Executive Certificate in Mineral Economics

Mineral Markets and Pricing

AISC stands for All in Sustaining Cash cost, which is a measure of the cost of producing and sustaining a mining operation. It includes all direct and indirect costs, such as labor, equipment, and maintenance, as well as the cost of capital expenditures required to sustain production. The AISC is an important metric for evaluating the financial performance of a mining company. Related terms include cash cost, total cost, and operating cost.

Asset is a valuable resource owned or controlled by a mining company, such as a mine, a mineral deposit, or equipment. Assets can be tangible, such as property or equipment, or intangible, such as mineral rights or intellectual property. The value of an asset is typically determined by its potential to generate revenue or profits.

Benchmark is a standard or reference point used to evaluate the performance of a mining company or a mineral commodity. Benchmarks can be based on industry averages, peer group performance, or other criteria. For example, a mining company may use a benchmark to evaluate its operating costs or mineral prices.

Byproduct is a secondary mineral or metal produced as a result of mining and processing a primary mineral or metal. Byproducts can be valuable and contribute to the revenue of a mining company. For example, copper mining often produces gold and silver as byproducts.

Cash cost is a measure of the direct cost of producing a mineral or metal, including labor, equipment, and materials. Cash cost is an important metric for evaluating the financial performance of a mining company. Related terms include total cost, operating cost, and AISC.

Commodity is a type of mineral or metal that is widely traded and has a standardized price. Commodities can be classified into different categories, such as base metals, precious metals, and energy minerals. The price of a commodity is often determined by supply and demand in the market.

Concentrate is a processed mineral product that contains a high percentage of the desired mineral or metal. Concentrates are often produced through flotation, gravity separation, or other processing methods. The quality and grade of a concentrate can affect its price and marketability.

Cut-off grade is the minimum grade of a mineral or metal required to make a mining operation economically viable. The cut-off grade is determined by the cost of production, the price of the mineral or metal, and other factors. A higher cut-off grade can result in lower production costs but may also reduce the amount of mineral or metal produced.

Deferred taxation is a tax accounting method that allows mining companies to delay paying taxes on certain expenses or revenues. Deferred taxation can help mining companies manage their cash flow and reduce their tax liability. However, it can also create tax liabilities in the future.

Deposit is a naturally occurring accumulation of mineral or metal that can be extracted and processed for economic gain. Deposits can be classified into different types, such as porphyry, vein, or sedimentary deposits. The size, grade, and quality of a deposit can affect its economic viability.

Discount rate is the interest rate used to calculate the present value of future cash flows. The discount rate is an important parameter in mineral project evaluation, as it affects the calculation of net present value (NPV) and internal rate of return (IRR). A higher discount rate can result in a lower NPV and IRR.

Economic indicators are metrics used to evaluate the economic performance of a mining company or a mineral commodity. Economic indicators can include metrics such as revenue, profit, cash flow, and return on investment (ROI). These indicators can help investors and analysts assess the financial health and potential of a mining company.

Exchange rate is the price of one currency in terms of another currency. Exchange rates can affect the price of minerals and metals, as well as the revenue and profitability of mining companies. A change in exchange rates can result in gains or losses for mining companies that operate in multiple currencies.

Feasibility study is a detailed evaluation of the technical and economic viability of a mineral project. A feasibility study typically includes estimates of capital and operating costs, revenue and cash flow, and an assessment of the project's risks and potential returns. The study is used to determine whether a project is economically viable and should proceed to development.

Fixed costs are expenses that remain the same even if the level of production changes. Fixed costs can include items such as labor, equipment, and maintenance. In contrast, variable costs change with the level of production. Fixed costs can affect the break-even point and profitability of a mining operation.

Forward price is the price of a mineral or metal for delivery at a future date. Forward prices can be used to hedge against price risks or to speculate on future price movements. Forward prices can be determined through over-the-counter (OTC) contracts or exchange-traded contracts.

Grade is the concentration of a mineral or metal in a deposit or ore. Grade is an important factor in determining the economic viability of a mining operation, as higher-grade deposits can be more profitable to extract. Grade can be expressed as a percentage or a ratio of the mineral or metal to the total weight of the ore.

Hedging is a risk management strategy used to mitigate potential losses or gains from price movements. Hedging can involve the use of forward contracts, options, or other derivatives to lock in a price or reduce exposure to price volatility. Hedging can help mining companies manage their price risks and stabilize their revenue and cash flow.

In situ is a naturally occurring accumulation of mineral or metal that has not been extracted or processed. In situ resources can be estimated and valued, but they may not be economically viable to extract. In situ resources can provide a basis for mineral reserves and resources.

Inflation is a general increase in prices and costs in an economy. Inflation can affect the price of minerals

and metals, as well as the revenue and profitability of mining companies. Inflation can also reduce the purchasing power of consumers and investors.

Internal rate of return (IRR) is the discount rate at which the net present value (NPV) of a project equals zero. IRR is a key metric used to evaluate the economic viability of a mineral project. A higher IRR indicates a more attractive project, while a lower IRR indicates a less attractive project.

Investment is the expenditure of money or resources to generate returns or profits. Investment can involve the acquisition of assets, such as mineral deposits or equipment, or the funding of mineral projects. Investment can be evaluated using metrics such as return on investment (ROI) or internal rate of return (IRR).

Leverage is the use of debt or other financial instruments to amplify returns or profits. Leverage can be used by mining companies to finance their operations or projects, but it can also increase the risk of financial distress or bankruptcy.

Long-term contract is a contractual agreement between a buyer and a seller to purchase or sell a mineral or metal over a prolonged period. Long-term contracts can provide price stability and revenue predictability for mining companies, but they can also limit their flexibility to respond to changes in market conditions.

Market capitalization is the total value of a mining company's outstanding shares. Market capitalization can be used to evaluate the size and value of a mining company, as well as its potential for growth and returns. Market capitalization can be compared to other metrics, such as revenue or earnings.

Merger and acquisition (M&A) is the combination of two or more companies to achieve strategic or financial objectives. M&A can involve the acquisition of mineral deposits, assets, or entire companies. M&A can help mining companies expand their resources, reduce costs, or increase their market share.

Mineral reserve is a portion of a mineral deposit that has been estimated to be economically viable to extract. Mineral reserves can be classified into different categories, such as proven, probable, or inferred reserves. The estimation of mineral reserves requires a feasibility study and the application of economic and technical criteria.

Net present value (NPV) is the present value of a stream of future cash flows, discounted at a given rate. NPV is a key metric used to evaluate the economic viability of a mineral project. A positive NPV indicates a profitable project, while a negative NPV indicates an unprofitable project.

Operating cost is the cost of producing and selling a mineral or metal, including labor, equipment, and materials. Operating cost can be affected by factors such as the grade of the deposit, the efficiency of the mining operation, and the price of inputs and outputs.

Opportunity cost is the value of the next best alternative that is given up when a choice is made. Opportunity cost can be relevant in mineral project evaluation, as it can affect the decision to invest in a particular project or asset. Opportunity cost can be compared to other metrics, such as return on investment (ROI) or internal rate of return (IRR).

Overhead cost is a type of fixed cost that is not directly related to the production or sale of a mineral or metal. Overhead costs can include items such as administrative expenses, marketing costs, and research and development expenses. Overhead costs can affect the profitability of a mining company, as they can increase the total cost of production.

Price elasticity is the responsiveness of the quantity demanded or supplied of a mineral or metal to changes in its price. Price elasticity can be affected by factors such as the availability of substitutes, the level of competition, and the sensitivity of consumers to price changes. Price elasticity can be used to evaluate the potential impact of price changes on demand or supply.

Price forecast is a prediction of the future price of a mineral or metal. Price forecasts can be based on historical trends, market analysis, or other methods. Price forecasts can be used to inform investment decisions, production planning, or hedging strategies.

Production cost is the cost of extracting and processing a mineral or metal. Production cost can be affected by factors such as the grade of the deposit, the efficiency of the mining operation, and the price of inputs and outputs. Production cost can be compared to other metrics, such as operating cost or total cost.

Project evaluation is the process of assessing the technical and economic viability of a mineral project. Project evaluation can involve the use of metrics such as net present value (NPV), internal rate of return (IRR), and return on investment (ROI). Project evaluation can help mining companies make informed decisions about investments, production, and development.

Reconciliation is the process of comparing the actual production or revenue of a mining operation to its planned or estimated production or revenue. Reconciliation can help identify discrepancies or variances, and can inform adjustments to the mining plan or budget.

Reserve reconciliation is the process of comparing the actual reserve estimates of a mining operation to its planned or estimated reserve estimates. Reserve reconciliation can help identify discrepancies or variances, and can inform adjustments to the mining plan or budget.

Return on investment (ROI) is the ratio of the net gain or profit of an investment to its cost. ROI can be used to evaluate the performance of a mining company or a mineral project. ROI can be compared to other metrics, such as internal rate of return (IRR) or net present value (NPV).

Risk management is the process of identifying, assessing, and mitigating potential risks or uncertainties that can affect a mining operation or a mineral project. Risk management can involve the use of strategies such as hedging, diversification, or insurance. Risk management can help mining companies reduce their exposure to potential losses or damages.

Royalty is a payment made to the owner of a mineral deposit or asset for the right to extract or produce the mineral or metal. Royalties can be a percentage of the revenue or profit generated by the mining operation. Royalties can provide a source of income for the owner of the mineral deposit or asset.

Scoping study is a preliminary evaluation of the technical and economic viability of a mineral project. A

scoping study typically includes estimates of capital and operating costs, revenue and cash flow, and an assessment of the project's risks and potential returns. The study is used to determine whether a project is worthy of further evaluation or development.

Sensitivity analysis is the process of analyzing how changes in assumptions or inputs can affect the outcome of a mineral project evaluation. Sensitivity analysis can involve the use of metrics such as net present value (NPV) or internal rate of return (IRR). Sensitivity analysis can help mining companies identify potential risks or opportunities and inform their decision-making.

Spot price is the current market price of a mineral or metal. Spot prices can be used to evaluate the value of a mineral deposit or asset, or to inform production or investment decisions. Spot prices can be compared to other metrics, such as forward prices or historical prices.

Strategic planning is the process of defining and achieving the long-term goals and objectives of a mining company. Strategic planning can involve the use of metrics such as return on investment (ROI) or internal rate of return (IRR). Strategic planning can help mining companies identify potential opportunities and risks, and inform their decision-making.

Tax planning is the process of minimizing the tax liability of a mining company. Tax planning can involve the use of strategies such as deferred taxation, tax credits, or tax deductions. Tax planning can help mining companies reduce their costs and increase their profitability.

Technical feasibility is the evaluation of the technical viability of a mineral project. Technical feasibility can involve the assessment of factors such as geology, mining method, and processing technology. Technical feasibility can help mining companies determine whether a project is technically viable and worthy of further evaluation or development.

Total cost is the sum of all costs associated with producing and selling a mineral or metal. Total cost can include direct costs, such as labor and equipment, as well as indirect costs, such as overhead and administrative expenses. Total cost can be compared to other metrics, such as operating cost or production cost.

Trading volume is the quantity of a mineral or metal that is bought or sold in a given period. Trading volume can be used to evaluate the liquidity and marketability of a mineral or metal. Trading volume can be compared to other metrics, such as price or open interest.

Uncertainty is a state of doubt or unpredictability about the outcome of a mineral project or investment. Uncertainty can be managed through the use of strategies such as hedging, diversification, or sensitivity analysis. Uncertainty can affect the valuation and risk assessment of a mineral project or investment.

Valuation is the process of estimating the value of a mineral deposit, asset, or company. Valuation can involve the use of metrics such as net present value (NPV) or internal rate of return (IRR). Valuation can help mining companies determine the worth of their assets or investments, and inform their decision-making.

Value chain is the series of activities or processes that create value for a mining company or a mineral

commodity. The value chain can include exploration, mining, processing, and marketing. The value chain can help mining companies identify potential opportunities and risks, and inform their decision-making.

Variance is a deviation from a planned or expected outcome. Variance can occur in mining operations due to factors such as geological uncertainty, equipment failure, or changes in market conditions. Variance can be managed through the use of strategies such as hedging, diversification, or sensitivity analysis.

Volatility is a measure of the uncertainty or risk associated with the price of a mineral or metal. Volatility can be evaluated using metrics such as standard deviation or beta. Volatility can affect the valuation and risk assessment of a mineral project or investment.

Waste rock is the rock or material that is removed during the mining process but does not contain significant amounts of the desired mineral or metal. Waste rock can be disposed of in a responsible manner to minimize environmental impacts.

Working capital is the funds or assets that a mining company uses to finance its day-to-day operations. Working capital can include items such as cash, accounts receivable, and inventory. Working capital can be managed through the use of strategies such as cash flow forecasting or inventory management.

Yield is the ratio of the revenue or profit generated by a mining operation to its cost or investment. Yield can be used to evaluate the performance of a mining company or a mineral project. Yield can be compared to other metrics, such as return on investment (ROI) or internal rate of return (IRR).