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# Mining & Metals Forecast 2020 Industry Trends

## **Global Energy Transition driving change & demand**

The energy transition from fossil-based fuels to lower carbon alternatives is underway. While it is a threat for the fossil fuel based energy sector, it is also driving significant new opportunities, including demand for reliable and cost effective energy storage and, with it, demand for different types of minerals, such as lithium, cobalt and alternative battery materials.

The primary drivers of the global energy transition are, firstly, the emergence of renewables (such as solar and wind power) as alternatives to traditional fossil fuels and, secondly, the growth of battery storage, including for electric vehicles, decentralised energy systems and large-scale battery storage. One of the main challenges that companies across the traditional energy sector - and countries that are beneficiaries of plentiful fossil fuel resources - currently face is how to prepare for the change and where to commit capital in the 'new energy' world.

Sources of renewable energy, such as wind and solar power, have grown at an unprecedented rate in the last decade, a trend which is expected to continue as costs continue to decline. This ongoing transition, underpinned by the growing electrification of the world's energy needs, will have major social, economic and political implications which go well beyond the energy sector.

As demand for renewable energy grows, interest in gridscale battery projects and in battery storage solutions for decentralised energy systems will also grow. The advantages of grid-scale and distributed battery storage are obvious: to provide grid balancing and smoothing much more quickly and accurately than power plants, and to act as "virtual transmission lines" avoiding the need for costly fixed-cost assets such as transmission lines and peaking power plants, increasing the efficiency of capital deployed in the electricity sector.

The rapid uptake of electric vehicles and other battery-based energy storage systems across the world is driving global demand for batteries and their component materials. That demand has been driven primarily by lower costs, but also by technology innovation and the many benefits of electrification generally (including reliability and demand shifting). There is significant and growing interest in energy storage projects worldwide. Globally, energy storage capacity is forecast to multiply (122-fold by 2040, attracting some USD 662 billion of investment), estimates Bloomberg New Energy Finance<sup>1</sup>. It is predicting a further halving of lithium-ion battery costs per kilowatt-hour by 2030, on top of an 85% reduction from 2010-2018.

Electrification is expected to substantially increase its share of final energy demand, with consumer led demand shifts, such as those to electric vehicles and heat pumps for transport, heating and cooling.

The increase in battery demand (and the expectation of that increased demand) creates other opportunities, including demand for industrial minerals used in batteries, such as graphite, lithium, nickel, cobalt, manganese, aluminium, vanadium and rare earth metals. The 'battery' thematic has already created a new wave of equity capital market interest, with an explosion in exploration companies targeting those minerals on traditional mining

By way of example, surging lithium and cobalt prices in 2015 and 2016 resulted is a shift in exploration focus towards elements critical to batteries. That surge of interest is heavily tied to investor interest in the battery sector and capital committed to those companies has already seen a number of new entrants funding green-fields graphite, lithium and cobalt mining operations.

exchanges such as the Australian Stock Exchange (ASX), the Toronto Stock Exchange (TSX) and the Johannesburg Stock Exchange (JSE).

While this is happening, battery technology, which is still in its infancy, continues to evolve. While lithium-ion batteries have higher power density and output, making them suited to mobile energy storage applications such as electronic devices and electric vehicles, other battery technologies, such as flow batteries, focus on life cycle and durability. And batteries are only one part of the energy storage solution - other technologies such as flywheel, compressed air, and pumped hydro storage continue to be refined and developed.

As these developments play out, the countries that will benefit most are those with proactive government policy. Electric vehicle and battery manufacturers are securing sources of minerals, materials and components to meet increases in demand. As these manufacturers are consolidating their supply chains, countries around the world are competing to capture investments at different stages of the production process. While traditional resource exporters, such as Australia and Canada, are well placed to capitalise on increased demand for raw materials, government policy that aims to capture more of the supply chain, including research and development and production, is critical.

### **Case study**

Baker McKenzie advised KfW IPEX-Bank, Société Générale and Korea Development Bank in relation to the Bulgana Green Power Hub (BGPH), a large integrated energy project in Australia.

The project involved a long term syndicated debt package as well as a 15-year, long term contract for difference Power Purchase Agreement (PPA) with the Victorian government, taking approximately 85% of the power generated by the BGPH and contributing significantly to Victoria's Renewable Energy Target. In addition, a 10 year corporate PPA where BGPH will supply power via a "behind the meter", private wire from a 20 MW / 34 MWh lithium-ion battery to a nearby glasshouse facility to be built by Nectar Farms Management Limited. The hub will comprise a 194 MW wind farm with Siemens-Gamesa wind turbines, combined with the 20 MW / 34 MWh lithium-ion battery provided by Tesla. The battery will be one of the first and largest grid-scale batteries in the world and will power the development of the Nectar Farms glasshouse, a major new advanced agriculture facility, providing secure and affordable, renewable energy as required for its hydroponic greenhouses. This project will make the advanced agriculture facility the world's first crop farm to be completely powered by renewable energy.

<sup>1</sup> https://about.bnef.com/blog/energy-storage-investments-boom-battery-costshalve-next-decade/

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