

# **The Energy Transition and the Challenge of Supply Development**

**Julian Kettle**

Senior Vice President, Vice Chair Metals and Mining  
Wood Mackenzie, London, United Kingdom  
Corresponding author: julian.kettle@woodmac.com

## **Abstract**

Policy makers around the world have set targets for decarbonisation to align with the Paris Climate accord and achieve net zero carbon dioxide emissions. The targets are aimed at limiting the average Global temperature rise to between 1.5 and 2.0 °C above pre-industrial levels. Achieving these accelerated decarbonisation pathways will require a significant shift from hydrocarbon-based energy generation to renewables and electrical storage capacity to mitigate for the variability in generation associated with renewables. There will also be a huge expansion of the electrical distribution network to transfer the power. A significant electrification of transportation will also need to occur along with the associated recharging infrastructure. These build outs will consume vast quantities of metals and will require an acceleration and expansion of the capital investment in mine supply and metals processing capacity. This paper quantifies demand for the metals consumed in Energy Transition applications and under different decarbonisation pathways and explores the challenges in developing the necessary supply.

**Keywords:** Wood Mackenzie, Energy transition, Decarbonisation, Metals demand.