

STRATEGIC INDUSTRIAL PARTNERSHIPS FOR INCLUSIVE, RESILIENT ENERGY TRANSITIONS AND SUSTAINABLE MINERAL VALUE CHAINS

Beatriz Mattos, Plataforma CIPÓ
Anna Pérez Català, IDDRI
Gaylor Montmasson-Clair, Southern
Transitions

WORKSTREAM 2

2026

T20
U.S.

An informal engagement
of global think tanks

Strategic Industrial Partnerships for Inclusive, Resilient Energy Transitions and Sustainable Mineral Value Chains

Beatriz Mattos, *Plataforma CIPÓ*

Anna Pérez Català, *IDDRI*

Gaylor Montmasson-Clair, *Southern Transitions*

Abstract

Growing demand for renewable energy, minerals, and new technologies is reshaping production, trade, and investment patterns across the global economy. These trends are creating new opportunities for industrial development, value addition, and job creation as countries seek to enhance energy security, strengthen supply chain resilience, and promote long-term socio-economic development. These opportunities would be enhanced by greater cooperation between producing and consuming economies to mobilize investment, build industrial capabilities, strengthen workforce skills, and support value creation across energy and mineral value chains.

In recent years, the G20 has advanced important initiatives to strengthen resilient, development-oriented energy systems and support industrial development, including the Principles for Just and Inclusive Energy Transitions and the Critical Minerals Framework. At the same time, discussions within the United Nations Framework Convention on Climate Change (UNFCCC), including under the Just Transition Work Programme (JTWP) and the recent initiatives on trade and climate, have increasingly highlighted the importance of aligning energy sustainability with industrial development, job creation, and broader socio-economic objectives.

The G20 has a key role to play in promoting strategic industrial partnerships that strengthen the resilience of energy and mineral value chains while expanding industrial capacity and increasing value creation across mineral-rich, low- and middle-income countries. This policy brief builds on existing G20 initiatives and complementary multilateral processes to provide recommendations on strengthening policy coordination, expanding technology cooperation, enhancing workforce and institutional capacities, and supporting mutually beneficial industrial partnerships. In doing so, it makes explicit the link between building inclusive mineral value chains and achieving energy sustainability and explores how the G20 can draw lessons from, and contribute to, ongoing UNFCCC discussions in the lead-up to COP32.

1. Structural Asymmetries and Cooperation Gaps Hindering Inclusive and Resilient Energy Transition Value Chains

The rapid expansion of renewable energy technologies and growing demand for strategic minerals are reshaping global patterns of production, trade, and investment. As governments seek to strengthen energy security, diversify supply chains, and build competitive green industries, new opportunities emerge for industrial development, value addition, and job creation. Yet these opportunities remain unevenly distributed. Without coordinated efforts to mobilize investment, build technological and workforce capabilities, and support industrial upgrading, many low- and middle-income countries risk remaining confined to lower-value segments of energy and mineral value chains, while higher-value activities remain concentrated in industrialized economies.

Low-carbon innovation generates spillovers that can be up to 40% greater than those of conventional technologies in the energy and transport sectors, creating opportunities for broad socioeconomic benefits (Dechezleprêtre et al., 2013, as cited in Lebdioui, 2024, p. 21). However, these gains remain highly concentrated. Four G20 members (China, the United States, Japan, and Germany) account for approximately three-quarters of global renewable energy patents (Lebdioui, 2024, p. 21).

Meanwhile, the cost of capital for renewable energy and battery projects in many developing countries, where much of the resource base for the energy transition is located, remains at least twice as high as in developed economies (IEA, 2025a). At the same time, the extraction of transition minerals can generate significant social and environmental risks, including ecosystem degradation, land-use conflicts, displacement, human rights violations, and unequal distribution of benefits. Ensuring that energy transitions contribute to sustainable development therefore requires governance approaches that integrate industrial, economic, social, environmental, and human rights considerations, supported by meaningful participation and accountability.

Realizing the development potential of the energy transition requires a different model of international cooperation. Efforts undertaken by the G20 and other multilateral spaces, such as the United Nations Framework Convention on Climate Change (UNFCCC), remain insufficiently coordinated. This fragmentation constrains the ability of low- and middle-income countries to capture greater value from energy transitions and translate resource endowments into inclusive and sustainable development outcomes. Strengthening coherence across these processes is therefore essential to broaden the distribution of transition benefits while reducing associated risks, costs, and negative externalities.

1.1 The G20's Emerging Framework for Inclusive and Sustainable Industrial Transformation

The G20 is uniquely positioned to advance cooperation on industrial development for energy transitions. It brings together major energy producers and consumers, mineral-rich countries, and leaders in transition technologies. Recent G20 initiatives increasingly recognize the

interconnections between energy transitions, industrial development, and mineral governance. In 2025, the South African Presidency established the Task Force on Inclusive Economic Growth, Industrialisation, Employment and Reduced Inequality, bringing together ministers responsible for foreign affairs, development, and finance (G20, 2025). The Task Force produced three key outcomes that can together provide the foundation of a coherent agenda linking energy transitions with industrial development and value creation: the G20 Principles for Inclusive Economic Growth, Employment and Reduced Inequality; the G20 High-Level Principles on Sustainable Industrial Policy for Inclusive Economic Growth, Industrialisation, Jobs and Equality; and the G20 Critical Minerals Framework.

Building on the G20 Principles for Just and Inclusive Energy Transitions adopted under Brazil's 2024 Presidency, the G20 Principles for Inclusive Economic Growth, Employment and Reduced Inequality reaffirm the link between growth, employment, equality, and sustainability, emphasizing that economic transformation should deliver sustainable and equitable outcomes. Principle 9, for instance, highlights the role of coordinated industrial policies in fostering inclusive transformation by strengthening productive capacity, addressing market failures, and promoting innovation and competitiveness (G20, 2025b).

This emphasis is reinforced by the 2025 G20 High-Level Principles on Sustainable Industrial Policy for Inclusive Economic Growth, Industrialisation, Jobs and Equality, which recognize the urgency of inclusive and sustainable industrial policies. Notably, Principle 11 underscores the need to promote sustainable, diversified, and resilient value chains that support industrial development while reflecting the needs and vulnerabilities of developing countries. The Principles also call for expanded policy space (Principle 4) and a “break from patterns of economic and technological dependency” (Principle 10), signaling recognition of the need for new development pathways (G20, 2025c).

Within the same Task Force efforts, the South African Presidency also spearheaded negotiations on the G20 Critical Minerals Framework, conceived as a foundation for a “just, inclusive, and sustainable global minerals diplomacy” (G20, 2025a, p. 14). Structured around six interrelated pillars, it calls for expanded geological exploration in producer countries, stronger governance and transparency, investment for local value addition, diversified value chains based on open and non-discriminatory trade, innovation and circularity, and expanded skills and knowledge exchange (G20, 2025a).

The Framework differs from most existing approaches to mineral cooperation, both in terms of its focus on addressing the distribution of value and the structure of the cooperation itself. It is an attempt to use international cooperation as a lever for just transitions, to address the structural inequalities and inequities embedded in mineral value chains, and to help level the playing field by explicitly uplifting and empowering mineral-producing countries in the Global South (Hermanus et al., 2025; 2026). In this respect, the Framework departs starkly from the G7’s focus on “securing supply chains for critical minerals” (G7, 2026).

Although the Framework remains voluntary, non-binding, and without a dedicated implementation architecture, it represents an important step towards bridging the interests of

producing and consuming economies. It also advances priorities reflected in national and regional initiatives, including the African Green Minerals Strategy. To realize its potential, implementation efforts should promote not only local value addition and industrial development, but also strong environmental safeguards, respect for human, labor, and Indigenous Peoples' rights, and equitable benefit-sharing. Identifying practical vehicles for implementation is therefore the critical next step.

1.2 Strengthening Multilateral Coherence: Lessons from the UNFCCC Just Transition and Trade Processes

Similar debates are increasingly emerging beyond the G20 and have begun to translate into concrete outcomes within multilateral processes. At UNFCCC COP30 in 2025, Parties adopted a decision under the Just Transition Work Programme (JTWP) that advances a rights-based, inclusive, and people-centered approach to just transitions. The decision emphasizes development-oriented, whole-of-economy approaches, social protection and participation, energy access and affordability, and the protection of human rights, environmental rights, and the rights of Indigenous Peoples and local communities. In doing so, it builds on and extends the principles advanced by the G20, contributing to an emerging multilateral framework for just transitions. The decision also recognizes the need to address financial and technical constraints faced by developing countries and highlights the importance of international cooperation, finance, and access to context-appropriate technologies to accelerate transitions and maximize employment opportunities (UNFCCC, 2025).

The COP30 decision further mandated the establishment of a Just Transition Mechanism expected to “enhance international cooperation, technical assistance, capacity building, and knowledge sharing” (UNFCCC, 2025, paragraph 25) and to be implemented in a manner that builds on and complements existing initiatives. If effectively designed, the mechanism could help address persistent implementation barriers faced by developing countries by improving access to finance, technology, technical assistance, and capacity-building. It could also strengthen coordination among just transition initiatives across countries and international forums, including the G20.

Alongside these developments, the Integrated Forum on Climate Change and Trade (IFCCT) has emerged as a complementary platform for dialogue at the intersection of climate and trade policy. The Forum seeks to bridge climate and trade policy communities through practical, solution-oriented dialogue that advances a more sustainable global trading system while supporting ambitious climate action and inclusive development (IFCCT, 2026). By providing an informal space for governments and experts to explore areas of convergence outside formal negotiating processes, the IFCCT could contribute to greater policy coherence and help identify pathways to align climate objectives with industrial development, value addition, and sustainable trade.

However, efforts undertaken by the G20 and in other multilateral spaces, such as the UNFCCC and the IFCCT, remain highly fragmented. This fragmentation risks undermining

the resilience of energy transitions, as the concentration of technological expertise, capital, processing capacity, and higher-value activities in a small number of economies can heighten vulnerabilities to supply interruptions, financing constraints, price fluctuations, and geopolitical or regulatory shocks.

Resilience should therefore be understood not only as securing access to minerals and technologies, but also as building diversified, adaptable, and socially sustainable energy and mineral value chains. Strengthening productive, technological, workforce, and institutional capabilities in mineral-producing countries, while ensuring environmental protection, respect for human rights, and meaningful participation, can broaden the geographic and economic foundations of the transition and reinforce its long-term legitimacy and durability. Greater coherence across international processes is therefore essential both to distribute the benefits of the transition more equitably and to strengthen the reliability and resilience of the global energy transition itself.

2. Policy Recommendations

Addressing the structural asymmetries, financing and implementation gaps, and fragmented international cooperation identified above requires action at three mutually reinforcing levels. The recommendations below combine stronger G20 policy coordination, practical investment partnerships and model agreements to translate principles into implementation, and closer alignment between the G20 and broader multilateral processes.

Together, these measures can mobilize investment, expand local value addition and industrial capacity, strengthen technological, workforce, and institutional capabilities, and support more equitable, socially inclusive and environmentally responsible mineral value chains. By diversifying sources of supply and production, broadening the geographic distribution of technological and industrial capabilities, and strengthening countries' capacity to adapt to external shocks, they can also help countries enhance energy security, build more resilient energy systems, and better anticipate and navigate disruptions to energy and mineral supplies.

Strengthen Coordination on Green Industrial Policies, Inclusive Energy Transitions, and Mineral Value Chains through a G20 Platform on Sustainable Industrialization

The G20 should establish a coordination platform that builds on the G20 Principles for Just and Inclusive Energy Transitions and the work of South Africa's Task Force 1. By bringing together the Sherpa and Finance Tracks, the mechanism could support continuity across presidencies and strengthen coordination on industrial development strategies that advance resilient, rights-based and sustainable energy transition value chains.

Rather than pursuing policy harmonization, the platform should facilitate coordination on industrial policy and identify complementarities across national and regional strategies. It should also support the development of policy tools for resilient and inclusive value chains,

while recognizing different national circumstances and preserving policy space for developing countries, consistent with the G20 High-Level Principles on Sustainable Industrial Policy for Inclusive Economic Growth, Industrialisation, Jobs and Equality (G20, 2025c). Particular attention should be given to policies that support industrial capabilities, value addition and value creation, workforce skills, human rights, and technology cooperation, building on the High-Level Principles' emphasis on capacity building, innovation, and resilient value chains.

Consistent with the recommendations of the 2024 Independent Report of the G20 TF-CLIMA Group of Experts (G20, 2024a), the platform should promote whole-of-government approaches to industrial strategy, facilitate green technology partnerships and knowledge transfer agreements, support the development of green manufacturing capacity in low- and middle-income countries, and strengthen coordination between ministries responsible for industry, mineral resources, energy, trade, finance, and climate policy. The platform could also facilitate exchange on social and environmental safeguards for energy transition value chains, including stakeholder participation, community benefit-sharing, labor standards, social protection measures, biodiversity protection, environmental impact assessment, and responsible mineral governance.

Better coordination within and across governments would help translate existing G20 commitments, including the Principles for Just and Inclusive Energy Transitions and Critical Minerals Framework, into practical cooperation that strengthens the resilience of energy and mineral value chains, expands industrial capacity, and avoids new forms of economic and technological dependency.

Develop Lighthouse Investments and Model Agreements for Inclusive and Resilient Mineral Value Chains Supporting Just Transitions and Green Industrialization

Operationalizing the G20 Principles for Just and Inclusive Energy Transitions and the Critical Minerals Framework starts with proving that inclusive and resilient value chains are feasible. To do so, and to answer the political calls for increased on-the-ground investment aligned to the ambition of mutually beneficial, inclusive partnerships, the G20 should champion a small number of 'lighthouse,' high-visibility investment pilots that demonstrate commercially viable and socially responsible mineral value chains (Think7, 2026).

These projects should focus on value addition (such as downstream processing and manufacturing) in mineral-producing countries and serve as proof of concept for alternative governance and financing models. Priority should go to projects that align with existing regional and national strategies, such as the African Green Minerals Strategy, and incorporate monitoring and reporting mechanisms to assess social, environmental, and economic outcomes throughout their lifecycle, thereby building on established political momentum and local ownership.

Such investment should leverage a range of instruments, mobilizing a coordinated development finance platform across consuming and producing countries, to provide blended

finance, political risk guarantees, and technical assistance. Establishing systemic risk-sharing vehicles that cover non-commercial risks (policy shifts, currency volatility, lack of local currency financing) at a sector level should complement the initiative to lower the cost of capital.

By concentrating resources on a limited number of scalable pilots, the G20 can reduce perceived investment risks, set benchmarks for social and environmental standards, and demonstrate that inclusive value creation is compatible with secure and competitive supply chains. These projects should apply existing sustainability standards and explicitly price in social dividends as part of the primary return-on-investment calculation.

In addition, to ensure such projects can be emulated and replicated across minerals and geographies, they should be embedded in mutually beneficial trade and investment agreements between supply and demand centers. The G20 should spearhead such developments by formulating principles, model clauses, and template agreements that meet the interests of both mineral-producing and consuming countries and further inclusive, just-transition-aligned trade and investment arrangements.

Strengthen Complementarity Between G20 Initiatives and Broader Multilateral Processes

The G20 should seek greater complementarity between its work on industrial development, energy transitions and critical minerals, and relevant discussions under the UNFCCC and other multilateral fora. While the G20 cannot substitute for formal multilateral, plurilateral, or bilateral negotiation processes, it can help build political convergence and advance cooperation where common ground is possible.

Given current geopolitical divisions, efforts to strengthen coherence should focus on practical areas where broad consensus remains achievable. These include promoting investment in energy transition value chains, facilitating technology partnerships, supporting workforce development and strengthening institutional capacities in developing countries.

In this context, the G20 can call on multilateral banks, including the World Bank and its partners, to play a complementary role in translating areas of convergence into concrete means of implementation, consistent with their respective mandates, country priorities and governance frameworks. For the World Bank, this could include leveraging its financing, technical assistance and advisory instruments to help countries address the enabling conditions for green industrialization, including infrastructure, skills, institutional capacity, investment frameworks, and access to technology and finance.

The G20 can also provide political visibility to emerging discussions under the JTWP and within the IFCCT, while drawing lessons from these processes to inform its own work on sustainable industrial development and critical minerals. Greater coherence should also facilitate exchange across climate, industrial, labor, social development, and environmental policy communities, helping to align industrialization strategies with social inclusion, biodiversity conservation, climate resilience, and human rights objectives.

In the context of COP31, the 2026 Global Climate Action Agenda places particular emphasis on the energy, industry, and transport transitions (UNFCCC, 2026). With COP32 scheduled to take place in Ethiopia, these issues may gain further prominence in the multilateral climate process. This creates an opportunity for the G20 to bring lessons from its work on sustainable industrial policy into the broader climate agenda and to deepen alignment between G20 initiatives and multilateral climate processes.

Reference List

- Dechezleprêtre, A., Martin, R., and Mohnen, M. (2013). *Knowledge spillovers from clean and dirty technologies*. Grantham Research Institute on Climate Change and the Environment, Working Paper No. 135.
- G7. (2026). G7 leaders' declaration on securing supply chains for critical minerals. Available at:
<https://www.elysee.fr/en/G7evian/2026/06/17/g7-leaders-declaration-on-securing-supply-chains-for-critical-minerals>
- G20. (2024a). A Green and Just Planet. Independent Report of the G20 TF-CLIMA Group of Experts. Available at:
https://cebrapsustentabilidade.org/assets/files/AF3_tf-clima_report-g20_en_digital.pdf
- G20. (2024b). *Principles for Just and Inclusive Energy Transitions*. Foz do Iguaçu, October 2024. Available at: <https://www.g20.utoronto.ca/2024/241004-energy-principles.html>
- G20. (2025a). *G20 Critical Minerals Framework (G20 Task Force One: Deliverable 3)*. Available at:
<https://www.g20.org.za/wp-content/uploads/2025/04/G20-TF1-FINAL-Deliverable-3-G20-Critical-Minerals-Framework.pdf>
- G20. (2025b). G20 Principles for Inclusive Economic Growth, Employment and Reduced Inequality (G20 Task Force One: Deliverable 1). Available at:
<https://www.g20.org.za/wp-content/uploads/2025/04/G20-TF1-FINAL-Deliverable-1-G20-Principles-for-Inclusive-Economic-Growth-Employment-and-Reduced-Inequality.pdf>
- G20. (2025c). G20 Voluntary and Non-Binding High-Level Principles on Sustainable Industrial Policy for Inclusive Economic Growth, Industrialisation, Jobs and Equality (G20 Task Force One: Deliverable 2). Available at:
<https://www.g20.org.za/wp-content/uploads/2025/04/G20-TF1-FINAL-Deliverable-2-G20-High-Level-Principles-on-Sustainable-Industrial-Policy.pdf>
- Hermanus, L., Dane, A., Ayala, A., Montmasson-Clair, G. and Khanna, M. (2026). Advancing whole-of-economy, whole-of-society approaches to just transitions. Southern Transitions, Cape Town. Available at:
<https://www.southerntransitions.org/s/Advancing-Whole-of-Economy.pdf>
- Hermanus, L., Dane, A., Ayala, A., Montmasson-Clair, G., Govindsamy, L., and Khanna, M. (2025). Characterising Whole-of-Economy, Whole-of-Society Just Transitions Across Economic and Social Systems, and Identifying Levers for Operationalisation, in Motshwanedi, S. and Kekana, M. (eds.) *Sherpa Track Technical Papers: Environment*

and Climate Sustainability Working Group. South Africa G20 Presidency, pp. 356-386. Available at:
https://www.southerntransitions.org/s/ecswg_g20technicalpapers_october2025.pdf

IEA. (2025a). Cost of capital expectations for 2025 diverge amid rising uncertainty, IEA, Paris. Available at:
<https://www.iea.org/commentaries/cost-of-capital-expectations-for-2025-diverge-amid-rising-uncertainty>

IEA. (2025b). World Energy Outlook 2025. IEA, Paris. Available at:
<https://www.iea.org/reports/world-energy-outlook-2025>

IFCCT. (2026). The IFCCT Roadmap: From Concept to Solution Building, Available at:
<https://ifcct-website.files.svdcdn.com/production/generic/IFCCT-Roadmap-March-25-2026.pdf?dm=1774457875>

Lebdioui, A. (2024). Survival of the greenest: Economic transformation in a climate-conscious world. Cambridge University Press.

Mattos, B., Pérez Català, A., Torres Gunfaus, M., Dane, A., Hermanus, L., and Khanna, M. (2025). From Principles to Action: Strengthening the G20 Approach to Just and Inclusive Energy Transitions. T20. Available at:
<https://t20southafrica.org/publications/from-principles-to-action/>

Think7. (2026). Solutions Paper. Task Force on Secure, Responsible and Equitable Critical Minerals Value Chains. Available at:
https://www.iddri.org/sites/default/files/PDF/Publications/Hors%20catalogue%20Idrri/T7-Taskforce-Critical-Minerals-Solutions%20Paper_0.pdf

UNFCCC. (2025). *Decision 2/CMA.7: United Arab Emirates just transition work programme*. Available at: <https://unfccc.int/documents/655048>

UNFCCC. (2026). *Work Programme for the Climate High-Level Champions and the Marrakech Partnership for Global Climate Action for 2026*. United Nations Framework Convention on Climate Change. Available at:
https://unfccc.int/sites/default/files/resource/2026_CHLCs_MP_WorkProgramme.pdf