
# MINED THE GAPS

## Trust and Critical Minerals

*Report for the Trust, Accountability and Inclusion Collaborative*

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Views are those of the author, not necessarily representative of TAI members or secretariat

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# Executive Summary

The global debate around critical minerals is stuck. On one side, governments and industry argue that the energy transition demands rapid development of mineral resources, and that greater engagement and regulatory safeguards are an obstacle to that speed. On the other hand, communities and civil society argue that deregulation and fast-tracking will entrench harm. Both sides tend to treat this as a zero-sum contest. This report argues that it does not have to be this way.

The starting point is to be honest about what 'critical minerals' actually are. The term has become a catch-all that bundles together minerals essential for renewable energy, minerals essential for weapons production, and minerals that are simply economically important to individual countries. Case in point: roughly 60 per cent of minerals on the European Union, United States, and Australian critical minerals lists have no energy transition use case. The factor that makes many of these minerals 'critical' is not scarcity in any absolute sense, but the geopolitical anxiety created by China's dominant role in processing and refining — and the rapid deterioration of trust in global trade. Organisations working in this space need to be precise about which minerals genuinely matter for energy transition, and resist being drawn into programming that inadvertently serves trade-war or defence agendas.

The report challenges four further assumptions that currently shape the debate. First, **while much of the policy conversation focuses on new 'greenfields' mines, the overwhelming majority of expanded critical minerals production is coming from existing 'brownfields' operations.** This is where organisations involved in critical minerals development engagement can have the most immediate impact — but it also means confronting entrenched patterns of engagement and benefit distribution at sites where consent has already been obtained or bypassed.

Second, **the market for developing new mines is structurally broken.** The exploration phase is dominated by small, under-capitalised junior mining companies whose technical focus is almost entirely geological. Environmental and social risks are routinely created during this phase but go unaddressed because companies lack the resources, incentives, and regulatory obligations to consider them. By the time a project reaches the mine permitting stage, those risks are deeply embedded.

Third, there is now substantial survey evidence — drawn from tens of thousands of respondents across Australia, Canada, and individual mine sites globally — **that the key drivers of community trust in mining are procedural fairness – community having a voice in projects that impact them, confidence in regulation, environmental impact management, distributional fairness, and quality of engagement.** This evidence consistently shows that strong regulation is an enabler of mining, not a blocker. The current push to 'streamline' or deregulate approvals processes risks undermining exactly the factors that allow projects to proceed with community acceptance.

Fourth, **the financial case for speed is real but poorly understood**. There are potentially massive benefits from speeding up the development of new mines, but at present, any such surplus is captured entirely by the company. It could instead be shared — funding both enhanced community benefits and the regulatory mechanisms needed to sustain trust across the life of a project.

**These observations lead to the following recommendations.**

### Recommendation 1: Be critical of critical minerals

Organisations should assertively challenge the current critical minerals framing and ensure that any programming is explicitly focused on minerals essential for energy transition — not defence, not trade leverage, not domestic economic convenience.

### Recommendation 2: Discourage a trade war with China

The single most effective way to reduce the 'criticality' of critical minerals is to work towards restoring a more trust-based global trade system, rather than accelerating the resource nationalism that is driving supply anxiety.

### Recommendation 3: Capacity building for companies.

The real capacity deficit in this sector is not with communities or governments, but with multinational mining companies whose corporate affairs models are corrosive to long-term trust. Donors should develop joint partnerships with major producers, focused on trialling new approaches to addressing environmental and social impacts, as well as community engagement, at the site level.

### Recommendation 4: Find a radically curious regulator.

This report proposes an 'Adaptive Governance Partnership' — a continuous, multi-party regulatory mechanism that brings together company, regulator and community representatives to make decisions as information arrives across the full mining lifecycle, rather than relying on intense set-piece regulatory processes. This model embeds the key drivers of trust into the regulatory structure itself, with the explicit trade-off that projects progress faster and the resulting financial gains are shared.

### Recommendation 5: Start a mining company.

If the core problem is the market, the most powerful intervention may be to enter it. Donors could create or invest in a new kind of junior mining company that ties exploration funding to environmental and social work programs — most logically in Australia or Canada.

### (Not Recommendation) 6: Benefit sharing

While benefits do matter, they are rarely the primary driver of trust. This report is deliberately cautious about recommending benefit sharing as a lead intervention, because it risks reducing communities to economic actors waiting for the right price.

# 1.Project background and scope

## Reconciling speed and fairness in critical minerals development

The apparent problem is this: we are currently witnessing an explosion in demand for critical minerals, and this will significantly exacerbate environmental and social risks and impacts around those resources. Demand for these minerals is being driven by both climate action – i.e., the need to convert existing fossil fuel generating capacity to renewables, as well as increased demand from the electrification of the global economy as a whole, with the uptake of electric vehicles and the rapid roll-out of data centres being two major drivers.

The debate and actual practice around how to navigate this tension between the need for rapid development and the need to not do harm to local communities and ecosystems appears to be stuck in an adversarial loop between mining companies, governments, NGOs, and communities. New models – of engagement, of regulation, of planning – are required.

There is increasing concern that how we think about critical minerals is increasingly being shaped by five predominant assumptions:

- That it is acceptable for the rapid development of transition mineral project developments to come at some expense of community interests; global climate needs trump supposedly parochial local concerns.
- There is a zero-sum framing of the interests of companies and communities; if one benefits, the other necessarily loses.
- That governments should derisk critical mineral projects by providing direct financial support, such as direct investment or guaranteed prices.
- That governments should seek ways in which to deregulate and streamline the approvals processes for critical minerals projects.
- That social and environmental impacts and risks are simply a function of regulation and funding – i.e., that they can be addressed or not addressed, and that the only determinant of which approach to take is whether it is economically practicable to engineer out or compensate out a risk. The consequence of this is that critical mineral projects are considered viable until such time (often quite late in the piece) that impacts and risks are critically examined.

This report seeks to challenge these assumptions and to identify alternative, innovative, and actionable approaches advancing both the interests of the energy transition, as well as the communities that will be most impacted by the mines that will fuel it.

## Methodology

This report was researched and written by **Sefton Darby**, an independent consultant specialising in social risk, public policy, and geopolitics, with an extensive background in minerals governance.

A small number of expert interviews were carried out with a cross-section of people with profoundly different experiences and interests in the issue, from critical minerals companies to mining service companies, to politicians with involvement in resource use, through to civil society groups and independent consultants.

An **open call** was also put out on LinkedIn seeking views on the tension between speed and fairness in project development. This call received excellent engagement and resulted in the identification of both interviewees and research resources previously not known to the author.

Finally, a short desktop review of key research and resources was carried out to inform the work.

It is important to acknowledge that AI was used in the production of this report in the following way:

- Zoom Workplace Pro AI Companion was used to provide detailed and summary notes of interviews.
- Claude AI Pro was used to generate graphs, proofread, and edit this document. Where AI was used to redraft sections of the report for clarity, it did so based on customisations trained on pre-AI written work by the author. It was also used to interrogate and search long technical documents to identify key themes and issues.

## Evolution of scope and assumptions

As with many research projects, what one sets out to study rarely resembles what ends up being written about. It is worth briefly mapping those changes — they reveal something important about the 'critical minerals' debate and explain this report's structure.

The primary focus of this report was initially on whether community engagement practices by companies could be changed in ways that would lead to both more equitable outcomes for communities, while at the same time potentially increasing the speed at which critical mineral projects are developed. While this is still a clear focus of this report **(see Chapter 4 below)**, the research progressively expanded in scope to include the contested definitions of criticality, the structural incentives of the exploration and mining market, and the role of regulation in enabling or undermining community trust.

## Limitations and potential lines of inquiry

The focus of this report is on providing swift insight into and alternative models for addressing the tension between rapid development of critical minerals projects and the welfare of communities that host those projects. Constraints of budget, time and project length mean that this is by no means a comprehensive research report, though links to key research in this area are provided. Several additional lines of inquiry were briefly considered and may be of interest to potential donors. Those areas are:

- The role of minerals and metals processing (as opposed to extraction).
- The potential to meet some critical minerals demands from mine waste processing and end-product recycling.
- Closure and equitable transitions around fossil fuel projects.
- The geopolitical risks of a successful energy transition.
- Community engagement practice in the energy transition sectors.
- Cumulative strategic social impacts.

Each of these is discussed in further detail in **Appendix A.**

# 2. What and where are critical minerals

## Uses of 'critical minerals'

Terminology here is genuinely contested – what are critical minerals, and for whom are they critical? Are we talking about 'critical minerals', 'transition minerals', 'energy transition minerals', or 'critical energy transition minerals' (as the UN would call them)— or something else?[1] The answer shapes the scope of solutions, who to engage, and how.

Starting with the broad term 'critical minerals', we find that the term is applied to the following categories of use.

1. **Manufacturing of renewable energy generation assets** – typically wind turbines, solar panels, and hydropower turbines.
2. **Energy storage facilities –** typically batteries and pumped hydro assets – from the micro (batteries in electric appliances) through to the macro (turbines in dams).
3. **Electricity transmission and distribution infrastructure.** The shift from fossil fuels to renewable energy generation requires new or enhanced lines and distribution infrastructure.
4. **Increased end uses of electricity,** most notably data centres, electric vehicles, the cooling and heating of buildings, and industrial electrification.
5. **Weapons production.** A number of critical metals are essential for war-fighting and defence uses.

## Are critical minerals really critical?

Criticality is in the eye of the beholder. Different countries apply different factors, and understanding those differences matters — because just as renewable energy and defence applications get lumped together, so too are different rationales for expediting development. Typical reasons include:

- **Scarcity of supply relative to current and potential demand:** the level of global production is either already behind (and therefore is a constraint on the potential rollout of electrification) current demand or is forecast to be behind potential future demand. This is particularly the case with most projections of minerals and metals required for uses 1 – 4 above.

*[1] See https://www.unep.org/topics/energy/renewable-energy/critical-energy-transition-minerals*

- **Levels of domestic production relative to domestic demand:** In some countries, specific minerals or metals may be considered critical due to very high levels of domestic demand relative to domestic production (e.g., the minerals and metals necessary for weapons production in the United States). Countries with intensive agricultural industries, for example, may consider mineral fertilisers more critical than others. Geographically small countries may even consider sand and aggregates to be critical because of their core role in land reclamation, construction, and infrastructure.

- **Concentration of supply:** The production and/or processing of some minerals and metals is concentrated in a small number of countries. This creates supply risks from natural disasters and climate change – while only indirectly minerals related, the global chip shortage of the early 2020s is a good example of extreme weather (drought) in one location (Taiwan) causing outsized supply shocks across the world.[2]

- **Political risk of supply:** The production and/or processing of some minerals and metals is concentrated in countries that are seen as strategic rivals and/or unreliable trade partners of countries that are significant users of minerals and metals. Most obviously, this applies to how China is perceived in the United States. This has been driven by China's dominant position in the processing of a number of critical minerals, and the way in which it flexed the power of this concentration when responding to the so-called US 'Liberation Day' tariffs in 2025.

- **Other domestic political or economic considerations:** Some countries have included minerals or metals to which none of the above factors apply. New Zealand's critical minerals list, for example, includes coal and gold – neither of which is essential for any of the above uses, and where supply is neither in systemic shortage nor subject to concentration or other vulnerabilities. Both are included, however, because they are the only material mining sectors in the country, have some degree of economic significance, and are currently the dominant sources of mining-related skills in the country.

The different reasons for criticality matter because different agendas and priorities are driving the haste to develop new resources.

***[2] Zhang, K, (2024), "How Water Scarcity Threatens Taiwan's Semiconductor Industry", The Diplomat, September 19, 2024, accessible at https://thediplomat.com/2024/09/how-water-scarcity-threatens-taiwans-semiconductor-industry/***

## Key sources of critical minerals

When these different uses and determinants of criticality are jumbled together (as they often are), there is the potential to both overstate and understate the importance of specific minerals and metals.

A recent article in Nature illustrates this overstating and understating problem well:

***...[R]oughly 60% of the critical minerals on the EU, US, and Australian lists have no energy transition use case. Indeed, the EU includes coking coal on its list. Conversely, critical minerals make up less than 2% of energy-transition mineral demand (by volume). Mineral ingredients of concrete, such as sand and cement, which are crucial for renewable energy infrastructure, constitute 70% of demand.***[3]

At the same time, the use of some critical minerals for manufacturing weapons and increasing defence capabilities often muddies estimates of who exactly critical minerals are critical for. Some estimates show that up to 33% of global chromium demand, 11% of cobalt, and 9% of titanium (amongst others) come from defence uses.  Global defence budgets are estimated to be five times larger than those spent on public low-carbon investments.

***Across the United Kingdom, the European Union and the United States, official "critical minerals" lists, often framed as tools to enable green transitions, consistently include minerals with prominent defence relevance, such as tungsten, tantalum, titanium, beryllium, rhenium and samarium, whose importance is less recognised in dominant framings... Even though many CMs are dual-use – spanning clean energy, digital, and military domains (e.g., rare earths, cobalt, nickel, copper, lithium) – these examples underscore how defence imperatives remain deeply embedded within ostensibly "green" CM strategies.***[4]

*[3] Franks, D.M. et al, "How the rush for critical minerals is neglecting human needs", Nature, Vol 647, 6 November (2025).*
*[4] Johnson, P. and Marin, A., "Beyond the twin transition: military drivers of critical minerals expansion", The Extractive Industries and Society 26 (2026).*

Finally, when considering whether we are at a unique moment in terms of the need for rapidly increasing the production of critical minerals, it is also useful to consider whether the current focus on critical minerals is influenced in part by a degree of temporal parochialism – the bias whereby we consider ourselves to be living in uniquely significant, turbulent, and/or transformative times. **Appendix B** provides further data on this, but some key observations include:

- Population plays a significant role in driving demand. While population growth has been slowing since the 1970s, the total population has still increased more than fourfold since 1900.

- Many minerals and metals have seen very significant past increases in per-capita use of minerals and metals. The highest growth periods of production growth have, in fact, been driven by the initial wave of electrification in the early-20th century, by post-war recoveries (1920s, 1950s), the consumer electronics boom of the late 20th century (copper), and Chinese industrialisation (1990s – 2000s) when it comes to iron. Some minerals and metals are, however, seeing unprecedented production growth – with lithium being an obvious example.

- For many minerals and metals, current increases in global production are not occurring at an unprecedented rate. Concerns should be focused on the much smaller set of metals that are increasing or will increase rapidly, as well as those specifically essential for energy transition, where future production is uncertain relative to potential demand.

## So where are they coming from?

This is an important question because some high-profile examples of egregiously bad critical minerals mines shape the conversations and interventions of policymakers and advisers. The first part of the answer to the 'where' question is that recent expansion of minerals production has come primarily from existing 'brownfields' mine sites. This matters because a lot of the debate around critical minerals seems ensconced in the starting point that critical minerals mines will mainly be new 'greenfields' sites. This is not the case; as Kemp et al (2026) observe:[5]

***[5] Kemp et al., "The rise of brownfield mining is reshaping global mineral supply and intensifying social and environmental risk." One Earth, Vol. 9, Issue 2 (2026). Accessible at: https://www.sciencedirect.com/science/article/pii/S2590332225003896***

***Despite the policy focus on new mines, there is little evidence that new mines are coming online faster. Of 40 large-scale undeveloped copper ore bodies identified in 2018, only 4 have progressed to advanced development or production. Instead, the interval between discovery and production has lengthened, now averaging 15.7 years. New large-scale mining projects across major commodities face a complex array of geological, geographical, social, environmental, and political risks. Rapid technological change also introduces market uncertainty by driving substitution, creating potential redundancies in future mineral demand. As such, most new mineral supply is being sourced by expanding existing operations.***

This focus on existing mines is even true of minerals 'exploration' happening predominantly at or in close proximity to existing mine sites, with greenfields and late-stage exploration projects still accounting for less exploration expenditure than that which is being spent near existing mines. As Kemp et al (2026) go on to note: "[i]f conservationists and policymakers assume that brownfield mining is a 'lesser evil' than establishing a new mine, they may miss some of the deeper, accumulating social and environmental risks of this practice. As with new mines, brownfield mining is frontier-making, and it is on the rise, albeit in a more embedded and often in a less visible way."

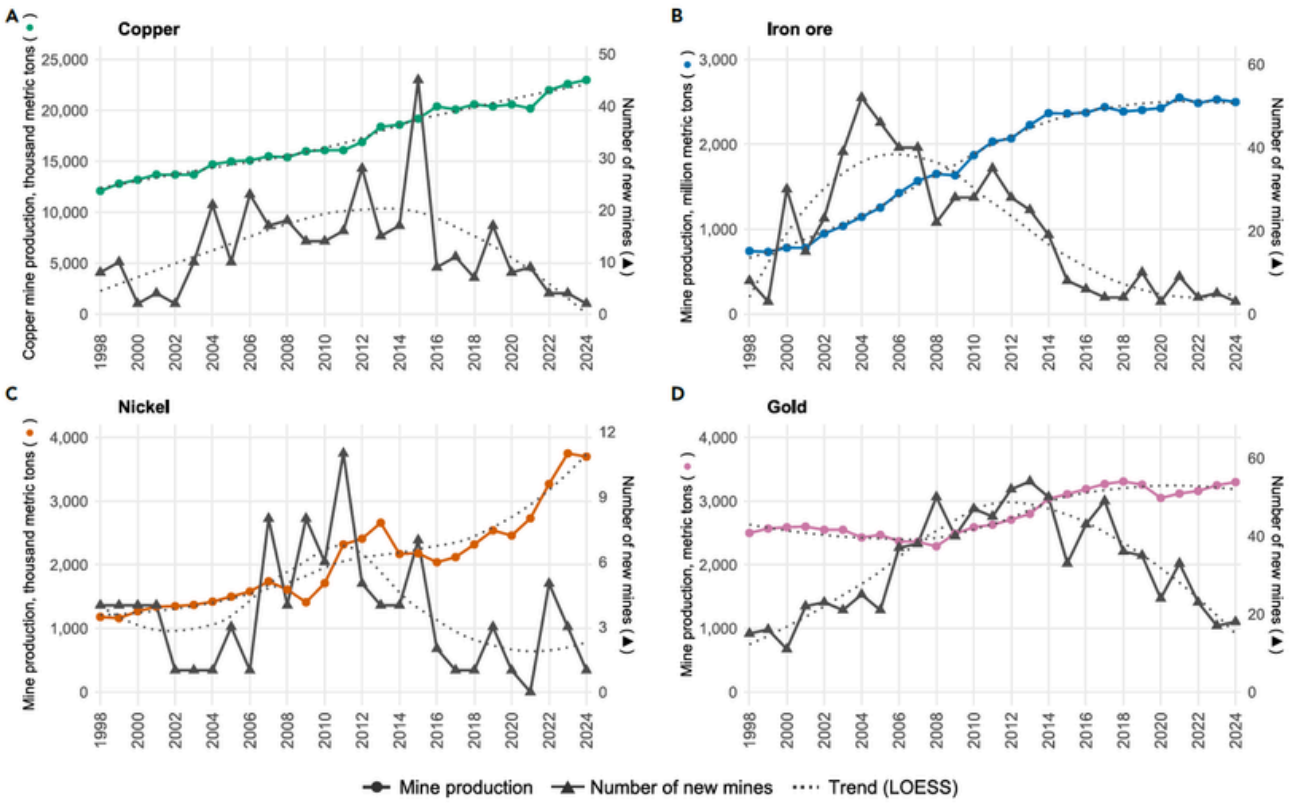



Figure 1: Global mineral production and new mines[6]

***[6] Kemp, et al. (2026).***

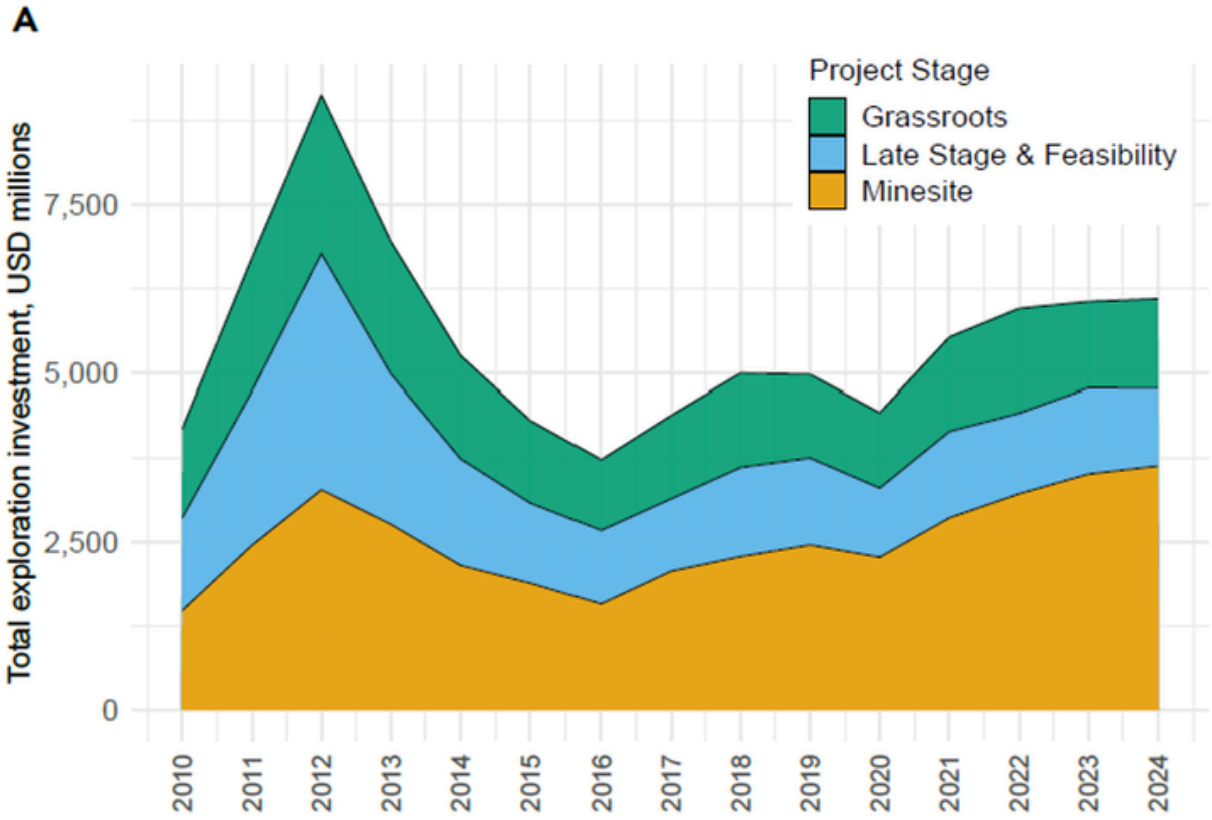



Figure 2: Exploration expenditure across grassroots, late stage and mine site locations[7]

For donors and policymakers, brownfields production has clear advantages and disadvantages. Advantages include:

- Policymakers and donors can influence how production is happening right now and how imminent expansions in production will play out.

- Because those mines are already producing, there are existing revenue flows that can be used to support new approaches to mine development, community engagement, and addressing impacts.

- Existing mines are a potential source of critical minerals that have been discarded in waste rock and tailings storage facilities, either because processing technology did not allow for their efficient extraction alongside the target mineral, and/or because extraction at a particular grade was not economically viable at the time of extraction. The fact that these minerals are already 'above ground' will, in some cases, create further opportunities for increased supply at existing sites.[8] Given the very long lead times to establish a new greenfield mine, the potential for waste rock and tailing processing is a particularly important avenue for the rapid expansion of critical minerals production.

***[8] See Piatak, N. et al., "Critical Minerals in Mine Waste", United States Geological Survey Report, May 30, 2025. Accessible at https://www.usgs.gov/publications/critical-minerals-mine-waste***

The disadvantages of production coming from existing mines include:

- Consent has already occurred or has been ignored. While Free Prior Informed Consent (FPIC) should be an ongoing process, not a gateway, the initial decision of whether to proceed with a mine has already passed.

- Patterns of cooperation and conflict may have already consolidated and be difficult to change. Both mines and communities may be set in their assumptions and patterns of engagement, of who can and cannot be trusted, and there may be reluctance to change.

- It may be difficult to change the existing patterns of who does and does not benefit from production.

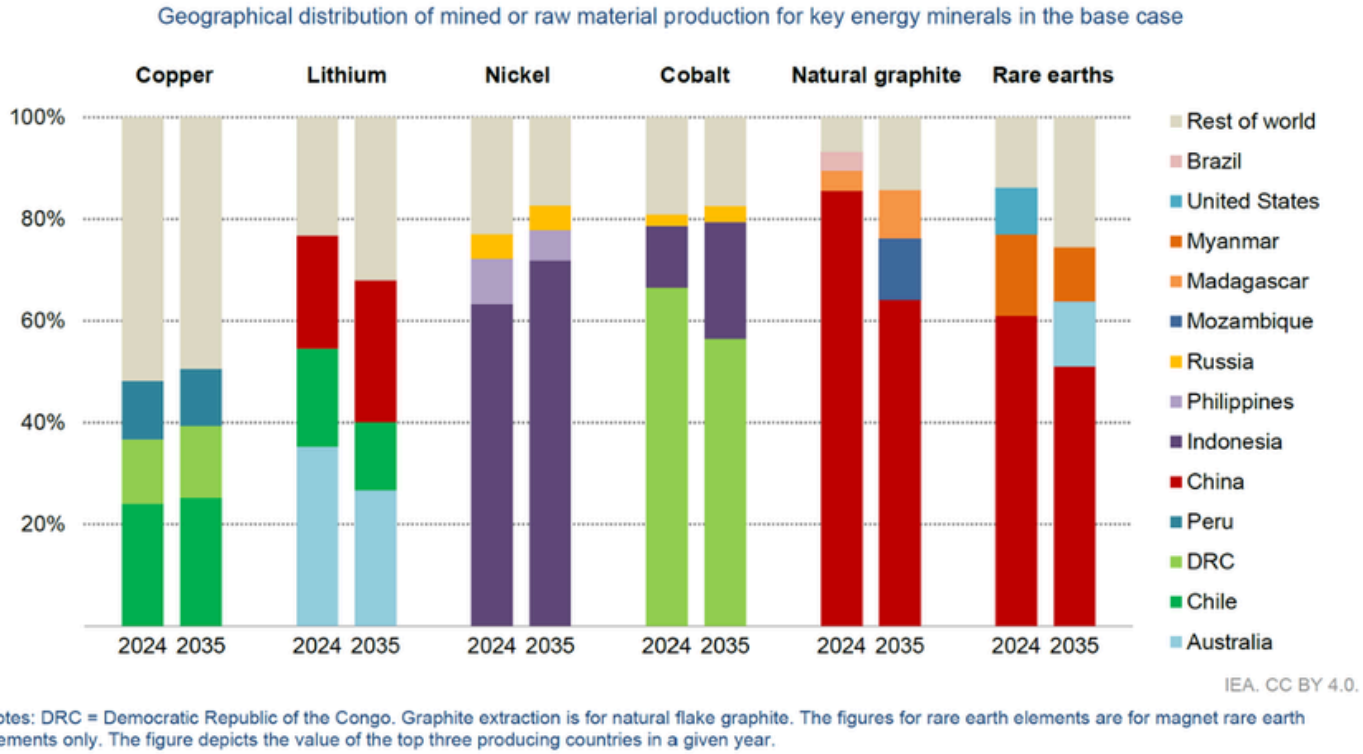
- Well-established relationships between companies and communities can be dominated by those groups that traditionally exert power – political and economic elites, suppliers, and employees, etc. It may be harder to engage with those who have long been impacted by the mine, such as Indigenous Peoples and women. Correspondingly, those who already have such power will likely have few incentives to fundamentally revisit how regulation and governance occur. Adding an element of speed or urgency to a development only adds to this risk.

***Often, governments, investors, and other outside actors work to ensure that women are present at community consultations or FPIC meetings (so as to superficially "check the box" of "gender inclusivity"), when in actuality, women present did not speak up, or were silenced when they did speak, or had their ideas and concerns ignored in the final community decision.[9]***

When thinking more precisely about the political geography of critical minerals production, there is a reasonably diverse range of countries that are dominant producers – something that is sometimes overshadowed by China's overwhelming dominance in the refining and processing of many of these minerals.

***[9] Bulman, A. et al., Enhancing Women's Meaningful Participation in Community Engagements: Insights from Experience Related to Land-Based Investments. Toolkit. Columbia Center on Sustainable Development and International Institute for Environment and Development, February 2026. Accessible here: https://ccsi.columbia.edu/women_participation_toolkit/***

Figure 3 below shows the top three producers across six critical mineral groups, now and a decade hence.




Notes: DRC = Democratic Republic of the Congo. Graphite extraction is for natural flake graphite. The figures for rare earth elements are for magnet rare earth elements only. The figure depicts the value of the top three producing countries in a given year.

Figure 3: IEA Top 3 Critical Mineral Producers (current and projected)[10]

***[10] International Energy Agency, Global Critical Minerals Outlook 2025, accessible at: https://www.iea.org/reports/global-critical-minerals-outlook-2025***

Taken together, the following countries represent the priority geography for any engagement on this issue:

Table 1: Major critical minerals producing countries[11]

| Country | HDI level | Critical minerals role |
|---|---|---|
| China | High | Processing / refining of all critical minerals; graphite and REE production; perceived source of supply risk. |
| Indonesia | High | Nickel, cobalt |
| DR Congo | Low | Cobalt, copper |
| Chile | Very High | Copper, lithium |
| Australia | Very High | Lithium, REE, also copper, nickel. Market hub (ASX) and HQ of many global mining companies. |
| Russia | Very High | Nickel, cobalt, also copper; source of supply risk. |
| Canada | Very High | Nickel, lithium, cobalt and other minerals. Dominant market hub (TSX) and HQ of many global mining companies. |
| Myanmar | Medium | REE; source of supply risk. |
| Peru | High | Copper |
| Philippines | High | Nickel. |
| Near followers: South Africa (manganese), Gabon (manganese), Argentina (Lithium). | | |

With the notable exceptions of the Democratic Republic of Congo and Myanmar, these countries all have high or very high levels of human development (UNDP). **This introduces a critical question for potential donors: is the principal concern risks to energy transition, risks to communities in countries with low development and weak governance, or both? If the first or third, that will require actions and programs primarily implemented in highly developed countries.**

***[11] Country list generated using IEA (2025). Human Development Index (HDI) 2023 data from UNDP (2025), Human Development Report 2025, accessible at https://hdr.undp.org/content/human-development-report-2025***

# 3. How do mines get built?

## A broken model of mine development

It is perhaps too easy to attribute company/community tensions to an everyday competition between the powerful and powerless. While the last chapter focused on how most critical minerals production is currently coming from existing mines, it is important to understand how new mines develop. And in looking at this, this chapter will make an extremely challenging observation and an equally challenging recommendation.

The observation is this: the current market dynamics of how new mines are developed is fundamentally broken, and some of the side effects of this brokenness is that new projects are developed in ways that enhance environmental and social impacts rather than progressively reducing them. The challenging recommendation is this: that we should not accept this broken market. Andy Reynolds at Inspire Resources summarises the dilemma perhaps better than anyone:

***The mining industry finds itself in the spotlight. Its defining challenge is the tension between changing societal expectations for the conduct of mining and the economic need to ramp up raw material supply for the energy transition.***

***A mine has a finite life before its reserves are exhausted, so new mines must constantly be discovered and developed. Once built, with huge sunk capital, mines and their impacts on ecology and society are very hard to change. The design decisions that set these constraints are made years in advance of production, often by small "junior" mining companies with limited resources, who have likely inherited stakeholder relationships from a succession of previous owners.***[12]

Key in this observation is the role of 'junior' mining companies. While it is easy to think of the industry being dominated by multi-billion dollar behemoths such as Rio Tinto and BHP, a notable feature of the industry is that the exploration and project development phase is overwhelmingly dominated by very small ('junior') companies seeking relatively modest investments to drill and define a geological resource to the point of enough certainty that it becomes an attractive acquisition for a 'larger' mining company. The failure rate is extreme, with some sources stating success as being as low as only 0.1% of prospected sites eventually leading to a productive mine.[13]

***[12] See Reynolds, A. (2025), "The Case for Co-Design" at Inspire Resources – accessible at https://www.inspire-resources.ca/blog/the-case-for-co-design***
***[13] See https://www.gold.org/gold-supply/gold-mining-lifecycle***

The technical capacity of these companies is overwhelmingly focused on geology and, to a lesser degree, metallurgy and engineering. Capitalisation is thin, and the current markets require scrupulous disclosure of information about geological resources and reserves. It is the overwhelming norm, therefore, that these companies invest little or no capacity or resources, considering the potential long-term environmental or social impacts of any mine that might eventually – perhaps after 10 – 20 years of on-again-off-again exploration – come from the project. Investor presentations in this section of the market almost always contain no meaningful environmental or social data or observations.

The problem with this model is that environmental and social risks are being created at this early stage of exploration. Common concerns include:

- Exploration in environmentally sensitive areas.
- Failure to consult with Indigenous Peoples and a lack of awareness of culturally sensitive areas.
- Failure to consult with local communities.
- Failure to adequately identify and consider potential environmental impacts – impacts on water resources, agricultural land, noise, and blasting impacts on properties, etc – of any eventual mining project.

These concerns typically go unaddressed precisely because junior mining companies have low capitalisation, no market incentives, and extremely high failure rates — companies and investors alike tend to be of the view that investing in social or environmental considerations is extremely premature. They also operate across large areas with limited permanent presence, and exploration activities rarely trigger regulatory scrutiny or legislated requirements for in-depth consultation.

The result: potential environmental and social impacts are treated as (i) a function of eventual mine design (which junior mining company personnel are unlikely to be involved in); and (ii) something that can be addressed simply through the application of sufficient project funding at a later stage. Put another way, at this stage the only make-or-break factor in a project is whether there is an economic geological resource; all other factors are to be dealt with at some future point in time, normally by another company.

It is for these reasons that greenfields mining projects often arrive at the point of seeking mining and associated permits carrying significant environmental and social baggage. At this point in time the project enters a regulatory process that is usefully summarised in Figure 4 below.[14]

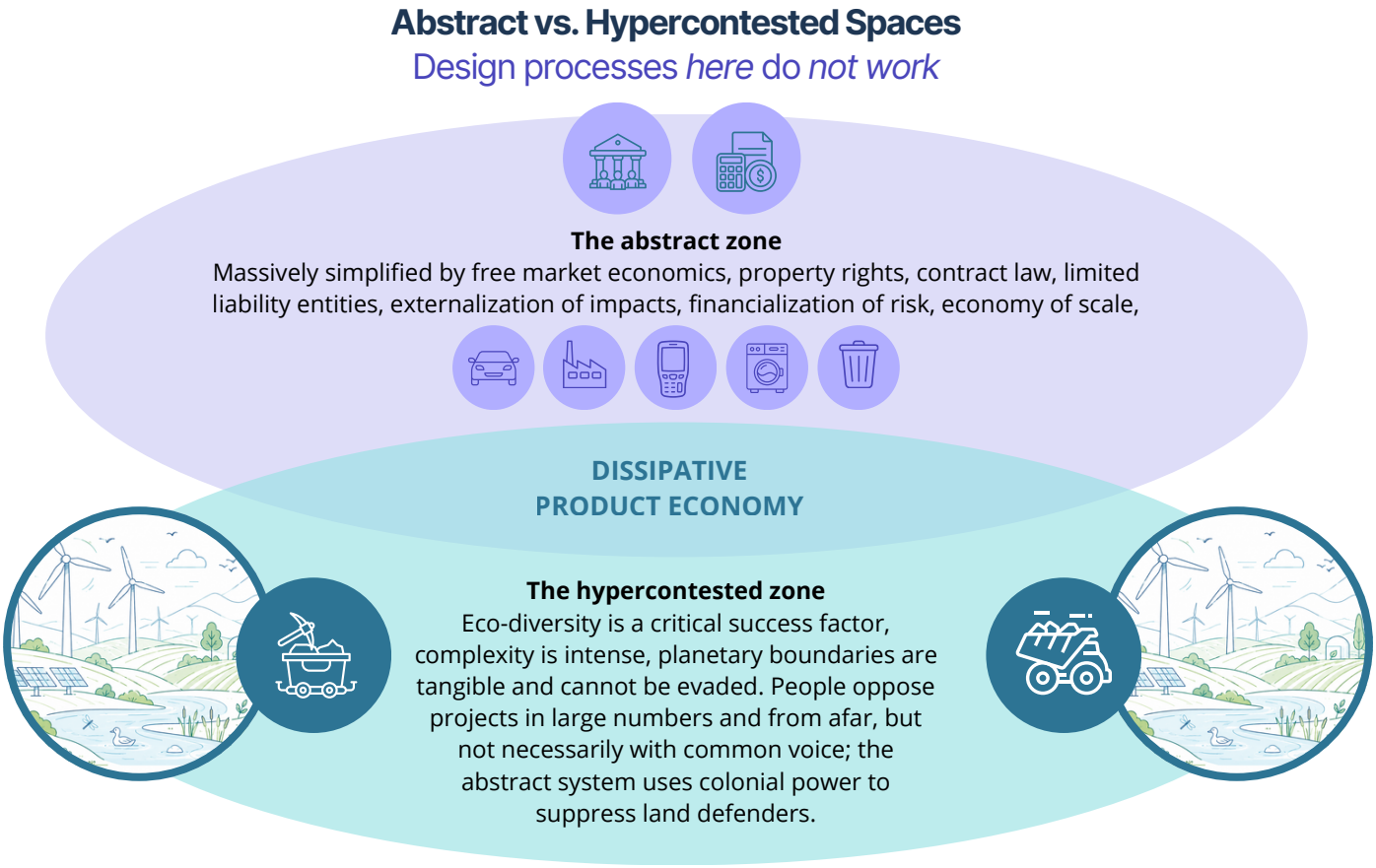



Figure 4: Abstract vs. Hyper Contested Spaces (Inspire Resources)

## The inevitability of conflict

What Figure 4 above usefully summarises is how the abstract zone of resource development, permit development, and regulation, intersects with the hyper-contested zone of people and environments. Companies and government agencies in the 'abstract zone' work with defined laws, regulations, processes, highly technical advice and documents, scientific facts, and evidence that are used to prove the overall merits of a project. They feel bound by standard procedure, professional standards, the law, and science.

Communities and Indigenous Peoples, on the other hand, can come from a position in the 'hyper contested zone' in which they find themselves disputing a project very late in the piece, with a low understanding of what can or cannot be considered under different regulations, or even when or whether or not they can have a say.

***[14] Reynolds, A. (2025).***

A good example of the difference between these two zones is the issue of the types of impacts that are defined and considered legitimate. The abstract zone – for example – tends to focus heavily on impacts that are physical, measurable, and are entirely within the realm of the company to create, mitigate, or remove through design and operation choices. In mining, these kinds of impacts might include deforestation, resettlement of communities, noise, dust, vibration from blasting, increased traffic, etc.

And yet it is often social impacts that drive rejection of existing or potential mining activity. While some social impacts are relatively straightforward, physical impact- exposure to hazard or nuisance-type impacts, more complex impacts might include impacts on mental health and wellbeing, or even physical impacts that are felt disproportionately by vulnerable groups such as those with disabilities, high health needs, older people, etc. In the author's experience, one of the consistently ignored but critical impacts is mental health, brought about by a sense that an individual has lost control over their own immediate environment and home. More details on what constitutes social impact assessments can be found in **Appendix C.**

The key difference between the two groups is one of power. Traditional determinants of power – the ability to control or influence political processes, legislation, a monopoly on the use of force, access to specialists and experts, access to information, and access to money – are readily accessible to politicians, regulators, and companies. On this side of the equation, everyone involved is paid (and/or has longer-term financial incentives) to work and to deploy power to keep a project moving forward.

Many people in communities and Indigenous Groups have, on the other hand, very low access to the formal pillars of power. They have little control over regulatory processes, often no access to expert advice, little access to key information about projects, and few financial resources. Most people on this side of the equation are not getting paid to ensure that any new project addresses their needs and concerns. Against this backdrop, their primary instruments of influence are to expressly reject the structures and restrictions of the 'abstract zone' ('I don't care what the regulation/permit says; I care about my community') and to deploy asymmetric tools and influence in order to counterbalance sources of formal abstract power.

Examples of asymmetric tools – i.e., those which are low cost and which seek to circumvent traditional modes of power – run the full spectrum from increasing bureaucratic scrutiny and friction (e.g., through the use of Freedom of

Information Requests) through to direct confrontation and violence. In-between sits the more traditional use of media and social media campaigns that seek to link the interests of host communities to the interests of urban voters and politicians.

And of course, these might be deployed alongside the use of tools within the abstract realm – e.g., taking legal action against a company and/or regulators with the view that extending the time required to approve a project ultimately reduces its overall benefit and increases the likelihood that a project can be significantly altered or stopped through economic pressure.

Taken collectively, the conflicts – subtle or obvious, formal or informal – that emerge can be extremely costly to communities and mining companies alike. Table 2 in Chapter 6 provides a hypothetical model of the impact of time on the overall net present value of a gold mine, and shows that a difference of four years (whether that be from regulatory delay, community conflict, or a combination of the two) can be measured in the hundreds of millions of dollars in NPV. Franks and Davis, in their essential report on the subject of the cost of conflicts in the extractive industries[15] identify commonly understood costs around project delays, failed expansion plans, or asset sales that did not go ahead. They also identify less tangible but overlooked costs, such as the diversion of staff time from regular jobs into conflict management, as well as HR costs – e.g., the inability to recruit or retain talent.

The full paper identifies costs related to increased security, project modification, risk management, material damage to assets, lost productivity, increased capital costs, staff time and turnover costs, reputational costs, and redress and compensation costs.

The author of this report has had recent experience working for a mine that was facing both kinds of costs – community conflict was causing the potential for regulatory processes to be slowed down, which would require a slowdown in the overall rate of mine production for several years – a cost measured in the hundreds of millions of dollars. At the same time, the extreme stress generated by ongoing conflict with community members was driving rapid turnover in the mine's community engagement team, thus hampering its ability to address the long-term issues driving the conflict.

***[15] Davis, R. and Franks, D., "Costs of Company-Community Conflict in the Extractive Sector", Corporate Social Responsibility Initiative Report No. 66 (2014), accessible at https://www.hks.harvard.edu/sites/default/files/centers/mrcbg/programs/cri/files/Costs_of_Conflict_Davis_Franks.pdf***

## Whose timeline is this anyway?

This accumulation of social and environmental risk matters because it is commonly built up over a much longer period than the permitting or licensing process itself. Figure 5 below shows the average timeline from discovery of a potential resource to production as being 15.7 years (taken from 127 mines globally). It is important to note that there may be years of prospecting and exploration before an actual 'discovery' is declared.

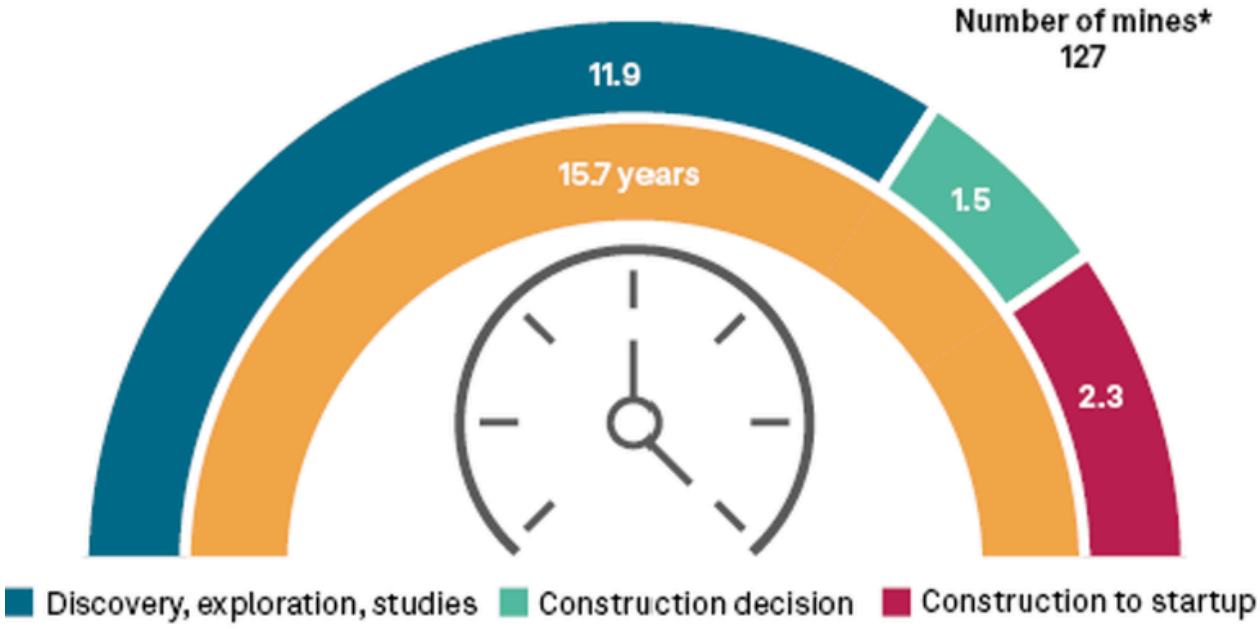



Figure 5: Average discovery to production time for mines[16]

Despite there being much criticism of how long regulatory approvals of mines take, there appears to be remarkably little cross-jurisdictional analysis of how much of this time is taken up solely by regulatory processes, many of which happen in parallel with the phases shown above. One source suggests that regulatory approvals take approximately two years in Australia and Canada, though this data is difficult to verify, and would vary significantly depending on the province/state, the commodity being mined, and the potential economic, environmental, and social impacts.[17]

***[16] From Manalo, P. "Discovery to production averages 15.7 years for 127 mines", S&P Global Market Intelligence, 6 June, 2023, accessible here: https://www.spglobal.com/market-intelligence/en/news-insights/research/discovery-to-production-averages-15-7-years-for-127-mines***
***[17] National Mining Association, "Delays in the U.S. Permitting Process Impair and Discourage Mining At Home", May 2021, accessible here: https://nma.org/wp-content/uploads/2021/05/Infographic_SNL_minerals_permitting_5.7_updated.pdf***

The key point here is this: the overwhelming majority of the timeline is taken up with the exploration and subsequent studies process in which different elements of a mine (engineering and extraction process, processing and metallurgy, infrastructure, environmental impacts, etc.) are developed in greater detail and are refined. Particularly during the exploration phase, much of this will be quite stop-start in nature, as the company almost continuously seeks new investment funds, and the likelihood of those funds being sourced varies immensely based on exploration results and present-day commodity prices. When mining companies seek to expedite regulatory processes, they do so because those phases feel, compared to exploration, construction, and production, much less within their area of natural competence and control.

Taken together, this broken model of mine development, the highly imperfect market of junior mining companies, and the potential costs and time it adds to critical mineral projects, all require a different kind of regulation and a different kind of mining company. These are presented below as Recommendations 4 and 5.

# 4. What communities actually want

## Pathways to acceptance or rejection of mining

The scope of this report centres on whether recent research into public sentiment towards mining might reveal pathways to break the perceived zero-sum conflict between project speed and community rights.

As noted in Chapter 2, the majority of additional production of critical minerals is coming from brownfield sites where the fundamental question of 'should we mine here' has already been decided. This chapter, therefore, focuses on the key factors that drive trust in and acceptance or rejection of mining, and whether understanding these drivers better can identify insights that might support both increasing the speed at which new resources come online, while also improving community wellbeing.

Before we consider the key drivers of trust and acceptance in mining, it is worth examining whether this is an issue that mining company executives are currently focused on. In this regard, it is interesting to examine the EY mining risks reports over the past years. These risk reports are based on surveys of global mining executives in which they are asked to rank the key risks to the industry. Figure 6 below shows how these rankings have changed.

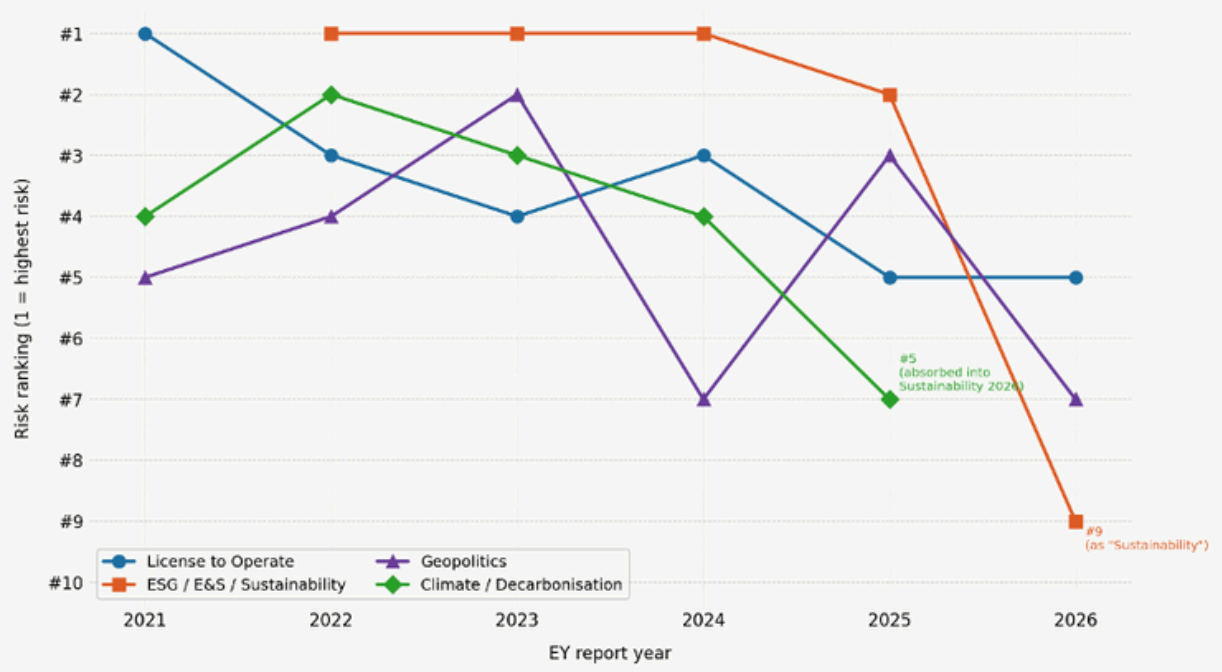



Figure 6: EY Top 10 business risks and opportunities for mining and metals – ranking of environmental, social and political risks 2021 – 2026.[18]

***[18] Drawn from EY mining and metals risk surveys. Current survey accessible here: https://www.ey.com/content/dam/ey-unified-site/ey-com/en-gl/insights/mining-metals/documents/ey-gl-top-ten-business-risks-and-opportunities-10-2025.pdf***

On one hand, the graph above does show that at the start of the 2020s, a more nuanced approach was taken to environmental, social, and political risks, with a single risk category 'Licence to operate' splitting out into multiple different risk categories. On the other hand, the change in sentiment amongst mining company executives in the past year is particularly stark, with all risks in these areas dropping significantly.

## Community sentiment data

We can now complement data on what mining company executives think matters with what surveys of national populations and even communities that host mines actually think. Some of these surveys are now quite sophisticated and include data modelling to help understand not just raw likes and dislikes of particular aspects of the mining industry, but crucially, which factors drive acceptance or rejection of mining.

Key nationwide surveys of interest to this report include the Australian Government's CSIRO Australian attitudes to mining surveys[19], consisting of three surveys from 2014 – 2024, drawing on views from almost 20,000 survey participants, as well as the Transfert / Voconiq Social Acceptability Barometer for the Canadian Mining Sector, consisting of a single survey of almost 5,000 participants in 2025.[20] These surveys have been carried out by the same researchers and firm (Voconiq) and have similar question sets and approaches to data modelling.

The public availability of survey results carried out in the same way but from individual mine sites varies immensely, with most producing only a very high-level summary of results, while others make relatively thorough reports and models available and, in some cases, provide public dashboards with which to explore the data further. Sites surveyed by Voconiq include mines in Australia, Brazil, Canada, Chile, Ecuador, Guinea, Iceland, Mongolia, Portugal, Sweden, the United States, and Zambia.[21]

***[19] CSIRO, Australian attitudes toward mining 2024 survey report. All surveys as well as access to survey reports and a data dashboard can be found on the CSIRO website here: https://www.csiro.au/en/work-with-us/industries/mining-resources/Social-and-environmental-performance/Attitudes-to-Mining-Survey-Report-2024***

***[20] Transfert/Voconiq, Social Acceptability Barometer – Canadian Mining Sector, 2025. The summary report of the survey was initially accessible at the Transfert website here: https://transfertconsult.ca/en/barometer/ but at the point of writing is no longer publicly available, though the author was able to download a copy before it was withdrawn.***

***[21] Individual survey programs and in some cases, results can be found here: https://voconiqlocalvoices.com/en/program-map/***

## What is trust, and what are its key drivers?

A broad summary of the most common features of the various CSIRO/Voconiq/Transfert models is as follows. Firstly, **trust** in the specific company being surveyed or the mining sector as a whole is consistently the key driver of acceptance of mining activities. The original CSIRO research article[22] on which much of this research is based provides a helpful definition of trust:

***To have trust is defined as having confidence that the behaviour of an out-group will match the expectations of the trust holder. Furthermore, to trust someone or an outgroup is to expect that they will not exploit one's vulnerability and even seek to cooperate...***

***In intergroup settings, such as those between companies [there are two types of trust]. The first is integrity-based which relates to the perception that the trustee is adhering to a set of principles. The second is competence-based trust that refers to the trustor's view that the trustee... has the skills and knowledge necessary to manage the particular issues of interest to the trustor or community...***

***Communities may be expected to respond positively toward mining companies where these entities do not take advantage of their vulnerabilities, demonstrate integrity and competence in the way they manage the risks their operation represents, work collaboratively with them, and meet community expectations regarding company behaviour.***

*[22] Moffat, K. and Zhang, A., "The paths to social licence to operate: An integrative model explaining community acceptance of mining", Resources Policy, 39 (2014), accessible here: https://voconiq.com/wp-content/uploads/2020/05/Moffat-Zhang-2014-1.pdf*

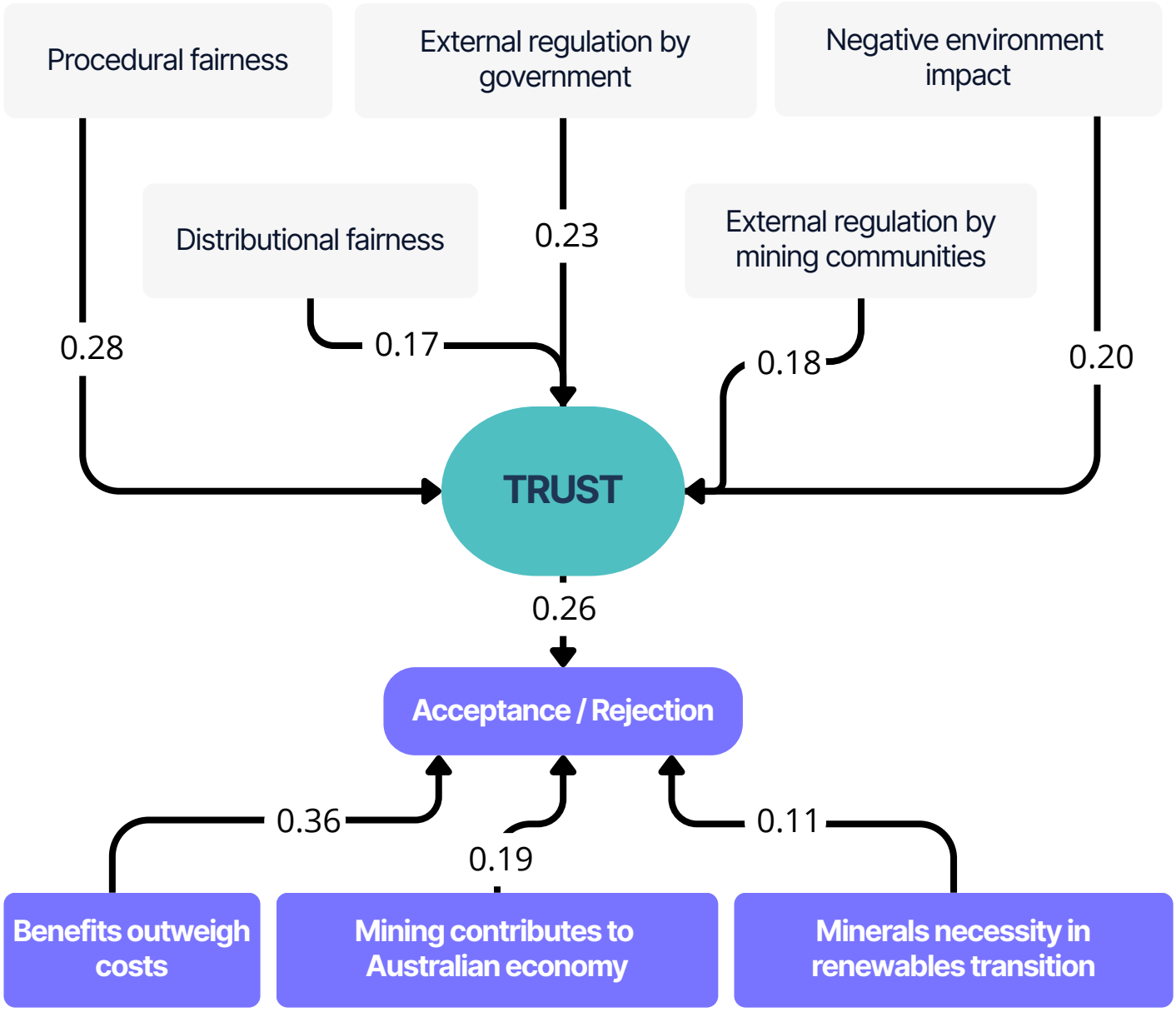
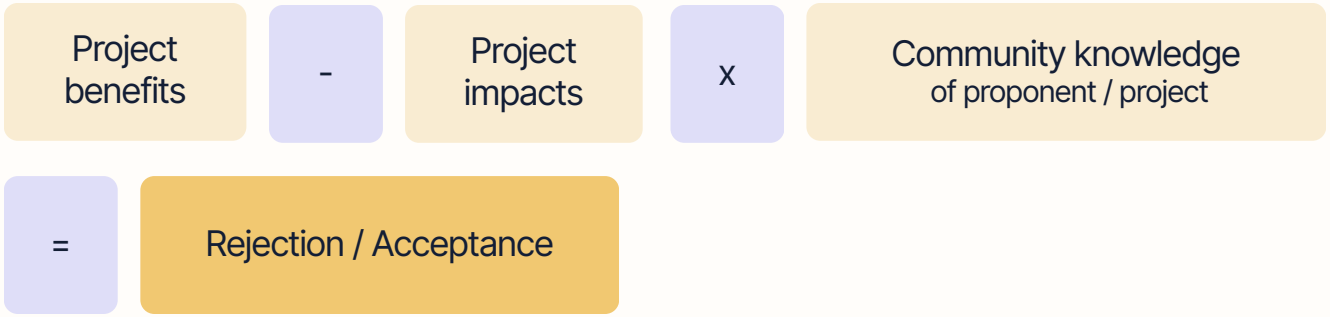



Figure 7: Pathways to Social Licence – CSIRO Australian attitudes toward mining survey 2024

What Figure 7 then shows is the 'trust model' for acceptance or rejection of mining in Australia. The factors at the top of the model, as being the key drivers of trust, are very similar to the drivers of trust for individual mine sites. What is different about this national model, however, is that in addition to trust, there are a number of other factors – benefits outweigh costs, contribution to the overall economy, necessity of minerals to renewables transition – that also contribute directly to acceptance or rejection of the industry as a whole. These are much less common at the individual mine site level.

**What this path model shows is that building acceptance in mining is a fundamentally different exercise from a standard communications model, which typically amounts to contacting communities to tell them necessary but mainly positive facts about the project.** A basic schematic approach of standard corporate approaches to community engagement could be summarised in Figure 8 below.




**The assumption:** community knowledge simply amplifies a net cost-benefit assessment.
**The problem:** it doesn't work like that.

Figure 8: Predominant corporate model of encouraging acceptance of mining

Benefits and impacts do matter, but the research is clear: they will not, in and of themselves, create trust, nor will levels of community knowledge about a project or the company behind it. This dominant model provides very little room for the kinds of vulnerability that is integral to creating trust. Indeed, what is striking about the standard model is how different it is from the CSIRO / Voconiq / Transfert evidence, data backed by tens of thousands of individual survey responses. In the author's experience, when this model fails to deliver community acceptance – as it often does – companies then revert to other tools in the corporate affairs toolbox – political lobbying, seeking to lower regulatory hurdles, and media engagement focused on portraying opponents to a project as being an irrationally aggrieved minority.

In the CSIRO / Voconiq / Transfert research, however, the key drivers of trust and therefore acceptance of mining consistently stack up again and again behind the following drivers:[23]

***[23] Most of the site-specific trust models are not publicly available, though through previous work in this area the author has sighted dozens of individual mine site models.***

i. **Procedural fairness / responsiveness** is a cluster of factors that relate to how well a company listens to and respects community opinions, responds to concerns, and involves people in decisions that affect them. Did the company proactively engage? Did they listen to community concerns? Did they act on what they heard and change how they operate? This driver or a variation thereof consistently appears as one of the most important factors

ii. **Confidence in governance and regulation.** Communities trust companies more when they believe that governments and regulatory bodies are effective at holding companies accountable and enforcing standards. This factor relates not only to trust in the efficacy of external regulation, but also internal company 'self-regulation' – i.e., that there are standards and clear red lines that the company adheres to. Again, this driver appears as one of the most important factors

iii. **Environmental impacts and impact management.** Environmental impacts – typically on water quality, landscapes, dust/noise/vibration on nearby communities – directly subtract from trust, but confidence in how a company manages its own impacts can improve trust. In some cases, there is also a clear link between procedural fairness and perceptions of impacts and effective impact management. If, for example, communities have been clearly involved in the identification of potential risks or impacts, impact monitoring or design of mitigation measures, there is potential for those impacts that remain to be perceived as not as detrimental to communities as they would have been had they not been involved.

It is, of course, overly simplistic to lump environmental impacts into a single category, particularly as they are felt in very different ways. An environmental impact might be experienced as:

- Amenity and annoyance that reduces one's enjoyment of living in a particular place – e.g., industrial noise, dust on houses and vehicles, etc.
- A permanent reduction in aesthetic landscape values.
- Impacts on biodiversity due to the destruction of ecosystems for plants and animals.
- Loss of economic resources, such as arable land or water sources.

- Cultural and spiritual impacts from the destruction of sacred sites and ancestral lands.

- Health impacts that might occur because of air pollution or impacts on water and food supplies.

- 'Solastalgia' – which is the pain of watching your home change around you due to environmental impacts.

The value of listing out different 'environmental' impacts is that they often lead to quite different interventions to avoid, mitigate, or manage, and they lead to quite different end outcomes. Some impacts, for example, might be seen simply as 'disbenefits' which can be compensated for financially; other impacts such as those that relate to mental health, would require more sophisticated interventions; while others, such as species loss, are not possible to compensate or 'manage' – they can only be avoided.

iv. **Distributional fairness** relates to communities experiencing benefits from a mining project, and that those benefits are shared fairly. 'Fairly' in this case works on multiple levels – from a broad consideration of whether there is a fair division of overall project benefits between different layers of government, host communities, and the company itself, all the way through to how benefits are distributed within and between host communities. 'Fairly' in this case generally means that more benefits accrue to those who are most impacted by mining operations, as opposed to being entirely captured by the entire community, many of whom may not be impacted by mining at all.

v. **Contact quality** relates to communities being engaged in ways that are clear and honest and are provided with easily accessible information about mining activities, risks, decisions, and outcomes. When companies proactively share information and explain their processes, this reduces uncertainty and demonstrates respect for community intelligence. This stands in contrast to 'contact quantity,' in which engagement may be widespread and high volume, but is not calibrated in a way that demonstrates respect, listening, and understanding of the issues that matter most to host communities.

**Appendix D** provides further examples of trust models, including those from the Canadian national survey, as well as an individual mine site survey. It also provides some details of different research into the approval of mining in different Latin American countries, albeit using different approaches to understanding social licence and acceptance from the Voconiq data.

Finally, it also provides an example of a trust model from the Queensland state lines company Powerlink, with data drawn from regional and rural communities in various 'renewable energy zones' where new energy generation and transmission projects are in development. What is striking about this model is how similar it is to that for mining and mine sites.

Some of the CSIRO/Voconiq research has explicitly asked about the role of mining in the energy transition. In the Canadian mining barometer, there is a clear support for critical minerals, though that support does not appear as a driver of wider trust and acceptance in the sector. The Canadian public broadly accepts the need for critical minerals to support the energy transition, though there is a strong preference that domestic needs should be prioritised over the demands of allied countries.

In the Australian attitudes survey, the necessity of minerals in the transition to renewables does appear as a direct driver of acceptance of mining, but it is notable that Trust is a significantly greater driver than the link to renewables and is even more important than the overall contribution of mining to the Australian economy. Interestingly, individual survey items show that Australians support the streamlining or simplification of regulations to make the transition to renewable energy faster, but the path model above still shows procedural fairness, external regulation by government, and external regulation by host communities as the key drivers of trust.

And it is here that the tension between current approaches to increasing the speed of critical minerals projects runs up against actual data. Across multiple nationwide and individual mine site surveys of attitudes to mining in both Canada and Australia – two countries that are vital for critical minerals – show that procedural fairness and regulation are consistently either the most important or amongst the most important drivers of trust in mining companies, which in turn is the major driver of acceptance or rejection of mining activities.

**Put another way: limiting or excluding host communities from having a say over potential or existing mining operations is likely to negatively impact trust and acceptance of mining. Strong regulation of the sector is an enabler of mining, not a blocker. Indeed, there is a significant risk that 'streamlining' or deregulation will negatively impact trust and acceptance, which would in turn slow project development, not expedite it.**

This runs directly against a lot of the current government and industry advocacy that aims to reduce community input into regulatory processes, and to weaken those processes as a whole. In the absence of quality data about permit processing times and causes of delays, it is difficult to prove one way or another why this narrative has become so dominant. An oft quoted source within industry is the Fraser Institute's annual survey of mining companies on issues such as investment attractiveness, regulatory transparency and timeliness, but it is important to note the very slim data that this is based on – views from only 256 individual company executives are used to evaluate and rank 68 different jurisdictions (some national, some state/provincial), with a baseline of 5 survey responses being considered enough for a country to be included in the analysis and ranking.[24]

Nonetheless, the drive for deregulation and fast-tracking being seen as a key part of unlocking critical minerals is becoming increasingly normalised. As of early February 2026, the United States government has signed 21 bilateral frameworks or MoUs on critical minerals.[25] A review of those frameworks and MoUs shows a remarkably common format in which countries commit to securing supply, direct investment in mining and processing, and preventing critical minerals asset sales on national security grounds (i.e., preventing the sale of mines to China). The agreements also contain commitments to "accelerate, streamline, or deregulate permitting timelines and processes".[26]

***[24] Fraser Institute, Annual Survey of Mining Companies, 2025, accessible at Fraser Institute, Annual Survey of Mining Companies, 2025, accessible at [23] Most of the site-specific trust models are not publicly available, though through previous work in this area the author has cited dozens of individual mine site models.***

***[25] US Department of State, 2026 Critical Minerals Ministerial Fact Sheet, February 4, 2026, accessible at https://www.state.gov/releases/office-of-the-spokesperson/2026/02/2026-critical-minerals-ministerial/***

***[26] Many of the frameworks and MoUs contain this provision. By way of example see the United States – Australia Framework for Securing Supply in the Mining and Processing of Critical Minerals and Rare Earths, October 20, 2025, accessible at https://www.whitehouse.gov/briefings-statements/2025/10/united-states-australia-framework-for-securing-of-supply-in-the-mining-and-processing-of-critical-minerals-and-rare-earths/***

# 5. Regulation as an enabler not a blocker

## Regulation across the mining lifecycle

As noted above, there is a clear tension between the deregulating and streamlining imperatives of governments and industry to expedite critical mineral projects, and the evidence that suggests that effective regulation is a key driver of community trust in and acceptance of mining.

Generic regulatory models are hard to build. As Owen et al. (2022) note:

***Each permitting matter is likely to include different sets of landowners, users, and rights holders with different information, procedures, and protocols to be followed. Even where mining projects are approved by the state, exactly what is permitted and under what conditions will influence mining's impacts, and the distribution of risks and benefits across different geographies and groups of people. Consultation and consent are multi-layered and inherently scattered processes.*** [27]

In general, however, and as noted in Chapter 3, many jurisdictions struggle with regulatory processes that are very light touch in the lead up to and during the exploration phase, but which are then very intensive when a mining permit is being considered. The challenge with this is that social and environmental concerns will begin to emerge in communities during the very earliest stages of exploration. While companies may not have the resources or capacities to consider these issues, and regulators may see addressing them as being overly burdensome, the effect is that failure to consider these issues early can often create significant risks to new mines once a full mining permit process is initiated.

Figure 9 below shows both how these processes typically play out in mining, as well as how they might be improved.[28]

***[27] Owen, J.R. et al., "Fast track to failure? Energy transition minerals and the future of consultation and consent", Energy Research and Social Science, 89 (2022), accessible at https://www.csrm.uq.edu.au/publications/fast-track-to-failure-energy-transition-minerals-and-the-future-of-consultation-and-consent***
***[28] Buxton, A., "People and nature first: safeguards needed in mining exploration", IIED Briefing, February 2022, accessible at https://www.iied.org/20736iied***

**Investment approval processes for early stages of the mining life cycle**

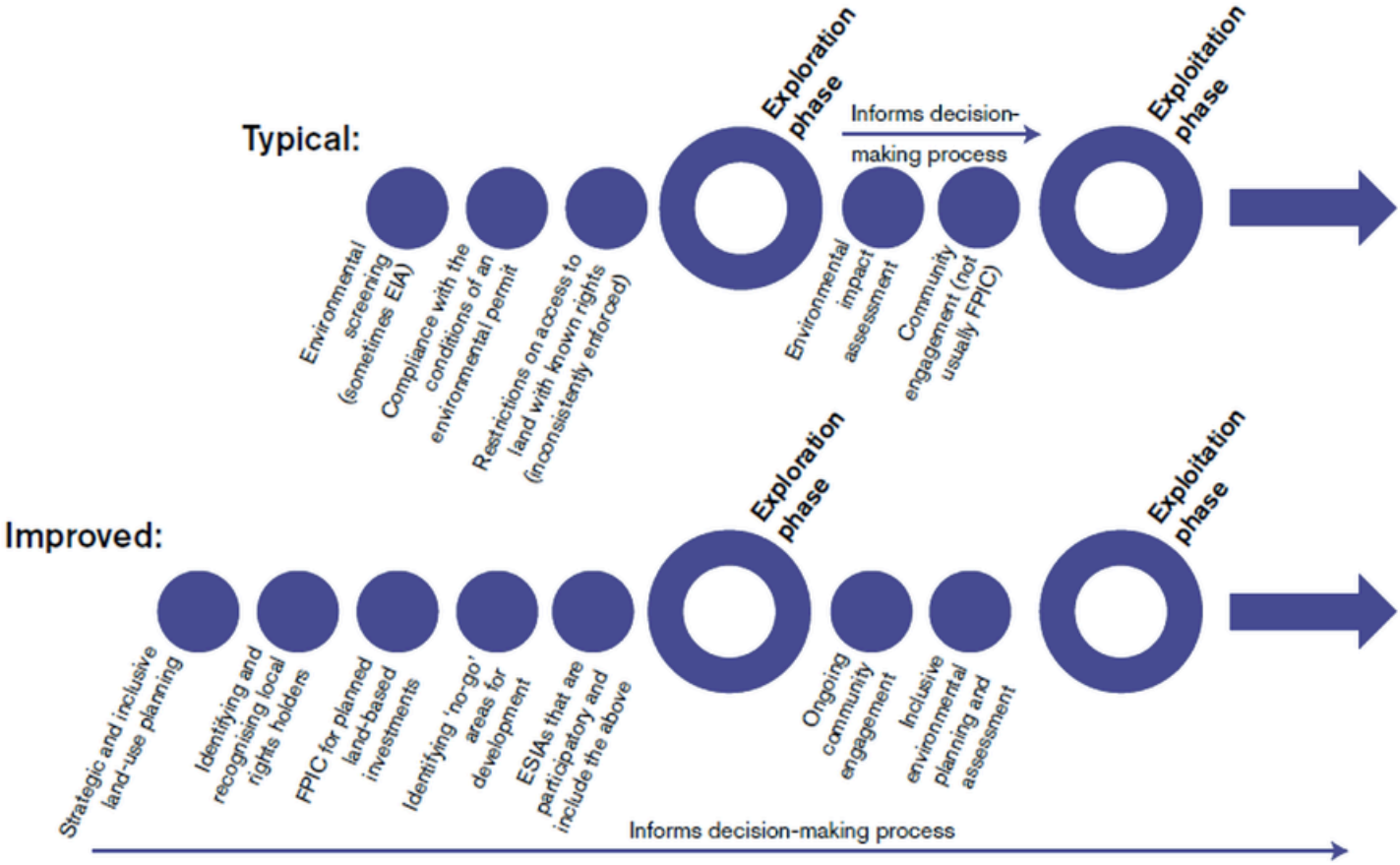



Figure 9: Typical and improved approaches to exploration and mining regulation

Once a mining permit has been granted, mines commonly go through continuous cycles of optimisation, discovery of new ore bodies, and changes to the footprint and method of mining, many requiring additional regulatory approvals. The cumulative impact of these changes is often very significant, yet because they are spread across many small changes over the years, there are few opportunities for communities to meaningfully engage with companies and regulators. As Kemp et al. note:

***Once a mine is approved and permitted, expansion tends to proceed as a routine feature of the operational phase, even when changes materially transform the original risk and impact profile of a project. In this context, expansions tend to advance without the level of assessment or public consultation as the approval phase, especially when changes occur within existing lease areas. Mine closure plans routinely lag behind expanding disturbance, and financial assurance mechanisms (where they exist) often remain tied to the original project scope.***[29]

***[29] Kemp, et al. (2026).***

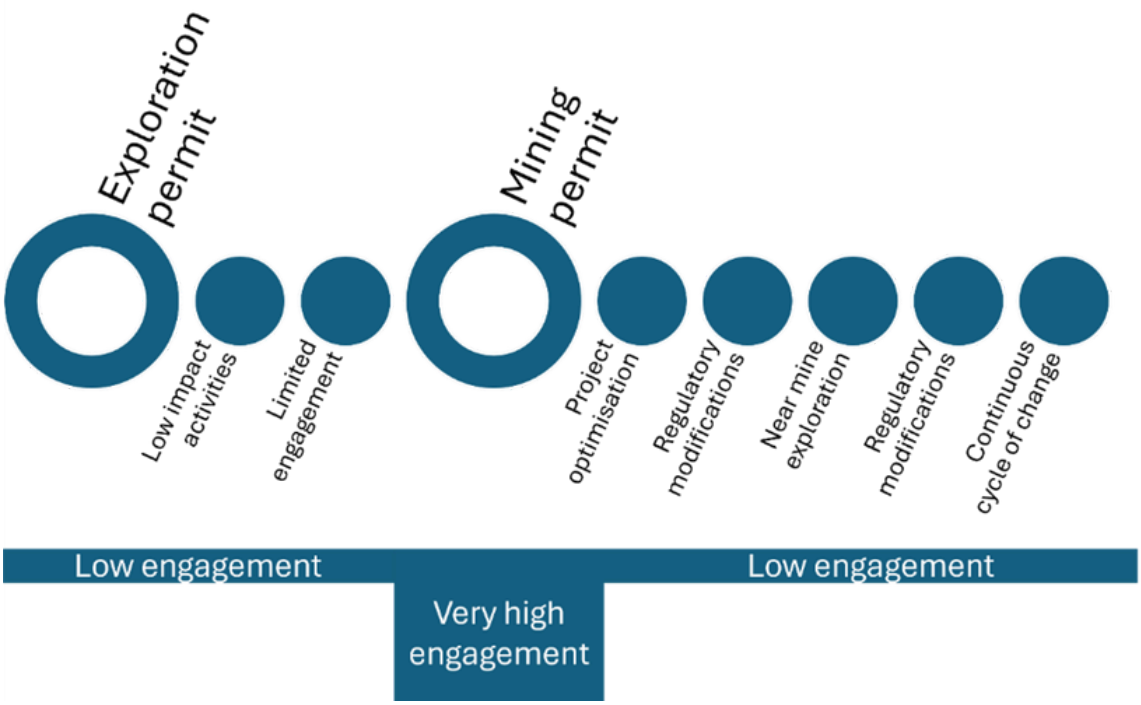



Figure 10: Community engagement during exploration and mining

## More regulation and engagement = faster permitting?

While Figure 9 illustrates the need to add additional safeguards early in the exploration process and more inclusive regulatory processes, Figure 10 illustrates that even after the approval of a mine, there is often a significant load of regulatory modifications or change applications where communities are often not engaged but potentially could and should be. On the face of it this looks like a guarantee that permitting times will inevitably increase, and industry blogs and visuals such as the one shown below appear to suggest that the time from discovery to production is a critical hindrance to meeting energy transition goals. As one industry commentator notes:[30]

***"You can announce all the critical minerals strategies you want, but if it takes 18 years to turn a discovery into production, the copper the world needs in 2035 needed to be found in 2017. Governments and the policies they control can reduce that timeline in a big way. Global discovery rates have been declining for years while the timeline to develop what has been found keeps getting longer, thanks to many governments leaning too far in the wrong way".***

***[30] Scott North, global minerals commentator on LinkedIn, 26 February 2026, accessible at https://www.linkedin.com/posts/scott-north-k_mining-copper-resources-share-7432586971325186049-iwdC?utm_source=share&utm_medium=member_desktop&rcm=ACoAAAjjel4BjzJvdqYsx_SgH0XdqNd5jdJpxBY Original source of the visual is MiningVisuals (2024), "Copper Mines: Average Time from Discovery to Production is 17.9 Years", December 19, 2024 accessible at https://www.miningvisuals.com/post/copper-mines-average-time-from-discovery-to-production-is-17-9-years This visual is in turn based on DeCoff, S. (2024), 'Major Copper Discoveries', S&P Global, accessible at https://www.spglobal.com/market-intelligence/en/news-insights/research/major-copper-discoveries***

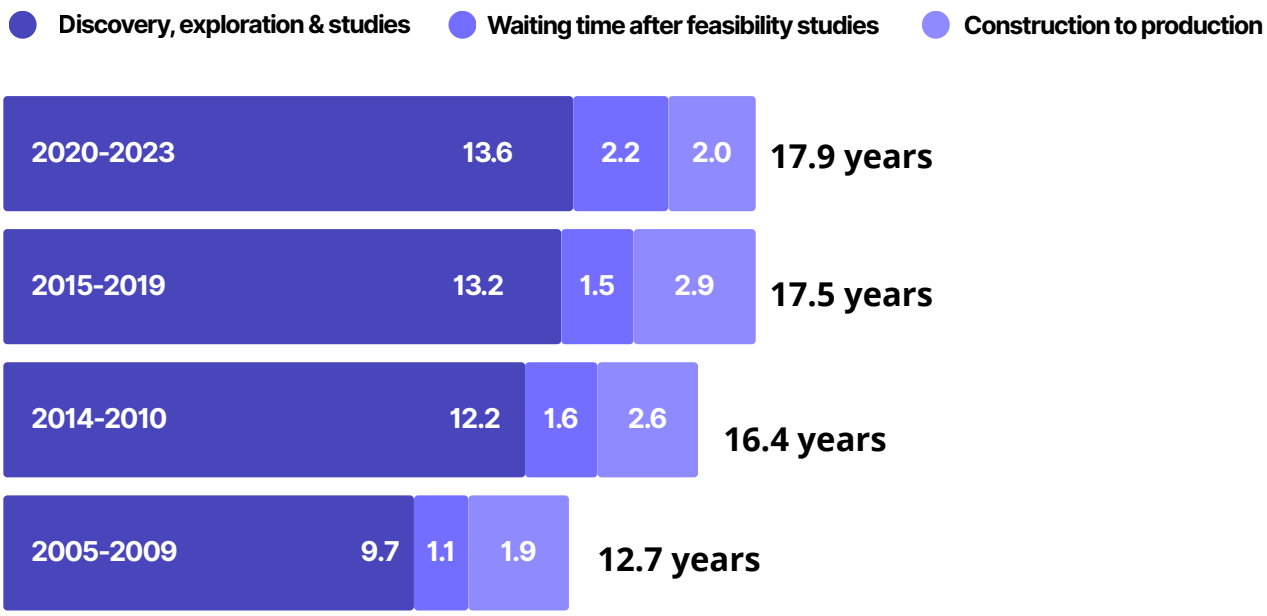



Figure 11: The industry view – time taken to bring copper deposits to production

***Data from S&P Global. Original visualization by Mining Visuals. Graphic adapted and redesigned by TAI.***

The research underpinning the above commentary and visual does not actually identify government permitting processes as being the key driver of this leap in discovery to production times, but it is fair to say that this sentiment is extremely common in industry.

The simplistic and most common response to this kind of commentary is that if the roles of regulators and communities are lessened in the decision-making process, minerals for energy transition will flow more freely. Curiously, this interpretation demonstrates a certain lack of self-awareness from within the industry in that it suggests that delays associated with the usual business of exploration and mining (i.e., waiting for investment to continue) are acceptable delays, while delays associated with government regulation or community consultation and engagement are not.

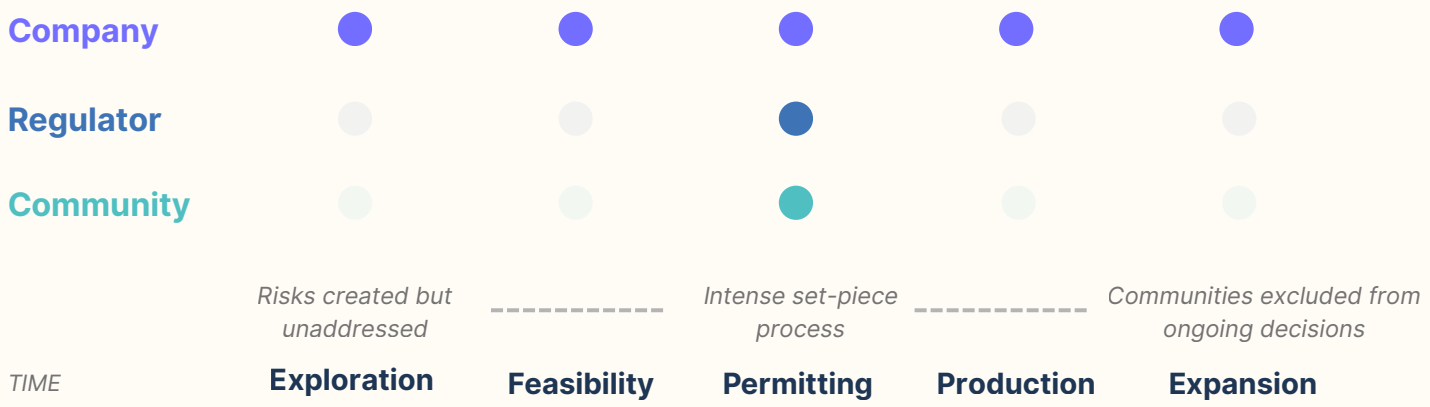
## Adaptive Governance Partnerships

If regulation is a key enabler of trust, the question then is how might that be reconciled with the imperative for speed over whatever portion of the resource development timeline can be attributed to regulation?

One way in which the two might be brought together would be to develop an experimental regulatory structure that could bring together the regulator, the company, and the community representatives to actually make regulatory decisions as an exploration project and eventually a new mine progresses, rather than relying on intense set-piece regulatory processes.

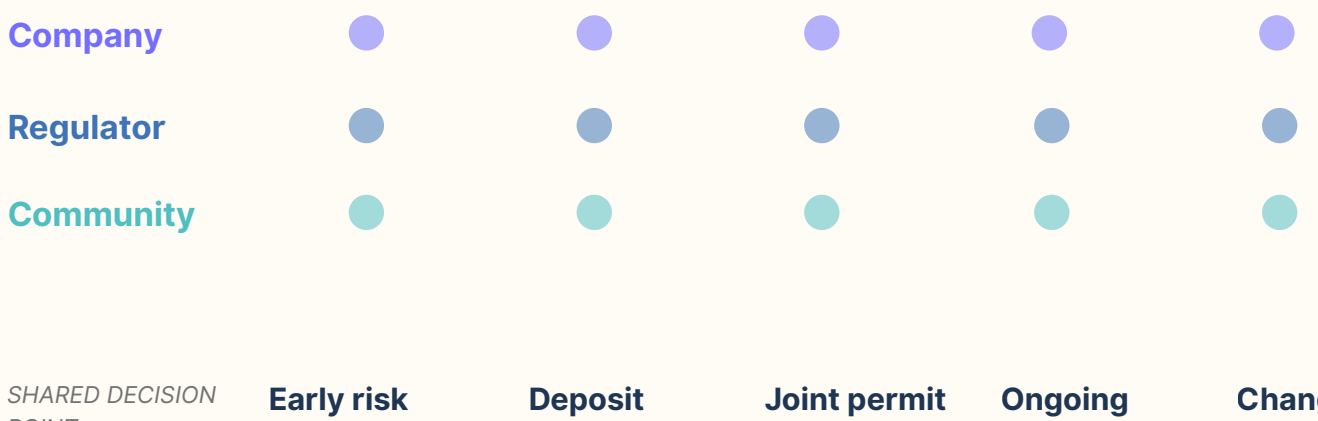
### Current approach

Fragmented, set-piece engagement concentrated at permitting




### Adaptive Governance Partnership

Continuous, shared decision-making as information arrives



## ADAPTIVE GOVERNANCE PARTNERSHIP (AGP)

A continuous multi-party regulatory and engagement mechanism across the full mining cycle

### The core proposition

**Continuous regulation and engagement** builds trust and speed ⊕ **Earlier production** increases project value = **Shared benefits** for community, company, state

### Trust drivers addressed by the AGP

- **Procedural fairness**
  Community listened to, Involved in aecisions
- **Confidence in regulation**
  Governments hold firms accountable
- **Distributional fairness**
  Benefits shared with those impacted
- **Contact quality**
  Clear, honest, accessible
- **Environmental impacts**
  Identified early to enable impacts to be avoided
- **Social impacts**
  Identified early to enable impacts to be avoided

Figure 12: Visualisation of an Adaptive Governance Partnership

On first blush, this seems like an intensely naïve and idealistic suggestion, but the idea here is that a form of **'Adaptive Governance Partnership' (AGP) would make decisions made as information arrives — for example, as studies conclude, deposits are confirmed, or expansions are proposed — rather than waiting for intense set-piece regulatory processes that often drag on for years and effectively stall a project.**

The advantages of an AGP approach would include:

- It would bring together the key drivers of trust in mining from the CSIRO / Voconiq research into a single model: procedural fairness, confidence in regulation, addressing environmental impacts, and contact quality would all naturally be addressed as part of such a partnership. **Put another way, an Adaptive Governance Partnership would be a trust-building intervention in and of itself.**

- Regulation and community engagement would occur during the exploration phase and would potentially address significant risks before any eventual mining project – e.g., by identifying areas of environmental, cultural, and social sensitivity early in the process so that they can be avoided by any eventual mining project.

- At present, the near absence of regulators in communities prior to major mining applications means that when major applications do arrive, regulators often have to build relationships with communities from scratch, and in a situation where some in the community may perceive their involvement as being a decade too late. By ensuring the involvement of regulators throughout the lifetime of a project, there is potential for an Adaptive Governance Partnership to build trust in regulators themselves, not just in the regulatory process and its outcomes.

- Regulation and community engagement would continue after any mining permit process and would allow all parties to make decisions as new information – e.g., geological data, market conditions, etc. – comes to light. Traditionally, it is only companies that have the incentives and resources to revisit earlier regulatory conditions; under an AGP process, all parties could seek subsequent revisions based on the actual experience of the project.

- By spreading consultation and regulation across the full lifetime of the project, obvious show-stopping impacts or issues could be identified and addressed much earlier. Continued engagement and regulation after the initial mining permit would also de-risk the mining permit process itself – in the author's experience, it is very common for communities to want to fight every single possible element of a proposed mine at the mining permit stage, precisely because they have low or no confidence that they will have any meaningful say after a mine is approved.

- Combining continuous engagement and regulation would provide an essential release valve for any emerging social and political risks – i.e., as issues and disagreements develop, they can be considered and directly addressed. For this reason, an AGP-type mechanism has the potential to significantly reduce operational risk.

Done well, an Adaptive Governance Partnership would allow projects to proceed faster than they otherwise would. Building such a mechanism would face real challenges, however, as it would:

- Require regulators who were open to – and able to receive legislative support for – a highly experimental approach to project regulation. Even the passing of legislation or regulation for an experimental process would be highly challenging in some jurisdictions where legislative time is highly over-subscribed (i.e., there are more laws that need passing than there is parliamentary time). That said, 'regulatory sandboxes' in which new approaches to project development and regulation are not entirely unheard of.

- Need to provide clear incentives to potential project proponents in order for them to take on a highly novel approach. Options for incentives could include, for example, reduced annual permit fees, which at the exploration phase can be a material cost to exploration companies. Governments could also incentivise this approach by providing 'super deductions' such as those used in jurisdictions to incentivise R&D or capex. A super-deduction is a tax process that generates a tax offset worth more than the expenditure itself. Because junior mining companies are almost always loss-making (i.e., they are spending money to generate unique geological data that can then be sold for a greater price), these super deductions would need to be refundable so as to create additional revenue for a company that could then be put towards traditional exploration activities.

A more detailed examination of the different incentives and disincentives that would exist for the different groups involved in an Adaptive Governance Partnership is provided in **Appendix E.** Perhaps the two most fundamental concerns that an AGP would create would be that, firstly, regulators would see it as critically compromising the role of government to regulate. Secondly, companies and communities may have mirror concerns that an AGP would either create a right of veto over projects or would remove a right of veto over projects.

The other aspect of the AGP that would be useful to explore further would be to consider how the mechanism might be used differently between greenfield and brownfield mining projects. In some ways application of an AGP mechanism would be easier in a brownfields site because the core decision over whether to extract has already been made. And while this does not imply that decisions to mine have an open-ended lifespan, it does mean that novel regulatory processes might be easier to accept and to fund because there is an existing asset. On the other hand, the clearest long-term benefit of an AGP approach would be in unlocking greenfields minerals projects that might otherwise be stalled or sterilised due to unaddressed social and environmental impacts and corresponding regulatory delay or outright rejection.

# 6. A new model of benefit sharing

In the process of carrying out interviews to inform this report, the single most common suggestion that was made when interviewees were asked to consider what might be done differently was to suggest some sort of approach in which expedited project approvals might be offset with greater benefit sharing with impacted communities. This section explores this idea in greater detail.
Before proposing a new model, it is worth asking: Does increased benefit sharing actually lead to increased trust and acceptance? The data says yes, but with two important cautions to add to community benefits as a lever for building trust and acceptance.

Firstly, almost all of the models that this author has seen and worked with, as well as the ones shown here, benefits for communities and the country as a whole are a driver of trust and acceptance, but they are very rarely **the** driver of trust and acceptance. Indeed, in most models, other drivers such as those around procedural fairness, regulation, and environmental impacts typically have a greater impact than benefits.

The second caution is that where benefits do occur as a driver of trust and acceptance, it is clearly linked to notions of fairness. This means that it's not simply a matter of showing that a community or a country is net better off, but rather a company or industry must demonstrate that those benefits have been fairly shared with those in a community most impacted by mining.

That said, the level of benefits a mining project generates is highly sensitive to the time it takes for a project to be approved and begin generating revenues, and because of that, it is worth examining further. One way of understanding the potential benefits of expediting a project is to develop a highly simplified financial model of a potential mine's NPV (Net Present Value), but with different time periods and discount rates.

Koinon Consulting has developed a simplified model that is displayed in Table 2 below.[31] The key assumptions for this hypothetical mine are that it has 2 million ounces of gold, that the price of gold is currently US$4,000/oz gold price, and that there are US$800/oz in costs, leading to US$3.4bn total free cash flow over mine life. In the table below, the first digit in each profile is the number of years from first exploration to production (6 = 'Rapid', 10 = 'Normal'), and the suffix is the discount rate (8%, 10%, or 12%, as required in Canadian financial reporting).

| Profile: Years and Discount rate | Present Value (USDm) | Difference (USDm) |
|---|---|---|
| 6YNPV8 | 1,252 | |
| 10YNPV8 | 898 | 354 |
| 6YNPV10 | 992 | |
| 10YNPV10 | 653 | 339 |
| 6YNPV12 | 790 | |
| 10YNPV12 | 476 | 314 |

Table 2: Impact of time on mine NPV

The difference in value of this hypothetical project improves by more than $300m in scenarios where production occurs four years earlier. It is a highly imprecise example, but it is useful in that it demonstrates that the financial benefits of time are potentially very significant and could be used to:

- Provide a radically different quantum of benefits to host communities.
- Pay for the additional costs and risks associated with an Adaptive Governance Partnership as discussed above.

The risks associated with this kind of 'streamlined regulation in return for significantly increased benefits' will, however, need to be considered. There is a risk, for example, that negotiating economic impacts becomes so dominant that they crowd out proper consideration of environmental and social impacts. It might also undermine the key drivers of trust outlined in Chapter 4 above – i.e. procedural fairness and enhanced regulation. It would also be important to

***[31] With thanks to Johnny West for developing this model and talking me through it. See https://koinon.consulting/wp/***

avoid creating a hyper-local 'resource curse' in which corruption and capture of benefits by a small elite hollows out economic diversity and political accountability. Finally, it would be important to ensure that the needs and rights of future generations are not ignored in any new benefit mechanism.

Another important element of the benefits conversation is, of course, to decide which mechanism or mix of mechanisms is the best way in which benefits can be 'transmitted'. Very broadly, the different ways in which benefits can be transmitted fall into the following categories:

- Dividends from direct equity shareholding in the company, either as a full commercial partner or in a 'carried interest' mechanism in which equity is received without requiring upfront capital.
- Joint venture profit-sharing mechanisms.
- Direct community or First Nations ownership (carried or otherwise) in companies.
- Through fiscal instruments such as taxes, royalties, fees, and duties, some or all of which may be shared with different levels of government, including subnational distributions.
- An emphasis on or requirement ('local content') on preferential processes for local employment, procurement, and supply chains.
- Community development programs, social investment funds, and foundations.
- Investment in new infrastructure and shared assets.

This report does not seek to explore the relative merits of each type of benefit stream, as they invariably vary immensely and have quite different risk and opportunity profiles depending on the specifics of the project, its surrounding communities, and the national jurisdiction. Much analysis and debate is overly focused on either ownership mechanisms and/or tax and royalty rates, particularly when commodity prices are high, while there tends to be less focus on employment and supply chains, even though they are often the single biggest line-item in a mine's operations.

# 7. Recommendations

## Recommendation 1: Be critical of critical minerals

### Be careful of the critical minerals agendas that are not about the energy transition

As noted above, there is real confusion about what critical minerals are, where they come from, and whether the urgency is genuine. Key observations include:

i. The critical minerals 'agenda' is being used by a variety of organisations to achieve goals that are tangential or unrelated to energy transition. Some countries have included minerals and metals on critical minerals lists that have no role in the energy transition and which have been included for economic or other objectives.

ii. It is extremely common for critical minerals lists to combine those that are essential for energy transition with those that are essential for war-making and defence. The rapid increase in spending on armaments is driving considerable demand for some minerals, and that demand is, in part, being camouflaged by their inclusion in the critical minerals agenda.

iii. Criticality at present is mainly determined by concerns around who does and does not have access to them, and how that access plays out amidst geopolitical instability. Put simply, critical minerals are mainly critical because China occupies a predominant role in their production or refining, and because the United States of America does not.

iv. The critical minerals debate has been dominated by the perceived need for new 'greenfield' mines, yet the overwhelming majority of expanded production has come from existing 'brownfield' mines — with risks and opportunities that are very different.

v. Similarly, there has been a lot of focus on potential critical minerals mines operating in the most vulnerable and difficult of jurisdictions – notably the Democratic Republic of Congo, and to a lesser extent, Myanmar. The most important producers of critical minerals are, however, commonly countries with well-developed economies – China, Indonesia, Chile, Australia, Canada, Russia, Peru, and the Philippines. Any donor programming in this area will not work well if it is progressed through some sort of poverty reduction/development lens.

**The recommendation is, therefore, that donors should assertively challenge the critical minerals framing that currently predominates. Donors should be careful not to develop critical minerals programs that unintentionally reiterate the current framing. Where programs are developed, they should be explicitly focused on minerals and metals that are essential for the energy transition only.**

The key recommendations that flow from these observations are that donor programs will need to be clearly focused on action in countries that hold linchpin roles in critical minerals development, and those countries are, by and large, highly developed ones. Australia and Canada, in particular, hold key roles both in the production of critical minerals, as well as in raising capital (ASX and TSX) for junior miners, and acting as headquarters for a large number of companies.

Finally, given the current importance of brownfields mines, any future donor programming in this area should have a strong focus on engagement with existing producers, not only on potential greenfields developments.

## Recommendation 2: Discourage a trade war with China

### Get to the root cause of what makes critical minerals critical

This may seem flippant, but as the IEA notes, 'today's [critical minerals] markets may appear well-supplied, but export restrictions and risks to security of supply are proliferating'.[32] While there are some minerals and metals that are medium-term critical for energy transition, the overwhelming driver of current concern is that critical minerals are critical because the US and Europe have low levels of domestic production and very low levels of domestic refining. They are deemed critical because China is the apex producer and refiner, and is deemed to be a geopolitical competitor of the United States.

There are, of course, sectors where the US and Europe hold very high levels of global dominance — the role of the US dollar in global financial markets, the large passenger aircraft duopoly of Airbus and Boeing, and the market dominance of Nvidia in the production of AI accelerator chips are all good examples.

*[32] International Energy Agency (2025).*

The point here is that critical minerals policy is trade policy. While there is definitely some need to accelerate production of minerals such as copper and rare earth elements, the factor that makes them critical has been the rapid disintegration of trust and norms in global trade.

**The recommendation here, therefore, is that donors should ensure that critical minerals programs are complemented with trade policy programs that make the case for restoring a more trust-based and less conflictual global trade system. Donors should also ensure that they do not inadvertently end up enhancing the notion that there is a critical minerals crisis that is entirely about scarcity. That definitely has the potential to be the case with copper and lithium, but the easiest intervention that could be made – and one that has much shorter lead times than building new mines – would be to return the global trade system to some degree of normality.**

## Recommendation 3: Capacity building for companies

### Change how current producers of critical minerals interact with communities and governments

Given that the majority of increased critical minerals production is currently coming from existing mines, a central recommendation of this report is to find ways of radically changing current company approaches to community engagement. Cutting across numerous strands of this report is a broken model of corporate engagement with governments, stakeholders, and communities — operating under different labels in different companies but called 'corporate affairs' here for convenience. This model is fundamentally corrosive to long-term trust and acceptance of mining and is holding back critical minerals developments. While donor programs often focus on whom they perceive to be the weaker players in governance - e.g., civil society organisations, government agencies – the real capacity building that is required here is actually with multinational mining companies, their senior staff, and owners.

The corporate affairs function sits at the centre of how companies engage with governments, communities, and regulators, and it is where the broken model is most entrenched. It seeks to shift risks and responsibilities to governments and communities, to reduce scrutiny, and to attract direct or indirect (e.g., through fast-track regulation) subsidies from governments.

Increasing speed and production of critical minerals will require community trust and acceptance, and that trust depends on deepening regulatory oversight and safeguards, and encouraging procedural fairness mechanisms. The current formula for fast-tracking and deregulating critical minerals projects is, ironically, almost custom-made to reduce trust rather than enhance it.

Key to addressing all these risks will be corporate models that see governments and communities as potential co-equal partners in project development, not as risks to be managed and disempowered. While this recommendation may seem overly ambitious, the obvious way of making its scope more manageable would be to carry out a review of the world's most significant brownfield critical minerals mines and expansion projects, and the companies operating them. Pairing that review with a multi-factor environmental and social risk matrix would quickly surface the small number of companies, countries, and communities where the corporate affairs model is doing the most damage — and where sustained engagement and capacity building for companies would bear the most fruit.

There is, of course, an element of carrot-and/or stick that needs to be applied here. While the above analysis would identify the sites, countries, and companies where a new approach needs to be taken, a purely advocacy / enhanced global standards approach would face significant headwinds because:

- Environmental and social risks have slipped significantly down the mining company's priority list (see Figure 6 above).
- The current narrative around streamlining and deregulation, while wrong-headed, does nonetheless currently have significant political currency.
- There is evidence to suggest that the proliferation of corporate sustainability initiatives is not in fact leading to greater sustainability (see **Appendix E**).

For these reasons, this recommendation suggests that donors develop joint partnerships with major mining companies in which the donors themselves are significant financial partners rather than assuming that companies will simply absorb any and all costs associated with a new approach. Those partnerships should seek to innovate and trial new approaches to community engagement at the site level rather than at the corporate level.

## Recommendation 4: Find a radically curious regulator

### Build a model of minerals regulation that drives speed, fairness, and benefits for all

As Chapters 3 and 5 identified, both the exploration market and the regulatory lifecycle systematically defer environmental and social risks until they become entrenched. Regulation is extremely light-touch during exploration — the phase when environmental and social risks are actually being identified — and then intensely concentrates them at the mining permit stage, by which point those risks are baked in and communities are fighting every element of a proposal because they know, from experience, that they will have little or no meaningful say once a mine is approved. Post-approval, continuous cycles of expansion, optimisation, and mine plan changes proceed with minimal community input despite materially transforming the original risk and impact profile of the project.

Chapter 5 outlined the idea of an 'Adaptive Governance Partnership' (AGP) — a continuous, multi-party mechanism that would bring together company, regulator, and community representatives to make regulatory decisions as information arrives across the full mining lifecycle. Rather than relying on intense set-piece regulatory processes, an AGP would enable decisions to be made as studies conclude, deposits are confirmed, expansions are proposed, and conditions change — spreading regulatory engagement from the earliest stages of exploration through to closure.

The evidence base for this approach is strong. The CSIRO, Voconiq, and Transfert research discussed in Chapter 4 consistently identifies procedural fairness, confidence in regulation, environmental impact management, distributional fairness, and contact quality as the key drivers of community trust in and acceptance of mining. An AGP would embed all five of these drivers into a single institutional mechanism. Put another way, the process of regulating a project through an AGP would itself be a trust-building intervention — not a hurdle to be cleared before the real work begins.

The explicit trade-off of this model is speed in return for inclusion. By identifying show-stopping environmental, cultural, and social issues during exploration rather than at the permitting stage, and by giving communities genuine confidence that they will continue to have a say after a mine is approved, an AGP should materially reduce the contestation and delay that currently characterise mining permit processes. As the simplified financial modelling in Chapter 6 demonstrates, bringing a hypothetical mine to production even four

years earlier can increase its net present value by more than US$300 million. That surplus — currently captured entirely by the company — could be used both to fund the AGP mechanism itself and to deliver a radically different quantum of benefits to host communities and governments.

Building such a mechanism would face real challenges. It would require a regulator open to — and able to receive legislative support for — a highly experimental approach to project regulation. 'Regulatory sandboxes' in which new approaches to project development and regulation are trialled are not entirely unheard of, but applying one to mining would be genuinely novel. It would also need to provide clear incentives for exploration companies to participate. At the exploration phase, annual permit fees are a material cost to junior companies; reducing or waiving those fees in return for participation in an AGP would be one option. Governments could also offer refundable super-deductions — tax offsets worth more than the expenditure itself — for environmental and social work carried out under an AGP framework. Because junior mining companies are almost always loss-making, any such incentive would need to be refundable so as to create additional revenue that could be directed towards both traditional exploration and early-stage community engagement.

The recommendation for donors is to identify and partner with a jurisdiction willing to trial this approach. Australia and Canada are the most logical candidates: both are major critical minerals producers, both have mature regulatory systems capable of supporting experimentation, and both contain regions where mining intersects with Indigenous land rights and rural communities in ways that make the current regulatory model's deficiencies acutely visible. The goal would not be to design an AGP in the abstract, but to identify a specific exploration project or early-stage mine in a willing jurisdiction and build the model around it — learning by doing, with rigorous monitoring and evaluation built in from the outset.

A more detailed examination of the incentives and disincentives that would exist for the different parties involved in an Adaptive Governance Partnership is provided in **Appendix E.**

## Recommendation 5: Start a mining company

### Influence and learn by doing – build a new kind of greenfields mining company

The need for securing critical minerals to support energy transition has reached an interesting inflection point:

- Current markets for most critical minerals are well-supplied, so long as geopolitics doesn't get in the way.
- A combination of factors, however, indicates that there are risks to future supplies of copper, rather than lithium, with a potential 30% copper shortfall by 2035, and with the currently healthy supply of lithium tipping back into deficit by the 2030s.[33]
- While the consequences of supply constraints are difficult to quantify, assumptions are widely held that escalating minerals and metals costs would significantly increase the costs of building out new energy generation, transmission and storage. In many markets renewable energy now enjoys the notable advantage of being the cheapest source of new generation capacity. A significant increase in minerals prices may risk that competitiveness and make continued investment in fossil fuel energy generation and use more attractive.
- In spite of the apparent urgency to increase production, investment in mining across the board – from exploration to production to expansion – is significantly constrained.
- The so-called 'ESG agenda' has been undermined in both the US and Europe, but in its absence tangible environmental, social and governance risks to critical minerals projects still exist and need to be addressed.
- This in turn creates a unique opportunity to refocus the ESG agenda away from a proliferation of standard setting and compliance driven reporting (see Appendix E), to approaches that actually do something to address impacts to communities and risks to companies.

***[33] International Energy Agency (2025).***

Donors face a choice: observe the problem or become part of the solution. The assumption is usually that donors fund governments or civil society. But if the core problem is the market — and the companies in it — then the most powerful intervention may be to enter that market directly.

The single most powerful thing that a donor could do to influence the greenfields mining market is to become a participant in it, albeit a radically different kind of participant. Creating or investing in a new kind of mining company would involve:

- Developing an investment instrument that would tie funding disbursements to the advancement of exploration work programs, but also the implementation of environmental and social work programs, which focus on reducing long-term impacts on communities, as well as long-term risks to the company.

- Identifying junior mining companies with exploration permits for energy transition-related critical minerals.

- The logical markets to explore in this regard would be Canada or Australia because:

    - They are key producers of critical minerals across multiple commodities.

    - They host the two largest markets for raising capital for mining projects – i.e., the TSX and ASX, and provide headquarters to many global mining companies.

    - Have large areas that face significant rural poverty that at times intersect with the traditional lands of Indigenous Peoples.

    - Have the greatest opportunity for a new model of mining company to influence the rest of the mining industry.

- Implementing a Monitoring, Evaluation, and Learning framework.

- Implementing a market engagement and communications strategy.

## (Not Recommendation) 6: A new model of benefit sharing

This recommendation is labelled a 'not recommendation', and has been placed purposefully last, because it is the most common response that people have when asked to consider the balance between the need for greater speed in delivering critical minerals projects, while also enhancing fairness for host communities. And as the CSIRO / Voconiq models show, benefits are a key factor in enhancing community trust and acceptance.

Benefit sharing is where most governments and companies start and end the conversation about community conflict. It reduces communities to rational economic actors waiting for the right price. It requires no new skills, no vulnerability, no change in behaviour, only a change in the budget line. It assumes that any environmental or social harm can eventually become acceptable if the financial offset is high enough. Focusing or constraining conversations to benefits and risks creates a trap for communities in which deeper considerations of fairness, consent, environmental and social impacts, as well as long-term liabilities, are not considered.

It is for these reasons that I am extremely hesitant to include a recommendation on benefits sharing in this report. That said, it would be useful to be able to model and quantify the benefits of expedited permitting and approval processes much more rigorously. In the absence of more specific modelling, mining companies currently carry all of the risks of delay and all of the benefits of speed. Enumerating the financial benefits of time will help to sharpen the conversation between communities, governments, and companies and will hopefully enable for meaningfully inter-generational economic and social development in mining communities, rather than the current approaches that often lean heavily on (superficial and visually attractive) 'sponsorships and donations' – i.e., small-scale but non-transformative grant-making.

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