

Project Valuation: The Drivers Behind a Mineral Project's Value

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With the increase in commodity prices, mergers and acquisitions of mineral projects have gained momentum. The mergers and acquisition environment raises the question of the true value of a mineral project, being in an early exploration or in an operational phase. There are various international accepted codes, namely the SAMVAL, VALMIN and CIMVAL Codes that set out the standards and procedures that should be followed to evaluate a mineral project based on its position in the project development cycle. The Competent Evaluator uses his knowledge and experience to attribute a value to the mineral project. The methods prescribed in the Codes do not address all the intangible levers that can contribute to or erode the estimated value of a mineral project. A total value approach is presented, which takes into consideration external factors that influence the value of a mineral asset, to use in estimating the market value of a project as part of the valuation process.

INTRODUCTION

The prediction of the value of a mineral asset is a complex matter. Various methods have been developed to determine the intrinsic value of a project, but all methods are not applicable to all stages of mineral asset development. There are also various underlying factors that are not incorporated in the determination of the market value of the project. External factors that are usually not considered in the valuation of a mining project, like environmental risks, social impact, and sustainability regulatory uncertainty, are not captured within financial statements but can influence the market value of the project. The incorporation of these external factors in a total value approach provides a method to quantify and determine the materiality of these factors. Through an analysis of these factors and their interdependencies, an understanding of the market value of a project can be developed.

INTRINSIC VALUE

The valuation of mining companies is based on the Mineral Resources and Ore Reserves present, so international reporting codes were drafted (SAMVAL, VALMIN and CIMVAL) to ensure consistency of mineral asset valuations. These valuations consist of two parts, namely, a technical valuation of the project and then a financial valuation based on the technical information.

It is important for the owner of a mineral asset to understand the technical requirements at the various stages of mineral asset development because the financial valuation is directly tied to the quality of the technical information.

The valuation codes also state that at least two methods, of the three discussed below, should be used to for the valuation. This ensures that any bias in using a certain method is reduced.

Valuation methods, as prescribed by the international valuation codes, are as follows:

1. **Income approach:** relies on the 'value-in-use' principle and requires determination of the present value of future cash flows over the useful life of the mineral asset.
2. **Market approach:** relies on the 'willing buyer, willing seller' principle and requires that the monetary value obtainable from the sale of the mineral asset is determined as if in an arm's length transaction.
3. **Cost approach:** relies on historic and/or future amounts spent on the mineral asset and is a valuation approach based on the economic principle that a buyer will pay no more for an asset than the cost to obtain an asset of equal utility, whether by purchase or by construction.

Different valuation methods are applicable through the mineral asset development stages as illustrated in Table I.

Table I: Relationship between stages of development and valuation method for mineral assets (SAMVAL Code, 2016).

Valuation approach	Early-stage exploration	Advance-stage exploration	Development properties	Production properties
Income	Not generally used	Less widely used	Widely used	Widely used
Market	Widely used	Widely used	Less widely used	Quite widely used
Cost	Widely used	Widely used	Not generally used	Not generally used

Although the market approach should provide an estimate of the market value of the project, there are some challenges (Baurens, 2010); namely:

1. There are a limited number of transactions for mineral properties, resulting in a small sample database for benchmarking.
2. There are no true comparable mineral assets in the mining industry. Each property is unique with respect to key factors such as geology, mineralisation, cost and stage of project development.
3. Effective data valuation due to the volatility in commodity prices and cyclicity of mineral markets.
4. Subjective judgement is needed to identify similar properties.

These challenges are normally addressed by building a database of transactions and reworking the value of the project back to a USD per tonne in situ value. Plotting of these valuations normally provides a large spread of values (mainly due to market volatility and cyclicity) and the mean of the range is normally applied as a multiplier to determine the value of a mineral asset. An example of project valuation curve is presented in Figure 1.

The valuation curve method marginalises the effect of current external factors on the value of a project as it incorporates transactions at various dates. The external factors of the past do not fully predict the externalities of the present or the future. It also does not provide transparency on which external factors influence the value of the project.

FACTORS INFLUENCING MARKET VALUE

Numerous economic papers have been written on the various factors that influence a company. These factors are normally seen as outside of the direct influence of the company and are omitted from financial valuations. The need to understand the influence of these factors (which are currently described as "intangible" because a fixed value cannot be directly contributed to them) is important to the seller and buyers because they can determine, to a large extent, the market value of a mineral asset. It should also be noted that these external factors do not stand alone as separate levers but influence one another due to underlying interdependencies.

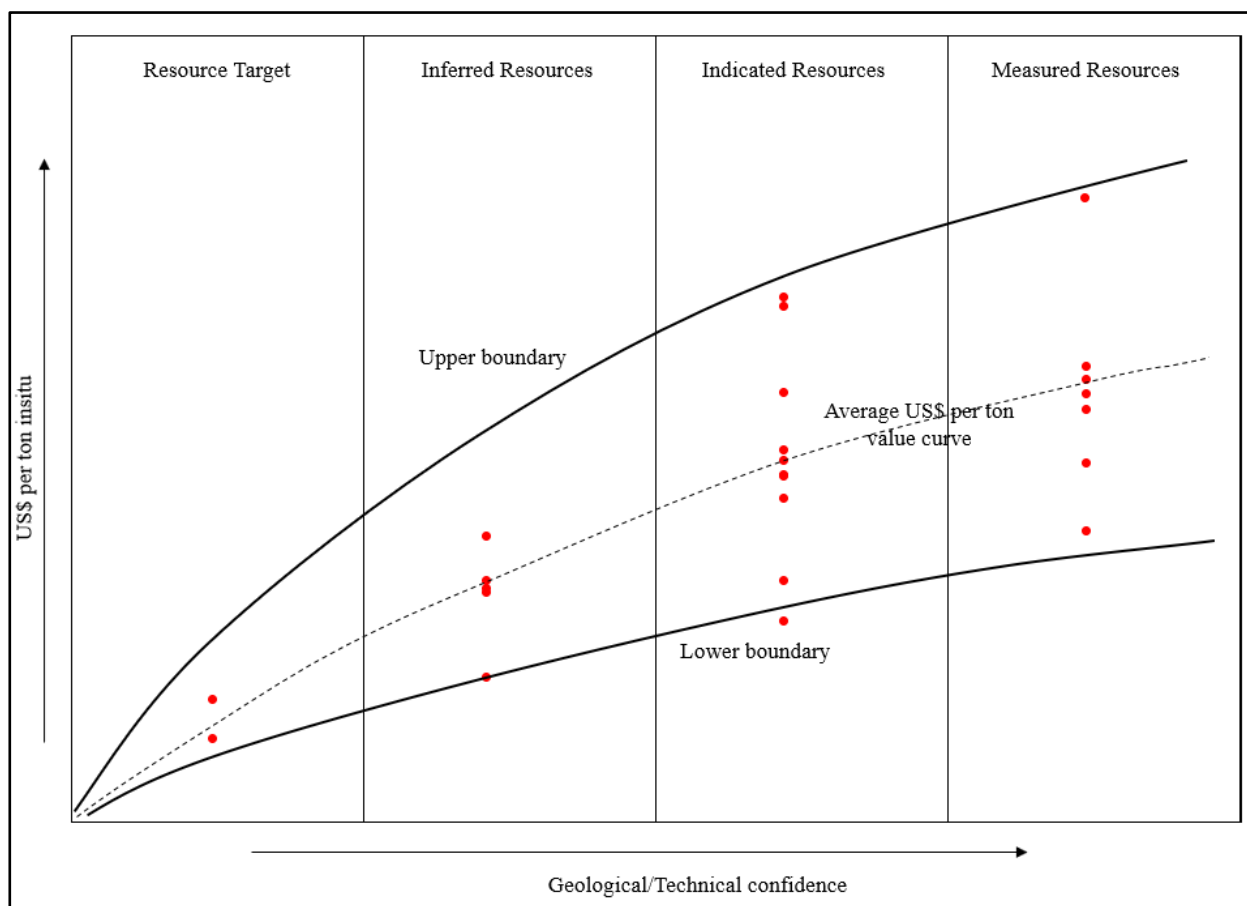


Figure 1: An example of a valuation curve based on historical transactions.

Typical external factors that are normally not captured (or only partially captured) on a mining company's accounts are as follows:

- Impact on the environment – this can be actual impact or perceived impact;
- Social impact;
- Labour – includes unrest, skills shortages and illegal practices;
- Shareholders' expectations with regards to operating margins;
- Security of tenure;
- Regulatory environment;
- Market sentiment – commodity prices, cyclicality and resource scarcity;
- Foreign direct investment – attractiveness of country to lure foreign investment;
- Technology and disruptive innovation.

A typical example of the interdependency of these factors and their effect on the valuation of a mineral asset is labour. Low labour costs increase the present value of a project. The labour cost is low due to illegal labour practices. The labour practice has a negative influence on foreign direct investment and a negative effect on the market sentiment. Therefore, the mineral asset is a high-risk project and the market deems the value of the mineral asset much lower than the intrinsic value determined.

To determine the effect of the external factors on a mineral project, the ratios of influence should be determined for a specific point in time and can then be included in the valuation systems thinking process.

TOTAL VALUE MODEL

The total value model discussed here is modified to align with the requirement of mineral assets and is from a total value model developed by Ernst and Young.

The external factors that add to or erode the intrinsic value of a company are often sub-divided into externalities and shared value. Shared value refers to value creation for stakeholders, for example, communities, employees and customers. The value exchanges with the community at large are referred to externalities, indicating that they are external to the entities that cause the effect. Figure 2 provides a schematic of the how total value is defined.

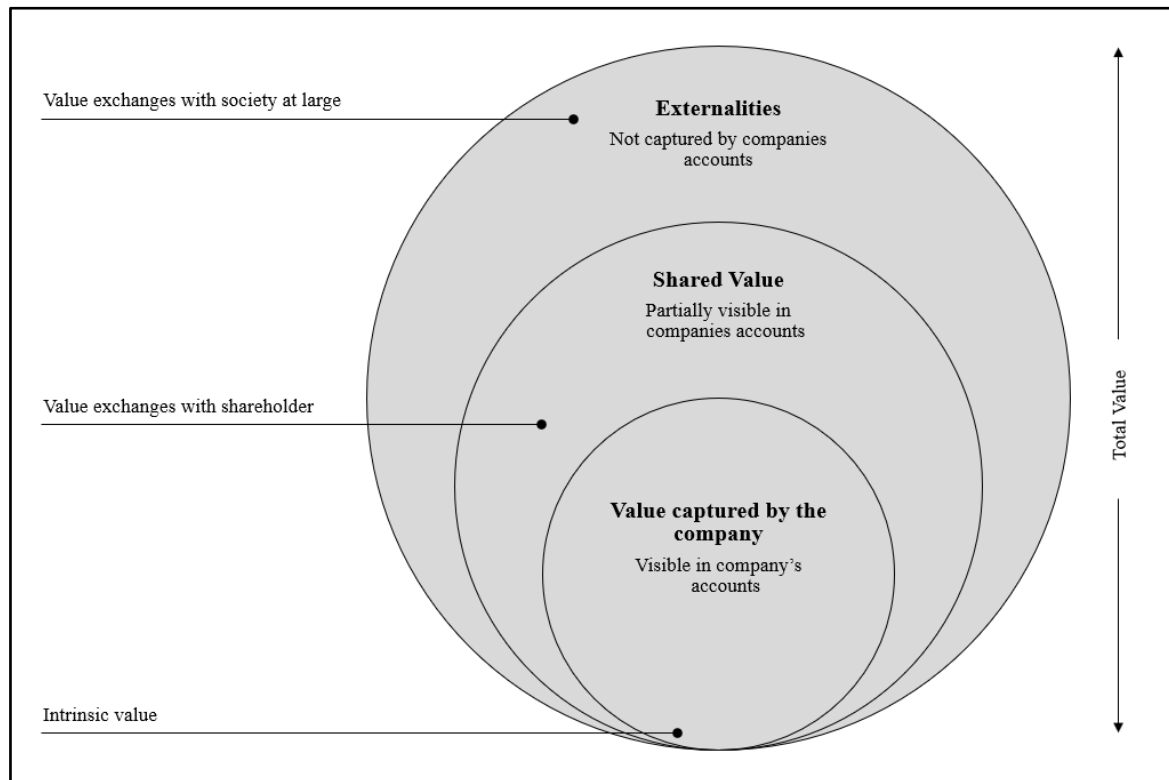


Figure 2: Total value defined as intrinsic value, shared value and externalities (Drost et al., 2016).

Merging the total value model with the external factors, listed above, and their interdependencies, the influence of these factors on the market value of the project can be determined. Figure 3 indicates the position of the identified external factors and their relationship with the total value model.

Now that the relationship between the total value model and external factors, including their interdependence, are understood, a total value analysis is required for the externalities and shared value can be conducted. The total value analyses will provide a qualitative measure, inclusive of a broad spectrum of external factors, to apply to the intrinsic value to obtain a market valuation for a mineral asset. A total value analysis provides an insight to the monetised impact, outcomes and their materiality on the valuation of the project. Figure 4 provides a conceptual presentation of a total value analysis.

With an understanding of the influences of the externalities and shared value, these can be applied to the intrinsic value of the mineral asset as determined through the valuation methods subscribed by international valuation codes. It is also important to note that these external factors are dynamic and can change rapidly and will vary between certain points in time. Figure 5 presents a diagram that indicates the methodology of determining the total value of a mineral asset.

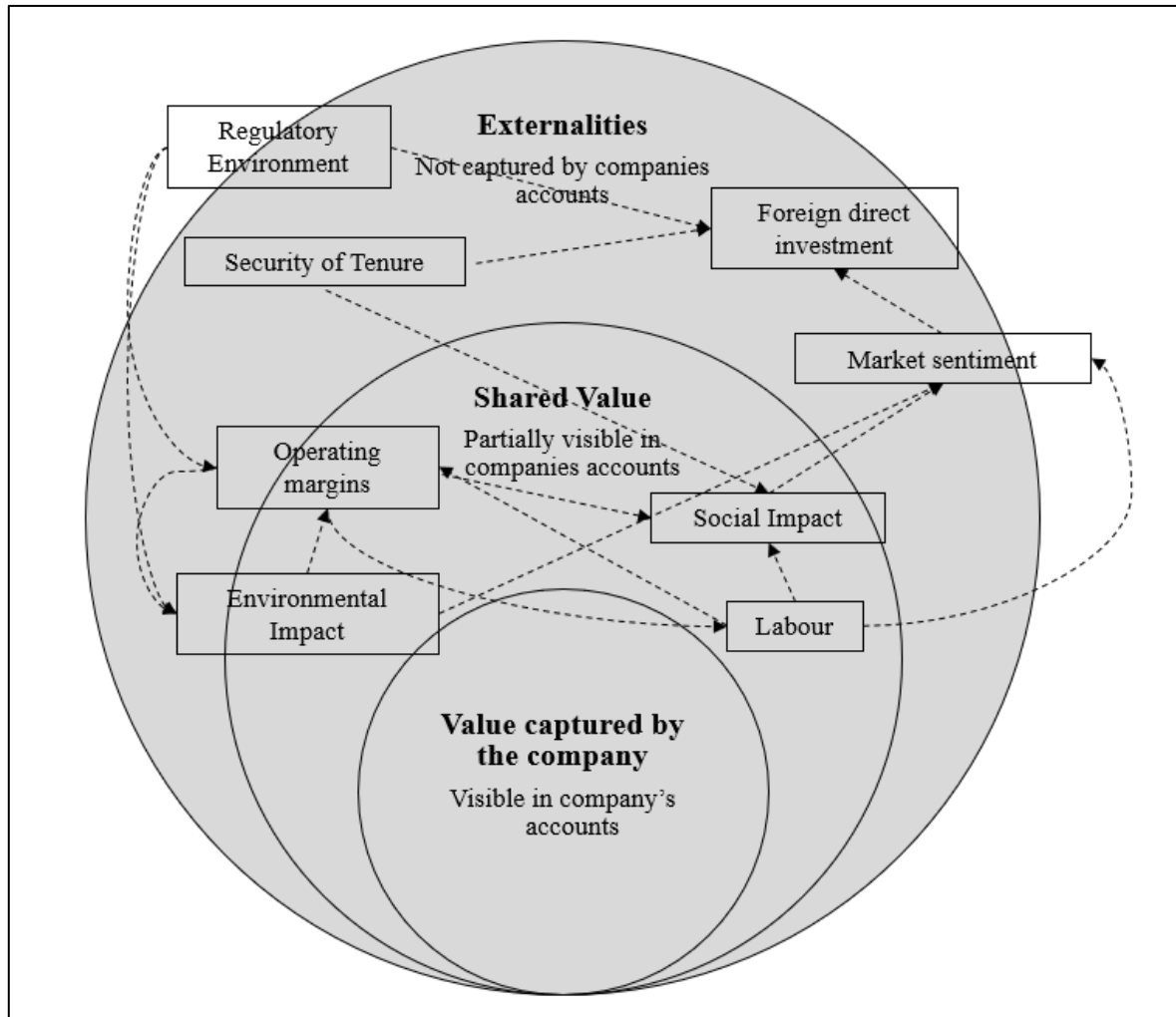


Figure 3: Relationship between the external factors and the total value model.

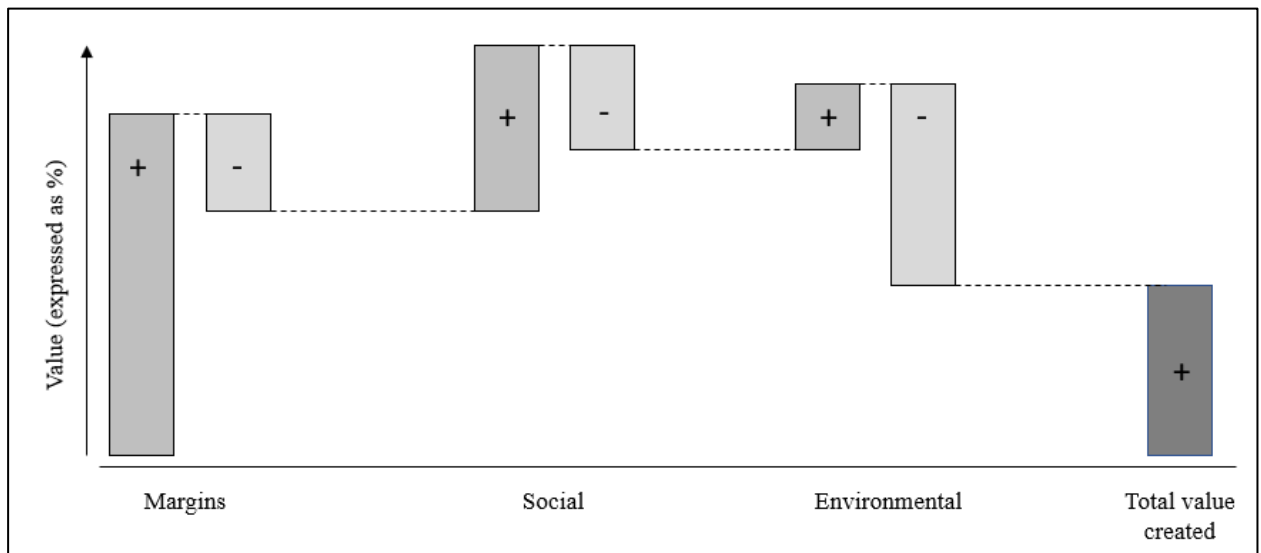


Figure 4: Conceptual total value analysis (after Dobs and Keller 2005).

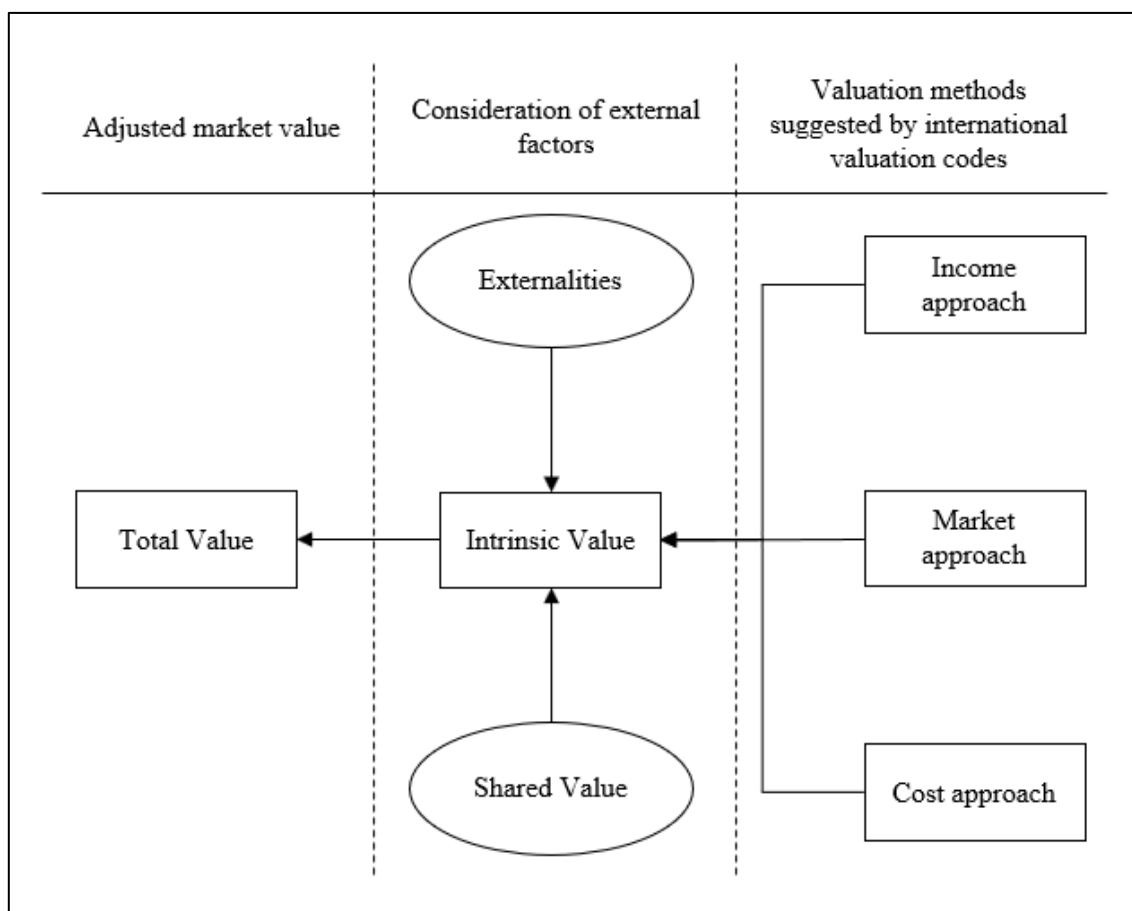


Figure 5: Diagram depicting the method of determining the total value of a mineral asset (at least two valuation methods should be used).

CASE STUDY: COPPER-COBALT MINING OPERATION

The case study is used to demonstrate the effect of external factors on the valuation of a mineral asset. Information critical to the valuation is tabulated in Table II. The total value analysis is presented in Figure 6.

Table I: Information critical to the valuation of a copper-cobalt operation.

Information	Notes	Effect
Country	Democratic Republic of Congo	Country risk captured in weighted average cost of capital (WACC)
Intrinsic value	USD 200 million	Based on the income and market approach
Market sentiment	Cobalt prices at all time high due to resource scarcity and the use of the metal in batteries	Positive effect on market value of project partially captured in net present value (NPV)
Regulatory environment	Royalties doubled, and cobalt classified as strategic mineral	Puts company margins under pressure, negative influence on foreign direct investment, negative influence on environment, social and labour.

From the analysis, the changes in the regulatory environment and its interdependencies significantly reduced the additional value-added through the current market sentiment. The intrinsic value can be adjusted by a factor of 1.03 to determine the adjusted market value of the project.

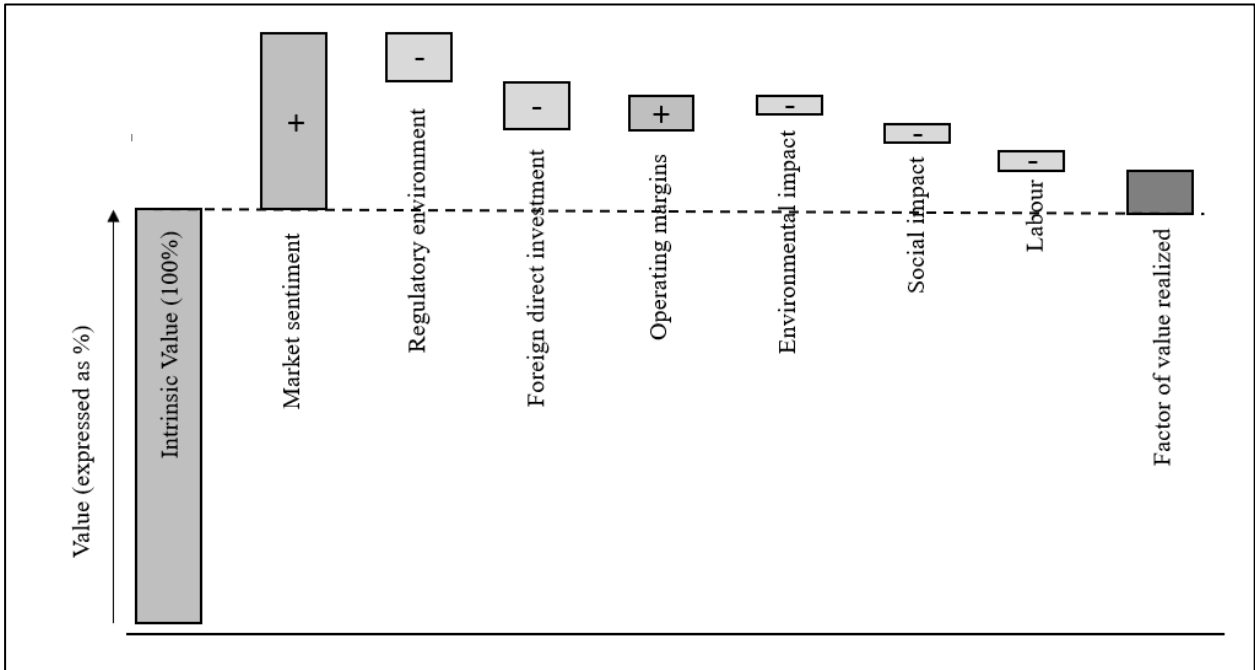


Figure 6: Total value analysis for a copper-cobalt project.

CONCLUSIONS

Mineral assets are valued according to their intrinsic value, even though the market approach allows for a correction of the intrinsic value. These methods are prescribed in the SAMVAL, CIMVAL and VALMIN Codes that are typically used for the valuation of mineral assets.

Mineral assets are rarely sold for the valuation prepared under these codes. The reason is that tangible factors are excluded in the valuation process. These external factors can have a big effect on the market value of the mineral asset and should be incorporated into the valuation of the mineral assets, or at least the seller/buyer should understand which and how external factors influence the mineral asset value. These external factors influence one another, and the underlying interdependencies of these factors must be understood at the time of the valuation to ensure their effect is correctly applied.

In this paper, the incorporation of the influence of external factors in a valuation was attempted through a modified total value method. The total value method provides a framework wherein the effect of external factors, being externalities or shared value, can be analysis and quantified. This provides a transparent method of assessing the levers on the value of a mineral asset in terms of their effect and materiality. The method also provides developers the opportunity to assess current economic environments and to optimise the external levers to optimise the perceived market value of a mineral asset.

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