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The pressing issue of electric vehicles battery recycling

2020 turned out to be a great year for electric vehicles (EV) markets. Global EV sales, including plug-in hybrid vehicles, reached 3.24 million, compared to 2.26 million in 2019. For the first time since 2015, the market share of EVs in Europe outpaced that of EVs in China. The share of EVs as a percentage of total new car sales throughout Europe increased from 3.3% in 2019 to 10.2 % in 2020. The EV share in China increased from 5.1 % to 5.5 % during the same period.

As the world is set on a path to electrify various means of transportation, EV battery recycling is becoming a pressing issue. According to Greenpeace, a total of 7.05 million tonnes of EV lithium-ion batteries will go offline between 2021 and 2030, weighing about 1,000 times the Eiffel Tower. The environmental impact at the end of life is enormous if not appropriately handled.

China should see the first of retired batteries now as the lifespan of an EV battery typically ranges from five to eight years. According to Caixin, as of April 2021, the cumulative production of new energy vehicles in China reached 6.29 million, carrying a total installed battery capacity of 298GWh. Over the next five years, the cumulative amount of retired batteries will exceed 100GWh. With China pledging to become carbon neutral by 2060, the recycling of EV batteries is poised to take on a new dimension. Premier Li Keqiang underscored the importance of recycling EV batteries in the latest government report presented to the National People's Congress in Beijing on 5th March 2021. One of the most significant issues the recycling industry faces is that China lacks an efficient collection system for used EV batteries. As a result, 70% of the used batteries went to small, unlicensed vendors that manually dismantle the batteries and disregard the environmental impact. The government is keen to prevent unchecked and unregulated disposal of lithium-ion batteries as the extraction of lithium, cobalt, and other materials is hugely polluting. The high collection cost (estimated to be RMB 8,500 per ton for LFP batteries) also makes the licenced recycling business hardly profitable (the material extracting value is only RMB 8,000 per ton).

Elsewhere, the European Union recently proposed that EV suppliers be responsible for ensuring that their products are not simply dumped at the end of their lives. Manufacturers are already starting to step up to the mark. Nissan, for example, is now reusing old batteries from its Leaf cars in the automated guided vehicles that deliver parts to workers in its factories. Volkswagen is doing the same but has also recently opened its first recycling plant in Salzgitter, Germany, and plans to recycle up to 3,600 battery systems per year during the pilot phase. Renault, meanwhile, is now recycling all its electric car batteries - although as things stand, that only amounts to a couple of hundred a year. It does this through a consortium with French waste management company Veolia and Belgian chemical firm Solvay. As for Tesla, it states on its website that "Any battery that is no longer meeting a customer's needs can be serviced by Tesla at one of our service centres around the world. None of our scrapped lithium-ion batteries go to landfilling, and 100% are recycled."

We at JK Capital have been following the electric vehicles battery recycling issue in recent years, meeting various industry players including carmakers, battery makers and battery recycling companies such as GEM (002340.CH) as part of our ESG investment themes. Unfortunately, at this stage the discussions we had with industry players about battery recycling left us more suspicious than enthusiastic. We believe that without a clear map for the EV battery recycling path, one can't call EV an effective solution for reducing CO2 emissions in transport and air pollution anytime soon.