



Artisanal Miners Deserve a Seat in Critical Minerals Supply Chain Planning

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Abstract

Governments and manufacturers are drawing up strategies to secure the cobalt, tantalum, tin, tungsten and other minerals on which batteries, electronics and low-carbon energy depend. Artisanal and small-scale miners, who produce a substantial part of several of these minerals and number in the tens of millions worldwide, are almost never present when those strategies are written. They appear in them as a risk to be managed. This Perspective argues that the omission is a mistake of both principle and practice. It is a mistake of principle because people whose livelihoods are reshaped by a policy have a claim to be heard in making it. It is a mistake of practice because measures designed without miners have repeatedly failed on their own terms: conflict minerals rules produced local embargoes, due diligence expectations encouraged buyers to withdraw, and formalisation schemes offered licences that few could use. The article sets out what a seat would mean in the arenas where supply chains are planned, considers the objections concerning child labour, safety, representation and the rights of industrial licence holders, and suggests steps for governments, buyers and standard setters. The argument is not that artisanal mining is benign. It is that the harms are more likely to be reduced with miners in the room than without them.

Keywords: *Artisanal and small-scale mining, Critical minerals, Supply chain due diligence, Formalisation, Cobalt, Participation*

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1. Introduction

The energy transition is a minerals transition. Electric vehicles, grid storage, wind turbines and the electronics that control them need far more cobalt, lithium, nickel, copper, graphite and rare earths per unit of output than the technologies they replace (IEA, 2021). States have responded with lists of critical minerals and with strategies for securing them. The European Union's Critical Raw Materials Act is one example, setting benchmarks for domestic capacity and for diversified imports and providing for strategic projects and partnerships with producing countries (European Union, 2024). Manufacturers, for their part, plan sourcing years ahead and sign long-term contracts with mines and refiners.

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A large group of producers is missing from this planning. Artisanal and small-scale mining, usually abbreviated ASM, covers work done with simple tools and little capital, by individuals, families, cooperatives and small enterprises, often without formal title. Estimates compiled for the Intergovernmental Forum on Mining and for the World Bank put the number of people working in it at more than forty million, several times the workforce of industrial mining (Fritz *et al.*, 2018; World Bank, 2020). They mine a substantial share of the world's tantalum and tin, some of its tungsten, and a variable but significant fraction of the cobalt that comes from the Democratic Republic of the Congo (Sovacool, 2019).

This Perspective argues that these miners should take part in planning the supply chains they feed. The claim is made in the title as one of desert, and the first part of the argument is about fairness. The second and longer part is practical: policy made about artisanal miners without them has a poor record.

2. Where Supply Chains Are Planned

Supply chain planning is not one meeting. It happens in several arenas, each with its own participants, and Table 1 lists the main ones. What they have in common is that artisanal miners are the subject of decisions in all of them and party to decisions in almost none. National strategies are negotiated between ministries, development banks and large companies. Due diligence standards are drafted in multi-stakeholder processes where industry associations and international organisations are well represented and miners' own organisations rarely are. Buyers set sourcing rules in corporate offices far from any mine.

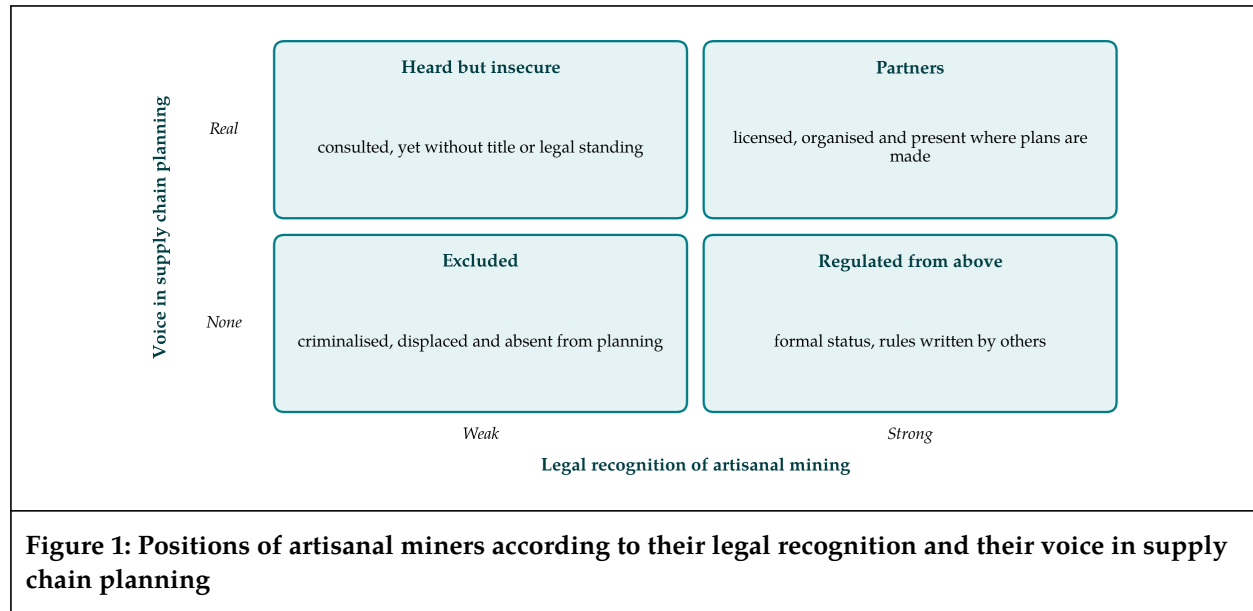
Table 1: Arenas in which critical minerals supply chains are planned, and what participation by artisanal miners would involve			
Arena	Decisions taken	Usual participants	What a seat would mean
National minerals strategy	Priority minerals, projects, export rules	Ministries, investors, donors	Miners' federations consulted before adoption
Mining code and land allocation	Who may mine where, and on what terms	Government, licence holders	Viable ground reserved; a voice in zoning
Due diligence standards	What counts as responsible sourcing	Standard bodies, industry, NGOs	Voting places for miner organisations
Buyer sourcing policy	Accept, condition or exclude ASM material	Brands, refiners, traders	Engagement plans agreed with cooperatives
Mine-site arrangements	Access, safety rules, prices	Concession holder, state agencies	Negotiated agreements, grievance channels
Development finance	Which programmes are funded	Banks, donors, consultants	Miners help set priorities and judge results

Participation comes in degrees. Arnstein (1969) described a ladder that runs from manipulation and token consultation up to partnership and delegated power, and her point was that the lower rungs let the powerful claim that everyone was heard while nothing changes. A seat, in the sense meant here, is a place on the upper rungs: standing to propose, to object and to have the objection answered. Figure 1 relates this to the other condition that determines a miner's position, legal recognition. Much current policy aims to move miners along the horizontal axis alone, giving them formal status under rules written by others.

3. The Case from Fairness

The principled argument can be stated briefly. Decisions about critical minerals determine whether artisanal miners may keep working, where, for whom and at what price. In many mining regions ASM is the main source of cash income and supports a much larger population through trade and services (Hilson and Maconachie, 2020). A basic norm of legitimate decision-making, recognised in instruments

on public participation and in the practice of consultation with affected communities, is that those who bear the consequences of a decision should have a say in it. Industrial mining companies enjoy that say as a matter of course. The Africa Mining Vision, adopted by African heads of state, commits governments to harnessing the potential of ASM for rural development ([African Union, 2009](#)). It is hard to see how that can be done over the heads of the miners.



4. The Case from Experience

The practical argument rests on three episodes in which measures aimed at artisanal supply chains were designed without artisanal miners and did not work as intended.

The first is conflict minerals regulation. Section 1502 of the United States Dodd-Frank Act of 2010 required listed companies to report on tin, tantalum, tungsten and gold from the Democratic Republic of the Congo and its neighbours. Its purpose was to cut funding to armed groups. Its early effect in the eastern Congo was a sharp fall in legal purchases of artisanal minerals, because buyers found it simpler to leave than to verify. [Seay \(2012\)](#) documented the damage to livelihoods and argued that the law had been shaped by advocacy in Western capitals with little input from Congolese miners or traders. [Geenen \(2012\)](#) reached a similar conclusion about the accompanying push to formalise: it imposed requirements that did not fit how mining was organised on the ground.

The second episode is cobalt. Reports of child labour and dangerous conditions in artisanal cobalt mines in the Congolese Copperbelt ([Amnesty International, 2016](#)), and evidence of high metal exposure in mining communities ([Banza Lubaba Nkulu et al., 2018](#)), led many manufacturers to declare their supply chains free of artisanal cobalt. That response protected brands. It did not protect miners, who went on digging and selling into a market with fewer buyers and weaker prices. The OECD guidance on which corporate due diligence is modelled asks companies to stay engaged and to help artisanal producers improve, and treats disengagement as a last resort ([OECD, 2016](#)). In practice, as [Calvão et al. \(2021\)](#) show, responsibility has tended to be passed down the chain to those least able to carry it.

The third is formalisation more generally. For four decades donors and governments have promoted licensing schemes as the answer to informal mining, and reviews of that record are discouraging ([Hilson and McQuilken, 2014](#)). Licences are costly, slow and issued in distant capitals; the ground set aside for artisanal miners is often barren or already worked out, while the best deposits are held under industrial titles. [Siegel and Veiga \(2009\)](#) argued that formalisation succeeds only when it starts from the arrangements miners already have. Each of these failures was predictable to anyone who knew how artisanal mining works, and the people who knew were not asked.

There is a counter-example. The Minamata Convention on Mercury obliges countries with significant artisanal gold mining to prepare national action plans, and its annex calls for the involvement of stakeholders, including miners, in drawing them up (UNEP, 2013). The results are uneven, but the convention shows that an international instrument can make participation by artisanal miners a requirement and not a courtesy.

5. Objections

Four objections deserve an answer. The first is that artisanal mining is too harmful to be given a place: it employs children, kills workers in collapsing pits and pollutes rivers. The harms are real and documented, and nothing here denies them. But exclusion does not end them. The mines exist because people have few alternatives and because the ore is there, and a sector pushed out of legal markets sells to those who ask no questions. Standards on child labour and safety are more likely to be met when miners help write rules they can follow and have something to lose by breaking them (Sovacool et al., 2020).

The second objection is that there is nobody to seat. Miners are numerous, mobile and divided, and the cooperatives that claim to speak for them are sometimes vehicles for local elites (Geenen, 2012). This is a fair warning about how representation should be built, and not a reason to do without it. Federations of miners exist in several countries, women miners have their own associations, and representativeness can be tested by asking who elects the delegates and who benefits. Industry associations are imperfect representatives too, and are heard nonetheless.

The third objection comes from industrial operators, who hold legal title and argue that artisanal miners on their concessions are trespassers. Title should be respected, and so should the fact that many concessions were granted over land where people were already mining. Negotiated coexistence, in which a cooperative works a defined area under agreed safety rules and sells through a known channel, has been piloted on the Congolese Copperbelt and deserves evaluation on its merits. The fourth objection is speed: consultation takes time and supply is urgent. The record above suggests that policies made in haste without the miners take longer in the end.

6. What Should Change

For governments of producing countries, the step with the most effect is to reserve ground that is geologically worth mining for artisanal use and to decide its location with miners' organisations. National critical minerals strategies should state the role intended for ASM and should be put to those organisations in draft. Importing governments that sign minerals partnerships can ask that this be done and can fund it.

Downstream companies can replace blanket exclusion with conditional engagement: buying artisanal material from identified sites that are working towards agreed standards, and paying a price that makes compliance worthwhile. Standard setters and industry schemes can give miner organisations voting places on their governing bodies, with the travel and translation support that makes attendance possible. Researchers can help by documenting what participatory arrangements achieve, since at present the evidence consists largely of accounts of what goes wrong in their absence.

None of this works unless miners can organise. Cooperatives and federations need legal personality, modest funding that does not come only from the buyers they negotiate with, and protection from reprisal when they speak. Development agencies that finance geological mapping, traceability systems and processing plants could set aside a part of each programme for the costs of representation, and could judge programmes partly by whether miners' organisations say they were listened to. Planning should also reach the women who wash, sort and trade ore, who are counted less often than the men underground and are easily left out of bodies built around pit owners and licence holders.

7. Conclusion

Artisanal miners already have a place in critical minerals supply chains: they are at the bottom of them. What they lack is a place where those chains are designed. Giving them one is owed to people whose

work supplies the transition, and it is also the more reliable way to reach the goals that exclusion has failed to deliver, among them safer pits, children in school, cleaner water and minerals that buyers can trust. A seat does not guarantee any of this. An empty chair has been tried, and its results are known.

Conflict of interest

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