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When EV meets ESG

In recent years, the world has witnessed a growing emphasis on sustainable practices across various industries. One notable area experiencing this paradigm shift is the automotive industry, which is rapidly transitioning to an electric vehicle (EV) future, with increasing integration of Environmental, Social, and Governance (ESG) principles. This transition carries significant implications for vehicle assemblers, component manufacturers, extractive industries—and responsible investors.

EVs offer a compelling solution to the environmental challenges associated with traditional internal combustion engine (ICE) vehicles. By relying on electricity as a power source instead of fossil fuels, EVs significantly reduce greenhouse gas emissions (GHG) and air pollution. Notably, the transportation sector is a major contributor to carbon dioxide (CO2) and nitrogen oxide (NOx) emissions, and EVs present a viable alternative to mitigate this impact. Furthermore, as the renewable energy sector continues to grow, the use of EVs complements this transition by enabling the integration of clean and sustainable energy sources, such as solar and wind power.

According to research conducted by S&P Global, the transportation sector, encompassing both commercial and consumer transport, accounts for roughly 30% of the European Union's (EU) total CO2 emissions. Of this total, 72% is attributed specifically to road transportation, including heavy-duty trucks, light-duty trucks, motorcycles, and cars. Taking a closer look at individual vehicle types, cars alone contribute to 60.7% of the EU's transportation emissions. European policymakers have made a strong commitment to tackling these emissions by adopting an ambitious approach to emissions reduction. Their goal is to achieve a 60% reduction in emissions from the transportation sector, compared to 1990 levels, by the year 2050.

Across the globe, numerous countries are also undergoing a transition towards the adoption of zero-emission vehicles. According to International Energy Agency (IEA), with the implementation of ambitious policy programs in major economies, such as the Fit for 55 package in the EU and the Inflation Reduction Act in the United States (US), the market share for electric vehicles is anticipated to witness significant growth in the coming decade and beyond. By 2030, it is projected that electric cars will constitute approximately 60% of total sales in China, the EU, and the US combined.

Rapid electrification of the automotive sector is also having positive knock-on effects for battery production and supply chains. As shown below, the EV supply chain starts with the sourcing of raw materials and specialty chemicals, which are utilised in the production of EV-specific auto parts. These parts, including batteries, auto components, and technology components, are then integrated into vehicles. Following a similar process to traditional ICE vehicle manufacturing, auto original equipment manufacturers then assemble these parts to create EVs.

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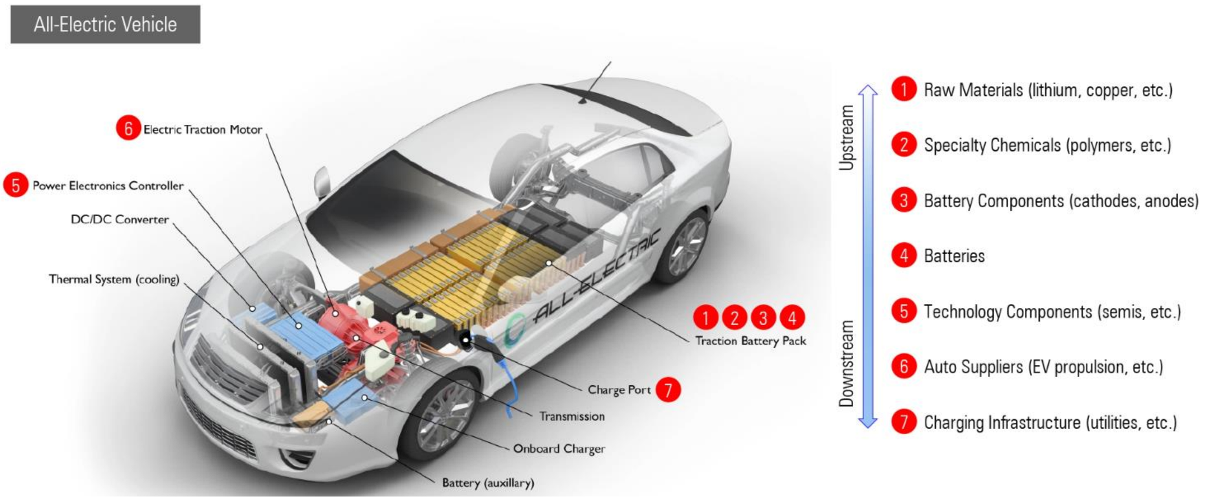

Source: Morningstar

Rising EV adoption brings attention to various ESG issues, with mineral extraction and processing emerging as the most significant concerns.

Within the entire EV ecosystem, there is a substantial surge in demand for six specific minerals: copper and aluminium (for applications such as upgrading electric power networks and manufacturing EV wiring, engines, and battery casings), cobalt, lithium, and nickel (used in EV batteries), and rare earth elements (a group of chemically similar metallic elements employed in electric motors). However, this heightened demand for minerals also raises concerns regarding the potential offsetting of the environmental and social benefits associated with transitioning to EVs. The increased extraction and processing of minerals could lead to waste generation, water pollution, and heightened emissions, thus posing environmental challenges.

Mineral extraction and processing are just the beginning of the EV value chain. Following that, the value chain progresses to battery cell manufacturing, which involves the production of electric power sources using processed minerals. Subsequently, there is battery pack assembly, where individual cells are integrated into composite enclosures. Finally, the battery is integrated into EVs. EV battery disposal sparks ESG risks too. Even at the end of their life, EV batteries contain a host of scarce and valuable materials and minerals.

According to Maplecroft's research, battery recycling encompasses two primary methods: pyrometallurgical processes that utilise heat to extract desired materials and hydrometallurgical processes that involve aqueous chemical processing. Pyrometallurgical processes are well-established and typically implemented in smaller plants, while hydrometallurgical processes recover higher-quality materials but necessitate larger processing facilities and incur higher costs for residue management due to the involvement of chemicals. These processes have the potential to result in pollution, including emissions of fumes into the air and the release of chemicals into water sources or the surrounding environment.

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Effective governance is essential to manage these risks.

Although EVs effectively reduce harmful air pollutants, the widespread use of minerals like cobalt and nickel presents its own set of challenges. Governments around the world are putting regulations in place which make EV/battery manufacturers and mineral miners responsible for their products and processes throughout their entire lifecycle. Taking battery recycling as an example, in China, companies would prioritise material recycling over repurposing used batteries due to regulatory requirements and shortages in domestically sourced lithium, with approximately 85% of it being imported. In 2020, the EU implemented new regulations aimed at safeguarding and enhancing the environment by minimising the negative impacts of batteries. These regulations prohibit certain materials and hold battery producers responsible for end collection and recycling. In the US, waste regulations primarily operate at the state level, with certain states enacting laws for battery recycling and disposal, while others have adopted Extended Producer Responsibility (EPR) principles.

Note:
[1] ESG Ratings of Public Listed Companies (PLCs) assessed by FTSE Russell in accordance with FTSE Russell ESG Ratings Methodology.

Grade	Description
4-star	Top 25% by ESG Ratings amongst PLCs in FBM EMAS that have been assessed by FTSE Russell
3-star	Top 26-50% by ESG Ratings amongst PLCs in FBM EMAS that have been assessed by FTSE Russell
2-star	Top 51%-75% by ESG Ratings amongst PLCs in FBM EMAS that have been assessed by FTSE Russell
1-star	Bottom 25% by ESG Ratings amongst PLCs in FBM EMAS that have been assessed by FTSE Russell

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