

ACDC: Beneath the Bonnet

Key Points:

- Bloomberg New Energy Finance predict that global lithium-ion battery demand will grow 8-fold by 2030.
- Over 2 million electric vehicles were sold in 2018, accounting for less than 2% of global passenger vehicle sales. Sales forecasts are estimated to rise to 56 million by 2040.
- ACDC aims to provide investors with exposure to growth across the entire battery technology value-chain, including lithium miners and energy storage companies.



Recent years have seen significant developments in lithium-ion battery power output and efficiency. Lighter and smaller batteries with increased output and falling prices have opened-up a wide range of new applications.

These have already had big impacts on the consumer electronics market. The next step in the evolution of the battery technology industry is in larger scale applications. Electric vehicles for private and mass transportation, aided by the emergence of autonomous vehicle technologies and the rapid reductions in charging times.

Further, use of lithium-ion batteries is promoting the growth of renewable energy technologies such as solar and wind, which are now able to be consumed on demand and not only at the right times, or when weather permits.

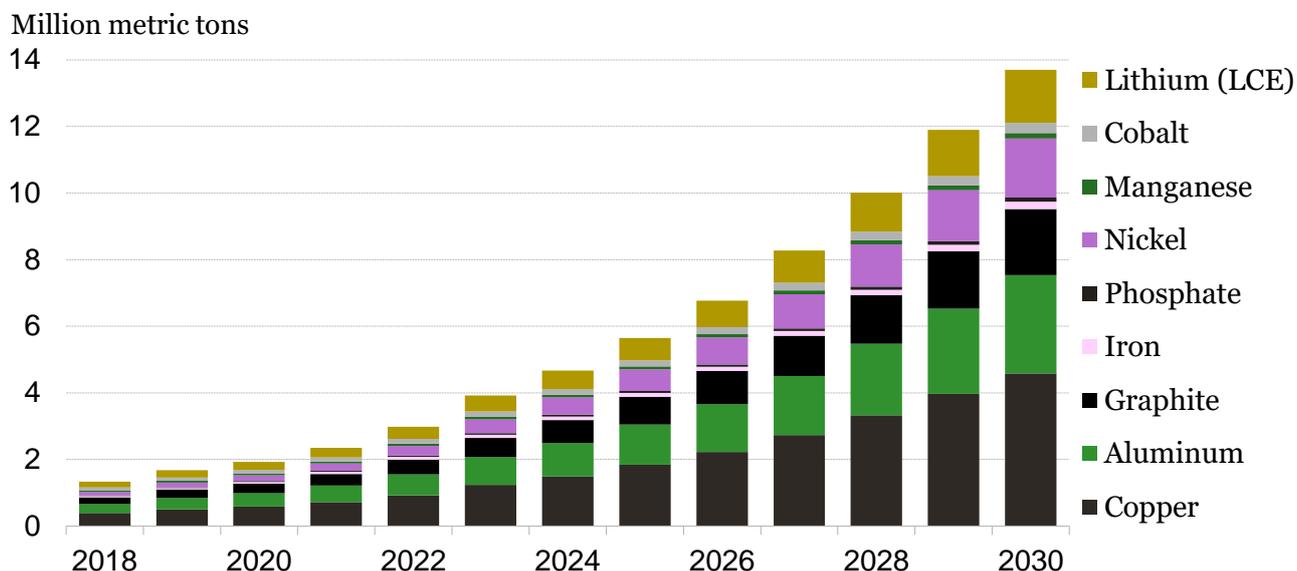
ETFs Battery Tech & Lithium ETF (ASX Code: ACDC) aims to provide investors with exposure to growth across the entire battery technology value-chain, from lithium miners to energy storage companies across a range of established and emerging companies.

This note looks at the key areas driving growth across this quickly developing industry and highlights the operations of several selected companies to provide real-world examples of technological developments and how they are being monetised.

Lithium – exploring the supply and demand outlooks

Forecasts compiled by Bloomberg New Energy Finance predict that global lithium-ion battery demand will grow 8-fold by 2030. This will have a significant impact on demand for lithium carbonate equivalent (LCE) and other core metals, such as copper, aluminium and nickel as well as rare earth metals, such as cobalt.

Annual lithium-ion battery metal demand at the mine

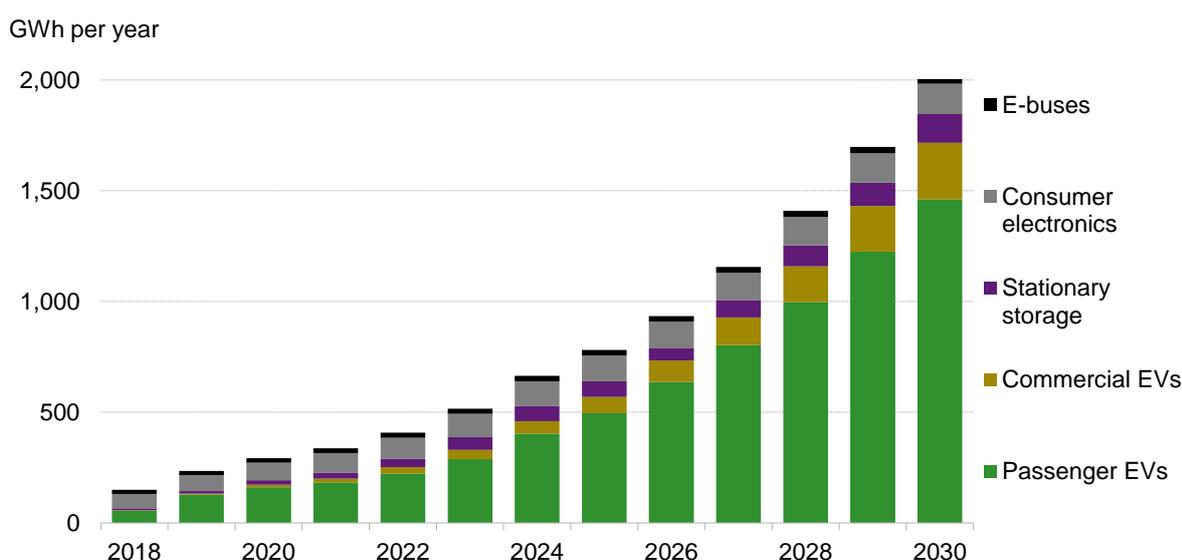


Source: Bloomberg New Energy Finance “2H 2019 Battery Metals Outlook”

China maintains a dominant position in the supply-chain through both its control of mining companies and its dominance of refining capacity.

Electric vehicle demand is anticipated to be the core growth driver over the coming decades, with passenger EVs dominating.

Annual lithium-ion battery demand forecast



Source: Bloomberg New Energy Finance “2H 2019 Battery Metals Outlook”

Current forecasts point to a supply surplus out to at least 2025, which has been reflected in recent price action. As shown in figure 3, lithium prices have been in decline for the past 15 months, following a three-year bull-run during which prices trebled.



Source: Bloomberg as at 30/09/2019

Stock in Focus: Albemarle Corp



Stock Code: ALB

Albemarle is the world's largest producer of LCE and a pioneer in the development of brine production processes that are commonly used today. Products include lithium metal as ingots, foil, rods and anodes, high purity lithium alloys, lithium salts and lithium sulphide, all of which have battery-related applications.

One of its stated aims is to provide materials and to support the growth and success of lithium-ion technology to promote advances in mobile communication, power storage and electric mobility.

Production and storage sites are located in Europe, North and South America, Asia and Australia, while Albemarle's customer base is spread across more than 100 countries.

Source: www.albemarle.com

Financial information as at 30 Sep 2019:

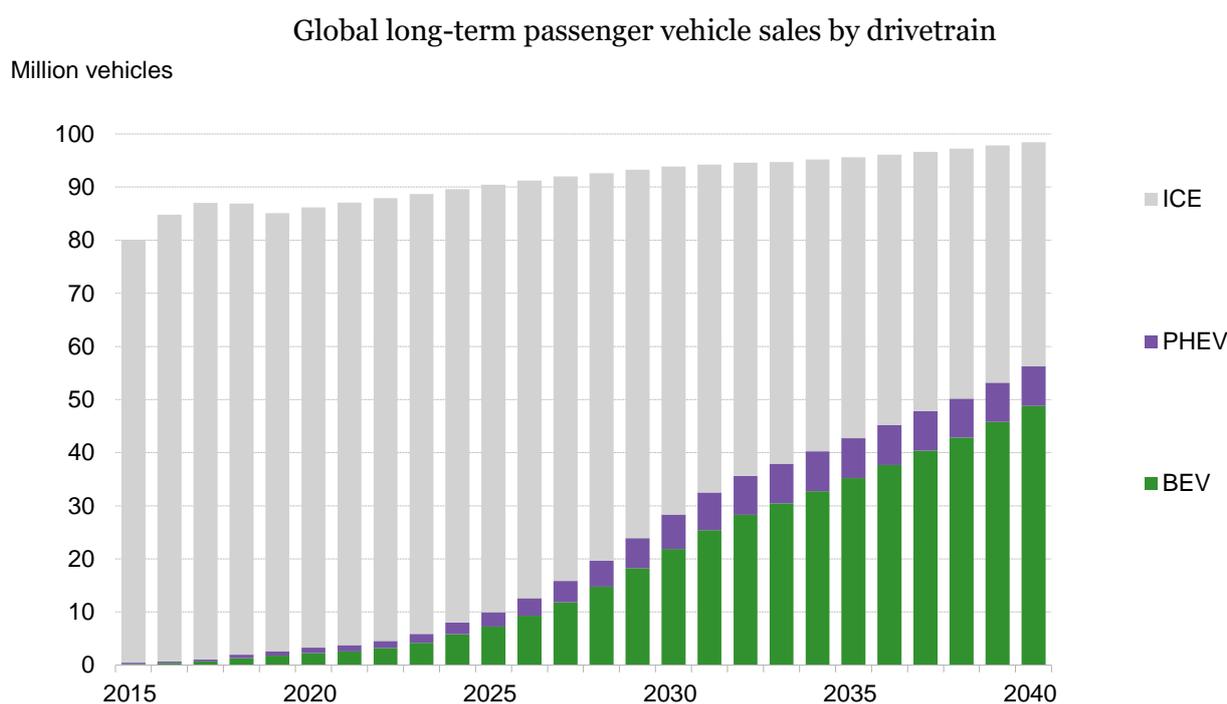
Country of primary listing	United States
Price	USD 69.52
Market cap	USD 7.5bn (AUD 5.0bn)
Fwd PE (x) current FY	11.0
Fwd PE (x) next FY	10.7
Div Yield (%)	2.1%

Analyst ratings	
BUY	16
HOLD	7
SELL	2
Average 12M target price	USD 89.64

Source: Bloomberg as at 30/09/2019

Electric vehicles

Over 2 million electric vehicles were sold in 2018, which represents significant growth from a low base, but accounts for less than 2% of global passenger vehicle sales. Forecasts compiled by Bloomberg New Energy Finance indicate accelerating growth over the coming decades with sales to rise to 10 million in 2025, 28 million in 2030 and 56 million by 2040. By the mid-2020s electric vehicle sales are expected to reach parity with internal combustion vehicles, at which point 30% of passenger vehicles on our roads will be electric.



(PHEV = plug-in hybrid electric vehicle, BEV = battery electric vehicle)

Source: Bloomberg New Energy Finance “Electric Vehicle Outlook 2019”

Stock in Focus: BYD

Stock Code: 1211



BYD is a Chinese manufacturer of passenger vehicles, mass transit vehicles and battery technology and is heavily backed by Warren Buffett's Berkshire Hathaway, which holds a 25% stake.

China currently represents around 60% of the global electric vehicle market, with over 600,000 fully electric vehicles sold in the first half of 2019. BYD is the largest Chinese producer, with market share currently running at close to 25%. BYD's market share has increased in 2019 to-date, despite a slowing in the Chinese market as a result of the removal of subsidies. 63% of BYD's revenue is currently generated by electric vehicles.

Aside from passenger vehicles, BYD is currently a major supplier of electric busses, with government contracts across Asia, Europe and North and South America. BYD is also investing in large-scale battery storage projects.

Source: www.byd.com, Bloomberg New Energy Finance

Financial information as at 30 Sep 2019:

Country of primary listing	Hong Kong
Price	HKD 39.15
Market cap	HKD 132bn (AUD 24bn)
Fwd PE (x) current FY	35.5
Fwd PE (x) next FY	29.3
Div Yield (%)	0.6%

Analyst ratings	
BUY	11
HOLD	7
SELL	10
Average 12M target price	HKD 41.76

Source: Bloomberg as at 30/09/2019

Grid storage batteries

The electric power sector has seen significant disruption from renewable sources in recent years, with wind, solar and other sources quickly becoming more economically viable relative to fossil fuel sources in many markets. Component costs are falling and efficiency is rising but improvements in battery technology have been the key to releasing these technologies and allowing them to meet consumer demand at times when the sun isn't shining and the wind isn't blowing.

Bloomberg New Energy Finance predicts 50% of world electricity output to be wind and solar generated by 2050 and that this transformation will require heavy investment in battery technology. There are numerous competing battery types and new technologies under development. Examples include flow batteries, lead-carbon, sodium-sulphur and compressed-air energy storage. Lithium-ion, however, is the established technology of choice and currently accounts for 85% of commissioned, utility-scale battery storage worldwide.

Source: Bloomberg New Energy Finance "New Energy Outlook 2019"

Stock in Focus: GS YUASA



Stock Code: 6674

GS Yuasa is a Japanese company that manufactures and sells automotive batteries, industrial batteries, power supply systems and other electrical equipment. They are a leader in lithium-ion technology and provide a range of storage solutions for renewable and reserve power applications.

The company is involved in multiple large-scale energy storage projects including constructing one of the world's largest lithium-ion batteries, to be connected to a wind energy plant in North Hokkaido, Japan. The battery will have an output of 240MW and a capacity of 720WMh, which is equivalent to 45,000 electric vehicles.

Source: www.gs-yuasa.com

Financial information as at 30 Sep 2019:

Country of primary listing	Japan
Price	JPY 1867
Market cap	JPY 154bn (AUD 2bn)
Fwd PE (x) current FY	11.9
Fwd PE (x) next FY	10.9
Div Yield (%)	2.7%

Analyst ratings	
BUY	1
HOLD	5
SELL	0
Average 12M target price	JPY 2470

Source: Bloomberg as at 30/09/2019

About ACDC

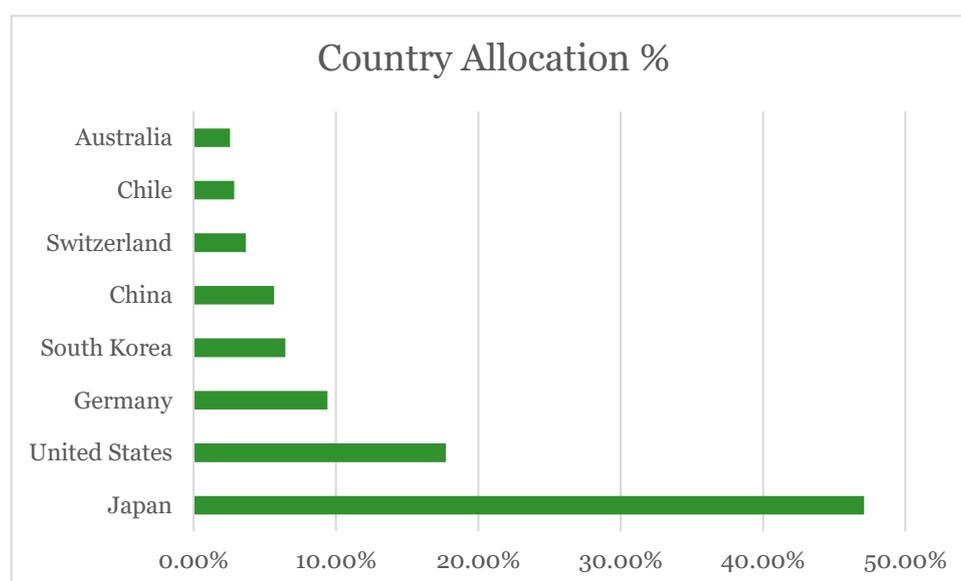
ACDC tracks the Solactive Battery Value-Chain Index, which aims to capture the performance of companies that are providers of electro-chemical storage technology and mining companies that produce metals that are primarily used for manufacturing of lithium batteries.

Companies comprising the Index are determined by reference to:

1. The U.S. Department of Energy's DOE Global Energy Storage Database, which identifies companies that are electro-chemical storage technology providers; and
2. Metal Bulletin, which identifies mining companies that produce lithium.

Constituents are equally weighted to provide maximum diversification.

ACDC currently holds 29 stocks from seven countries with sector allocations heavily in favour of the Industrials, Materials and Consumer Discretionary sectors.



Source: Bloomberg as at 30/09/2019

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