



وزارة الاستثمار
Ministry of Investment

Waste Investment Opportunities

Investor promotion pack –
Li-ion battery recycling

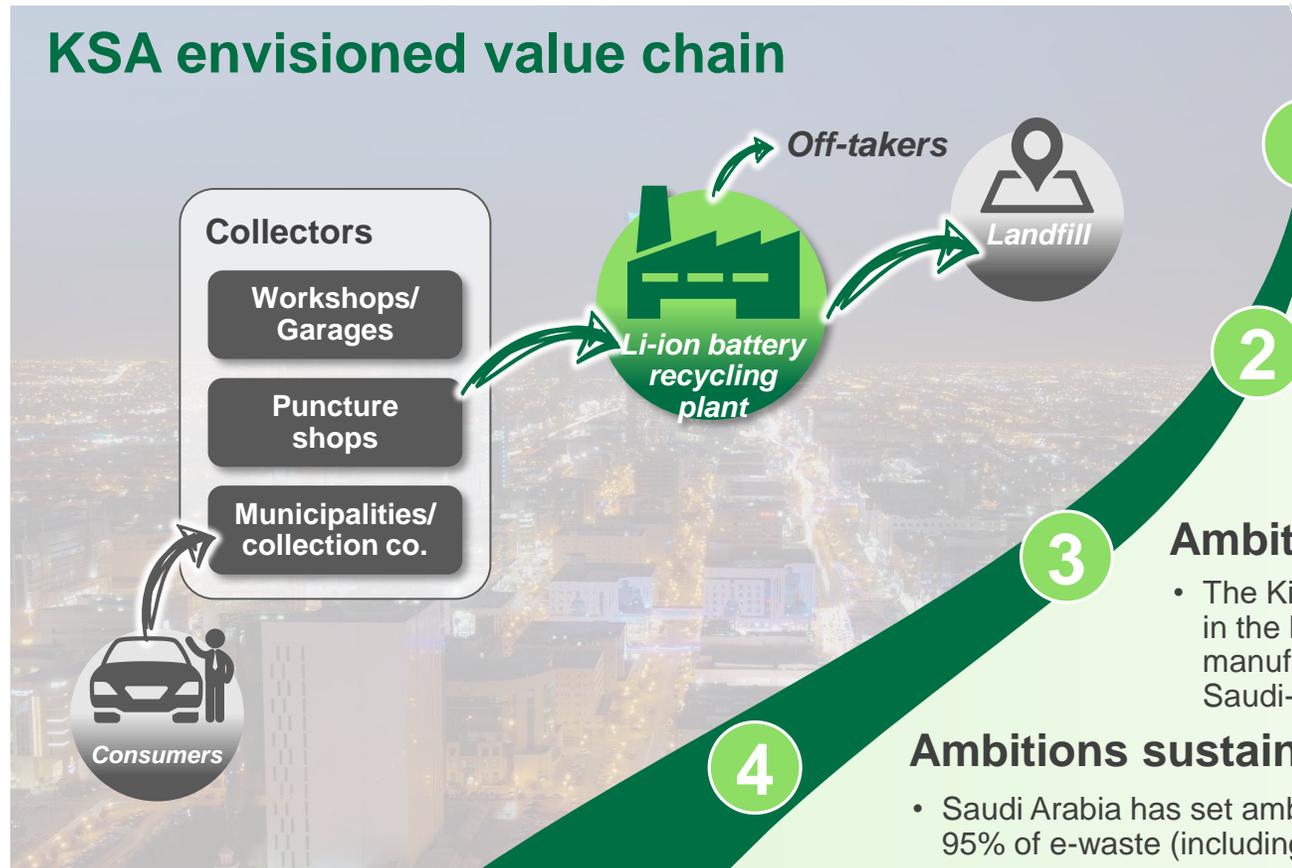
Riyadh, Oct 2022

Li-ion battery recycling facility – Overview & value proposition

Opportunity overview

Establish a **15,000 tpa** used Li-ion EV battery recycling facility to recycle un-useable minerals available in Li-ion batteries using **mechanical hydrometallurgy** technology

KSA envisioned value chain

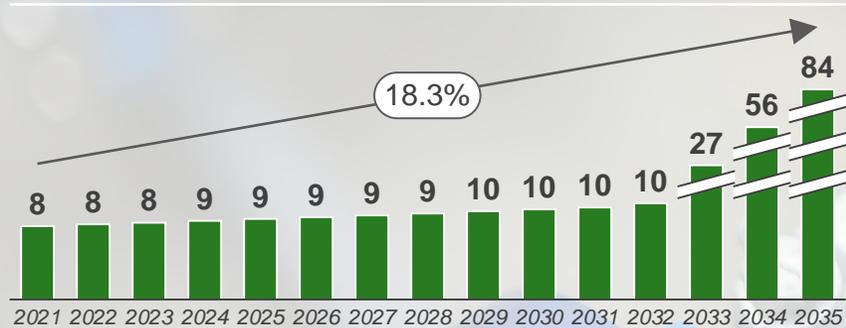


KSA value proposition

- 1 Large and growing waste market**
 - With a population of around 35 m growing at a 2% rate, the Kingdom now generates ~140 k tons of battery waste per year including ~9 k tons of Li-ion batteries (EV battery waste market forecasted increase at 18% CAGR by 2035)
- 2 Government commitment to unlock sector**
 - Testimony to the government's strong commitment to unlock the sector, the National Center for WM and the Saudi Investment Recycling Company have been established with mandate to support the transformation of the Kingdom's industry
- 3 Ambitions to develop automotive & mobility sectors**
 - The Kingdom's Vision 2030 aims for OEMs to produce 300,000+ vehicles in the kingdom before 2030 by attracting leading EV automotive manufacturer and to invest in large road infrastructure projects – 680 km Saudi-Oman highway and the UAE-Saudi International Highway
- 4 Ambitions sustainability targets**
 - Saudi Arabia has set ambitious long-term targets for resource conservation, aiming for 90-95% of e-waste (including batteries) to be diverted from landfill by 2035

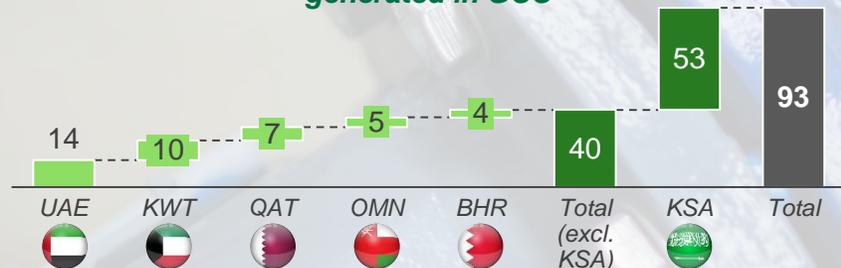
Li-ion battery recycling facility – Market outlook

Li-ion battery waste generation forecast in KSA
2021-2035 [k tons]



GCC electric vehicles yearly sale forecast
2025 [k #]

KSA generating ~57% of total lubricant waste generated in GCC



Local market drivers

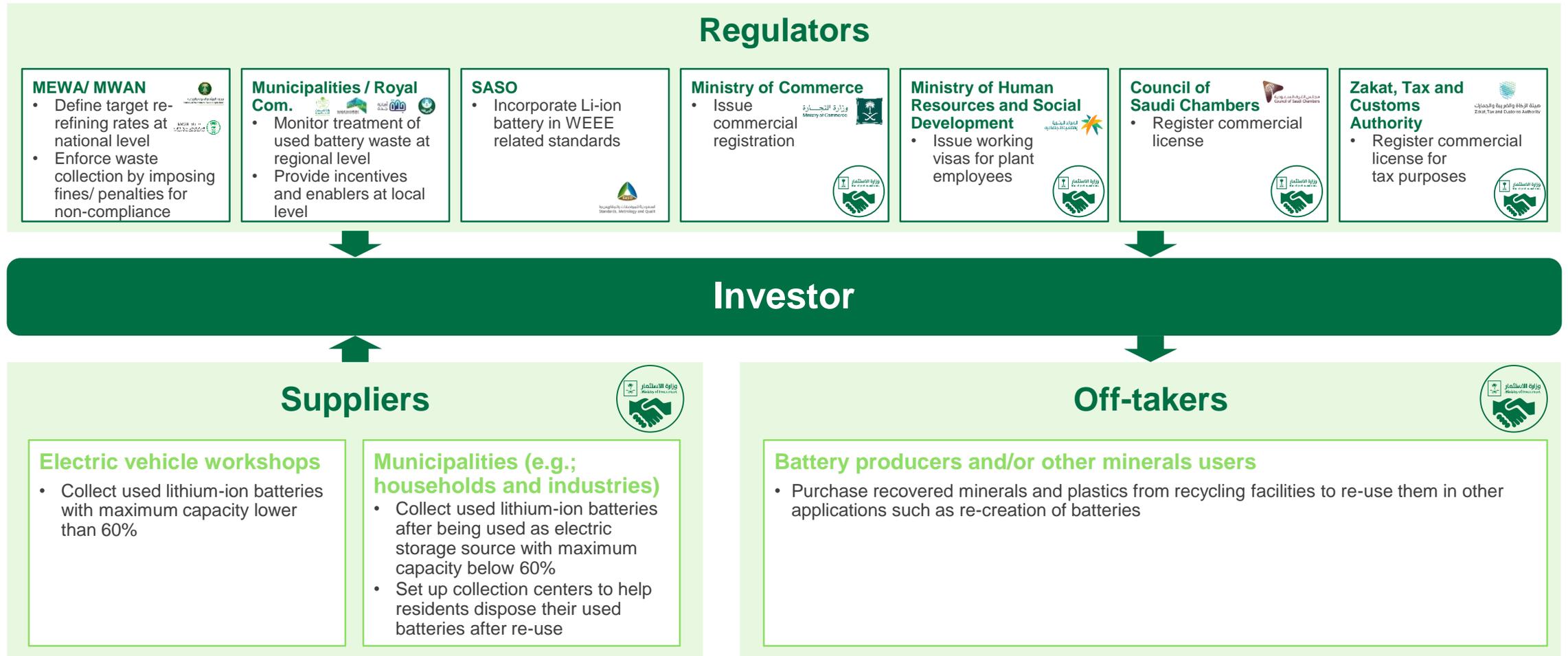
- 1 Growing population**
Population of c.35 m with highest growth rate (2.5% p.a.) among G20
- 2 Increasing automotive demand**
Overall automotive industry CAGR expected to reach 4-5% while CAGR of Li-ion battery is expected to go higher than 18%
- 3 Launch of operation of EV manufacturing plant in KSA**
Lucid, luxury electrical vehicle manufacturer, announced the launch of a factory in KSA with a capacity of 150 k vehicles per year
- 4 Landfill diversion objective**
Landfill diversion target set (90-95% of electrical and electronics waste by 2035 which includes battery waste)

Global market trends

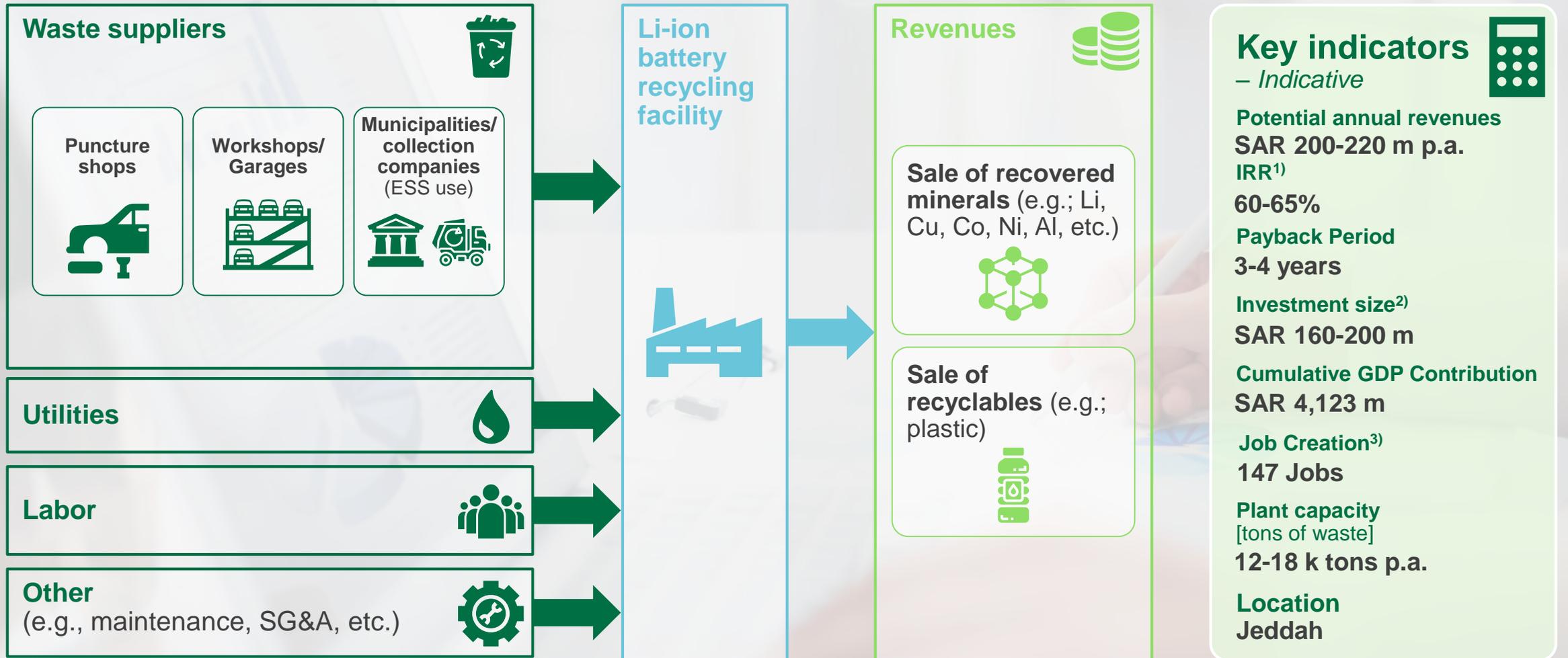
- 1 Growing LiB demand**
Electrification of transportation is entering mass market phase and by 2030 is expected to require 8x LiBs
- 2 Favorable regulatory environment**
Regulators across all major markets are moving towards implementation of battery recycling directives
- 3 Increase circular econ. popularity**
Governments are rolling out circular economy frameworks within their broader sustainability agendas – Push is especially strong in EU and China
- 4 Supply chain economics**
Growing demand is putting strain on cathode metals supply chain – LiB recycling can improve supply security, minimize environmental impact, and reduce dependence on mining

Li-ion battery recycling facility – Stakeholder ecosystem

Illustrative logos – non-exhaustive



Li-ion battery recycling facility – Business model & financials



Li-ion battery recycling facility – Enablers & incentives

Existing enablers & incentives

Financial	Facility¹⁾ 	<ul style="list-style-type: none"> • Competitive land costs relative to other countries (USD 0.3 per sqm) • Provision of soft loans through SIDF – up to 75% of project financing 	
	Utilities 	<ul style="list-style-type: none"> • Low power and water costs set for industrial cities – Lowest in the region 	
	Equipment 	<ul style="list-style-type: none"> • Customs duty exemption for machines used in production process and for spare parts not available locally 	
	Labor 	<ul style="list-style-type: none"> • Nationalization incentives set; HRDF covers a share of the salary • Facilitative procedures³⁾ for foreigners with specialized skills 	
Non-financial	Foreign businesses 	<ul style="list-style-type: none"> • Allows foreign entities and individuals to have 100% ownership of properties in the kingdom such as plants/ facilities, businesses, etc. 	
	Feedstock and Offtake 	<ul style="list-style-type: none"> • Development of appropriate technical and marketing studies to increase exposure to potential feedstock providers and off-takers 	

Additional MISA support

-  Facilitate the **registration process** of companies in KSA
-  **Establish connection** with local market players
-  **Introduce investor to relevant** public stakeholders

Additional enablers and incentives can be discussed with MISA on case-by-case basis

1) Includes land, facility construction costs and equipment; RCYJ in case the project in Jubail or Yanbu 2) Water and electricity costs; 3) Procedures could include work permits and salary coverage

Li-ion battery recycling facility– Cost of Doing Business



- 1 Electricity tariffs for industrial players**
 - USD 48/MWh
- 2 Productivity adjusted wages**
 - USD 3.3/hour
- 3 Logistics Performance Index (1-5)**
 - 3.2
- 4 Construction Costs (Indexed to US, % 0 is cheapest)**
 - 74
- 5 Ease of getting credit (0-100)**
 - 50

Li-ion battery recycling facility – Next steps

Restricted / مقيود

Phase 1: Initiation

- Submit expression of interest concerning the opportunity to MISA.
- Discuss with MISA the opportunity and organize site visit
- Communicate with involved entities (off-takers, feedstock providers, partners, etc.)
- Conduct pre-feasibility study and due-diligence before final investment decision
- Secure enablers and incentives
- Secure MISA investment license



Phase 2: Set up license requirements

- Secure commercial registration from Ministry of Commerce
- Secure working visas and labor working files from Ministry of Human Resources and Social Development & Ministry of Internal Affairs
 - Register at the Council of Saudi Chambers
 - Register at Saudi Banks
 - Register at Zakat, Tax, and Customs Authority.
 - Secure waste management license from MWAN.

Execution steps

Phase 4: Launch production

- Launch Li-ion battery recycling plant operations
- Initiate sale of recovered minerals and recyclables along the treatment process
- Adjust to market demand and ramp-up generation output



Phase 3: Construct facility

- Launch and complete Li-ion battery recycling facility engineering procurement and construction phase

Recommended project type

Private investment

JV w/ local company

PPP

Start your journey with MISA



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