

NICKEL: FROM THE 'DEVIL'S METAL' TO THE 'HOLY GRAIL' OF CLEAN TRANSPORT

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Nickel is rapidly emerging as a 'critical' metal for the shift toward electric vehicles (EVs) and battery energy storage. While 'clean energy' technologies, including EVs, are shrouded in communications associated with sustainable futures, these products are dependent on finite resources in immense quantities. With the [Paris Agreement on electric mobility](#), nickel is anticipated to reach a [35% demand increase](#) by 2025 according to industry estimates. The International Energy Agency (IEA) estimates that the global EV fleet will reach [230 million](#) by 2030.

A standard 60kWh [lithium-ion EV battery](#) uses 39 kg of nickel - the most out of any metal. Amid increasing demand and conflict in Europe, Nickel prices rose to \$100,000/tonne leading to the London Metal Exchange (LME) to remove the [commodity from trading](#). Tesla CEO, Elon Musk, partners with Chinese billionaire [Zeng Yuqun](#) to capture the bulk of the EV market and associated consumer hype. Musk has [repeatedly urged](#) mining companies to extract more nickel, which he deems essential to the techno-industrial roll-out of his products. Tesla's largest EV manufacturing hub is [located in China](#) (also the world's largest consumer of nickel for stainless steel products) and distributed into the global consumer market. [China's dominant position](#) in the EV supply chain is expected to continue. Western nations are racing to catch up starting by building alliances to secure access to finite battery metals.

Australia currently [holds significant amounts](#) of the most sought-after reserves of nickel, and a number of key nickel mining companies are pivoting to capture profits from the intensification of extraction in the race to electrify. Other nickel deposits considered viable economically for extraction are located in Indonesia, South Africa, Russia and Canada. These countries together contain 50% of global resources. On land, nickel is found as either laterite or sulphide ores. Up to 8 billion tonnes of nickel resources are found in manganese crusts and nodules on the ocean floor, resulting in a [deep sea](#) extractive push.

Green Sacrifice Zones: socio-environmental impacts

Globally, mining is often positioned by dominant Corporate State actors as a key pathway for national economic growth for "developing" countries. However lands and communities, particularly in the [Global South](#), are often [sacrificed](#) to the destructive impacts of mining extractivism - which are increasingly associated with new green economies. Nickel extraction involves open cut or underground mining followed by a complex separation and concentration process, smelting and refining. Laterite mining and processing is [more energy intensive and environmentally damaging](#), with most extraction occurring in the Asia-Pacific region. With both processing methods, the smelting process is particularly harmful to the environment. [Impacts include](#) heavy metal air and soil contamination, acid rain, acidified wetlands, biodiversity decline, vegetation dieback and heavy soil erosion.

Around the Indonesian island of Obi, the dumping of millions of tonnes of nickel tailings into the sea has turned the [ocean red](#), causing mass die-offs of fish populations. In 2019, 17 nickel mines were shut down in the Philippines by the Environment Minister due to environmental impacts. Serious contamination incidents have been reported in [Russia](#), [Papua New Guinea](#) and [Colombia](#). High levels of a [carcinogen have been found](#) in drinking water close to Indonesia's largest mine, linked with deadly respiratory infections. Nickel operations have been associated with violence against environmental defenders in South Asia; and, in Guatemala, with [forced displacement](#), armed conflict, sexual assault and murders. In Australia, abandoned nickel mines have left devastating impacts for local communities.

The bulk of nickel mining occurs in South Asia. However, the capital-intensive, and practice of [dumping millions of tonnes of waste material](#) into the ocean, alongside the prominence of China, has

led Western players to seek out new jurisdictions in order to sell their ESG (environmental, social and governance) credentials to investors. Within this context, the Australian mining industry is emerging as integral to the new battery energy-storage supply chain.

With regard to Indigenous lands in Australia, government regulations currently fail to adequately protect land rights and cultural heritage, particularly in areas where mining operations are highly concentrated. The [Juukan Gorge inquiry](#) into the mining industry's conduct, in relation to Ministerial discretion over decisions related to cultural heritage destruction, brought a range of important issues into parliament and presented a number of recommendations. However, regulation in Australia is geared toward fast tracking mining applications, and this trend is likely to worsen with the Federal government granting 'major project status' on the basis of securing critical minerals for the 'clean' energy.

Australia's emerging role in the Nickel supply chain

With a history of [settler-colonial extractive exploitation](#), a well-established [government support](#) of mining industries, and significant nickel ore deposits, Australia is [positioned fifth globally](#) in terms of nickel mining output. By 2030, state-corporate market sources predict that [25 percent](#) of nickel will be extracted in Australia. Australia is touted as desirable because it has substantial reserves of [both laterite and sulphide ores](#). The increasing dominance of ESG (environmental, social and governance) discourse in the battery metals sector is leading to expansion of both laterite and sulphide mining investment in Australia, for two different reasons. Existing large laterite operations, such as Nickel West and Murrin Murrin, promote high-pressure acid leaching (HPAL) as an alternative to 'more damaging' practices in Asia and Africa. There is also increased exploration of Australia's sulphide deposits, the [extraction of which](#) is deemed more energy efficient, and results in [higher grade metal](#).

The United States and Australia are developing a [critical minerals cooperative arrangement](#), citing environmental and labour standards as justifications. Battery metals are part of the AUKUS military intelligence-sharing partnership, while leaders of the Quad ([Quadrilateral Security Agreement](#)) - US, India,

Japan and Australia - have agreed to map out critical minerals [supply chains](#) and draw up regulations to speed up project approvals. South Korean battery producers are [seeking strategic alliances](#) with Australian mining companies in order to diversify supply chains so far reliant on China.

New nickel operations and expansions are being supported by [Federal](#) and state governments in Australia. In September 2021 the Federal Government opened a [\\$2 billion finance scheme](#) supporting Australian critical mineral extraction projects which 'secure vital supplies' and jobs for the 'new energy economy'. Western Australia (WA) has a [future battery industry strategy](#) geared toward capitalising on its competitive advantage to become a 'world leading' and a 'sustainable' player in the global battery supply chain.

Australia's domestic Nickel extraction footprint

According to [Geoscience Australia](#), Australia hosts 24% of global 'economically viable' nickel deposits. In 2021 all Australian nickel extraction was from twelve operating mines in WA, where 96% of reserves are located. Now, with grants from government and industry allies such as CSIRO, nickel exploration and project approvals are expanding in regional NSW and Queensland. Our mapping of nickel projects shows an increasing number of large and small companies mostly located in WA. Apart from BHP's Nickel West (see case study), other significant operating mines include Mincor, IGO, OZ Minerals and Panoramic Resources. A number of new projects are at the exploration stage including Auroch Minerals, Estrella and Poseidon Nickel (all in the Goldfields region).

Most companies are promoting themselves as 'battery metals' companies, not just referring to nickel, but also other minerals touted as essential to so-called green energy, such as cobalt and copper. Australia Mines is developing a nickel-cobalt-scandium project in Queensland. A-Cap, who is exploring in WA, has established [partnerships with lithium ion](#) battery manufacturers in Europe, indicating a trend for exploration companies to raise their capital by investing in future-facing supply chains.

Particular concerns from groups in Australia in response to expanding mining operations for battery metals include land rights, labour issues, and water contamination. We examine two key studies from Western Australia and Canada.

DOMESTIC CASE STUDY



BHP MT KEITH NICKEL OPERATION - OPEN PIT MINE AND 5-KM WIDE TAILINGS LAKE. IMAGE: CONSERVATION COUNCIL OF WESTERN AUSTRALIA

BHP pollutes Indigenous lands for future battery energy

BHP is one of the world's [most destructive](#) extractive companies in terms of impacts for the climate, environment and communities. The company has recently announced that it will expand its operations in Western Australia to become a '[nickel hub](#)' for '[cleaner](#)' futures. Located in the 'Goldfields' region, central WA, BHP's Nickel West complex is a part of a larger mining district that covers Kalgoorlie and surrounding areas. In response to a [supply deal](#) with Tesla, Nickel West infrastructure is expanding.

The company is jumping on the opportunity to clean up its image by aligning with clean energy futures, claiming that [over 85%](#) of production from Nickel West is sold to the future-battery supply chain. The company has opened Australia's first nickel sulphate [processing plant](#) at Kwinana, saying the facility will refine 'enough to make 700,000 EV batteries'. BHP [plans to expand](#) extraction at the Mt Keith site by 40% to meet this stated demand. While framed as 'clean and green' by industry proponents, the operation is heavily reliant on hydrocarbons across its operations and is associated with a number of environmental issues, Indigenous and workers' rights concerns.

BHP has a history of abandoning destruction and is supported by [legislative loopholes](#) to avoid rehabilitating mines after extraction - the ecological damage is so severe it is near impossible to repair and thus incredibly costly. The company attempted to abandon Nickel West from 2012-2014, yet was not willing to pay the cost of [addressing contamination](#) caused by toxic waste from smelting. Large mines such as Nickel West can cost [hundreds of millions](#) of dollars to rehabilitate. Water acidification is [a risk](#), as is subsidence, which caused the [collapse](#) of Norilsk's Lake Johnstone nickel mine after its closure in 2009.

Water use is the biggest concern for operating mines and infrastructure in this region. The Goldfields has hosted grand-scale metals extraction since the 1880s. But the region's communities, ecosystems and industries are all dependent upon a limited water supply from underground aquifers. The WA Government has [no integrated water use plan](#) for the Goldfields. Companies submit individual water use assessments for approval, with no existing long-term plan for the regional impacts of over-allocation to the mining industry.

A number of serious workplace related incidents have occurred at BHP's sites. These include a death at BHP's Leinster mine in [2010](#), [a major fire](#) at BHP's smelter at Kalgoorlie in 2018, and [Legionnaires' disease](#) at infrastructure at BHP's Kwinana site in 2020.

The Goldfields covers several Indigenous native title claims. Section 18 of the [Western Australian Aboriginal Heritage Act \(1972\)](#) allowed a Government Minister to have final discretion over extractive projects on Aboriginal Lands. This law allowed such atrocities as the destruction of sacred sites at Juukan Gorge by Rio Tinto in 2020. While Section 18 was removed in 2021 and replaced with an [updated law](#) requiring the involvement of Traditional Owners, it is implicated in mine operations approvals in WA prior to 2021. In 2020, Tjiwarl Native Title holders in the Leinster area (a site of BHP's operations) [filed a compensation case](#) against the WA Government for damage and loss of access to land and Tjukurrpa (Aboriginal Law) due to industrial and mining expansions.

Greening the image of BHP as a "clean" company is in stark contrast with the significant implications for communities concerned with climate change, cultural heritage, human rights and the environment.



AERIAL PHOTOGRAPHY OF NORTHERN ONTARIO'S RING OF FIRE. PHOTO: GARTH LENZ, CANADIAN GEOGRAPHIC

Australia's Nickel production: overseas footprint

Australian companies are focused on domestic nickel mining and exploration with relatively few new extractive operations overseas. Existing Australian stainless steel ore suppliers, such as South32 in Colombia and Nickel Mines in Indonesia, are upgrading facilities and promoting their role in the battery metals industry. South32's Cerro Matoso operation is notorious for serious [human and environmental impacts](#), while Nickel Mines is expanding in Sulawesi to meet [battery metals demands](#) spurred by Tesla's investment in Indonesian nickel. Australian companies are also entering new 'high risk ESG' jurisdictions such as [Tanzania](#), and [investing](#) in ore from conflict countries such as [New Caledonia](#). AusTrade views the Philippines to be a hotspot for future [Australian nickel mining opportunities](#).

mineral deposits including nickel, copper, platinum, palladium and chromite. The region was recently the subject of a mining bidding war between BHP and [Wyloo Resources](#) (owned by Australian billionaire Andrew 'Twiggy' Forrest) over establishing a "world-class future metals hub".

A proposal to [build an access road](#) to support mining exploration was approved in 2020, sparking nine First Nations groups to declare a [moratorium against mining](#) on their territories. First Nations groups and the [Friends of Attawapiskat](#) joined in opposition due to concerns of socio-environmental impacts from mining expansions. The area contains vulnerable wetland and peatland ecosystems which form one of the world's most important carbon sinks, storing an estimated [26 billion tonnes of carbon](#).

The declaration put Canada on notice until the State's obligations to UNDRIP (United Nations Declaration of Rights of Indigenous Peoples) were respected and the government agreed to a new Regional Impact Assessment (RIA) [led](#) by a representative Indigenous governing body. While the process involved the forming [of a committee](#) to include an Indigenous-led consultation process, the government failed to allow the main Indigenous governing body to join. In January 2022, several First Nations groups [sent a letter](#) to the Environment Minister demanding that he disband the committee due to failing to consult groups adequately.

GLOBAL CASE STUDY

First Nations Moratorium on Mining and the 'Ring of Fire', Ontario

A large area in Ontario, Canada known as the 'Ring of Fire' is currently vulnerable to new mining operations from Australian companies. Located in Ontario, Canada the area covers 5000 square kilometres with

Local communities are increasingly concerned about the recent takeover by Forrest, whose reputation for fair dealing with Indigenous peoples in Australia is poor, with several legal [Native Title disputes](#) linked to his projects over the years.

“... we are going to stand for our rights, we are going to stand for Mother Earth, we are going to stand for the river system, the animals that are not able to speak at the tables that we sit across from industry and governments. That is why we say those things, and we mean what we say.”

Chief Wayne Moons, Neskantaga First Nation,
Ring of Fires, Ontario, Canada

Emerging Trend: technical and industry-led ESG ‘solutions’

Proponents of new energy technologies and industry knowledge producers have generated new technical standards around ESG (environmental social and governance). For example, we see the rise of ‘carbon neutral’ mining and a range of initiatives to ‘clean’ up emissions from [nickel mining in Australia](#). This is guiding a push for industry-led and technology driven ‘solutions’, invested in by companies keen to establish ‘green’ supply chain credentials. Elon Musk has asked for ‘environmentally friendly’ mining, which is not possible as [extractivism](#) entails destructive impacts on the environment that are irreversible.

Half of nickel extraction [ends up as waste](#) and recycling processes require heavy technological input and are associated with social and environmental [challenges](#). In response to the corporate [Nickel Institute’s push](#), Australian companies are jumping on board with waste recycling. [Sunrise Energy Metals](#) is developing a ‘recycling hub’ in NSW. While BHP is [investigating](#) the conversion of waste from its Mt Keith tailings pond into magnesium carbonate, claiming this will pull CO₂ from the atmosphere. Another example is [research in Canada investigating](#) the carbon sequestration potential of waste tailings to contribute to reporting carbon neutrality.

Proponents of nickel mining expansions are depending upon technical and industry-led strategies to appear to manage and mitigate risks associated with destructive mining processes. This trend repeats corporate practices of the past that fail to address problems and serve the interests of business as usual.

CONCLUSION

This global rush to secure minerals for battery power is generating a number of [socio-environmental material and geopolitical concerns](#) linked to Australian companies which demand urgent attention if the world seeks to adequately address climate change. The Australian government, in cooperation with proponents of battery supply chains, are positioning nickel mining companies to play a key role in supplying so-called ‘ESG compliant’ raw materials to Western markets, to compete with China. Nickel’s listing as a ‘critical mineral’ has amplified mining and associated sectors to promote the expansion of domestic mining and processing - justified in terms of the race to meet Net Zero targets.

This research found that nickel extraction operations are accompanied by a range of site-specific and spillover socio-environmental impacts, from land acquisition land to post-extractive legacies. Australian companies are associated with projects in Canada, Australia, Indonesia, Tanzania and New Caledonia, with severe risk of impacts on land, water and human rights. More specifically, case studies highlight risks to vulnerable ecosystems, indigenous rights, toxic waste contamination and water depletion. Not only is nickel mining emissions-heavy, but the scale of demand is placing pressure on communities and ecosystems. While companies strive to bolster their ESG credentials on paper and in investor forums, these realities for environments and communities are strategically hidden.

Expansion of extraction is likely to disproportionately affect First Nations communities and have ramifications for the planet as a whole. Given the large increases in demand for nickel from Australia, more research is needed to uncover the hidden costs and implications of nickel mining and related battery value chain expansions in the name of climate change. The increased role of Australian companies will require Australian extractive operations.

In an era of Australia’s increasing global role in securing minerals for so-called ‘clean’ technologies, the exploitative and destructive implications of mining under settler-colonialism must be more adequately understood. The issues associated with expanding consumption of new vehicles and intensifying destructive mining practices and associated supply chains should be adequately considered given the potential ramifications for the planetary crisis.



PHOTO FROM [FRIENDS OF THE ATTAWAPISKAT RIVER \(FAR\)](#) ARE A COALITION OF IMPACTED COMMUNITY MEMBERS AND ALLIES FOCUSED ON STEWARDING AND PROTECTING THE ATTAWAPISKAT RIVER AND ITS WATERSHEDS., 'RING OF FIRE', ONTARIO, CANADA.

OBJECTIVES AND RECOMMENDATIONS

- 1. Australian companies must be held responsible for their domestic and overseas impacts on people and the environment.** This requires the Australian government to improve oversight and independent monitoring of company activities to ensure diligence with regards to legal obligations in host countries and internationally.
- 2. Communities harmed by overseas Australian investments, operations or activities must have access to justice within Australia.** This should include the introduction of mandatory human rights and environmental due diligence obligations for large Australian companies especially those operating in high-risk locations and sectors.
- 3. Australian climate policies must be centred on justice and equity.** This should include exposing and holding to account all misleading branding of “clean” energy and “renewable” technologies. Justice and equity must be centred across all value and supply chains of the transition to prevent further global intensification of destructive extractivist practices, particularly in vulnerable ecological and cultural regions.
- 4. To endorse, amplify and advocate [A Way Forward](#) report.** The report calls for an overhaul of Australia’s cultural heritage protection regulations and a review of the *Native Title Act 1993* to address power imbalances in negotiations based on free, prior and informed consent.
- 5. To endorse, amplify and advocate for [Red Lines for Extractivism](#).** A statement written by a global coalition of frontline groups for the COP26 People’s Summit 2021.
- 6. To endorse, amplify and advocate for the creation of a ‘circular society’.** This has been presented in a War on Want, London Mining Network and Yes to Life No to Mining joint report [A Material Transition](#) (2021), calling for high consuming countries to take responsibility for their over-reliance on finite resources. Recognising that a fundamental change to Global North economies and lifestyles is the only sustainable option for reducing the demand for critical minerals.
- 7. To build networks of solidarity centred in justice.** This must be built across Australia and internationally in collaboration with environmental and human rights defenders, Indigenous peoples, fisherfolk, campesino groups and frontline communities. Where their value-based systems centred in reciprocity and custodianship are respected in their resistance against mining and other extractive projects in their lands, mountains, rivers and waters.
- 8. To stand with communities in their ‘Right to Say No’.** This must include the right to self-determination, collective rights, and the right to self-govern based on principles of sustainability and care for humans as well as non-human living forms.

JOIN US IN SOLIDARITY WITH COMMUNITIES ON THE FRONTLINES OF GREEN EXTRACTIVISM