

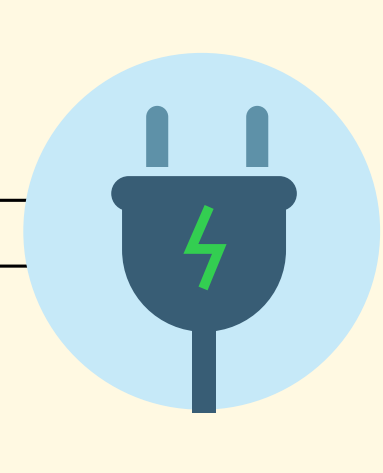
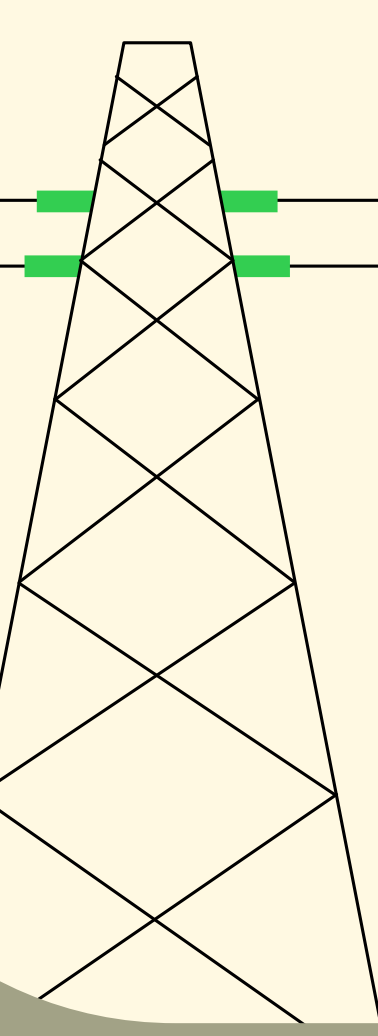
Rethink mining.

Sustain your social license to operate with green mining.

Did you know mining ...

Plays a central role in ensuring socioeconomic development?

Access to energy will require more copper than ever



933,000T copper per year for electrical uses today



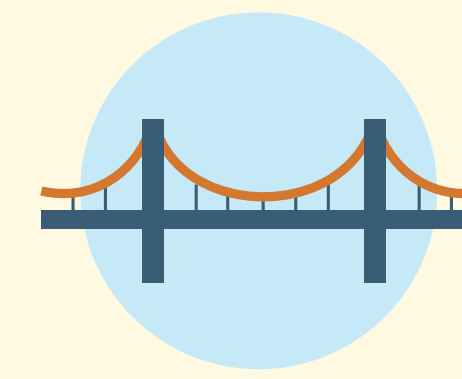
2x electricity in the final energy mix by 2040¹

Digital is enabled by mined products²



40+ mined metals are used in a smartphone

Essential in infrastructure



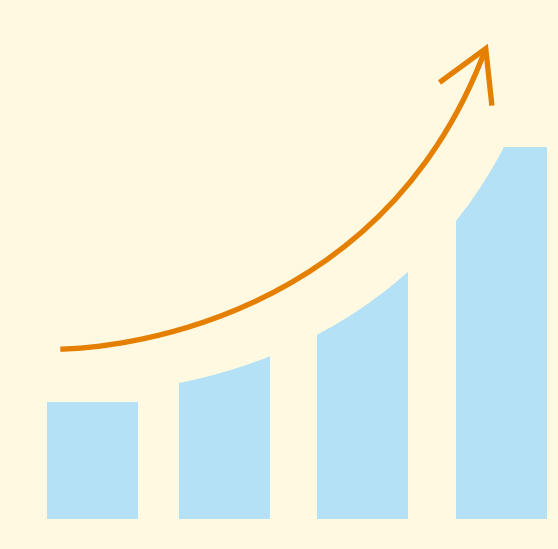
1.6T of iron ore to produce **1T** of steel used for bridges, railways, or buildings³

Is a key component in the low-carbon economy?

Electrical Vehicles (EV)

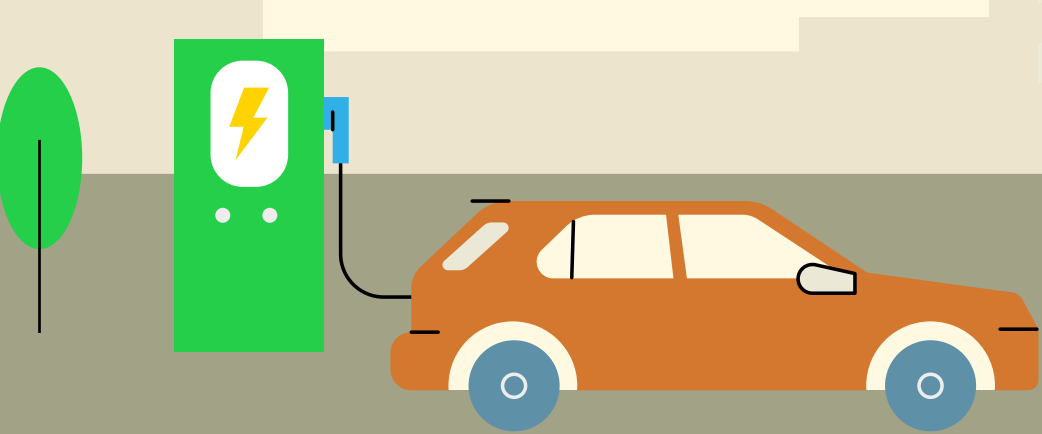
3x more copper

is needed in an EV vs. a gasoline automobile (from 49 lbs. to 183 lbs.)⁴



14x nickel, **9x** lithium, **3x** cobalt demand rise as a result of EVs by 2030⁵

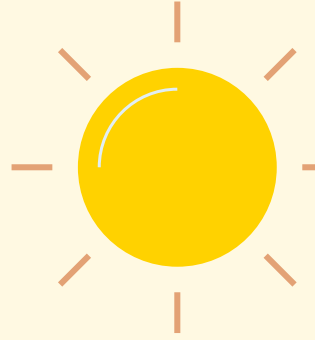
95% of cobalt, lithium, and graphite in batteries can be reused⁶



Renewables

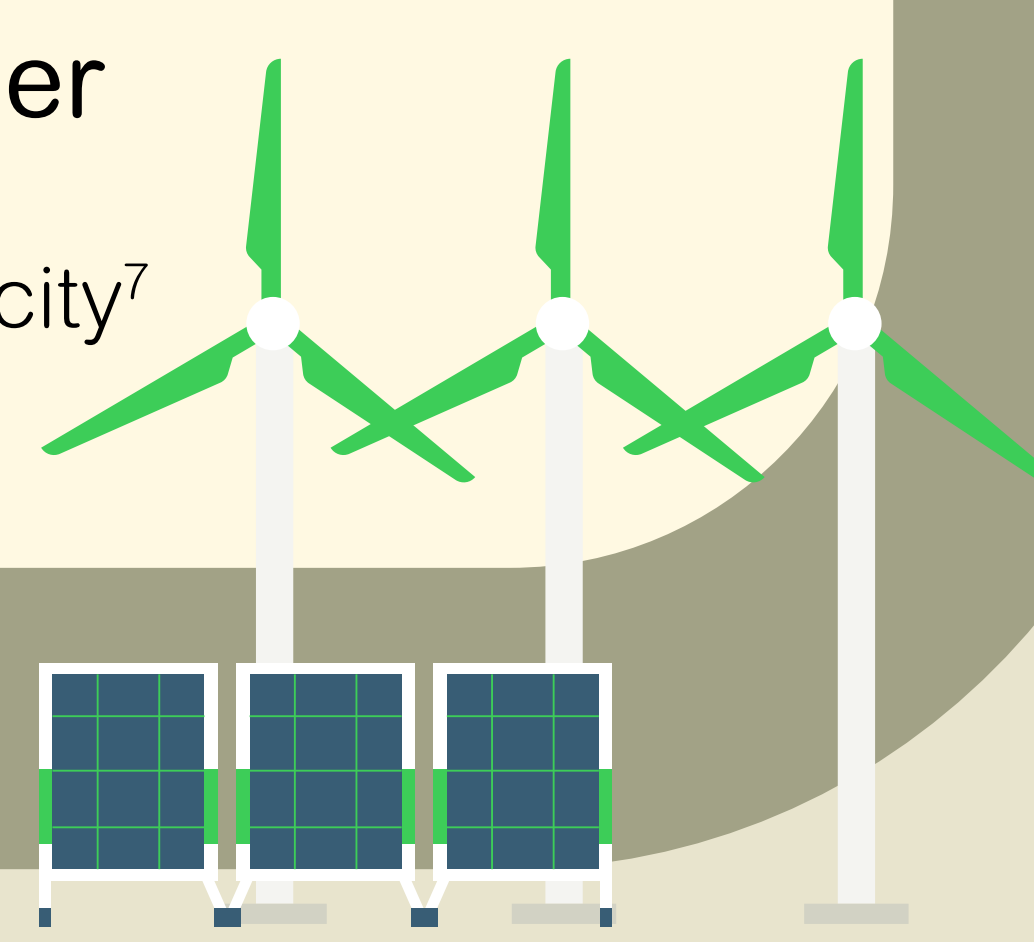
6x renewable

electricity from wind and solar by 2040⁷



5.5T of copper per megawatt in PV solar system⁶

2.5 – 6.4T of copper is used on average for each megawatt of wind power capacity⁷



An essential industry looking into sustainability



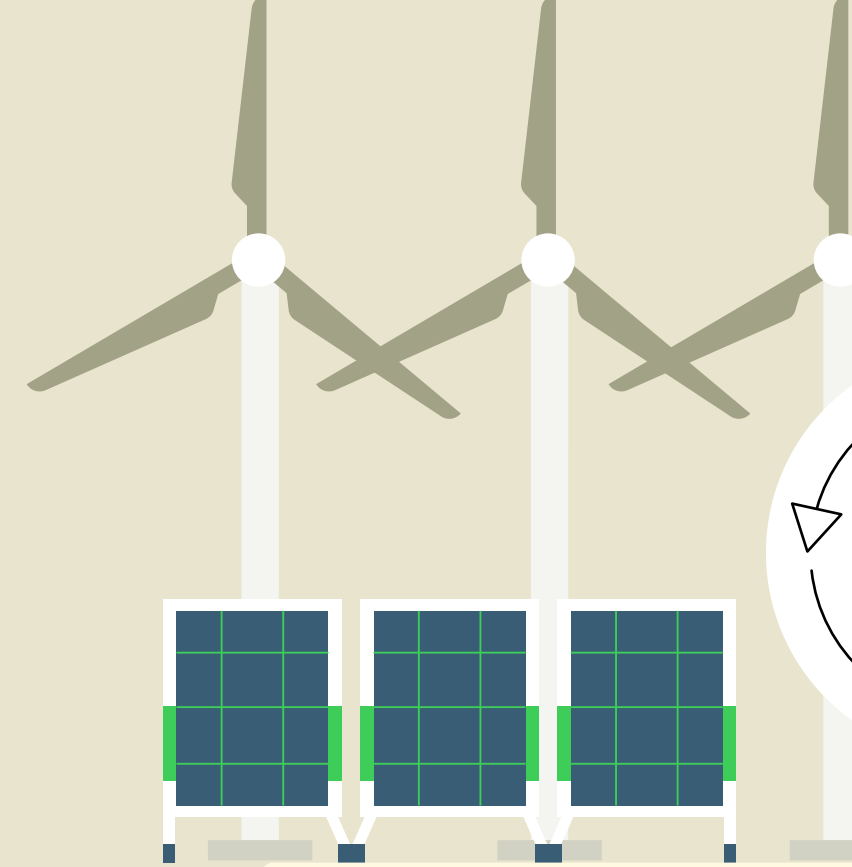
4 – 7% global GHE from mining⁸



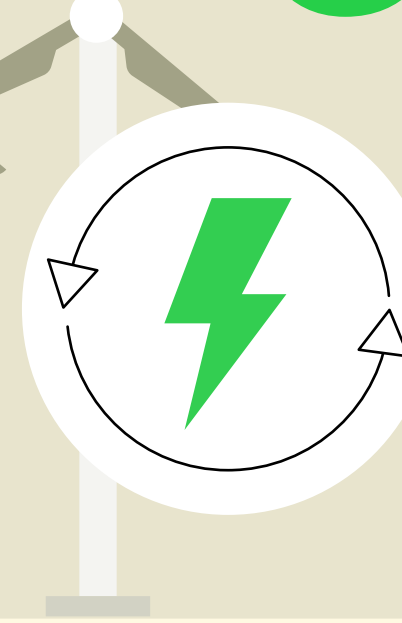
Amount **CO₂** emissions must fall by 2050 in all sectors, from 2010 levels⁸



Most major mining companies are committed to **carbon neutrality** by 2050



30 – 40% energy consumption is used during comminution



A step-by-step sustainability strategy toward green mining

Where do I start?



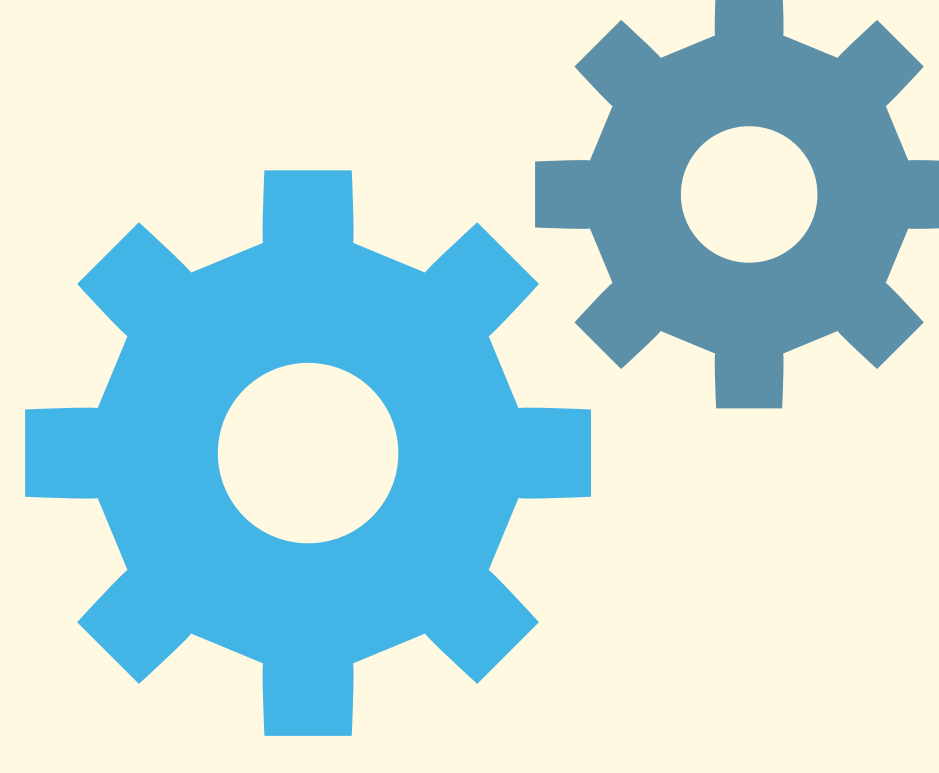
1

Get a strategic and data-driven view of energy and carbon emissions



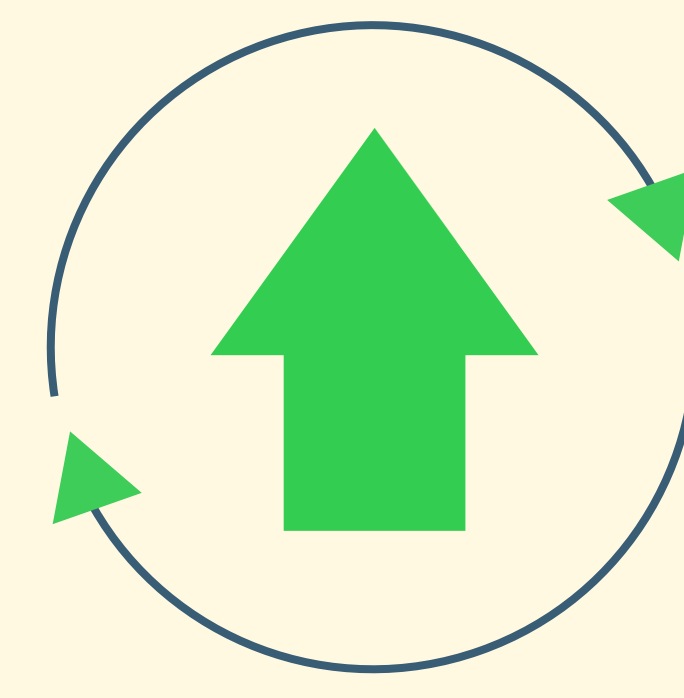
2

Build a roadmap



3

Execute



4

Measure and improve

We can be with you all the way

Which technologies are available?

Evolutionary approaches

Current assets efficiency

» Energy efficiency

14,400 homes equivalent in emissions reduction targeted by Vale, using smart meters.⁹

Efficient power distribution

» Yield efficiency

10% capacity improvement globally at MMG, with IoT production management.¹⁰

Up to **10%** energy savings in comminution in a specific unit operation combining digital solutions.

Digitally integrated operations

New infrastructure

» Balanced energy mix

100% consumed energy from renewables to minimize scope 2 emissions.

Renewables and microgrids

Revolutionary approaches

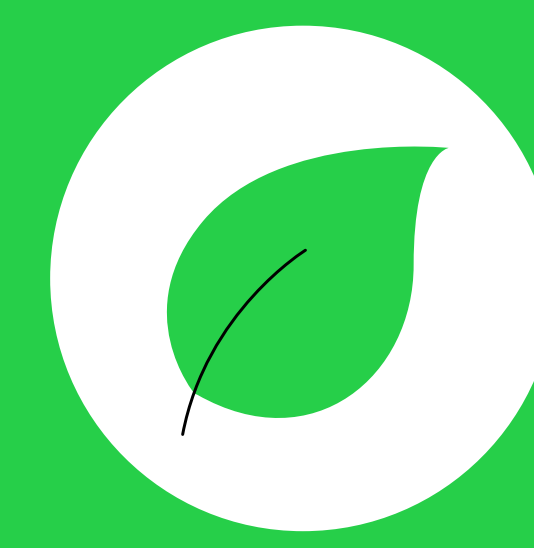
Redefining processes

» Zero-carbon process

115 Mt CO₂e generated by trucks, vehicles, and shipping in mining.¹¹

Electrification

“**All-electric**” Newmont Goldcorp’s Borden Mine features low-carbon electric vehicles.⁹



As the most **sustainable corporation in the world**, Schneider Electric is on a mission to make Industries of the Future eco-efficient, agile, and resilient, driving them on a step-by-step sustainability journey.

Source:

- Schneider Company Story 2020
- Australian Mining Association
- worldsteel.org
- copper.org
- Bloomberg
- Renewable Energy World
- Copper Development Association
- Mckinsey – “What every CEO needs to know”
- IM Mining
- AVEVA
- Rio Tinto

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