

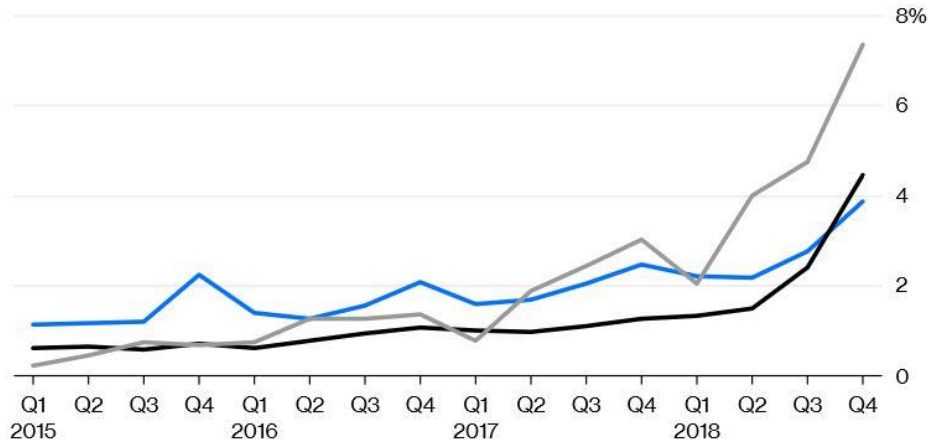
ELKEM'S OPPORTUNITIES IN THE BATTERY MARKET

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The demand for lithium-ion battery cells is surging

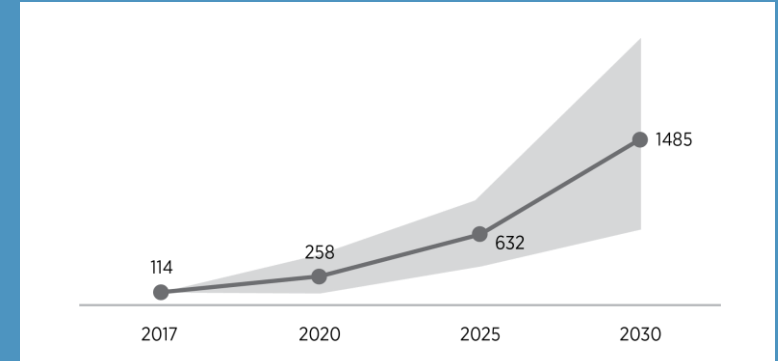
Electric vehicle sales as a percentage of total passenger vehicle sales

Europe North America China

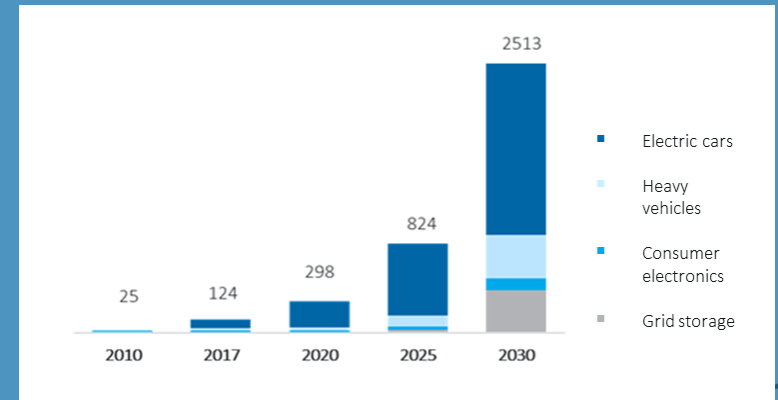


Sources: China Association of Automotive Manufacturers, Bloomberg NEF

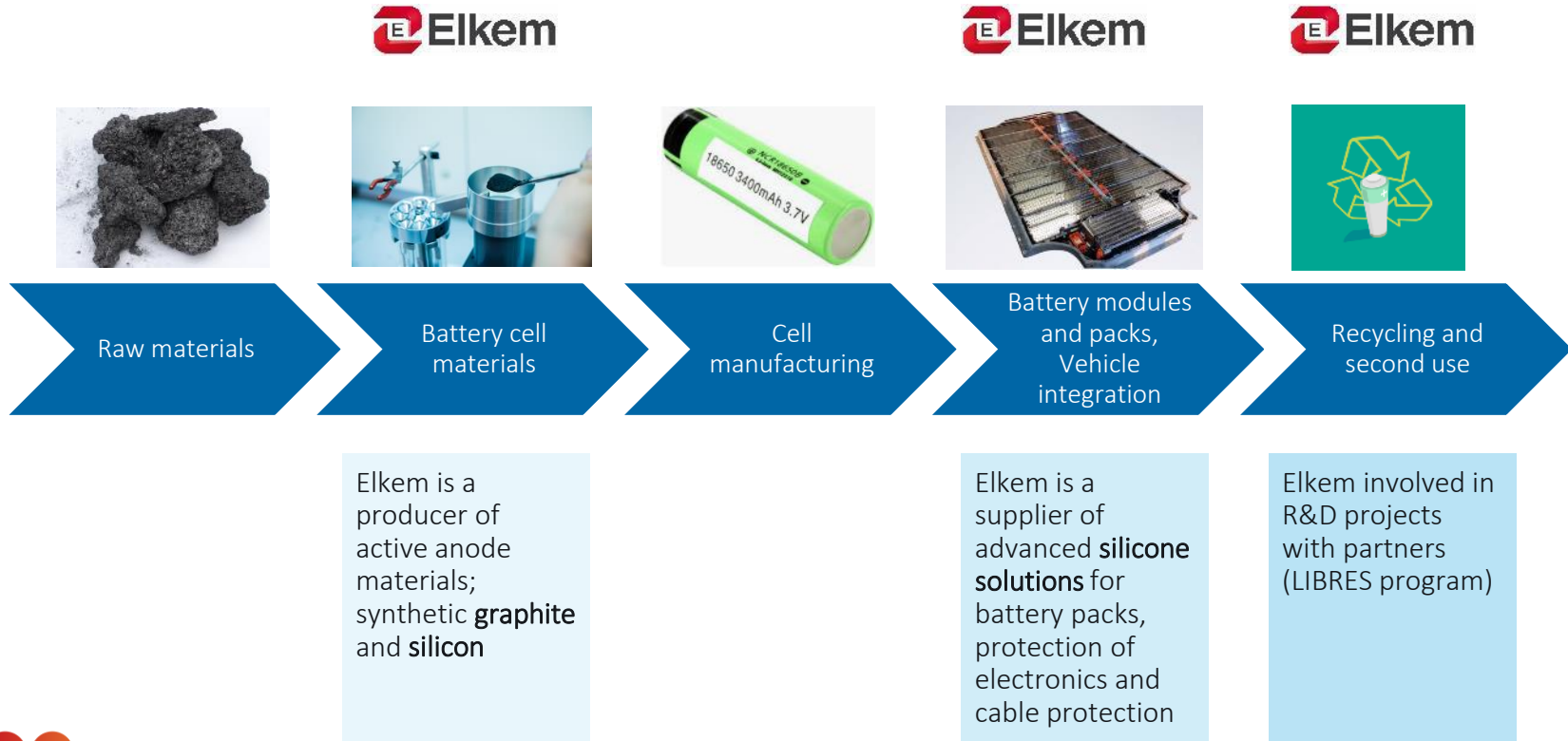
Li-ion battery , average demand forecast (GWh)



Demand by segment (GWh)



Elkem's role in the lithium-ion battery value chain



Elkem providing the solution for today's and tomorrow's anodes

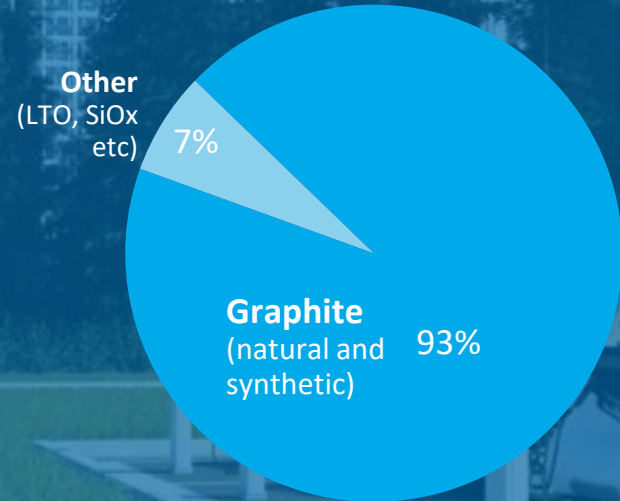
- **Graphite**

- Proven and established technology
- Stable long term performance
- Opportunities to mix in other materials (such as silicon)
- Limited upside (high end materials close to theoretical capacity of 372 mAh/g)

- **Silicon**

- Theoretical capacity 10x higher than graphite – solution to improve energy density
- Improved charge and discharging rate
- Improved charging at low temperature
- Reduced risk of over heating
- Fundamental issues related to expansion and contraction reducing battery lifetime

Market share active anode materials



Elkem approaches anode graphite with a compelling value proposition

- Robust cost structure
- High end products demonstrated in test production
- Strategic location in Europe
- Green footprint: Clean process based on Norwegian hydro power



Elkem graphitization



Acheson graphitization

Elkem investing 65 MNOK in pilot line for anode graphite production

PURPOSE

- Develop and verify process technology and operational parameters
- Design parameters for verification of industrial scale business case
- Produce material for industrial scale testing and product qualification with customers
- Training centre for industrial operation

*Supported by Innovation Norway



Elkem has a unique position – today and tomorrow

The Li-ion battery market offers a significant growth opportunity for Elkem



Western supply chains must be developed to serve battery production in Europe and the US



Robust cost structure is required as price reduction is the most important demand driver



Elkem is uniquely positioned to supply solutions to the battery industry meeting today's challenges and tomorrow's opportunities combining graphite, silicon and silicones



DELIVERING YOUR POTENTIAL

