

Resilient supply chains for the energy transition

Issues for the G20

Briefing
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Key findings and recommendations

This policy brief highlights four key areas where the G20 could focus its attention in order to better coordinate policy actions to **strengthen the resilience of renewable energy supply chains:**

1. Increase the effectiveness of diversification strategies;
2. Enhance market transparency;
3. Support collaborative innovation; and
4. Support sustainable financing for resilient supply chains.

Executive summary

Efforts by the global community towards net zero emissions have been increasing since the signing of the Paris Agreement in 2015. However, progress towards this goal is slow and actual pledges and commitments are falling well short of what is required to keep global temperature rise below 1.5°C by 2050. Achieving net zero emissions at the global level will require a massive deployment of renewable energy technologies and products and resilient supply chains are absolutely essential for this transition.

Increasing demand for critical minerals that are central to renewable energy, such as the rare earth elements, copper, cobalt, nickel and lithium, has focused the minds of policymakers and business, driven by the lingering economic effects of the pandemic and the Russian invasion of Ukraine. Geopolitical interest in renewable energy supply chains has never been higher.

As a key forum for the world's major economies, the G20 can play a central role in promoting cooperation, coordination and collaboration on policies surrounding the resilience of renewable energy supply chains. It has already taken some steps in this direction with the adoption of the Bali Energy Transitions Roadmap under the Indonesian G20 Presidency in 2022, with a wide range of actions identified (including in relation to supply chain resilience). However, these actions are not prioritized, remain voluntary, and their pursuit lies in the hands of successive G20 Presidencies. The lack of a focused effort in the G20 to address priority issues that affect supply chain resilience will hamper the drive towards the energy transition.

This policy brief highlights four key areas where the G20 could focus its attention in order to better coordinate policy actions to strengthen the resilience of renewable energy supply chains:

- Increase the effectiveness of diversification strategies;
- Enhance market transparency;
- Support collaborative innovation; and
- Support sustainable financing for resilient supply chains.

A major overall challenge faced by the G20 in pursuing policy coordination in this area is that the issue of renewable energy supply chains cuts across many policy fields - climate, energy, environment, trade, development, innovation and finance. Despite efforts to work in a multi-disciplinary fashion, the G20 still faces constraints in this regard. It is imperative that the G20 double down on efforts to collaborate across policy silos to ensure an integrated and cohesive approach.

Abbreviations

NDC	Nationally Determined Contribution
UNEP	United Nations Environment Program
IEA	International Energy Agency
UNFCCC	United Nations Framework Convention on Climate Change
OECD	Organisation for Economic Co-operation and Development
ESG	Environment/social/governance
Mt	Megaton (1,000,000 tons)
PV	Photovoltaic

Renewable energy supply chain pressures and tensions

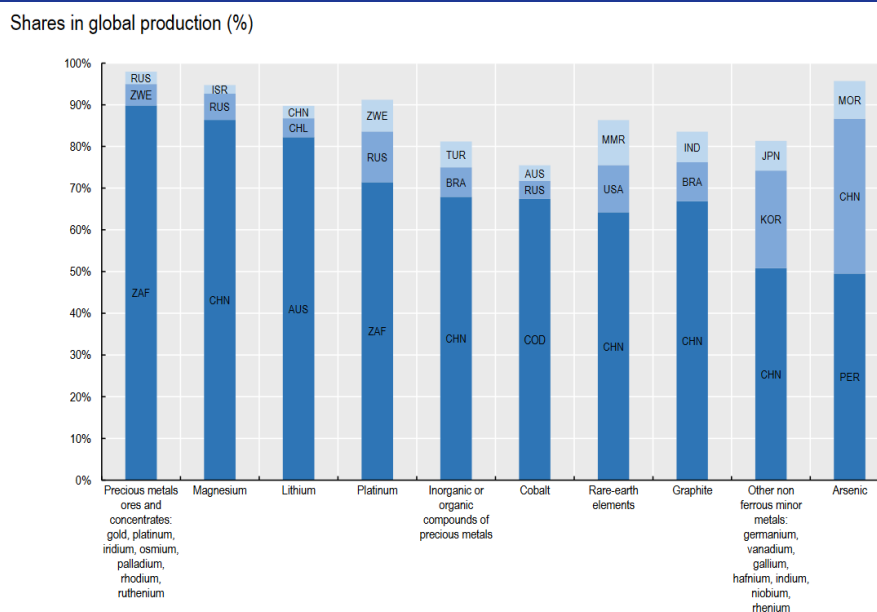
The push towards net zero emissions has been accelerating since the signing of the Paris Agreement in 2015. According to the UN, more than 70 countries have now set a net zero target, covering around 76% of global CO₂ emissions (UN 2023). This is accompanied by commitments to net zero from more than 3000 businesses and financial institutions and over 1000 cities. However, while the strong global commitment to a energy transition is very promising, the actual pledges and commitments fall well short of what is required to keep global temperature rise below 1.5°C by 2050. According to the most recent UNEP (2022) emission gap report, updates of countries' Nationally Determined Contributions (NDCs) under the Paris Agreement have not met expectations and would result in year 2030 emissions that are roughly at today's level, which would put the planet on pathway corresponding to about 2.5°C to 3°C of global warming by the end of the century.

Achieving net zero emissions at the global level will require a massive deployment of renewable energy technologies, increased energy efficiency, and a phase out of unabated fossil fuel use. Recent years have seen significant cost-reductions and accelerated deployment of wind, solar PV, and electric vehicles. Decarbonizing the global economy will require a rapid acceleration and strengthening of the global supply chains for the respective energy technologies.

The resilience of these supply chains faces several significant challenges. The Russian invasion of Ukraine came hard on the heels of the trade and production disruptions stemming from the COVID pandemic and the subsequent trend towards re-shoring and “friend-shoring” to shorten and strengthen supply chains. At the same time, there is a general consensus that broader concerns over energy security can be addressed through the increased penetration and adoption of renewable energy as a means of reducing the dependence on foreign sources of fossil fuels.

Demand for the critical materials required for renewable energy products and infrastructure, such as the rare earth elements, copper, cobalt, nickel and lithium, is increasing rapidly and is projected to further increase in the coming years (IEA 2023). This is posing particular geopolitical concerns and is changing the energy security calculus. A large proportion of the production of these critical materials is in a handful of countries, as shown in Figure 1. This is a particular challenge as a number of these countries is characterized by unstable regimes or monopolistic behaviour, increasing the risk of insecurity in the supply chains.

Figure 1: Top 3 producers of the top 10 most production-concentrated critical raw materials.



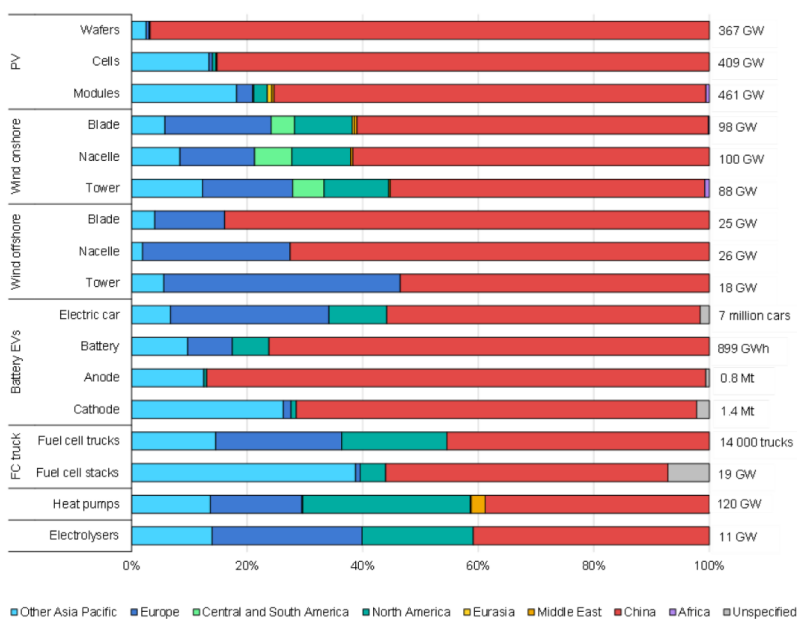
Source: OECD (2023)

In addition, there is a risk of replacing one dependency (on foreign energy supplies) with another dependency based around foreign sources of critical minerals and energy technologies. For instance, as depicted in Figure 2, China has a market share of more than 90% for PV wafers, and accounts for about 70% of the batteries produced for electric vehicles. Complex manufacturing processes, inadequate infrastructure, and lengthy lead times can also create bottlenecks for critical materials and can hinder the rapid scaling and distribution of energy components that are crucial for decarbonization. This is of particular relevance that renewable energy technologies have been more exposed to trade conflicts than conventional energy technologies (Apergi et al. 2023).

Enhancing the resilience of renewable energy supply chains so that they are able to withstand and recover from disruptions or shocks is essential to ensure the continuity and stability of the flow of renewable energy technologies and a smooth and sustainable energy transition. Addressing these supply chain issues necessitates diversification of raw material sources, investment in domestic manufacturing capabilities, and enhanced coordination among stakeholders to ensure that supply chains are as efficient as possible. It involves diversifying suppliers, maintaining buffer stocks, implementing robust risk management strategies, and enhancing coordination among stakeholders. It also requires that much greater attention be paid to circular economy approaches to “flatten the curve” of demand for primary metals in the consuming countries (Systemiq 2022).

Over the last two years, much has been written about the challenges of ensuring a resilient renewable energy supply chain. This has mostly focused around the issue of critical minerals and materials (see, for example, IEA 2021, 2023; OECD 2023; Systemiq 2022). Drawing on this literature, the purpose in this policy brief is to distill an agenda of policy actions that the G20 can undertake to enhance the resilience of renewable energy supply chains. The recommendations in the paper focus on diversification, market transparency, innovation, and finance and are intended to help inform the upcoming meetings of the G20 Energy and Climate Ministers in July 2023 and discussions beyond these meetings.

Figure 2: Regional shares of manufacturing capacity for selected renewable energy technologies and components.



IEA. CC BY 4.0.

Notes: FC = fuel cell. Heat pumps capacity refers to thermal output.
Sources: IEA analysis based on InfoLink (2022); BNEF (2022); BNEF (2021b); Benchmark Mineral Intelligence (2022); GRV (2022); UN (2022a); Wood Mackenzie (2022).

Source: IEA (2013)

G20 and renewable energy supply chains

Since 2015, the G20 has consistently reaffirmed its collective commitment to the targets of the Paris Agreement to keep global warming to ‘well below 2°C’ relative to pre-industrial temperatures and undertake efforts to limit the increase of the global mean temperature to 1.5°C (G20 2022). As its Member States currently account for roughly 70% of global emissions, the G20 play a crucial role in global efforts to mitigate climate change. The issue of CO₂ emission reduction has been an increasingly major focus for the G20 since the Paris Agreement. Much of this discussion has been around increasing ambition, coordination of mitigation actions, fossil fuel subsidy reform, technology and innovation, and climate-related finance. Concerns over the renewable energy supply change did not feature in the climate and energy meetings of the G20. For example, the importance of renewable energy supply chains received only a passing mention in the Rome Leaders’ Declaration in 2021 (G20 2021).

In 2022, the issue of energy supply chains moved to a much more central position on the G20’s climate and energy agenda. Under the Indonesian G20 Presidency that year, the Energy Transitions Ministers’ Meeting committed to pushing towards “future-proof and secure energy systems capable to withstand shocks and uncertainty, by strengthening supply chains including critical minerals and materials” and enhance resilience (G20 2022b). This was largely a response to the energy price hikes experienced in 2022 as a result of the Russian invasion of Ukraine. It was also a response to rising concerns over the availability of critical raw materials for renewable energy technologies.

The G20 Ministers also adopted the Bali Compact, which laid out a set of “inclusive voluntary principles” for G20 members to ensure smooth and effective transitions to net zero. One of the

principles called for “strengthening and diversifying supply and value chains” as one means of enhancing energy security, market stability and affordability (G20 2022c).

At this high level, the focus was very much on energy security and energy supply chains in the broadest sense (i.e. including supply chains for fossil energies). More direct statements about the issue of renewable energy supply chains are to be found in the Bali Energy Transitions Roadmap, which was adopted by the G20 Energy Ministers (G20 2022d). The Roadmap proposes a comprehensive set of “voluntary and desired” actions and deliverables for the G20 across four Priorities: securing energy accessibility; scaling up smart and renewable technologies; and advancing renewable energy financing. It identifies a range of intergovernmental organisations, multilateral development banks, initiatives such as SEforALL and the Clean Cooking Alliance, and parallel G20 Groups that are or could be conducting relevant work. The main challenge in this Compact is that there is no sense of priority for the actions and it is up to successive Presidencies to determine which actions will be pursued. In the absence of a Secretariat and with limited means of ensuring continuity between Presidencies, the G20 faces considerable obstacles in translating these actions into material change.

Nevertheless, one of the actions calls for G20 and other countries to “[p]romote the resilience and sustainability of clean energy supply chains” (G20 2022d, p.10). In order to pursue this action, the compact notes that the:

“G20 can help foster an open, transparent and non-discriminatory trading environment for low emission energy products and equipment to facilitate the rapid deployment of clean energy technologies. G20 to support the formulation of global standards and frameworks for ESG [environment/social/governance]. To enable a faster clean energy transition across sectors and regions, the G20 can work on common definitions and certification of clean energy technologies and materials, identify and lift barriers to diverse, responsible, sustainable and resilient supply chains for critical mineral production, processing, and recycling needed for clean energy technologies.” (G20 2022d, p.5)

In 2023, the Indian G20 Presidency identified energy security and diversified supply chains as a priority area for the Energy Transition Working Group, with a particular focus on addressing technology gaps and financing. The Energy Transition Ministerial Meeting and the Environment and Climate Ministerial Meeting will both be held in late July and it remains to be seen the extent to which the actions in the Bali Roadmap are taken up.

A major overall challenge faced by the G20 in pursuing policy coordination in this area is that the issue of renewable energy supply chains cuts across many policy fields - climate, energy, environment, trade, development, innovation and finance. Despite efforts to work in a multidisciplinary fashion, the G20 still faces constraints in this regard. It is imperative that the G20 double down on efforts to collaborate across policy silos to ensure an integrated and cohesive approach. The recommendations below seek to highlight a number of areas where such collaboration could be enhanced.

An agenda for the G20

With climate issues getting higher on its agenda, the G20 is well placed to provide a platform for dialogue, cooperation, and policy coordination among nations to address issues around the resilience of renewable energy supply chains. As noted above, they have taken a few tentative steps in that direction already with the Bali Energy Transitions Roadmap. But much more can be done to foster consensus and encourage collective action. However, as always, the effectiveness of the G20 actions hinges on member commitment, as diverging interests and political tensions can pose challenges to achieving meaningful climate action.

There are four key areas where the G20 can take further steps:

- Increase the effectiveness of diversification strategies;
- Enhance market transparency;
- Support collaborative innovation; and
- Support sustainable financing for resilient supply chains.

Increasing the effectiveness of diversification strategies

The immediate and natural policy response of governments to energy supply chain issues is to diversify sources of supply. This was particularly evident in the wake of the Russian invasion of Ukraine as sources of Russian oil and gas were closed off to many Western governments with resulting spikes in prices. This led to a surge in gas imports from other countries and the rapid development of gas infrastructure in Western Europe in particular, driven by concerns over the approaching winter and energy affordability.

Similarly, there is now significant movement underway to diversify sources of critical minerals and materials. The time frames for such diversification are considerably longer as it takes resources and time to find and develop alternative sources of these materials. Nevertheless, the diversification strategy is already starting to show signs of success with new sources of lithium, cobalt and nickel starting to come online. However, diversification should also include other dimensions of the supply chain rather than just increasing the volumes of the raw materials themselves. These include reducing the demand for the critical minerals through technology and innovation, reducing the overall demand for some of the end-products needing such materials (e.g. through changing transport patterns and infrastructure to reduce the absolute number of electrical vehicles in the road), and increasing the recycling of the critical minerals.

At the same time, there are growing concerns over the rapid increase in export restrictions that are being applied to critical materials. The number of export restrictions on critical raw minerals has increased five-fold between 2009 and 2020 and now stand at over 18,000 restrictions with China, India, Vietnam, Russia, Argentina and Kazakhstan leading the way (OECD 2023). While some of these restrictions may be environmentally-motivated (i.e. to better regulate the domestic mining and processing industries), many are likely applied to protect domestic industries and exploit market power. The proposal by the EU to establish a Critical Raw Materials Club is a reaction to such concerns but runs the risk, in turn, of creating further trade tensions.

At the international level, there is a significant opportunity for the **G20 to support efforts to develop strategic partnerships to strengthen renewable energy supply chains**. Such partnerships must be mutually beneficial and promote development in a sustainable manner in partner countries while also creating secure and resilient value chains for G20 countries. Some partnerships focused around critical minerals have recently been developed by the US (e.g. Minerals Security Partnerships) and the EU (e.g. with the UK, Canada, Ukraine, Namibia and Kazakhstan). While these are still in a relatively nascent stage of development and implementation, it would be useful to also draw on the experience in broader climate-related partnerships that have been established in recent years (such as the Just Energy Transition Partnerships).

Building on these early moves on partnerships, **the G20 could develop model frameworks or guidance for strategic partnerships**. The risk of a very fragmented approach to the partnerships could have an impact on the sustainability, credibility, transparency and efficiency of such partnerships. Given its representation across developed and emerging economies, the G20 is well-positioned to provide a strong platform for exchanging experiences on how to

structure partnerships in an effort to ensure that they are mutually beneficial and provide sustainable and secure development opportunities as well as secure sources of supply.

The available evidence indicates that the trade dimension of the renewable energy supply chain issue looms large in any diversification strategy. As noted above, export restrictions are playing an increasingly important role in international markets for critical raw materials, affecting both the availability and the process of these materials. OECD (2023) indicates that export restrictions on scrap segments of the critical raw materials are not growing as fast as restrictions on upstream ores and minerals, which provides a positive sign for the recycling of critical minerals. Nevertheless, the observance of global trade rules in order to maintain open markets will remain critical, along with the role of the WTO. To strengthen the trade dimension of the supply chain challenge, **the G20 could establish a stronger linkage between the work on renewable energy supply chain resilience and the work of the Trade and Investment Working Group.**

At the domestic level, countries need to look closer to home to address additional aspects of the diversification challenge, primarily through developing local sources of critical materials by increasing mining and recycling and ensuring that high social and ecological standards are followed. **The G20 should increase its efforts to advocate for the integration of circular economy principles in the renewable energy sector.** The G20 Resource Efficiency Dialogue established at the Hamburg G20 Summit in 2017, provides a ready framework for driving this effort. To date, the Dialogue has focused on issues around sustainable production and waste, sustainable cities, circular fashion, plastics and marine litter, and food loss and waste, among other issues. In 2023, the Indian Presidency has identified circular economy in the steel sector, extended producer responsibility for circular economy, and the establishment of a G20 Resource Efficiency and Circular Economy Industry Coalition as its priorities (Ministry of Environment, Forest and Climate Change 2023). The G20 should extend this effort to promoting recycling, reuse, and responsible disposal of renewable energy materials and technologies to minimize waste and resource depletion and strengthen the resilience of the renewable energy supply chain.

Building on its proposed Resource Efficiency and Circular Economy Industry Coalition, the **G20 should actively engage with industry stakeholders, including renewable energy manufacturers, suppliers, and investors, to understand their perspectives, challenges, and opportunities** regarding renewable energy supply chain diversification. Such engagement can inform policy decisions, identify barriers to diversification, and foster public-private partnerships to drive innovation and investment in diverse renewable energy sources.

Enhance market transparency

Enhancing transparency around the renewable energy supply chain is a crucial objective for enhancing the resilience of the system. By promoting transparency, the G20 can foster sustainable and reliable markets, attract investments, and ensure the integrity of the renewable energy sector. It can also build a higher degree of trust between market participants. To date, much of the discussion around market transparency in the renewable energy supply chain has focused on better understanding the environmental risks and costs to the supply chains of companies and the role of transparency in driving environmental behaviour change of companies (see, for example, CDP 2021, 2022).

As well as building trust and confidence in the supply chain, increased transparency can support sustainable practices in both company operations and government strategic stockpiling

initiatives as well as address growing concerns over “green-washing” on the part of both companies and governments in relation to the source and environmental impacts of critical minerals production and processing. Building such transparency requires a significant amount of international collaboration and coordination and the G20 can lead in this effort in a number of interconnected ways.

Developing a better understanding the risks around a poorly diversified supply chain, and how to mitigate those risks, is key. **The G20 is well-placed to provide a platform to pool experiences and coordinate actions in mapping the renewable energy supply chain and developing risk assessment frameworks.** This can help to ensure increased regulatory stability and promote clarity around the implications of trade policies that affect the flow of diverse renewable energy technologies and critical materials across borders. It can also significantly enhance the traceability of the renewable energy supply chain, from raw material extraction to final product assembly, an essential ingredient in increasing the credibility and sustainability of sustainable supply chains. This mapping can identify potential risks, such as human rights abuses or environmental damage, and enable public and private stakeholders to make informed decisions. Collaborative efforts and information sharing among G20 members can help create comprehensive and accurate supply chain maps. The EU Critical Raw Materials Act aims to bring in supply chain regulation that covers all stages of the European critical raw materials value chain and presents a solid basis upon which to build a G20 effort.

To support a push for increased transparency, **the G20 should facilitate the development of internationally recognized standards for reporting and disclosing information related to the renewable energy supply chain** to ensure consistent and comparable information is publicly available across the supply chain. This includes promoting standardized metrics for environmental, social, and governance (ESG) factors, as well as requiring companies to disclose their renewable energy sourcing, production processes, and carbon footprints. Such transparency empowers stakeholders to make informed choices and holds companies, and countries, accountable for their sustainability commitments.

As part of such an effort, the G20 could support a platform for developing internationally agreed ESG principles and business reporting that could then pave the way for international ESG and reporting norms. The development of harmonized ESG standards and metrics has been a fraught experience, particularly at the international level, and has had some recent bad press around green-washing. Nevertheless, a number of countries are forging ahead, most notably in the EU, along with companies and business groupings, and there is a burgeoning number of ESG-related schemes of varying robustness and credibility. Other initiatives such as the OECD’s Due Diligence Guidance Corporate for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas also provide a basis for thinking about how to move forward. While the need for G20 support for the formulation of global standards and frameworks for ESG is identified in the Bali Energy Transitions Roadmap, it is not clear if or how the current G20 Presidency will be taking this forward. The G20 should be providing greater and more focused leadership on this key issue.

In a closely related area, **the G20 should support the development of common definitions, credible certification and labeling schemes for renewable energy technologies, products and materials.** These schemes are essential in providing assurance to consumers and investors regarding the authenticity, sustainability, and ethical sourcing of renewable energy products. Harmonizing such schemes internationally can contribute to market transparency and are an essential complement to making progress on internationally agreed ESG principles and norms.

The G20 can support the exchange of good practices and experiences in the development and adoption of digital technology solutions to enhance market transparency.

Promoting supply chain traceability through technology can greatly enhance transparency. Blockchain, for example, can enable the recording and verification of transactions and product information at each stage of the supply chain. This allows for a transparent and immutable record, reducing the risk of fraudulent practices or unethical sourcing, and increasing the visibility and accountability of the renewable energy supply chain. This could link up very effectively with the G20 workstream on the digital economy (including through the G20 Digital Innovation Alliance), which at this stage does not have a green focus.

Support collaborative innovation

The role of research and development (R&D) in spurring innovation in renewable energy as a means of strengthening the resilience of the whole renewable energy supply chain cannot be underestimated. By supporting R&D focused on the supply chain, governments can encourage the development of new technologies, materials, and manufacturing processes that reduce reliance on a limited set of resources and increase the range of available renewable energy options. R&D on circular economy approaches to reducing the dependence on primary ores and minerals must be a critical part of this. It can also facilitate the development of alternatives for the end-products that are currently dependent on critical materials, nudging consumers towards products that may be more conducive to an alternative or more resilient supply chain as well as meeting other climate-related goals.

However, the rise of “green” industrial policy in recent years in key economies has placed some strain on the collaborative aspects of global innovation towards renewable energy with flow-on effects on the supply chain. The Inflation Reduction Act in the US and the Net Zero Industry Act in the EU are clearly geared towards mobilizing a much more interventionist industrial strategy on the part of the respective administrations. This represents a reaction to multiple pressures: the rising dominance of China in many areas of the renewable energy industry; the urgency of the net zero challenge itself; a push to strengthen domestic manufacturing capabilities; and a desire to shorten and strengthen supply chains. Unfortunately, in the absence of a strengthening of collaborative approaches to R&D and innovation, there is a real risk that a situation of “competitive innovation” will evolve as these two major producers focus inwards, with serious consequences for the scale and efficiency of innovation.

The G20 can lay the groundwork for the strengthening the strategic collaborative efforts to increase collaboration on innovation and facilitate technology transfer to promote diversification. This can involve sharing knowledge, best practices, lessons learned and technological expertise and help address capacity gaps in emerging and developing countries. Dialogue and cooperation are a good first step in this regard but will require the G20 to work more flexibly across policy silos to develop an integrated approach to supply chain innovation. For example, the G20 should link up its work on resource efficiency and circular economy to more explicitly tackle the cross-cutting issue of supply chain resilience. As noted earlier in this brief, reducing demand for critical minerals through innovation and R&D is a key complement to securing new sources of supplies of raw materials.

Similarly, the **G20 should ensure that innovation collaboration as a core feature in the development of strategic partnerships.** This will necessarily involve discussions with partners on technology transfer and capacity building as well as in the formulation of international standards on critical materials and renewable energy technologies. In developing guidance or frameworks for partnerships, the G20 will need to ensure that the concept of development is quite broad and includes actions on innovation and technology transfer that will benefit the partner country.

The **G20 should also link up its various initiatives on circular economy and resource efficiency with the innovation question on renewable energy and the resilience of its supply chain**. Invoking the reduce, reuse, recycle approach to demand side management of critical materials for renewable energy is an essential component of diversification strategies.

Finally, the **G20 could develop a joint commitment to devote a certain percentage of its total R&D expenditure to the issue of renewable energy innovation and the associated supply chains**. Such a pledge would send a strong positive signal to researchers, business and investors on the importance attached to renewable energy R&D as a means of reducing critical materials dependence.

Support sustainable financing for resilient supply chains

Sustainable finance underpins all the issues and recommendations discussed in this policy brief. Without access to adequate and sustainable finance, G20 efforts to strengthen diversification strategies, establish critical raw materials partnerships, enhance market transparency and drive innovation will be significantly compromised. In the last decade, the issue of sustainable finance has emerged as a powerful tool to address environmental challenges and promote the transition to a low-carbon economy. In the context of renewable energy supply chains, it is very much a cross-cutting issue and can play a pivotal role in strengthening their resilience and efficiency.

In 2016, the G20 started to gradually bring the issue of sustainable finance into its orbit with the Sustainable Finance Working Group (SFWG) being formalized in 2021. The focus of this work has largely been on identifying institutional and market barriers to sustainable finance, primarily with respect to financial market regulation, aligning International Financial Institutions' efforts with the Paris Agreement, and improving sustainability reporting.¹ The issue of sustainable finance sits in the Finance Track, making it a potentially powerful voice in the discussions of international financial management.

However, much more can be done to leverage the expertise and reach of the SFWG to address a broader range of climate-related issues and to link across the G20 work themes. The resilience of renewable energy supply chains is one such issue and there are a number of specific actions that the Group could tackle that are linked to the issues already discussed in this policy brief.

First, the **G20 should accelerate the development of robust reporting and disclosure requirements** in order to promote transparency and accountability throughout the renewable energy supply chain and support the international harmonisation of reporting standards. Financial institutions are in a prime position to lead the assessment of the environmental, social, and governance (ESG) performance of companies involved in the supply chain.

Second, sustainable finance can foster innovation in renewable energy supply chains by channeling funds towards research and development of renewable technologies and driving technological advancements, cost reductions, and efficiency improvements. **The G20 can work towards reducing investment risks associated with renewable energy supply chains**. This can be achieved by providing policy certainty and stability, ensuring transparent regulatory frameworks, and minimizing political and regulatory barriers.

Third, the **G20 should identify and promote mechanisms to enhance access to finance for renewable energy projects and supply chain development in emerging and**

¹ See <https://g20sfgw.org> .

developing economies. Boosting and improving the delivery of international climate finance is a core task in this regard. However, the G20 could expand this focus to establish good practice in simplifying access to trade finance for investment in supply chains. Trade finance represents a greater potential to deliver a significant improvement in the sustainability performance of corporate clients and their suppliers and can help ensure that goods and services are produced in the most carbon efficient location. In addition, coordinating with other forms of finance such as development finance and sustainable debt and transition finance is also important to explore. In this regard, the G20 can strengthen the engagement and collaboration with international financial institutions to provide targeted financing and technical assistance to emerging and developing economies for their renewable energy projects, including the still evolving blended finance options (including through existing finance arrangements such as Invest EU).

Finally, the **G20 can support efforts to modernise export credit facilities to better take into account the need for emerging country finance of renewable energy supply.** Updating the OECD Agreement on Officially Supported Export Credits is a key step in this regard, although this has had a chequered history in relation to export credits for coal projects (Global Trade Review 2021).

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