



# Baotou 500,000 t/y Water Slag & 500,000 t/y Steel Slag Solid Waste Resource Utilization Project

Closed-loop solid waste recycling into green cementitious materials and valuable metals

|                                                                                               |                                                                                                    |                                                                                       |
|-----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Total Investment<br><b>RMB 304.725 million</b><br>Feasibility study estimate pending approval | Annual Processing Capacity<br><b>1,000,000 tons</b><br>500,000 t water slag + 500,000 t steel slag | Annual Revenue at Full Capacity<br><b>RMB 221.035 million</b><br>Full production year |
| After-Tax Project IRR<br><b>59.46%</b><br>Feasibility study base case                         | After-Tax Static Payback Period<br><b>2.90 years</b><br>Feasibility study base case                | Comprehensive DSCR<br><b>2.77x</b><br>Feasibility study base case                     |

## Project Overview

Inner Mongolia Huajun Xiyuan Circular Industry Co., Ltd. proposes a solid waste resource utilization project in Baotou, Inner Mongolia, processing 1 million tons per year of steel solid waste—500,000 tons of water slag and 500,000 tons of steel slag. The project will produce 880,000 tons per year of cementitious material design output, along with iron concentrate, rare earth concentrate, other valuable metal concentrates, and treatment services. The process features two parallel lines: water slag undergoes magnetic separation, drying, vertical milling, and ultra-fine classification to produce S105 ultra-fine slag powder; steel slag undergoes crushing, iron/valuable concentrate recovery, 600-mesh grinding, high-intensity magnetic separation, gravity separation, and dielectric enrichment. Tailings are blended into an all-solid-walk alkali-activated low-carbon cementitious material. The project requires 98 mu of land and a 12-month construction period per the feasibility study. Current status: feasibility study completed; financing roadshow materials prepared for bank review.

## Technology & Competitive Edge

- Dual-line process: water slag to S105 ultra-fine slag powder; steel slag to iron/valuable concentrates and tailings.
- Tailings automatically proportioned and mixed into all-solid-walk alkali-activated low-carbon cementitious material.
- Dielectric separation (DC RF) enables recovery of valuable components; pilot testing and continuous operation are preconditions.
- Process design aligns with national policies promoting steel slag utilization and valuable metal recovery from smelting slag.

- Close proximity to raw material source (approx. 5-10 km) reduces transportation and organization costs.

## **Market & Business Model**

- Revenue from cementitious materials (63.7%), iron concentrate (18.1%), solid waste treatment income (18.1%), other concentrates (0.1%).
- Cementitious material sales require customer certification and orders; iron concentrate needs grade and channel verification.
- Treatment income includes service fees; policy subsidies are not counted as primary repayment source.
- Raw material supply: regional steel slag ~2 million t/y, water slag ~3 million t/y; minimum supply volume and quality must be contractually locked.
- Business model forms a closed loop: raw material supply, product sales, technical verification, and cash flow collection.

## **Scope of Works & Project Status**

- Construction of two processing lines with total annual capacity of 1 million tons, on 98 mu of land.
- Construction period estimated at 12 months per feasibility study.
- Feasibility study completed; project investment estimate pending approval.
- Financing structure: RMB 94.725 million project capital (31.1%) and RMB 210 million proposed loan.
- Recommended conditional, phased disbursement tied to milestones: compliance, contracts, technical verification, trial production.

## Key Financials

|                                        |                                   |
|----------------------------------------|-----------------------------------|
| Total Project Investment               | <b>RMB 304.725 million</b>        |
| Project Capital                        | <b>RMB 94.725 million (31.1%)</b> |
| Proposed Loan                          | <b>RMB 210 million</b>            |
| Full Production Year Operating Revenue | <b>RMB 221.035 million</b>        |
| After-Tax Project IRR                  | <b>59.46%</b>                     |
| After-Tax Static Payback Period        | <b>2.90 years</b>                 |
| After-Tax NPV                          | <b>RMB 375.73 million</b>         |
| Comprehensive DSCR                     | <b>2.77x</b>                      |
| Downside Scenario IRR / Payback        | <b>29.4% / 4.06 years</b>         |

### Investment Highlights

- Large-scale processing of 1 million tons per year of steel solid waste, addressing regional waste management.
- Diversified revenue streams: cementitious materials, iron concentrate, treatment services, and valuable metal concentrates.
- Strong base-case returns: 59.46% IRR, 2.90-year payback, and 2.77x DSCR.
- Resilient downside performance: 29.4% IRR and 1.10x minimum DSCR under stress assumptions.

### Key Risks

- Technology risk: dielectric separation requires pilot testing, continuous operation, and product grade verification before full production.
- Raw material and sales risk: no exclusive supply contract; cementitious materials need customer certification and orders.
- Policy and subsidy risk: treatment service fees and policy subsidies must be separately split; unimplemented subsidies not counted as repayment source.

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