

# Critical Raw Materials for the Energy Transition

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The global objective of achieving net zero greenhouse gas emissions is driving significant decarbonisation of energy and transport, with a shift towards renewable energy sources and electric vehicles. It is now widely recognised that this will lead to significant increases in demand for a range of minerals and metals, including lithium, graphite, manganese, nickel and cobalt (used in batteries), the rare earth elements (used in magnets in motors) and the platinum group elements (for electrolysis to produce green hydrogen). There are concerns about the security of supply of some of these raw materials, and the increasing demand cannot be met solely by recycling; mining of primary resources will be essential. In this talk I will summarise current issues around supply of critical raw materials, with a focus on our recent research on lithium resources and supply chains. Whilst there is popular concern around the availability of lithium for batteries, in reality there is no geological scarcity of lithium – a variety of resources are known, and ongoing exploration continues to grow the resource base. The bottlenecks in the lithium supply chain are related to mineral processing and infrastructure development, and geopolitics is an important control on availability. I will discuss the role that geologists can play in all aspects of critical raw material supply chains, to ensure security of supply for a greener future.