

SEG 2022 Conference: Minerals For Our Future

A New Century for Nickel; Assessing Global Reserves, Resources, and Sustainability of the Devil's Metal

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Nickel is fundamentally important to modern life and society and is vital for the production of stainless steel, specialty alloys, electroplating, battery production, and more. Global nickel demand is expected to soar as the world transitions to a low- to zero-CO₂ and carbon neutral energy and transport future that increases battery use for energy storage associated with renewable energy systems. This means that understanding the current nickel market and known nickel resources and reserves are key to enabling the energy transition, including the environmental, social, and governmental (ESG) challenges that may prevent nickel project development or may hinder the continuation of current operations. This presentation provides a comprehensive global overview of reported Ni resources and reserves for 2018 classified by mineral deposit type. The majority of nickel has been and will continue to be sourced from laterites and magmatic sulfide systems; other deposits have been mined for nickel although production from these remains relatively small. Our database includes 653 nickel deposits with at least in-ground resources and often reserves, yielding 346.0 Mt of contained Ni in resources that, if all converted into resources and hence production, could meet ~153 years of Ni demand at 2018 global production rates (~2.25 Mt Ni). Comparison of these data to 2011 data indicate that magmatic sulfide resources are keeping pace with depletion by mining whereas laterite resources and reserves are lower, suggesting the latter can be more comprehensively assessed during early resource and reserve estimation. Known nickel resources and reserves are sufficient to continue current levels of production for several decades. However, the nickel mining sector faces a number of challenges that may change this, including increased demand from electric vehicles and batteries and potential supply restrictions relating to increased ESG challenges to the mining industry (including and geopolitical challenges like the Ukraine-Russia crisis).