

GRAPHITE - EV METAL MATERIALS

INVESTMENT OPPORTUNITY SCORECARD

MINING & METALS



GRAPHITE - EV METAL MATERIALS

Opportunity Description: Opportunity to setup a 10 ktpa capacity Graphite Anode Active Material plant to cater for local and regional demand

INVESTMENT OVERVIEW

INVESTMENT HIGHLIGHTS

- Expected investment size of USD 200 Mn
- Plant capacity:
 - Natural Graphite: 18 ktpa
 - Anode Active Material (AAM): 10 ktpa
- Graphite is a soft black lustrous form of carbon that conducts electricity and is used in lead pencils and electrolytic anodes, as a lubricant, and as a moderator in nuclear reactors.

VALUE PROPOSITION

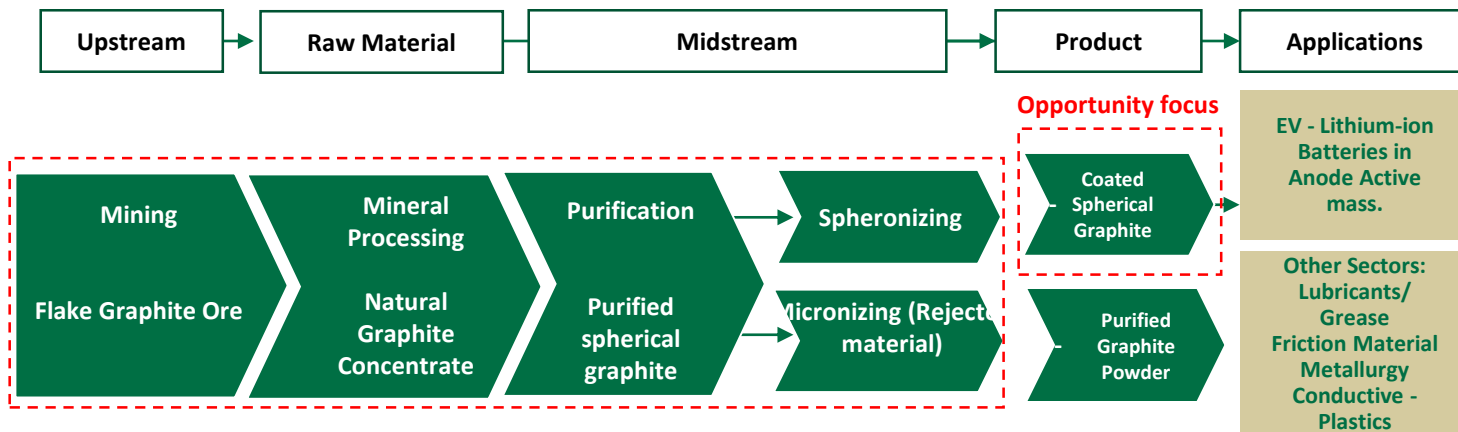
- Graphite mining is considered to be relatively easy and safe, the deposits are comparatively soft in nature with presence of hard rocks on either side.
- Natural graphite is processed to form rounded particles and blended with high conductive artificial graphite
- Apart from usage in L-ion battery cell manufacturing, the diverse usage of Graphite in refractories, steel industry and nuclear power generation makes it a perfect fit for the KSA economy that is active in these industries.

MARKET OVERVIEW

GLOBAL TREND

- The global Graphite market is estimated at USD15 Bn in 2020 and is expected to witness a CAGR of 4-5% between 2020 and 2027.
- The traditional uses of graphite are in crucibles, foundries, pencils. However, more sophisticated applications of graphite are seen in refractories that are used in the manufacture of steel, cement and glass.
- Demand is expected to augment further with the development of batteries used in electric vehicles, devices and storage

VALUE CHAIN ANALYSIS



KEY DEMAND DRIVERS

- In the KSA, Graphite demand is mainly driven by steel production through graphite electrode electric arc furnace, continuous casting and in steel molding applications.
- The KSA has primary focus on developing the raw materials for battery cell manufacturing to support and localize the EV value chain
- This will boost the Graphite domestic demand, with the usage in Lithium-ion (Li-ion) batteries that require graphite active anode material.

DEFINITIONS

#	SCORECARD SECTION	DEFINITIONS
1	Market size	Size of market in value/volume in KSA and/or Region (MENA/GCC) covering future projections based on available estimates from published /government sources
2	Business drivers	A select number of factors that will influence future demand for the related product/service
3	Investment highlights	An overview of key financial metrics summarizing the investment opportunity along with the expected return based on the suggested investment size
4	Value proposition	Summary of key differentiators that position KSA as a strategic choice over other regional/global peers
5	Market readiness	An overview of KSA market structure, market maturity and level of participation by local and global players
6	Competitor analysis	List of the local & international players manufacturing the underlying product in Saudi Arabia and their market share
7	Global trends	Latest business developments within the sector/product category
8	Scalability and localization	Ease of scaling the business across the value chain or into new adjacent products or geographies that would maximize the opportunity's investment returns and the ability and potential to locally manufacture the product and its components
9	Import dependency	An overview of the countries from which Saudi Arabia is importing the product and their value/volume and share in total imports
10	Value chain analysis	The process or activities that would potentially need to be carried out to deliver the underlying product or service
11	Key stakeholders	Government institutions, organizations, and/or authorities that participate or influence the market for the underlying product/service
12	Enablers	Factors that enable investment in the underlying opportunity
13	Cost of doing business in KSA	Key factors that position KSA as a competitive destination for investment in the region. Productivity adjusted wages do not include cost of \$1.23/hour towards annual recurring charges including work permit, resident identity (iqama) and health insurance

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