

Tumed Right Banner, Baotou, Inner Mongolia

2 Million Tons/Year Coal Gangue Solid Waste Resource Utilization Project

Investment Value Analysis Report

I. Investment Highlights and Core Logic

1. Policy Dividend-Driven, Aligned with National "Dual Carbon" Strategy

China's cumulative coal gangue stockpile exceeds 6 billion tons, creating enormous environmental pressure. This project belongs to the encouraged category in the "Guideline Catalogue for Industrial Structure Adjustment" and highly aligns with the policy orientation of comprehensive utilization of bulk solid waste in the "14th Five-Year Plan for Circular Economy Development". As a benchmark project for "Zero-Waste City" construction with key local government support, it has significant policy moats in project approval, taxation, and land.

2. Waste to Wealth, Technical Barriers Build Excess Profit Space

Unlike traditional low-value-added paths such as coal gangue brick-making or power generation, this project adopts a cutting-edge patented technology system of "physical field mineral separation + supercritical thermal cracking + high-temperature synthesis". It transforms solid waste with extremely low cost per ton (even negative cost) into mullite at RMB 4,000/ton, flint clay at RMB 1,600/ton, and high-quality kaolin at RMB 600/ton. The leap in product added value brought by technological dimensionality reduction is the core source of the project's high gross margin (67.34% in full production year).

3. Superior Resource Endowment, Cost Advantage Difficult to Replicate

The project is located in Tumed Right Banner, Baotou, in the Hohhot-Baotou-Ordos "Golden Triangle", adjacent to the Daqingshan coal-rich area. Raw materials (coal gangue) are sourced locally with extremely short transportation distances, and raw material costs

are almost negligible. Meanwhile, the low energy costs (electricity prices) in Inner Mongolia further amplify the project's overall cost advantage.

II. Market Prospect Analysis

1. Mullite and Flint Clay: Domestic Substitution for High-End Refractory Materials

With the transformation and upgrading of China's high-temperature industries such as steel, cement, and glass, demand for high-performance refractory materials has surged. Mullite, due to its high melting point and creep resistance, is an indispensable high-end refractory raw material. This project synthesizes high-purity mullite (M70) through wet co-grinding of kaolin and bauxite, directly addressing market pain points. With an annual output of 102,000 tons of mullite and 127,500 tons of flint clay, it will effectively fill the market gap for high-end refractory raw materials and possesses strong export earning potential.

2. High-Quality Kaolin: Rigid Demand Under Tight Supply-Demand Balance

Domestic high-quality kaolin resources are increasingly depleted, with 800,000-1.1 million tons needing to be imported annually to meet demand from ceramics, papermaking, and high-end coatings. This project produces 370,500 tons of kaolin annually (covering coating grade, ceramic grade, and electronic grade), achieving import substitution through deep processing and purification technology, with extremely strong market absorption capacity.

3. Mineral Soil Conditioner: Golden Key to Trillion-Level Ecological Restoration Market

China has a huge area of saline-alkali land and degraded soil, and mineral soil conditioners play an important role in the national food security and mine ecological restoration strategies. This project uses silica-aluminous tailings to compound and prepare 900,000 tons of soil conditioner, with low cost and significant effects, and the potential market demand exceeds 30 million tons/year.

III. Financial Benefits and Valuation Evaluation

1. Excellent Financial Performance

According to rigorous financial calculations, the total project investment is RMB 1.281 billion. After reaching full production, annual operating revenue can reach RMB 1.244 billion, and annual net profit reaches RMB 599 million.

Indicator	Value
Return on Equity (ROE)	140.86%
After-tax Financial IRR (FIRR)	43.35%
Static Investment Payback Period	3.17 years
Full Production Gross Margin	67.34%

This set of data represents rare excellent performance in both the manufacturing and environmental solid waste sectors.

2. Valuation Analysis

Using the DCF (Free Cash Flow to Firm) model, under conservative assumptions of WACC at 8.67% and perpetual growth rate at 0%, the calculated project Enterprise Value (EV) is approximately RMB 6.362 billion, and Equity Value is approximately RMB 5.506 billion.

The planned total project investment is RMB 1.281 billion, while the intrinsic value is as high as RMB 6.362 billion, with a value creation multiplier of nearly 5x, indicating that the project has an extremely high investment safety margin and appreciation space.

IV. Risk Warning and Response Mechanism

1. Macroeconomic and Downstream Demand Fluctuation Risk

- **Risk Description:** Products are mainly used in refractory materials, ceramics, and other industries, affected by macroeconomic and real estate cycles.
- **Response Mechanism:** Diversified product matrix (cross-border agricultural soil improvement, electronic kaolin, clean energy) forms anti-cyclical hedging; extremely low product costs provide absolute survival advantage in price wars.

2. Technology Scale-Up and Capacity Ramp-Up Risk

- **Risk Description:** Scaling up from laboratory or pilot stage to 2 million tons/year scale may face process stability challenges.
- **Response Mechanism:** Core equipment procures mature commercial products from domestic and international sources; phased production reaching (60% load in first year of operation) reserves sufficient equipment commissioning and process optimization cycles.

V. Investment Conclusion

Based on comprehensive research and judgment, the 2 Million Tons/Year Coal Gangue Solid Waste Resource Utilization Project in Tumend Right Banner, Baotou, Inner Mongolia is a scarce high-quality target that is **"technology-driven + resource-monopolistic + policy dividend-driven"**.

Through technological innovation, the project breaks the low-value-added curse of solid waste treatment and achieves astonishing profit conversion. Its extremely low break-even point (16.78%) and abundant cash flow provide rock-solid repayment guarantees for debt financing.

For debt institutions, this is a high-quality green finance asset with extremely low risk and stable returns; for equity investors, it is an excellent entry point for positioning in the circular economy track.

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