

Key points

Mineral-rich low- and middle-income countries (LMICs) are adopting strategies to promote domestic value addition, green industrialisation and economic diversification.

International economic rules constrain available options for mineral-rich LMICs to pursue industrial strategies.

States should reconsider blanket prohibitions on trade-related industrial strategy tools and adopt approaches that are supportive of industrialisation goals in mineral-rich LMICs.

Who benefits from the global rush for critical minerals is deeply connected to whether international economic rules can be reshaped for inclusive and sustainable outcomes.

Critical minerals, trade rules and industrial strategies: who benefits?

Growing demand for 'critical minerals' and geopolitical rivalries between large economies are fuelling a scramble to secure control of supply chains. To harness their mineral wealth for local development, many mineral-rich low- and middle-income countries (LMICs) are adopting strategies aimed at promoting industrialisation and economic diversification. Some of these goals align with international guidance and initiatives on promoting just energy transitions. But international treaties on trade and investment constrain policy options for industrial strategies in mineral-rich LMICs. This briefing paper unpacks these issues and highlights the need to realign international economic rules with just transition principles.

Rising global demand for critical minerals such as lithium, copper, nickel and cobalt (see Box 1) has prompted renewed hopes for economic development in mineral-rich LMICs, including least developed countries (LDCs). Entrenched trade patterns have long confined these countries to exporting unprocessed raw materials – a system that has brought, at most, modest benefits to local economies and communities, along with social and environmental harms. Many LMICs, including several LDCs, are now promoting domestic value addition to translate their mineral wealth into industrial development.

This goal aligns with the 2024 Guiding Principles on Critical Energy Transition Minerals, developed by a panel of experts convened by the United Nations Secretary-General. In addressing questions of justice at all levels – from project impacts to relations between producer and consumer countries – the principles go beyond 'do no harm' to highlight domestic value addition and fair benefit sharing.¹ The goal also aligns with

the 2025 G20 Leaders' Declaration, which affirms that critical minerals should be a "catalyst for value-addition and broad-based development, rather than just raw material exports".² Regional frameworks, such as the African Green Minerals Strategy (AGMS) and the Association of Southeast Asian Nations (ASEAN) Minerals Development Vision, affirm comparable approaches.^{3,4}

Public action for industrial development

To encourage domestic processing of critical minerals, many countries are using a range of industrial strategies. This is part of a broader trend towards greater state intervention in economic relations, evident not only in China's industrial development trajectory but also in Europe and North America since the 2008 global financial crisis: many higher-income countries are deploying industrial policy tools to address crises and pursue economic objectives.

Policy measures in mineral-rich LMICs vary widely, reflecting different contexts and political choices. For example, Indonesia requires nickel miners to ensure ore is processed locally; Namibia and Zimbabwe have banned the export of raw lithium; and the Democratic Republic of the Congo (DRC) and Zambia are establishing special economic zones on both sides of the border to develop a battery supply chain.

The effectiveness of such policies in achieving their intended goals is yet to be thoroughly evaluated, partly because many are still at an early stage of implementation. In Indonesia's nickel sector, domestic processing requirements and restrictions on exporting unrefined ore, backed by the country's substantial leverage and scale as the dominant global nickel producer, are considered to have supported the growth of a local refining industry.⁵ But comparable measures in other sectors and countries have failed to deliver similar results, and broader research is required to understand how public action can support local value addition.⁶ Further, processing activities can cause substantial social and environmental harm, including pollution and land rights violations – and carbon-intensive coal power has been a key factor in Indonesia's nickel refining boom. This complexity calls for holistically assessing policies in social, environmental and economic terms.

Industrial strategy in budget-constrained economies

In higher-income economies, industrial strategies have relied extensively on subsidies. While many governments in mineral-rich LMICs do grant tax breaks to mining companies, industrial strategies in these countries have relied particularly heavily on trade-related measures. A study of climate-related industrial policy measures found that, in 2023, subsidies featured in more than 75% of measures introduced by advanced economies (including China) but in only a third of measures adopted by emerging and developing economies.⁷

Trade-related measures include domestic processing requirements, whereby miners must process minerals locally or sell them to domestic

refiners, in full or in part; restrictions on the export of raw materials; local content requirements, which mandate companies to use goods and services produced domestically; and differential pricing arrangements, which may involve, for example, requiring mining companies to sell a percentage of their output at preferential rates to firms seeking to establish value-added operations in the country.

Use of trade-related measures in industrial strategies reflects structural constraints faced by mineral-rich LMICs and particularly LDCs, which usually operate with far less fiscal space than their higher-income counterparts. This reduces their ability to provide subsidies in order to support the domestic industry and compete at regional or global levels. Unlike subsidy programmes, trade-related measures do not require extensive public funding.⁸ This consideration is particularly pressing in countries with substantial debt burdens.

Critical minerals partnerships

Efforts to promote domestic value addition are also reflected in bilateral partnership negotiations between consumer and producer countries. These non-binding instruments establish a framework for cooperation to promote closer integration of mineral supply chains between the partners. For consumer economies such as the European Union (EU) and the United States (US), these framework partnerships form part of strategies to secure supplies of raw materials; for producer countries, securing opportunities for domestic value addition and local beneficiation is often a priority in partnership talks.

Some of the framework partnerships on critical minerals concluded by the EU refer to promoting domestic value addition and local beneficiation (for example, those with Chile, South Africa and Zambia). In fact, under the EU Critical Raw Materials Act, “whether and how a partnership could contribute to local value addition” should be a criterion for deciding with which countries the EU will negotiate partnerships.⁹

However, the wording used in such international partnerships when dealing with domestic value-addition goals is often unspecific, and it is as yet unclear whether and how even those partnerships that refer to supporting local value addition will do so in practice. This is particularly relevant considering the structural factors that make it harder for mineral-rich LMICs to develop local value addition, such as: low-cost competition from China's large-scale processing industries; the geopolitical pressures for consumer countries to develop processing capabilities domestically or in closely aligned states; and the restricted policy options resulting from international economic treaties.

Box 1. What are critical minerals?

While 'critical minerals' is often used to describe the minerals required to power the energy transition, the crossover is only partial. Critical minerals are typically defined by countries based on criteria such as economic significance and supply chain vulnerability. Economic significance may include energy transition aspects but also sectors such as defence, telecommunications, aerospace and electronics.²³ For this reason, official lists of critical minerals often include materials that are not relevant for the energy transition and at times fail to include materials that are essential for the transition.²⁴

Trade and investment agreements: constraints on policy options

Legally binding treaties on trade and investment constrain options available to policymakers to promote industrial development.¹⁰ These constraints impact in particular policy tools that, because of their more limited demands on public budgets, are popular among mineral-rich LMICs. Restrictions deriving from international trade and investment agreements include:

Bans on domestic processing requirements and export restrictions:

World Trade Organization (WTO) rules prohibit the use of quantitative restrictions on exports of goods, such as measures to restrict exports of unprocessed critical minerals.¹¹ On this basis, Indonesia's domestic processing requirements and its restrictions on the export of unprocessed nickel ore were successfully challenged by the EU in a WTO dispute.¹² Indonesia appealed the panel report but, as the WTO appellate body is not currently operational, is maintaining its measures in the interim. Many bilateral trade treaties go beyond WTO requirements, prohibiting not only quantitative export restrictions but also export duties.¹³ Some trade agreements explicitly prohibit forms of indirect export restrictions, such as export monopolies.¹⁴

Prohibitions of local content requirements:

the 1994 WTO Agreement on Trade-Related Investment Measures (TRIMs) prohibits requirements for businesses to use local goods, while the 1994 General Agreement on Trade in Services (GATS) restricts the ability of states to impose local content requirements on trade in services. Similarly, the 1994 WTO Agreement on Subsidies and Countervailing Measures (SCM Agreement) prohibits granting subsidies that are contingent upon export performance or the use of local goods.¹⁵

Bilateral and regional trade treaties often go beyond these restrictions, imposing 'TRIMs+' obligations that further constrain the ability of states to use or enforce local content requirements. Many bilateral investment treaties (BITs) also restrict or prohibit the use of performance requirements that mandate investors to purchase local goods or services, export a given level or percentage of goods or services, achieve a given level or percentage of domestic content, or transfer technology.¹⁶ Investment treaty constraints on local content are typically enforceable through investor–state dispute settlements (ISDS), a mechanism that enables investors to bring claims against states to international arbitration.

Restrictions on differential pricing: differential pricing arrangements may be deemed an indirect form of export restrictions prohibited by WTO rules and bilateral agreements. Some bilateral trade treaties affirm this explicitly. For example, in incorporating WTO rules that prohibit export restrictions, the US–Chile trade agreement affirms that this

prohibition applies to export price requirements, with some exceptions.¹⁷

Some treaties qualify the restrictions through caveats and exceptions. In prohibiting differential pricing, the EU–Chile trade agreement exempts measures to supply raw materials to local operators at preferential prices to promote local value addition. This exception is subject to conditions, including that the measures must not “adversely affect the capacity of the European Union to source raw materials from Chile”.¹⁸

Standards of treatment for foreign

investment: broad investment treaty obligations enforced through ISDS, such as those concerning investment-related market access, national treatment and fair and equitable treatment, can affect the use of wide-ranging industrial policy tools. Businesses have successfully challenged industrial policy measures in ISDS claims based on these broad obligations. This includes treatment of subsidies, export duties and tax measures. For example, two US companies prevailed in ISDS claims against Mexico that challenged a tax imposed on products containing sweeteners other than cane sugar, including high-fructose corn syrup produced by the US claimants. The tax was adopted partly to support Mexico's domestic sugar industry. The ISDS tribunal in both claims found that the tax breached applicable treaty obligations related to national treatment, fair and equitable treatment and prohibition on use of performance requirements.¹⁹

The need for reform

In mineral-rich LMICs and LDCs, there is a strong interest in and need to move up the value chain and mobilise their mineral wealth for national development and prosperity. Policymakers and communities are mindful of the failures of the past, which have locked such countries primarily into raw material exporter roles. There is a strong sense that things must be done differently now, with more deliberate state action guiding economic transformation, in a changed global context where high-income economies are

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themselves openly embracing extensive forms of state intervention.

While some partnership agreements refer to supporting local value addition and economic diversification in mineral-rich LMICs, including LDCs, the binding rules of international trade and investment treaties place substantial constraints on countries' industrial policies. Some treaty provisions restrict the very measures that mineral-rich LMICs are most likely to rely on to facilitate domestic processing, encourage exports of processed goods rather than raw materials, maximise positive linkages with local businesses and promote technological innovation and knowledge sharing.

Policy debates about the effectiveness of any given measure – such as domestic processing or local content requirements, or differential pricing arrangements – should be grounded in empirical evidence on what works and under what conditions. But the cumulative effect of such treaty provisions is to significantly restrict options available to policymakers, compounding structural constraints that may derive from limited fiscal space or the modes of a country's integration in the global economy.

Some large economies increasingly deviate from established trade rules, leveraging their economic strength to take unilateral actions or impose bilateral deals. Indonesia's nickel export controls show rising assertiveness among some LMICs too. Yet Indonesia's large internal market and its commanding share of the global nickel supply give it leverage that many LMICs, especially LDCs, do not necessarily have when acting alone. For these countries, it may be harder to adopt and sustain measures in breach of economic treaties, particularly in the face of expensive investor claims or unilateral countermeasures from large economies.

It does not have to be this way. Some recent trade and investment treaties show how these treaties can support, rather than constrain, local value addition policies. The 2023 Investment

Protocol to the Agreement Establishing the African Continental Free Trade Area (AfCFTA) – a regional treaty applicable among African countries – encourages states to introduce measures that “promote domestic development including local content”.²⁰ It also qualifies investment protection standards, for example enabling states to grant preferential treatment to local firms in order to achieve national development objectives or address the “internal needs” of disadvantaged groups.²¹ This approach resonates with the AGMS, which calls for green industrialisation through local beneficiation.²²

Who will benefit from the current rush for critical minerals is deeply connected to international economic law and whether relevant rules can be reshaped for inclusive and sustainable outcomes. The climate challenge and international efforts to promote just energy transitions, including through local beneficiation and value addition, call for renewed action to develop tailored trade and investment frameworks that safeguard adequate policy space for mineral-rich LMICs, particularly LDCs, to harness their mineral wealth for industrial development. These are key questions for mineral-rich LMICs but also for high-income countries concerned about critical minerals security: for partnerships to be meaningful and realise long-term sustainability of supply chains, they must be just in law and in practice.

Ongoing discussions about WTO reform and flexibilities, about critical minerals, trade and economic security, about reform of the investment treaty system, and about just transitions and the links between trade and climate change in multilateral climate talks could all provide policy entry points for exploring concrete responses to these questions.

Lorenzo Cotula, Jesse Coleman and Lindlyn Moma

Lorenzo Cotula, head of law, economics and justice, IIED; Jesse Coleman, managing director, Change Collective; Lindlyn Moma, director of strategic impact, IIED. The authors would like to thank Binyam Gebreyes, Sunayana Sasmal and Rachel Thrasher for their helpful comments.



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Contact

Lorenzo Cotula
lorenzo.cotula@iied.org

44 Southampton Buildings
London, WC2A 1AP
United Kingdom

Tel: +44 (0)20 3463 7399
www.iied.org

IIED welcomes feedback
via: www.linkedin.com/company/iied

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To find out more about our work on critical minerals, see www.iied.org/critical-minerals-just-energy-transition-opportunities-challenges

Notes

¹ See Principle 4 in UN Secretary-General's Panel on Critical Energy Transition Minerals (2024) Resourcing the energy transition: principles to guide critical energy transition minerals toward equity and justice. / ² G20 South Africa 2025 (2025) G20 South Africa Summit: leaders' declaration. / ³ African Union (2024) Africa's Green Minerals Strategy: African Union's mineral resources strategy for the just transition and decarbonising future. / ⁴ ASEAN (2025) ASEAN Minerals Development Vision. / ⁵ IRENA (2023) The geopolitics of the energy transition: critical minerals. / ⁶ SARW (2025) Definition and exploration of critical energy transition minerals value addition by commodity chains; Karkare, P and Medinilla, A (2023) Green industrialisation: leveraging critical raw materials for an African battery value chain. ECDPM. / ⁷ Thrasher, R et al. (2025) Climate-related industrial policies: opportunities and obstacles in the global trade and investment regime. Boston University GDP Center. / ⁸ Sasmal, S (2025) Between a rock and a hard place: critical minerals, export restrictions and WTO law after the Indonesia dispute, *Journal of World Trade*, 59(6). / ⁹ EU Critical Raw Materials Act (2024) Art. 37(1)(c)(iv). / ¹⁰ Cotula, L (2025) “Green developmentalism” and the role of international law in negotiating the energy transition, *Global Policy*, doi:10.1111/1758-5899.70043. / ¹¹ General Agreement on Tariffs and Trade (1947) Art. XI. / ¹² Indonesia – Measures relating to raw materials. WT/DS592/R (2022) / ¹³ For example, see Art. 26 of the 2016 Economic Partnership Agreement (EPA) between the EU and Southern African Development Community (SADC) EPA States (Botswana, Eswatini, Lesotho, Mozambique, Namibia, South Africa). The provision includes some flexibility for introducing export duties or taxes. / ¹⁴ Interim Agreement on Trade (ITA) between the EU and the Republic of Chile (2023) Art. 8.4. / ¹⁵ On WTO and investment treaty constraints on local content generally, see Johnson, L (2016) Space for local content policies and strategies: a crucial time to revisit an old debate. GIZ. / ¹⁶ For example, see: Canada–Guinea BIT (2015), Art. 9; Burkina Faso–Canada BIT (2015) Art. 9; Angola–China BIT (2023) Art. 9; Angola–Japan BIT (2023) Art. 6. / ¹⁷ US–Chile Free Trade Agreement (2003) Art. 3.11.2(a). / ¹⁸ EU – Chile ITA (2023) Art. 8.5 and Annex II to Ch. 8 of the treaty. / ¹⁹ ADM v. Mexico, ICSID Case No. ARB(AF)/04/05, Award, 2007; Cargill v. Mexico, ICSID Case No. ARB(AF)/05/02, Award, 2009. / ²⁰ AfCFTA Protocol on Investment (2023) Art. 28. / ²¹ See note 20. Art. 13(2). / ²² See note 3. / ²³ Cotula, L (2024) ‘Critical minerals’: international economic law in a global resource rush, *Trade, Law and Development*, 15(2). doi:10.2139/ssrn.4851505. / ²⁴ Franks, D et al. (2025) How the rush for critical minerals is neglecting human needs, *Nature*, 4 November.

