The critical metals needed to build infrastructure for the renewable energy transition are commonly found in ultramafic rocks. These rocks can also be used to bind carbon dioxide (CO2) from the atmosphere within carbonate minerals. Accelerated weathering of ultramafic rock to make carbonate minerals has potential to store billions of tonnes of CO2 per year while improving the efficiency of critical metal recovery from mines. This talk will describe how using CO2 sequestration as an ore processing technology could turn mining into a carbon negative industry while enhancing the supply of the metals we need to create the green economy.