Coal-Era: Drivers and Approaches to the Valuation of Coal Properties

Coal remains one of the most widely used sources of energy in the world, particularly for electricity generation. While developed countries continue to diversify their sources of energy, many emerging economies remain dependent on coal and other fossil fuels as their primary source of energy.

Coal in the Spotlight
On 25 August 2014, the Supreme Court of India concluded that the process followed by the Government of India (“GoI”) and/or its various agencies for allocating coal block licences in India since 1993 was “arbitrary and illegal.” Subsequent to its decision, the Supreme Court cancelled 214 licences of the total 218 licences awarded over the relevant period, including those of coal mines which were already producing coal. It also ordered the companies that owned the operational blocks to compensate the government for losses incurred at the amount of INR295 per tonne of the total coal extracted over the aforementioned period. (On the basis that such companies were able to extract higher economic profits by owning coal properties at the expense of the exchequer.) The Comptroller and Auditor General of India (“CAG”), in its final report tabled in August 2012, claimed that the inefficient allocation process followed by GoI for the coal blocks has cost the exchequer c. INR1.86 lakh crore (or c. US$30.2 billion).

This recent mass cancellation of coal licences in India by the Apex court has not got unnoticed. There has been some commentary on this subject in various global publications and media but the judgment has also commanded significant discussions within India. Whether investors (local or foreign) react by resorting to legal action, increasing their perceptions of risk or reducing their India investments is yet to be seen. We understand that many domestic players have already reiterated their interest in the forthcoming auctions that would seek to reallocate some of the cancelled blocks.

The judgment and imminent re-auction of particular recently cancelled blocks have revived interest in coal and its importance as a commodity. In this article we briefly assess the importance of coal globally and in India, highlight the principal value drivers of coal properties and introduce the various approaches that may be adopted to value such properties.

Who Needs Coal?
Global demand for commercial coal has risen from 2,343 million tonnes oil equivalent (“Mtoe”) in 2000 to 3,827 Mtoe in 2013, at an average growth rate of 3.9% per annum. According to the International Energy Association (“IEA”) (2012) and BP (2013), coal meets 29.9% of global primary energy needs, generates 41% of the world’s electricity and fuels production of 70% of the world’s steel.

Total world coal production reached a record level of 7,896 million tonnes in 2013. Coal reserves, as of December 2013, were estimated to be 892 billion tonnes which equate to c. 113 years of coal output at current production levels. The top 10 coal producing countries (namely, China, the United States (“U.S.”), Australia, Indonesia, India, Russia, South Africa, Kazakhstan, Poland and Columbia) account for c. 90% of global coal production.

The figure below summarises regional consumption trends for coal since 1988. It is clearly evident that Asia Pacific (“APAC”) accounts for a majority of global coal consumption and all of the increase in consumption in the last 25 years. These trends are expected to continue.

---

1 Supreme Court Judgment on Coal Blocks, 25 August 2014, p.4 and p.162.
2 Using an exchange rate of USD: INR = 0.016 as at 10 February 2015 (Source: www.xe.com).
4 Coal Facts 2013, World Coal Association, p.1.
Driving the APAC region’s growth in consumption is China, the world’s largest producer and consumer of coal, accounting for 47.4% of production and 50.3% of consumption in 2013. Meanwhile India, at 13% of global consumption currently, is expected to overtake the U.S. to occupy second place by 2024.\(^5\)

**Forecasted Global Demand for Coal Till 2035**

*Source: BP Energy Outlook 2035, January 2014, p.68*

After 2030, forecasts see China’s consumption of coal slowing down as the economy shifts towards a greater focus on services and domestic consumption. In contrast, India’s forecasted demand remains robust as industrialisation continues in the country, resulting in speculations that after 2025 India will replace China as the leading source of coal demand growth.\(^5\)

**Coal in India**

In India, coal is a primary input for the power sector and in industries such as iron, steel and cement. Although India has the fifth largest coal reserves in the world (proven reserves of 60.6 billion tonnes and total estimated reserves of c. 286 billion tonnes) and is the fifth largest producer of coal,\(^7\) it has been unable to meet its growing demand through domestic production. In recent years, production has lagged consumption — since 2007 (to 2013) coal production has grown by c. 4% per year whereas consumption over the same period has grown by more than 7% annually. As a result, between 2005-06 and 2012-13, India’s coal imports more than tripled from 41.2 million tonnes to 140.6 million tonnes.\(^8\)

India imports thermal coal mainly from Indonesia and South Africa and coking coal for steel production from Australia. Indonesia is the largest source of coal imports to India, accounting for 55% of total coal imports in 2012.\(^9\)

Domestic shortages may have been exacerbated by inefficient delivery models. In addition, domestic coal production generally has high ash content, rendering it unsuitable for coking and use in the steel industry.\(^10\) With the demand for metallurgical coal expected to remain buoyant, Indian coal imports may continue to rise.

According to the Planning Commission, India’s demand for coal is expected to reach 980.5 million tonnes of coal by FY2017 with the power sector constituting roughly 70% of the total demand.\(^11\) However, indigenous coal availability is projected optimistically by some accounts at 795 million tonnes. Even assuming steady growth in domestic production, therefore, the shortfall in demand is expected to continue. The recent cancellations of coal licences may thus have a further adverse impact on the availability of domestic coal, at a minimum in the short-term, which will likely result in higher import bills.

**China, EU and India Coal Imports (in million tonnes)**


---


\(^6\) BP Energy Outlook 2035, January 2014, p.69.

\(^7\) BP Statistical review of world energy, 2014, p.30 and p.32.

\(^8\) Annual Report 2013-14, Ministry of Coal, GoI, p.67.

\(^9\) Effective 1 October 2014, Indonesia introduced a new export regulation policy requiring traders to obtain appropriate licensing. This may affect imports of coal from Indonesia in the future.

\(^10\) “Outlook for metallurgical coal is steady”, Mike Elliott (EY Minings & Metals), World Coal Association, 24 January 2014.

Coal Price and Drivers of Value

Coal is generally categorised according to its physical and chemical properties, such as hardness, moisture level and energy content, and its primary uses can be classified between thermal coal and coking coal, which are used for power generation and iron and steel production, respectively.

Thermal coal prices depend on the calorific value (“CV”) of the coal product as well the level of impurities such as of sulphur, ash and moisture. All else equal, the, higher the CV and lower the impurities, the higher the expected price per tonne.

Coal is therefore not a homogeneous product and there are several different coal markets that are segmented by end-use (steam, metallurgical), quality (CV, ash and sulphur content, etc), geographical location, regulations, coal supply contracts etc., each with different pricing structures. As may be seen in the chart on the following page, for instance, coking coal prices generally exceed those of steam coal and Asian prices are higher than those in North America or Western Europe.

A key underlying characteristic inherent in commodity companies is their dependence on the price of the commodity for their cash flows and value. Global commodity companies are usually price takers regardless of their size especially when their market is global. Therefore, the revenues of commodity companies may be heavily impacted by commodity price trends and volatility.

In some circumstances, especially for more mature commodity companies or mines, when outputs stabilise, changes in commodities price and the commodity price cycles may explain most of the variances in commodity companies’ revenues.

The other key value drivers of a mining property may include:

- The extent and quality of the reserves;
- sales arrangements;
- operating, capital and extraction costs;
- applicable royalties, taxes, and duties; and
- project, market and country risks which may be reflected in the expected cash flows arising from the mine or in the discount rate applied to convert future cash flows to a present value.

Coal properties may differ in more than one respect and such differences can be critical in inferring value and distinguishing value between properties.

---

12 Other factors such as freight costs (which in fact constitute a significant portion of the total cost of delivered coal) can have a significant impact on the final price.
Valuing Coal Properties

Mining projects are complex undertakings and often require much effort and time to bring into production. They are generally characterised by substantial investments in exploration activities, mining equipment and infrastructure before commencing commercial operations. Further, as explained above the projects may be prone to the volatile commodity price cycles and the regional or global imbalance or balance of supply and demand fundamentals. In this context, the economic value of the mine is a key issue whether in the context of licensing, mergers and acquisitions or in disputes. The recent developments in the Indian coal sector have highlighted the perennial interest in coal properties. The Supreme Court of India has cancelled a majority of the coal licences awarded to private players since 1993. It has further penalised certain companies for the extraction of coal over the relevant period and ordered a fresh auction of the various cancelled coal blocks to ensure transparency and fairness in allotment. Economic value of the said coal properties would be particularly relevant in all such circumstances.

As a first step (assuming the date of valuation has been fixed and relevant definition of value has been selected13), it is necessary to assess the stage of development the mineral property has attained as at the valuation date. This is particularly important because in mining cases, the stage of development will most likely determine the valuation approaches that are deemed appropriate and may have a significant impact on the final value ascribed to the property.

Mining projects follow a broadly predictable development path from the initial identification of potential resources, to exploration, evaluation of deposits through geological and metallurgical work, mine planning and construction, which eventually leads to production and, finally, to the decommissioning and remediation phase at the end of the mine’s life.

Based on this life-cycle, mining properties can be characterised into four broad categories: (i) exploration properties, (ii) mineral resource properties, (iii) development properties, and (iv) production properties. The stage of development at a particular time can be assessed based on a review of the technical reports prepared on the project. In some jurisdictions, public companies must publicly disclose the necessary information with respect to the reserves and resources of its mining projects.14

In determining the appropriate valuation approach(es) to use, it is prudent to be familiar with internationally recognised valuation standards for mineral properties such as the Standards and Guidelines for Valuation of Mineral Properties produced by the Special Committee of the Canadian Institute of Mining, Metallurgy and Petroleum on Valuation of Mineral Properties (“CIMVAL”), the South African Mineral Assets Valuation Working Group (“SAMVAL”) and the Australian Institute of Mining and Metallurgy (“AusIMM”).15

Three potential ways to value a mining asset are commonly applied, namely by reference to its replacement cost; or

---

13 The appropriate definition of value may be case specific but “fair market value” or “FMV” is typically used. FMV is may be defined as “The price, expressed in terms of cash equivalents, at which property would change hands between a hypothetical willing and able buyer and a hypothetical willing and able seller, acting at arm’s length in an open and unrestricted market, when neither is under compulsion to buy or sell and when both have reasonable knowledge of the relevant facts.”

14 For more details, please see: Valuation of “Start-Up” Oil and Gas and Mining Projects, Chris Milburn and Laura Hardin, FTI Consulting, The Arbitration Review of the Americas 2011.

15 For more details, please see: Valuation of “Start-Up” Oil and Gas and Mining Projects, Chris Milburn and Laura Hardin, FTI Consulting, The Arbitration Review of the Americas 2011.
 invested capital, its market value or the future income that it is 
expected to generate:16

**Income-based approaches**

In valuation theory, discretionary after-tax cash flow is of 
primary importance. The most commonly applied income 
approach is a discounted cash flow (“DCF”) method, which 
assess the value of an asset by reference to the amount, 
timing and risk of its future cash flows. When implementing a 
DCF method, it is customary to follow three main steps:

- Estimating future cash flows for an explicit forecast period;
- calculating the terminal value of the asset at the end of the 
forecast period (this may not be appropriate for a mining 
property as its full useful economic life can usually be 
estimated); and
- discounting the cash flows and terminal value to determine 
a present value using a discount rate that takes into 
account the market risk of the cash flows and terminal 
value and the time value of money and summing the total 
value of the asset to arrive at the current value.

Extractive industries are unique in some respects: once the 
mining resource is established to a sufficient degree of 
certainty from a technical perspective and economic viability is 
verified via a feasibility study, the processes and technology to 
extact the ore and produce the commodity are well-
established and the costs can therefore generally be 
estimated with a reasonable degree of precision. Further, such 
products usually have a ready end market (global or regional) 
and so revenues can also be forecasted using publicly 
available forward pricing curves.

**Market-based approaches**

Value is inferred from publically-available information 
pertaining to transactions and trading prices involving mines 
that are deemed to be sufficiently comparable to the target 
mine. While mining projects may have unique characteristics, 
value data from reasonably similar mines can be used to 
determine a reasonable range of their fair market value or to 
re-affirm the reasonability of value conclusions reached via 
other methodologies including the income approach.

**Cost-based approaches**

Value is determined based on the principle that a notional 
purchaser would not spend more on an asset than it would 
worth to construct the asset themselves. Such costs would 
include development costs of a mineral property. Depending 
on the circumstances, this may be thought of as a ‘floor’ value 
as it would not include any future expected rate of return or 
cash flows on this investment.

---

16 Another approach that may be applied in valuing mineral properties is an option-based approach. A significant portion (or majority) of the value of a mineral property may be in the option to develop the property and commence production when feasible. Therefore, it is possible to model the valuation of the mining property as a real option that is available to the mining company and/ or investors. We do not discuss this approach in more detail here.

17 “Coal block valuation panel seeks assistance from CAG”, the Indian Express, 23 November 2014.
Conclusion
The valuation of a coal project is a vast undertaking that requires knowledge of the overall mining process, a sound understanding of the property from a technical and financial perspective, knowledge of the appropriate valuation standards and guidelines, risks specific to the geography and project, an understanding of the context of the valuation and experience with standard valuation and financial concepts and approaches.

The recent developments in India have given rise to conflicting opinions in India and globally but have also reiterated the strong interest in strategically important minerals and commodities such as coal.

Whether for the purposes of any damages analysis (that may arise from any claims pursued by domestic or foreign investors or for estimating losses to the exchequer) or ascribing reserve or bid price in the imminent auctions or ascertaining the value in a more general context like transaction advisory or capital budgeting, the valuation approaches would generally include a detailed review of available market data; comparable transaction data; and the construction of an income-based analysis where sufficiently reliable information exists to prepare a financial projection.