

Green Metals

Green metals are required to decarbonise and address climate change. Large deposits of these metals are rare and Chalice's Julimar Project is one of the largest and most significant discoveries in recent history.



About Chalice

Chalice Mining is a West Australian-based company with a track record of responsible and successful mineral exploration.

In March 2020, Chalice made a significant discovery of platinum group elements (PGEs), nickel, copper, cobalt and gold at the Julimar Project, located on private farmland near Toodyay, about 70 km north-east of Perth.

The Gonneville Deposit, the first discovery at Julimar, is the largest nickel sulphide discovery since 2000 and the largest platinum group element discovery in Australian history.

What are green metals?

Gonneville is host to a suite of green metals - palladium, platinum, nickel, copper and cobalt. Green metals are used in applications like renewable energy, energy storage, batteries, electric vehicles, pollution control and hydrogen.

These metals are required in very large quantities to decarbonise the global economy.

Green metals are essential to modern society, however sustainable new sources of these metals are becoming increasingly rare. The supply of these metals is increasingly being dominated by geographies with poor sustainability standards.

As the world pledges to meet greenhouse gas emission targets, demand for these metals is projected to surge over the coming years. The International Energy Agency forecasts that 60 new nickel and 17 new cobalt mines alone are required by 2030 to meet announced emissions goals.¹

The role for Chalice and Julimar

Large-scale deposits of these green metals are rare, and Julimar is one of the largest and most significant discoveries in recent history. Driven by the need to comply with emissions targets and to satisfy increasing sustainability standards, end-users such as battery manufacturers are searching for reliable, sustainable sources of these metals.

Russia and South Africa currently dominate the world's production of PGE's and Australia has never had a major PGE mine.

This presents an excellent opportunity for Chalice and the Julimar Project, which has the potential to be a reliable future source of these critical metals, generating significant economic benefits for the region and state.

Chalice believes that mining of these critical green metals must be done in a responsible and sustainable manner, and acknowledges that mining and processing of metals can have localised environmental impacts.

Chalice is committed to protecting local environmental values and ensuring greenhouse gas emissions from any future metals production are appropriately addressed as part of development design and planning.



Applications and Uses²

Platinum and Palladium



Primarily used in catalytic converters – a pollution control device in every petrol, diesel or hybrid vehicle. Palladium reduces greenhouse gas emissions from exhaust streams, including nitrogen oxides which are 300x more potent than CO₂ as a greenhouse gas. These metals also have a future role to play in green hydrogen production, storage, transportation and use in hydrogen fuel cells.

Platinum and palladium are the most common Platinum Group Elements (PGEs).

Nickel and Cobalt



Nickel and cobalt are key materials required in lithium-ion batteries for electric vehicles (EV) and other high-powered battery applications. Nickel is also used in everyday electronics including mobile phones, laptops and digital cameras alongside home appliances and medical equipment.

Copper



Used extensively in solar, wind, hydro and geothermal energy technologies, as well as in mass electrification technologies including EV's and batteries. It is also used in everyday consumer electronics such as mobile phones, and in all aspects of the electricity system.

Growing demand for green metals



Renewables



Energy Storage



Electric Vehicles



Hydrogen

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1: Source: International Energy Agency - The Role of Critical Minerals in Clean Energy Transitions Report, 2021.
2: Johnson Matthey PGM Market Report 2021; IEA "The Role of Critical World Energy Outlook Special Report Minerals in Clean Energy Transitions" March 2022; S&P Global Commodity Quarterly: Copper Q4 2021.