016, China began implementing a “severe winter cuts regime,” curbing sintering, steelmaking and coal usage to cut back on smog. The program has been effective; according to China’s 338-city study, the level of microscopic airborne PM2 particles which penetrate deep into the lungs declined 6.5% in 2017 and a further 9.3% in 2018. In March 2019, China’s ecology minister pledged that the country would maintain its commitment to fighting pollution, saying “We resolutely oppose relaxing or being more lenient with environmental supervision and regulation.” He added that China “cannot sacrifice the environment in exchange for economic growth.”

China’s environmental crackdown has caused a dramatic increase in premiums for higher quality iron ore. See Figure 3. Until late 2016, 65% Fe content iron ore commanded about a 15% premium versus the basic 62% grade price. The premium reached 37% in July 2018 and slipped back to 16% in May 2019. Generally, the premium is about US\$5 for each percentage point Fe content above 62%. As benchmark prices (likely) retreat from the current US\$95 per tonne level and steel prices hold, we believe the premium will increase. Indeed, a number of Chinese steel manufacturing executives who attended an industry conference in Singapore in May 2019 noted that the combination of improved China economic growth in the first quarter, coupled with the country’s anti-pollution initiatives, have caused steelmakers to purchase higher grade iron ore. Moreover, as steel demand is expected to remain strong for some time and government-mandated emission controls also remain firmly in place, steelmakers’ need for high quality iron ore should likewise stay high for a long period.

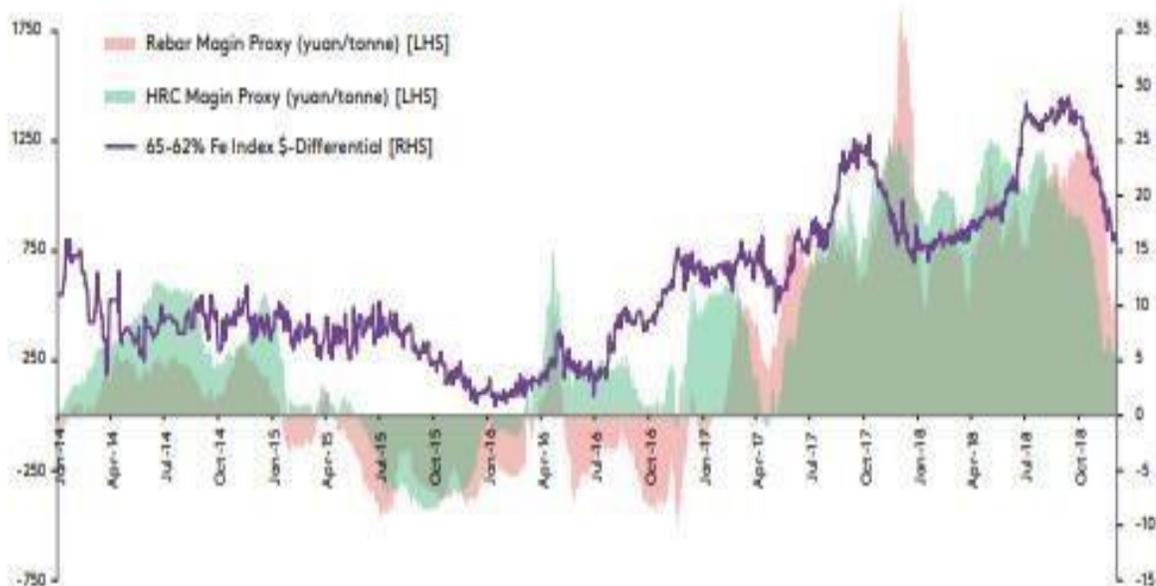
**Figure 3. Premium for Each Percentage Point Above Baseline 62% Content Fe Iron Ore**



Source: Bloomberg.

Largely due to the environmental program, China will remove about 150 million tonnes of in-country steelmaking capacity over the period 2016-2020. Nevertheless, China's overall crude steel production has continued to grow – despite the capacity reductions. Chinese steel producers have utilized high quality iron ore to produce more steel (but less carbon-intensive steel) at higher profit margins and in a more efficient manner. Indeed, the profitability of Chinese steel mills is positively correlated with the size of the 65%-62% Fe premium. See Figure 4. (The key premium for Black Iron is the even-wider 68%-62% differential.) The reason: the higher silica and alumina levels in the baseline 62% grade increase blast furnace slag volume, thereby lowering hot metal yields, increasing coke consumption and pollution, and limiting steel production rates. China's cuts have also reduced the market for its own high-cost, high-impurities iron ore; at least half of the country's 300 million tonnes of capacity has left the market permanently.

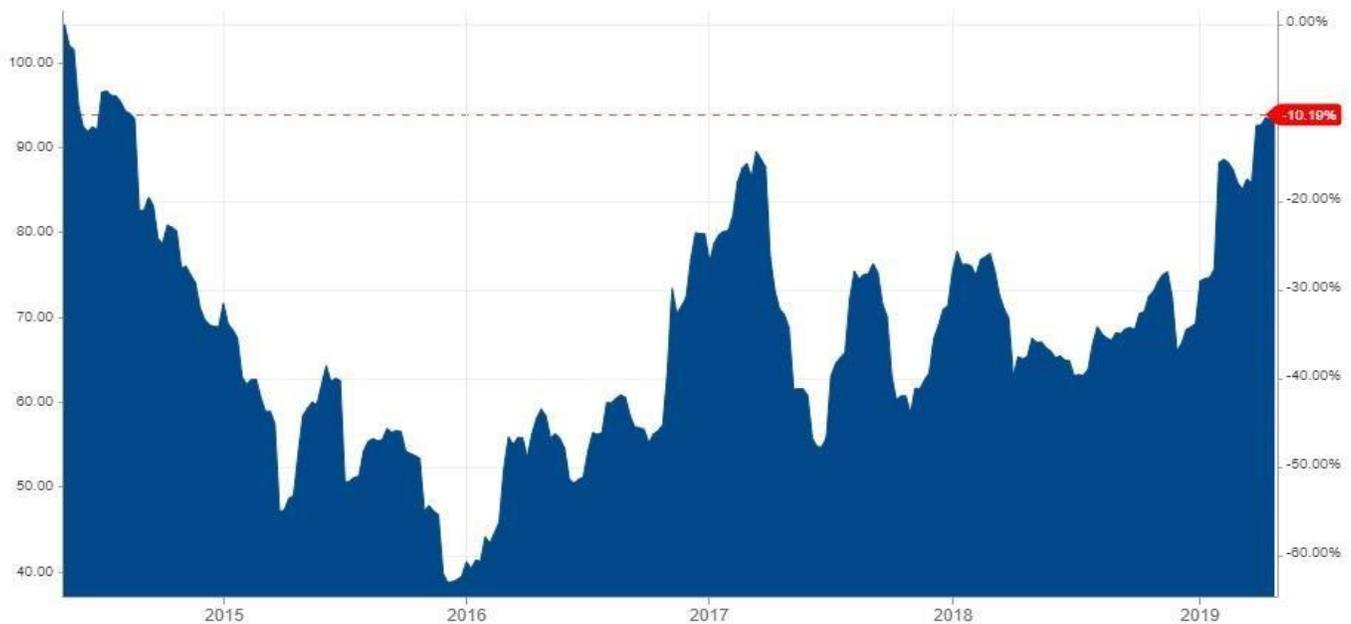
**Figure 4. Strong Correlation Between Chinese Steel Makers Profitability and Iron Ore Premiums**



Source: *Fastmarkets*.

**Baseline Iron Ore Prices:** Baseline 62% Fe content iron ore bottomed in early 2016 at around US\$40 per tonne and stabilized in the low-US\$60 range through year-end 2018 as the worldwide economy and steel making demand improved. See Figure 5. Baseline prices have recently spiked to around US\$95 due to the tragic January 2019 tailings dam collapse in Brazil (see page 9), as well as adverse weather in Australia and ongoing supply issues at other major iron ore producers.

**Figure 5. Baseline 62% Fe Content Iron Ore Prices Over the Last 5 Years Expressed in US Dollars Per Tonne**



Source: MARKETINSIDER.

**Shymanivske Construction Plans:** Black Iron plans to build the Shymanivske Project in two phases. First, the company would build a four million-tonne per annum mine for a projected capital cost of US\$436 million. Phase 1 construction is expected to take two years. Second, Black Iron contemplates adding a further four million tonnes of capacity (bringing the project to a total annual capacity of 8 million tonnes). This expansion would likely entail capital expenditures of US\$312 million, but would be funded out of free cash flow generated from the initial four million-tonne annual mining operation. Key aspects of Black Iron’s capital funding strategy for Phase 1 are as follows:

- In February 2019, Black Iron reached a Memorandum of Understanding (MOU) with Glencore whereby Glencore would buy the entire output of the Shymanivske project and serve as a backstop equity investor in the project. Under the terms of the MOU, Glencore will pay the full prevailing market price for Black Iron’s iron ore, adjusted for its premium ore quality, less a discount to be negotiated, which is typically around 2%-5%.
- It has not yet been determined whether Glencore’s equity investment will be at the BKI corporate level or at the Shymanivske project level. If Glencore’s investment were to be at the project level and if, in the end, it funded 20% of the project’s costs, Glencore’s total investment in Phase 1 of the project would be approximately US\$87 million (20% x US\$436 million). At this hypothetical project ownership level, Glencore would receive 20% of Shymanivske’s iron ore at cost — about US\$31 per tonne — and would pay market prices for the remaining Phase 1 iron ore (which is currently well in excess of US\$100 per tonne).

From Black Iron's perspective, using product offtake to fund construction is less dilutive than trying to raise the majority of the equity in the public markets. Sources of potential funding to round out the US\$436 million needed include export credit agencies, bank debt/high yield bonds, as well as potentially equity-in-kind arrangements with international construction companies. To explore these last sources in more detail, consider the following possibilities:

- Metinvest, a B minus-rated fully integrated steel manufacturer in the Ukraine recently raised about US\$2.5 billion of high-yield debt at yields of 7.75%-8.75%. If Black Iron were to try to raise high yield debt, we believe it would be able to do so given the project's economics and its MOU with a company of Glencore's stature; however, the required yield would be higher, probably around 10%.
- If a construction company were to take, as part of its compensation, equity-in-kind, that would limit Black Iron's cash construction outlays by taking the majority of the investment during construction post all financing being in place and announced. For example, if a construction company were awarded the contract and wanted to put in US\$40 million of equity-in-kind over the two-year construction period, it would own about 10% of the project (US\$40 million divided by US\$436 million).

**All Necessary Infrastructure In Place:** Unlike many start-up mines, the infrastructure surrounding BKI's project is in place – saving the company hundreds of millions of dollars -- and BKI has already signed LOIs for the necessary capacity on those facilities. Note the following key points:

- Paved roads between the mine site and the city of Kryvyi Rih (population 750,000) already exist. In addition, the city, which is surrounded by five iron ore mines, has a highly skilled -- and inexpensive -- work force. For example, the hourly wage of a skilled electrician in the area is only about US\$5/hour. In contrast, in the booming Pilbara iron ore and met coal mining region of Australia, the annual salary requirements of a truck driver approaches US\$200,000.
- BKI's iron ore project sits only two kilometers away from Ukraine's main state-owned rail line. BKI has signed an LOI for 10 million tonnes per annum of capacity on that line, more than enough to handle the 4 million tonnes per year from Phase 1 of the Shymanivske Project plus an additional 4 million tonnes contemplated from a Phase 2 expansion.
- Similarly, Black Iron has LOIs in place for 9.5 million tonnes per year of shipping capacity at Port Yuzhny, a port on the Black Sea located 430 kilometers away that loads cape-sized vessels necessary to compete in global seaborne iron ore markets.

- Finally, Black Iron has LOIs for 140 megawatts of electric power and sufficient natural gas supply to operate the project.
- We note especially that the rail and power LOIs allow Black Iron to avoid the crushing per-kilometer construction costs of about US\$3 million and US\$1 million that many mining projects face to build new rail and power lines, respectively. Most development iron ore projects are several hundreds of kilometers from power lines, rail, and/or port facilities.

**Required Permits:** Ukraine’s government granted Black Iron a 20-year mining permit for the 2.56-square kilometer Shymanivske Project in 2004. Black Iron has the option in 2024 to renew the permit for an additional 20 years.

In order to build the necessary waste dumps, concentrator and tailings facility for the project, Black Iron is in talks with the government to purchase a nearby plot of land which is currently being used by the military for training purposes. We expect these discussions to lead to a deal, as raw land is plentiful in the country. In addition, Black Iron is proposing to build around 200 apartments for military use as part of the potential transaction.

**Presidential Election:** Ukraine elected actor and political newcomer Volodymir Zelensky as its president on March 31, 2019; he beat Ukraine’s incumbent president in a runoff election by a resounding 73% to 24% margin. The message of the election: we believe that the Ukrainian people signaled a desire to move faster toward integration with Europe and to maintain a distance from Russia. Importantly, Mr. Zelensky expressed no desire to increase or decrease the country’s commitment to the ongoing conflict with Russia in Eastern Ukraine. Ukraine’s continued commitment to its mining industry was not an issue in the campaign or election. Perhaps the overarching economic and political characteristic for Ukraine is its potential for growth. The country boasts a 99% literacy rate, yet its GDP per capita is only about US\$2,600.

**Experienced, Shareholder-Focused Management Team:** Founder and CEO Matt Simpson leads an experienced BKI management team. We particularly note that Mr. Simpson was previously mine General Manager for Rio Tinto’s Iron Ore Company of Canadian mine, which is the largest iron ore mine in North America. Also, COO Les Kwasik has 40 years of mining experience, and VP Ivan Markovich has strong relationships with senior Ukraine government officials. BKI’s management and board collectively own about 8% of the stock.

**Black Iron’s Investment Proposition:** We believe that BKI shares represent an extraordinary investment opportunity. The company owns a unique resource that stands to grow in value and importance as China continues its only possible choice of embracing policies to limit the growth of carbon emissions while still producing the steel needed to grow its economy. In prior years, China needed the steel to build skyscrapers; now it has to produce steel so that its growing middle class can buy white goods like washing machines.

In addition, other regions which produce premium grade iron ore are experiencing supply issues. In Australia's case, a dwindling supply of premium iron ore remains after years of aggressively mining the resource. As shown in Figure 6, Australian miners are depleting iron ore resources with low impurities and replacing them with lower-quality, higher impurity resources. In Brazil, the January 2019 Vale tailings dam collapse and its aftermath, which resulted in the country's banning all cheap upstream dams, is likely to reduce global iron ore production by around 75 million tonnes per annum. Not only is Brazil a large iron producer (second in the world behind Australia), but its exports are very high quality. In 2018, the average Fe content of Brazilian iron ore exports was 64.5%, a full five percentage points higher than Australia's 59.5% figure. Perhaps 10% of the 75 million tonnes permanently idled represents ultra-high quality iron ore like Black Iron's.

**Figure 6. Dwindling Replacement Quality of Australian Iron Ore**



**Based on conservative steady-state prices of US\$62 per tonne for baseline 62% Fe content iron ore (and ignoring the current price spike to about US\$95), coupled with a US\$35 premium for BKI's 68% Fe content product — the current premium is around US\$30, which is likely to hold or increase as benchmark prices decline from the current US\$95 per tonne level — BKI is expected to generate annual EBITDA of about US\$385 million over Shymanivske's 20-year mine life.** Strongly contributing to this expected cash flow is a particularly low operating cost of US\$31 per tonne to mine, process, rail, and load ships (FOB). Low labor costs, a very attractive Ukrainian currency exchange rate (see Figure 7) and moderate infrastructure costs are key factors in Shymanivske's very modest operating costs. One way to appreciate the impact of the project's low operating costs: those costs are roughly

equal to the premium that BKI should realize on sales of its high grade iron ore. Effectively then, BKI's business model and prospects are equivalent to that of a company selling baseline 62% Fe content iron ore with approximately zero operating costs.

**Figure 7. 10-Year Exchange Rate History of Ukrainian Hryvnia to US Dollar**



Source: XE Corporation.

On a worldwide basis, established iron ore companies trade at EV/EBITDA multiples of 4.0-6.5 times. (See Table 1.) If we were to apply this multiple to BKI, its implied value upon reaching steady state operations would be US\$1.6-US\$2.5 billion. Even factoring in some amount of debt that the BKI will take on to complete the project, and a likely project ownership position by Glencore and possibly by a construction consortium (which would limit BKI's capturing the full US\$68+ margin on some tonnes it sells), **BKI's current EV of US\$9 million seems far too low given the economic opportunities described above. Phrased differently, in 2017 the consulting firm BBA concluded that the Shymanivske had an after-tax net present value (NPV) of US\$1.7 billion, dramatically above BKI's future likely enterprise value.**

**We believe that given BKI's tremendous economic opportunities, the company should currently trade at perhaps a US\$100 million enterprise value, implying a present fair share price of about C\$0.75 per share or US\$0.55-US\$0.60 per share. Furthermore, as Shymanivske construction gets closer, we think the market will start putting perhaps a 1x multiple on the company's projected annual EBIDTA of around US\$385 million.**

**Table 1. Key Financial Parameters of Selected Iron Ore Companies**

(figures in millions of US dollars)

	<u>Enterprise Value</u>	<u>EBITDA</u>	<u>Enterprise Value/EBITDA</u>
Cleveland Cliffs	\$4,477	\$733 (A)	6.11x
Ferrexpo (B)	\$1,954	\$492 (D)	3.97x
Vale (E)	\$76,296	\$11,900 (D)	6.41x
BHP (F)	\$145,986	\$22,100 (D)	6.61x
Rio Tinto (G)	\$104,231	\$22,700 (D)	4.60x

**Footnotes:**

(A) Over the twelve months ended March 31, 2019.

(B) Iron ore pellet producer which has operated in Ukraine for 40 years.

(D) Over the twelve months ended December 31, 2018.

(E) Produces iron ore, iron ore pellets and nickel.

(F) Produces iron ore, copper, coal, nickel, zinc, potash, as well as oil and gas.

(G) Produces iron ore, aluminum, copper, diamonds, gold, industrial minerals, and uranium.

It is important to note that the above calculations assume that all of Black Iron's output is sold as 68% Fe content iron ore to blast furnaces. As noted on page 3, we believe that much of Black Iron's output will ultimately be sold to Middle East steel companies employing the DR steel making process. DR processes require a 69.5% Fe content iron ore, which commands a significant market premium to even the 68% Fe product. Since Black Iron can create a 69.5% concentrate product at a much lower incremental cost than the incremental premium it would realize from selling the product, it is fair to conclude that Black Iron's projections of around US\$385 million of annual EBITDA and a US\$1.7 billion NPV are understated.

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*05/14/2019*

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