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# climate intelligence

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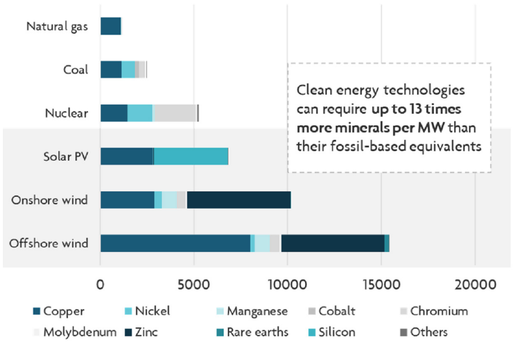
clarissa.lins@catavento.biz • guilherme.ferreira@catavento.biz • pedro.guedes@catavento.biz

## KEY FACTS ABOUT CRITICAL MINERALS FOR CLEAN ENERGY TECHNOLOGIES

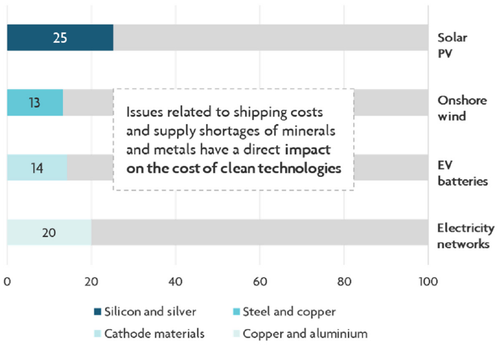
### Why are some minerals considered critical for the energy transition?

Minerals used in conventional and clean technologies, kg/MW[1]



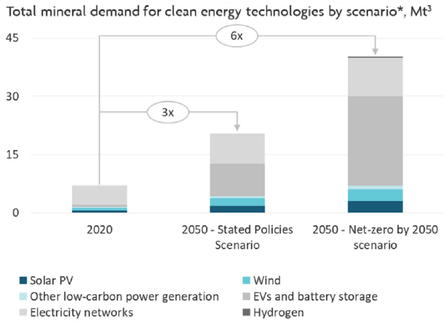

### Minerals and metals influence the competitiveness of clean technologies

Share of material price on the cost of technologies (2020), %[2]



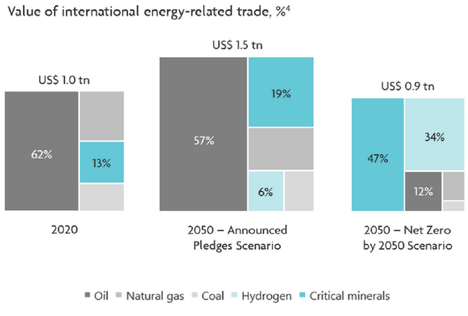

### Demand for minerals can increase up to a factor of 6 by 2050...

Total mineral demand for clean energy technologies by scenario*, Mt[3]



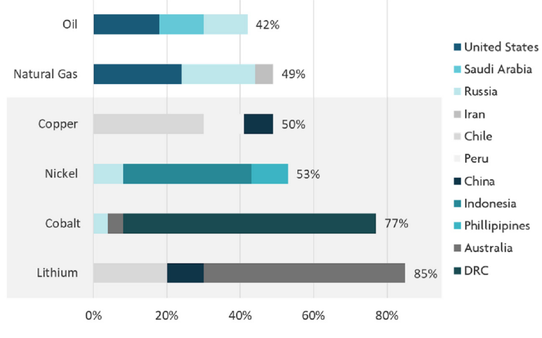

### ... and their share on energy-related trade could rise from 13% to 47% by the same year

Value of international energy-related trade, %[4]

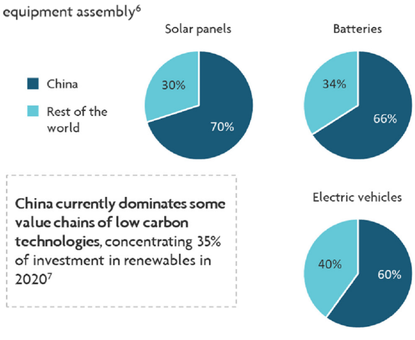



### The concentration of production and equipment assembly may exacerbate geopolitical tensions and supply chain risks

Share of top three producing countries in total production for selected resources[5]




Share in equipment assembly[6]




Given that an increase in the production of critical minerals is necessary to secure the energy transition, proper planning on a multi year time frame is required to avoid shortages, as the average lead time from reserve discovery to mineral production is 17 years[8].

* The scenarios shown were prepared by IEA, with the Announced Pledges scenario (APS) taking account of all the climate commitments made by governments around the world and assuming they will be met in full and in time and the Net Zero Emissions by 2050 scenario (NZE) showing a pathway for the global energy sector to achieve net zero $CO_2$ emissions by 2050; 1 / IEA. The Role of Critical Minerals in Clean Energy Transitions. 2021; 2 / IEA. World Energy Outlook 2021. 2021; 3 / IEA. The Role of Critical Minerals in Clean Energy Transitions. 2021; 4 / IEA. The Role of Critical Minerals in Clean Energy Transitions. 2021; 5 / IEA. The Role of Critical Minerals in Clean Energy Transitions. 2021; 6 / Catavento analysis based on CSIS. The Geopolitics of Critical Minerals Supply Chains. 2021; Wood Mackenzie. Tectonic shift: China's world-changing push for energy independence. 2021; 7 / IEA. World Energy Outlook. 2021; 8 / IEA. The Role of Critical Minerals in Clean Energy Transitions. 2021