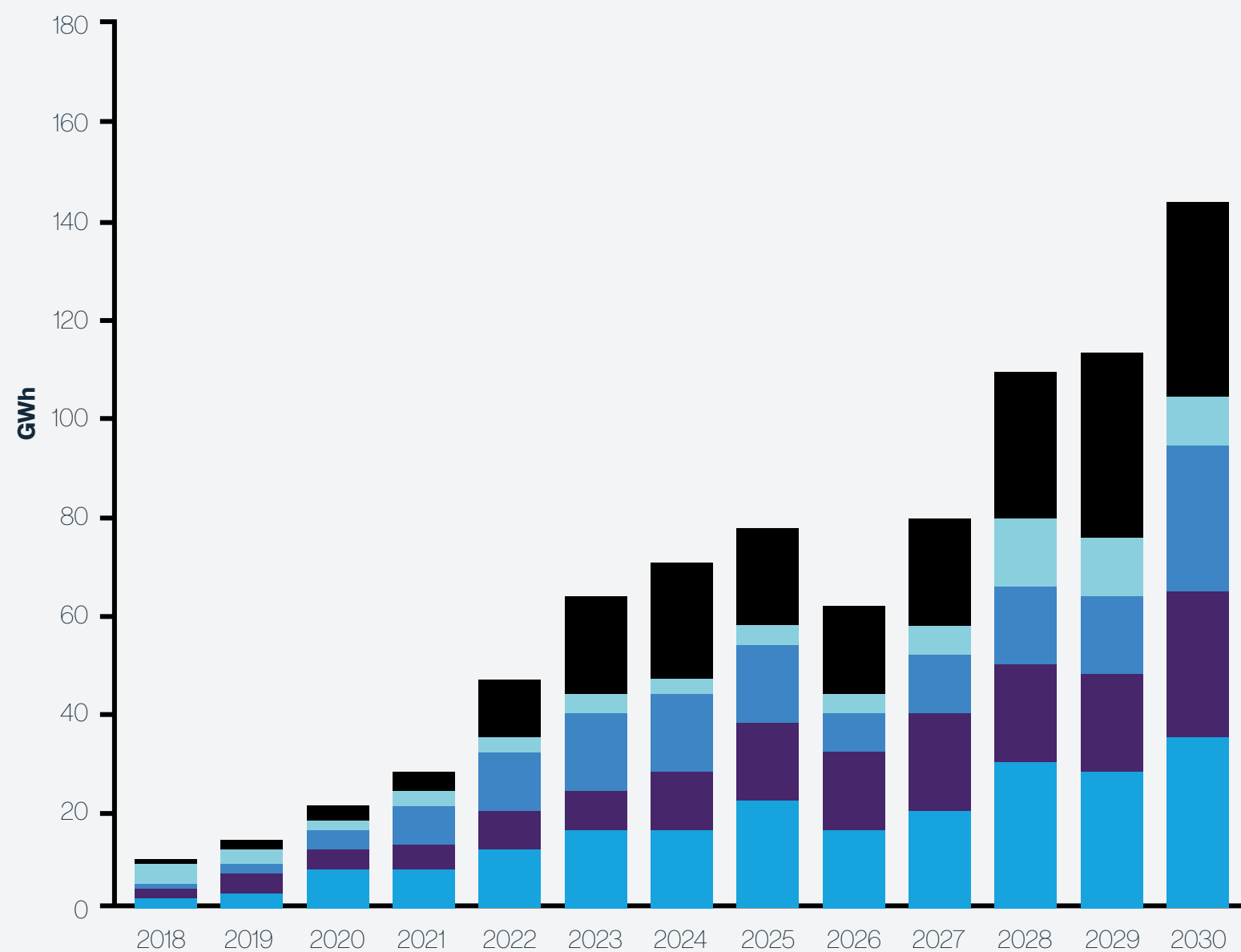


Delivering Reliable, Sustainable, Renewable Power: Energy Storage Applications

Global demand for energy storage systems (ESS) is soaring, forecast to grow to more than 140 GWh by 2030



CBI market report 2021, Avicenne



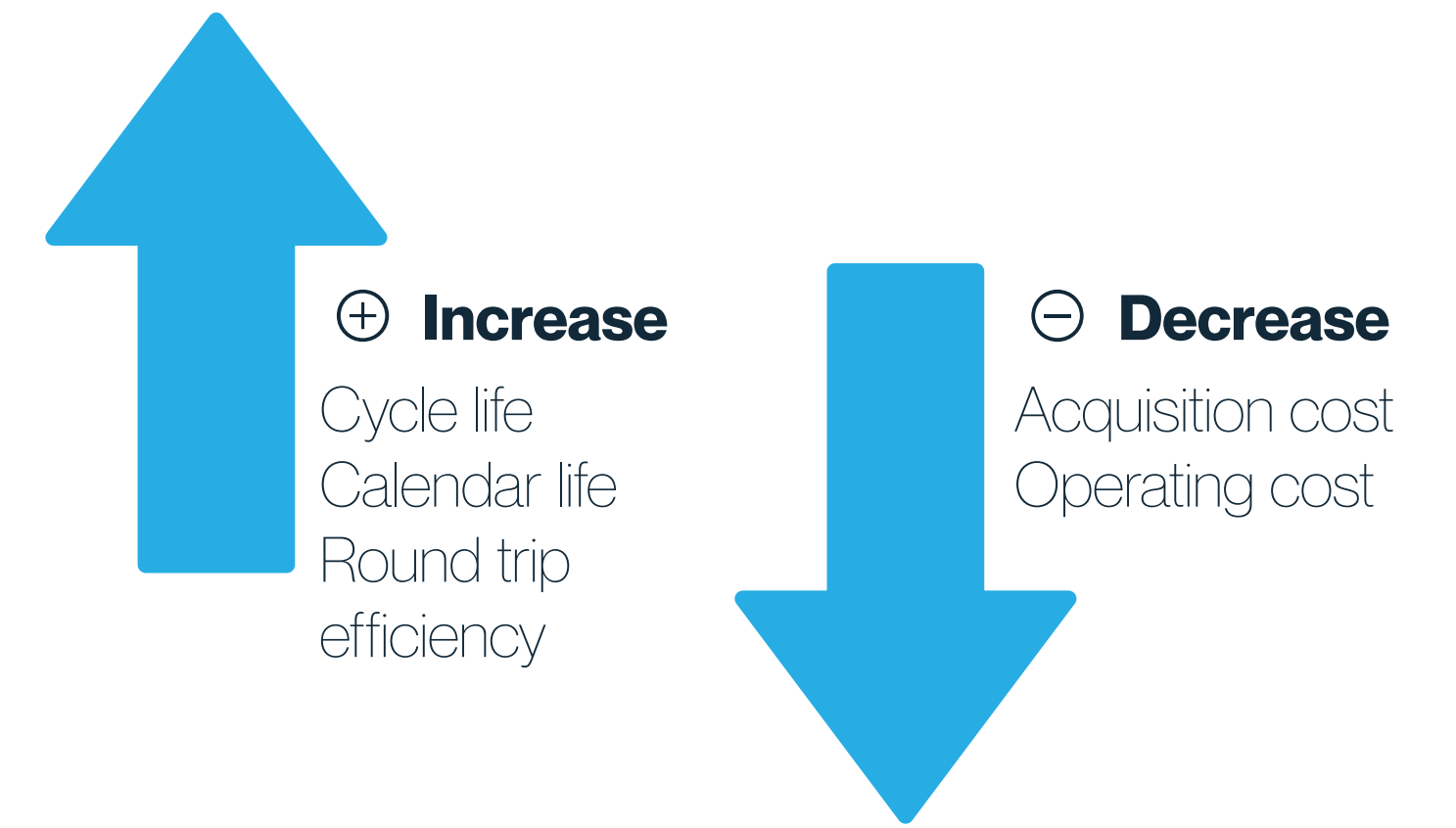
KPIs for lead batteries in motive power applications

Indicator	Current	2025	2028	Stretch Target 2030
Cycle life (80% DOD) as an estimate for C10 or higher rates	4000	4500	5000	6000
Operational cost for low charge rate applications (above C10) – Grid scale, long duration	0.12 \$/kWh/energy throughput	0.09 \$/kWh/energy throughput	0.06 \$/kWh/energy throughput	0.04 \$/kWh/energy throughput
Operational cost for high charge rate applications (C10 or faster) - BTMS	0.25 \$/kWh/energy throughput	0.20 \$/kWh/energy throughput	0.15 \$/kWh/energy throughput	0.10 \$/kWh/energy throughput
Acquisition cost, ESS level (\$/kWh)	350	325	300	275



ESS are essential for the clean energy transition:

- ⊕ Batteries are key to delivering on global electrification and decarbonization goals
- ⊕ Advanced lead batteries are playing a vital role, but must continue to innovate to enhance performance



Achieving the KPIs will ensure lead batteries:

- Meet evolving technical requirements of end-users
- Grasp future market opportunities
- Continue to be a vital technology in the clean energy transition

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