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Battery expert call: Abundant growth opportunities in India

- **India to account for 3% of global battery cell market by 2030, with planned production capacity of ~150GW hours**
- **Proposed PLI for component and battery material manufacturers to lend impetus to the sector**
- **Discovery of lithium reserves, China Plus One and policy support to help rationalise production costs**

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We hosted a call with Anajani Sunkavalli, founder and MD of Altmin, a government-backed battery materials player that is developing new technology to produce cutting-edge, eco-friendly materials for lithium-ion and EV batteries. Key takeaways:

India focused on boosting share in global cell production: India plans to scale up to ~150GW hours of battery cell capacity by 2030, equating to 3% of estimated worldwide production. The recent discovery of lithium reserves offers a healthy opportunity for the country to broaden its production footprint. China currently dominates global production with ~30% share.

Supportive policy initiatives: The Indian government is formulating a new performance-linked incentive (PLI) scheme for component and battery material manufacturers. Though China will remain the dominant cell producer, its supply has been banned in Europe, and other countries may follow suit. Raw material suppliers of battery producers are, therefore, actively in search of alternate producers and India holds tremendous potential to step into the breach.

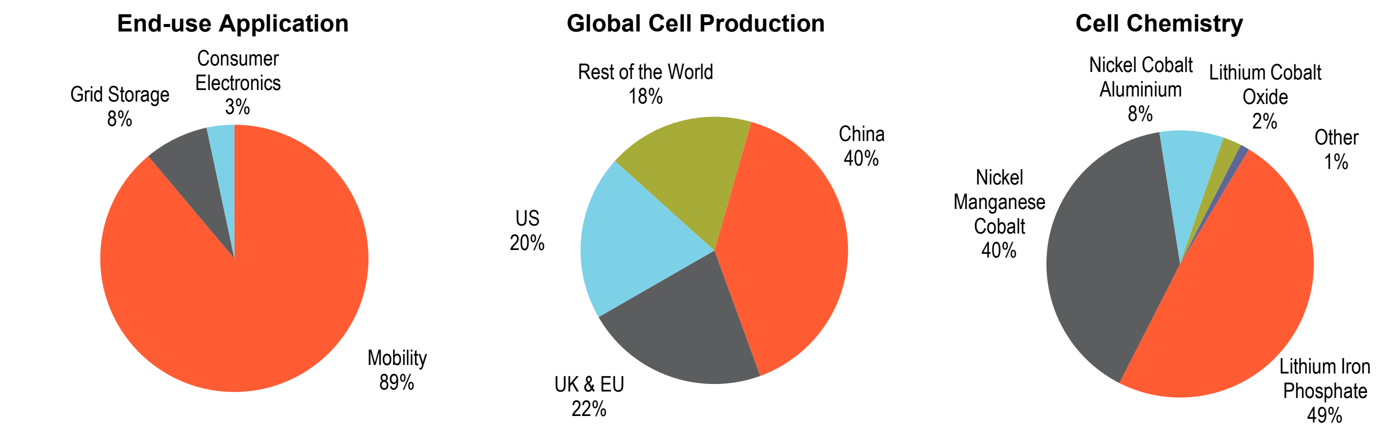
Spotlight on cost reduction: Raw material dominates the battery cell cost structure at 77%, followed by labour cost at ~8%. The government's initiative to encourage localisation by investing in entities such as Altmin, which was started as a mineral sourcing company in 2016 with government support, will help alter the cost dynamics, as will India's discovery of lithium reserves and the global China Plus One tilt.

Cell demand-supply imbalance to continue: Per Altmin, global battery cell demand is estimated at ~5.5k GWh by 2030, clocking a ~41% CAGR over the next seven years (from 2023). The electronics industry is expected to dominate demand, followed by stationary and transportation. With global cell production expected at ~4.5k GWh in 2030, the demand-supply gap that year is estimated at 1k GWh. China and the US are likely to rank as the top producers, dominating 60% of production, with China accounting for the lion's share at 40%. India's share in world production is projected at 3% by 2030.

About Altmin

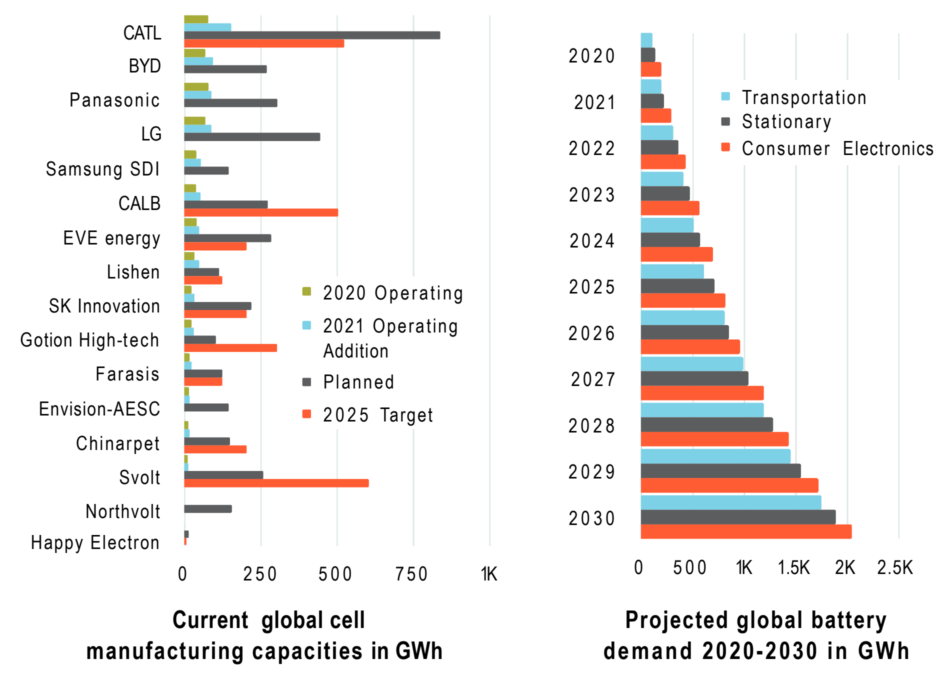
- Altmin began as a mining/mineral sourcing company in 2016 with the support of the Indian government, Niti Ayog and other institutions, where it focused on sourcing lithium and other rare earth minerals.
- Together with Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), Altmin is currently in the process of developing new technology to produce next-generation, eco-friendly battery materials, such as lithium iron phosphate, lithium manganese, ferrous phosphate and lithium titanite. The company aims to ensure uninterrupted supply of these materials globally in the fast-growing lithium-ion battery and EV segments.

Fig 1 – Global cell production likely to fall well short of demand by 2030



Source: Altmin, BOBCAPS Research

Fig 2 – Key global suppliers and projected demand

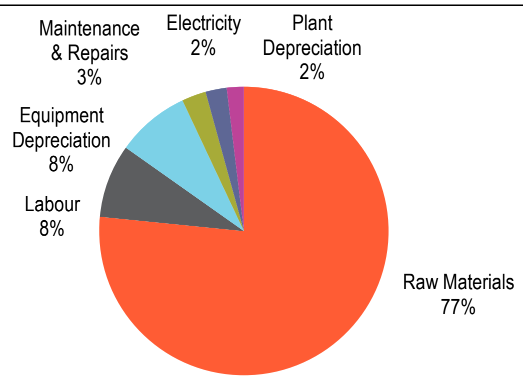


Source: Altmin, BOBCAPS Research

Sourcing of battery raw materials

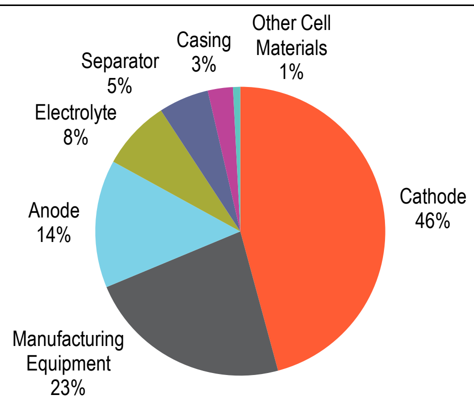
- Unlike other companies that rely heavily on China, Altmin sources lithium carbonate, the primary raw material for cell manufacturing, from Brazil and Bolivia and is in the process of setting up long-term sourcing agreements. Lithium carbonate availability is up to 10GW and 15% of its raw material composition. All other raw materials are sourced primarily from India under long-term supply agreements.
- Lithium ferro phosphate (LFP) is currently the most favourable battery material and ripe for adoption by automotive and mobile phone manufacturers, such as Ola, Amar Raja, Reliance and Log 9.
- Entry barriers for LFP manufacturing are the same as those for lithium processing. The availability of technology, scalability and raw materials are entry barriers to new players.

Fig 3 – Cost breakup of cells



Source: Altmin, BOBCAPS Research

Fig 4 – Cost breakup of cell by material



Source: Altmin, BOBCAPS Research

Battery material production process

- Conventionally, LFP is produced using a hydrothermal process, but this process is not only multi-layered in nature but also expensive and involves heavy effluent discharge. ARCI has developed a single step and semi solid-state process to produce carbon coating with no liquid intake, which Altmin believes is the best available battery chemistry at present.
- Altmin aims for further advancement of this process by minimising emissions, or by capturing released ammonia, or by producing environment-friendly green ammonia.
- As per the company, its carbon coated LFP (C-LFP) enhances the conductivity of the electrode, protects the thermal stability and improves the battery life cycle. Moreover, it is free of toxic elements, does not require ventilation, is easily recyclable and can withstand temperatures up to 140C, unlike traditional NMC 111 battery material.

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