Baotou 1 Million TPY Steel Solid Waste Resource Utilization Project

Turning steel slag into green cementitious materials and valuable metals

Total Investment
RMB 304.725 million
Including construction investment of RMB 285 million

Annual Processing Capacity
1,000,000 tons/year
500,000 tons water slag + 500,000 tons steel slag

Full Production Year Revenue
RMB 221.0353 million
Feasibility study base case

After-tax IRR
59.46%
Base case; downside case 29.4%

Static Payback Period
2.90 years
Base case; downside case 4.06 years

Project Overview

Inner Mongolia Huajun Xiyuan Circular Industry Co., Ltd. plans to build a comprehensive solid waste resource utilization base in Kundulun District, Baotou, Inner Mongolia. The project will process 500,000 tons/year of blast furnace water slag and 500,000 tons/year of steel slag, totaling 1 million tons/year. It adopts a dual-line parallel process: water slag high-activity ultra-fine grinding and steel slag valuable component physical separation, with tailings used to produce low-carbon cementitious materials. The project covers approximately 98 mu with a total construction area of about 38,000 square meters and a 12-month construction period. Total investment is RMB 304.725 million, with proposed external financing of RMB 210 million. The project is currently in the planning stage, with pilot testing and supply agreements identified as critical next steps.

Technology & Competitive Edge

- Water slag line uses mature magnetic separation, drying, vertical mill and ultra-fine classification processes.
- Steel slag line employs crushing, 600-mesh ultra-fine grinding, strong magnetic separation, gravity separation and DC RF dielectric enrichment.
- DC RF dielectric separation is a key technical link for rare earth concentrate purification, requiring pilot verification.
- Produces S105 grade ultra-fine slag powder and all-solid-waste alkali-activated low-carbon cementitious materials.
- Process enables recovery of iron concentrate, rare earth concentrate and other valuable metal concentrates.

Market & Business Model

- Revenue streams: cementitious materials (RMB 140.8 million), iron concentrate (RMB 40 million), solid waste treatment income (RMB 40 million).
- Cementitious materials target ready-mix concrete, cement enterprises, EPC contractors and building materials enterprises.
- Iron concentrate (Fe≥45%) sold to steel enterprises and traders with grade and price linkage mechanisms.
- Rare earth concentrate (REO≥60%) is a potential high-value product but contributes minimally to revenue.
- Business model integrates raw material supply, treatment services, product sales and green building material applications.

Scope of Works & Project Status

- Construction of a 1 million TPY solid waste resource utilization base covering approximately 98 mu.
- Total construction area of about 38,000 square meters, including processing lines and supporting facilities.
- 12-month construction period planned from June 2026 to June 2027.
- Project is at planning stage; pilot testing for dielectric separation and supply agreements are pending.
- Key milestones: preparatory work, engineering construction, pilot verification, trial production, full production.

Key Financials

Total Investment	**RMB 304.725 million**
Proposed Financing	**RMB 210.0 million**
Capital	**RMB 94.725 million**
Full Production Year Revenue	**RMB 221.0353 million**
Full Production Year Net Profit	**RMB 154.9147 million**
After-tax IRR (Base)	**59.46%**
After-tax IRR (Downside)	**29.4%**
Static Payback Period (Base)	**2.90 years**
Minimum DSCR (Downside)	**1.10x**

Investment Highlights

- Large-scale processing of 1 million tons/year of steel solid waste, addressing environmental challenges.
- Diversified revenue from cementitious materials, iron concentrate and treatment services.
- Strong base-case financials with after-tax IRR of 59.46% and payback of 2.90 years.
- Downside scenario still yields 29.4% IRR and 1.10x minimum DSCR, indicating repayment capability.

Key Risks

- Technical risk: Dielectric separation industrial scale-up and continuous operation not meeting expectations.
- Market risk: Slow cementitious material introduction, price fluctuations and customer payment collection delays.
- Subsidy risk: Treatment income/subsidy nature unclear and cashing uncertain.

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