

THE GLOBAL BATTERY ALLIANCE'S CALL TO ACTION:

Policymakers to bridge the cooperation gap in critical battery minerals with harmonised data and transparency

June 2024

Cooperation is needed to address the supply, financing, and sustainability gaps in critical battery minerals.

Global markets are facing a *supply gap* for critical battery minerals¹ - cobalt, copper, graphite, lithium, manganese, nickel, and others - resulting from the projected 17-fold growth of the battery industry for electric vehicles (EV) and stationary energy storage by 2030.² In part, this gap is a result of rapid demand growth, estimated between two to four times depending on the mineral and energy transition scenario.³ Recycled sources will only gradually contribute to bridging this gap: by 2040, between 10 and 30 percent of supply is projected to come from recycled sources.⁴ One of the main drivers of the gap is the geographical concentration of mineral reserves, processing, and recycling capacity, and the resulting captive supply chains.

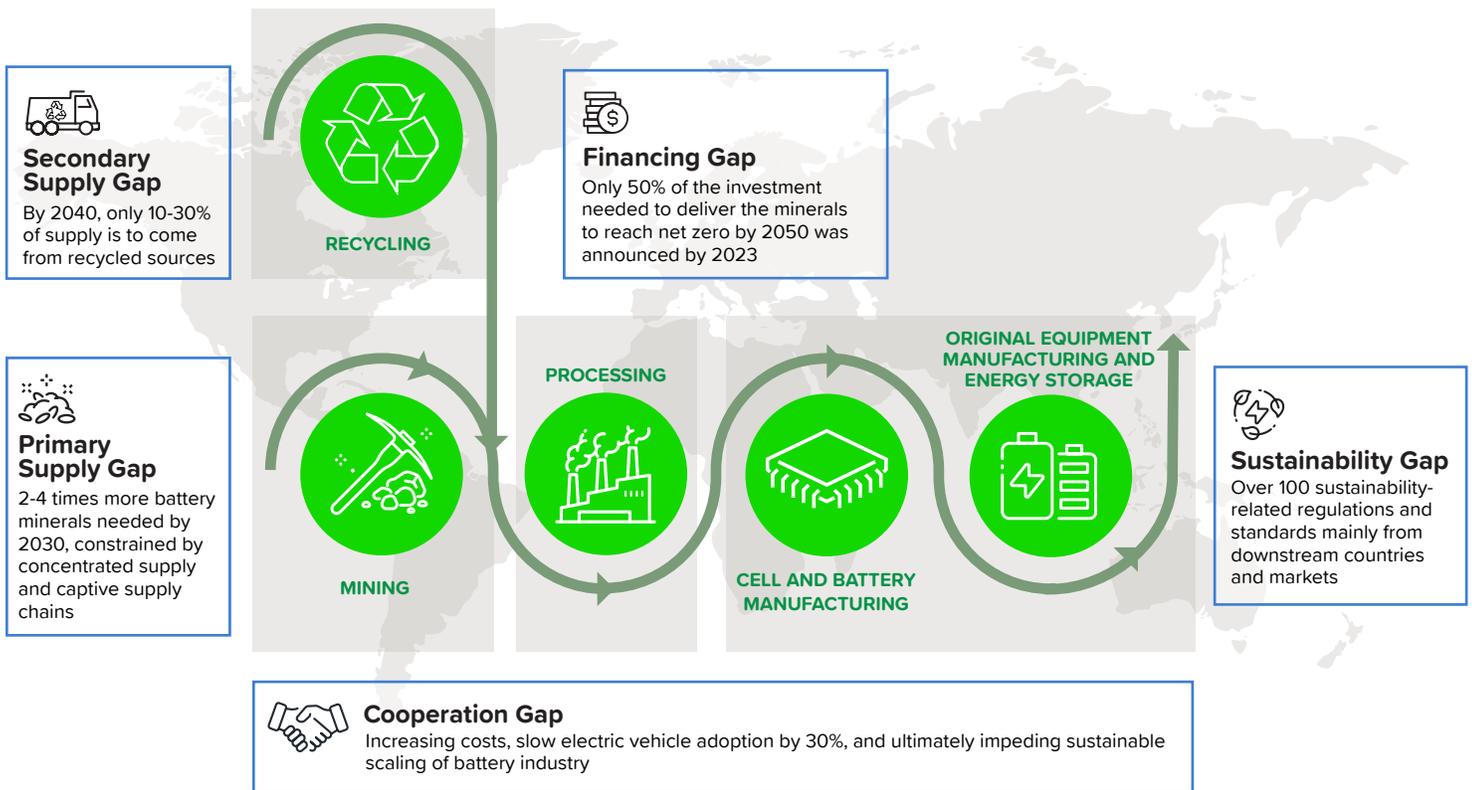
Today, the GBA wants to raise policymakers' awareness of another gap - the cooperation gap. Siloed policymaking and economic activity risk increasing costs along the value chain, slowing electric vehicle adoption, and ultimately, impeding sustainable scaling of the battery industry.

There is also a *gap to finance* the ramp-up of production and recycling capacity, and thus the diversification, of critical mineral supply chains. For instance, only half of the investment needed in order to deliver the copper, lithium, nickel and cobalt required to reach net zero by 2050, was announced by 2023.⁵ Despite high demand projections, low market prices resulting from an uncertain demand outlook for specific minerals, and in some cases also for EVs, risk perception amongst investors, among other factors, hinder the channelling of investment into critical mineral value chains, and towards more sustainable practices.⁶

The Global Battery Alliance (GBA) was created at the World Economic Forum in 2017 on the twin realisation that batteries would be essential to power the green transition, but that their production could bring about a *sustainability gap*, unless social, environmental and governance (ESG) impacts along the value chain are addressed.⁷ As the most recent climate targets to triple renewables by 2030 agreed upon at the United Nations climate conference (COP28) place an increasing pressure to scale battery supply rapidly, the GBA remains committed to its vision.⁸ In light of the opportunities for economic transformation and circularity, a battery-fuelled economy holds the promise of a sustainable response to the energy transition.

Today, the GBA wants to raise policymakers' awareness of another gap - *the cooperation gap*. Under current global conditions, countries advance critical minerals strategies, policies, and partnerships in a fragmented and competitive manner which, at times, is characterised by lack of transparency and a diverging sense of urgency. The result is a gap in coherent and coordinated action on policy, investment and capacity building, and which is manifested in a lack of partnerships across the value chain and between stakeholders. This threatens effective responses to the supply, financing and sustainability gaps. Siloed policymaking and economic activity risk increasing costs along the value chain, which in turn, could slow electric vehicle adoption, and ultimately will impede sustainable scaling of the battery industry.⁹ It can exacerbate concentration of supply, processing, and recycling, and work against the objective of diversifying and building resilient critical mineral supply chains.

FIGURE 1: Cooperation is needed to address the supply, financing, and sustainability gaps of sustainable critical battery minerals for batteries



This communiqué presents the GBA's recommendations to policymakers on bridging the cooperation gap. It draws on interviews within and outside the GBA's diverse membership and discussions in four thematic member focus groups representing industry, governmental and non-governmental stakeholders across jurisdictions which are important for battery value chain. Stakeholders across these dimensions highlight four priority areas for policymaker attention:

1. **Improve transparency, trust, and joint responsibility for sustainability of batteries through harmonised approaches to ESG performance, due diligence, and traceability.**
2. **Urgently adapt and create global regulatory frameworks for circular critical minerals value chains and reducing the material footprint of batteries.**
3. **Channel financing to sustainable scaling of critical battery minerals value chains, especially to diversifying refining and processing capacity, via innovative and coordinated action.**
4. **Adopt the social and environmental license to operate as a principle underpinning critical minerals projects and build capacity of policymakers and investors in new mining jurisdictions.**

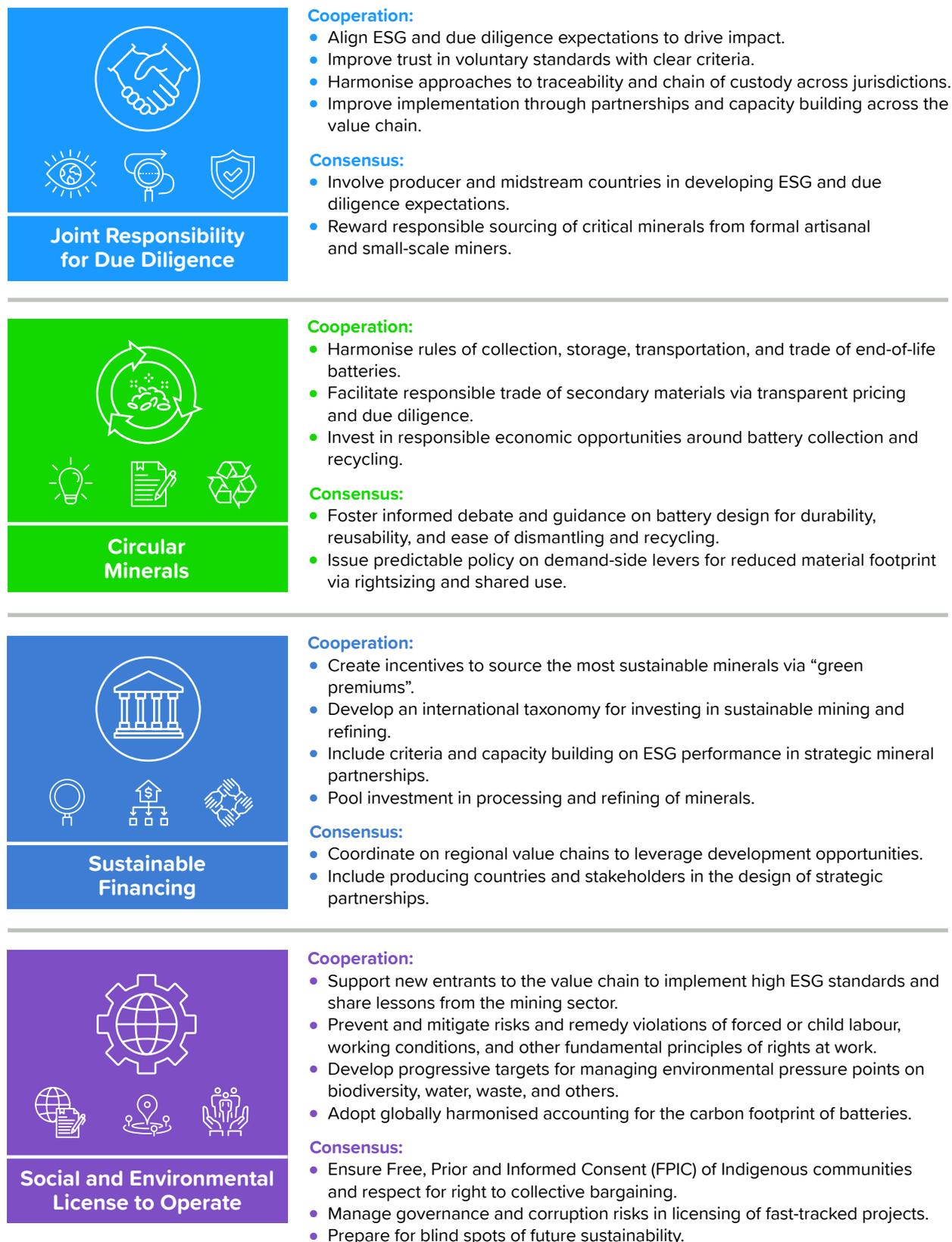
In these areas, where there is broad consensus on objectives and priorities, policymakers in consumer and producer countries must **cooperate, drive consistent policies and foster coordinated action** to advance harmonised, inclusive regulatory frameworks for applying high ESG standards globally. Policymakers should create incentives for consumer and industry action toward the green transition and facilitate collaboration between the battery industry and its stakeholders. This creates policy predictability and the production of harmonised data for evidence-based policymaking, and facilitates an informed public debate.

Under each theme, issues remain where consensus is lacking, or where stakeholder voices - especially those of civil society, producer countries and mid-stream companies - are missing. **Here, policymakers must build consensus.** This communiqué outlines opportunities for both cooperation where broad consensus exists, and consensus building, where this is needed for harmonisation and collaborative action to follow.

The GBA Battery Passport: The role of globally comparable, harmonised data on battery sustainability in facilitating cooperation

Building on the GBA's work ahead of COP26, the recommendations of this communiqué also draw on and support the GBA's ongoing work on the Battery Passport.¹⁰ The GBA Battery Passport is a transparency and accountability framework, building on requirements from battery sustainability regulations – including but not limited to the EU Battery Regulations – and voluntary standards into a comprehensive framework of globally harmonised, traceable, and comparable performance metrics at the product level. Reporting against Battery Passport rulebooks will facilitate benchmarking and the calculation of a GBA ESG score or Quality Seal, providing insights on carbon footprint, biodiversity, pollution, community engagement, labour conditions, economic development, and circular design. By issuing a score or quality seal aimed at investors, procurement divisions and consumers, the GBA seeks to contribute to building a platform or marketplace where products compete on independently validated and verifiable sustainability performance, triggering continuous improvement and a race to the top.¹¹

FIGURE 2: Four priority areas for policymaker attention to improve cooperation and consensus building for sustainable critical battery minerals



1. Improve transparency, trust, and joint responsibility for sustainability of batteries through harmonised approaches to ESG performance, due diligence, and traceability.

Until now, the majority of supply chain due diligence and ESG performance requirements have been driven by policy and markets in consumer jurisdictions and cascaded up via the supply chain. Through its work on the Battery Passport, the GBA has identified over 100 regulations and dozens of voluntary standards relevant to battery value chain sustainability, mainly from consumer nations, but also pertaining to raw materials strategies in producer nations. The proliferation of voluntary standards reflects the importance of ESG performance, but navigating this landscape is proving challenging for companies, their supply chains, and stakeholders.

Opportunities for cooperation.

In the EU, which is spearheading a set of new-generation due diligence regulations – the Batteries Regulation, Corporate Sustainability Due Diligence Directive (CSDDD) and others – policymakers can harmonise these regulations, prioritising impact and effectiveness. The OECD guidance for Responsible Business Conduct (RBC) and due diligence, as well as the United Nations Guiding Principles on Business and Human rights (UNGP), serve as a basis for aligning and harmonising standards and regulations. They also provide guidance for companies to understand what individual standards cover, and their degree of regulatory alignment. Policymakers and industry should continue to leverage these frameworks in efforts toward consolidation of standards, and in order to balance the feasibility of implementation with legitimacy, and align with the ambition to drive impact.

Policymakers can accelerate mutual recognition and interoperability of voluntary ESG and supply chain due diligence standards, with the aim to develop harmonised data and to reduce the reporting burden. Standards can serve to support mandatory due diligence, but to increase trust in audits and data conducted against these standards, it is becoming imperative to develop comparable, impartial definitions for minimum expectations on assurance, third-party verification, stakeholder participation and multi-stakeholder governance for standards. These due diligence standards can build on the Organisation for Economic Cooperation and Development's (OECD)'s work on alignment assessments.¹² Multi-stakeholder led standards and ultimately, encoding sustainability expectations into law, can have greater legitimacy amongst stakeholders.¹³

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The Delegated Act of the EU Batteries Regulation on due diligence is an opportunity to clarify such expectations which will be required from recognised schemes for an effective interplay between regulation and voluntary standards. Regulators can learn from the experience of the EU's Conflict Minerals Regulation and recognise the challenges related to use of voluntary or industry-led schemes as tools for compliance.¹⁴

The United States (US), Japan, China, and other jurisdictions beyond the EU, are at various stages of introducing due diligence, environmental footprint, and traceability requirements for batteries.¹⁵ This creates an important opportunity now to address challenges of traceability across global supply chains. Policymakers across these jurisdictions can develop common methodologies for data collection and verification of the supply chain, making traceability systems interoperable, and creating harmonised data architectures.¹⁶

For more effective implementation, legitimacy and adoption of ESG performance requirements across the supply chain, policymakers in consumer countries can build incentives for continuous improvement and learning into regulations, to balance sanctions or disengagement. They can do so by investing in partnerships and capacity building between Original Equipment Manufacturers (OEMs), cell and battery makers, and their suppliers, to implement requirements of transparency and responsible sourcing.

Opportunities for consensus-building.

Policymakers in mineral producing and midstream countries must have a stronger voice in shaping ESG and due diligence standards. They can contribute to the development of sustainability requirements relating to mineral extraction, as well as other parts of the value chain, at the global level. This could be achieved by, for example, participating in the UN Secretary General's Panel on Transition Minerals, and other multinational initiatives. At the national level, policymakers can assess how requirements flowing from the downstream, can support delivery of socio-economic development, environmental protection, and improve industrial capacities.¹⁷ Contextualising these requirements in national regulations will encourage uptake and enable their enforcement. For regulators and standard-setters in consumer countries, it is crucial to actively engage mineral-producing countries in these standard-setting processes, as well as factor in any associated capacity-building required for their implementation. Help desks, designed to support compliance with the EU and Germany's recent regulations, can serve as one opportunity for capacity building.

Supporting responsible sourcing of critical minerals from artisanal and small-scale (ASM) into global battery value chains can spread the socio-economic benefits of the energy transition, and in addition, open new sources of supply of critical minerals, alongside large-scale mining. However, given associated environmental and social risks, previous approaches to due diligence have resulted in excluding ASM production from global supply chains. Policymakers in the downstream can reward value chain actors for engagement with and sourcing from ASM miners by harmonising and promoting standards that mitigate negative impacts and support local livelihoods, ensure environmental protection, and minimize social conflict.¹⁸ They can also support the development of mineral credits incentive schemes for investing in formal ASM. International institutions, development banks and national geological surveys in collaboration with producing country governments can build capacity in geological research, formalisation, and regarding responding to due diligence requirements by artisanal miners.¹⁹

2. Urgently adapt and create global regulatory frameworks for circular critical minerals value chains and reduce the material footprint of batteries.

While multiple ESG standards govern mineral extraction, at the collection, trade and end-of-life of batteries as well as mineral recycling, policymakers will need to adapt existing or develop new global regulations and standards to advance principles of circularity, coverage of secondary supply, and a more resource-efficient use and design of batteries. Stakeholders stress the urgency of developing harmonised frameworks for recycling and circularity before EV batteries reach end of life at scale.

Opportunities for cooperation.

Policymakers can harmonise rules of safe collection, storage, transportation, and trade of end-of-life batteries, by collaborating under United Nations Environment Programme (UNEP) and United Nations Economic Commission for Europe (UNECE) efforts to implement the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. This process should be supported by creating clear definitions of the hazardous nature of batteries sent for recycling. This will facilitate circulation of non-hazardous materials and allows for the planning and capacity building of regulators to manage hazardous substances.²⁰ Policymakers can also cooperate to establish an efficient and flexible channel for battery materials transportation across regions.

Regulators can harmonise regulations and standards globally in order to facilitate trade and transparent pricing of secondary materials, for example, by developing a taxonomy for black mass in order to ensure it is traded fairly and material recovery is enhanced.²¹ Policymakers can include secondary materials in responsible sourcing and chain of custody regulations and develop the corresponding guidance.

Governments can invest in the development of battery collection and recycling capacity, and related business models especially in the Global South to facilitate job creation and avoid environmental and social risks of unregulated treatment of waste batteries. Projects supported by development partners and international organisations are paving the way, building on lessons from the e-waste sector.²² Classification systems such as United Nations Framework Classification for Resources (UNFC) and sustainable Resource Management Systems (UNRMS) embed principles of circularity, waste minimization and management, and can help addressing these issues along the value chain.

Stakeholders stress the urgency of developing harmonised frameworks for recycling and circularity now, before EV batteries reach end of life at scale.

Opportunities for consensus-building.

The battery industry must scale production of primary minerals and enable recycling, but the step-change for sustainable battery value chains in the long run, hinges on improving material efficiency of batteries.²³ Combined with recycling, it is estimated that this can cut demand for primary critical minerals by 10-30% by 2030. It will also make batteries more affordable, which is key for increased adoption, including in emerging markets.²⁴ Innovation on battery chemistries, “rightsizing”²⁵ of batteries and behavioural incentives are already part of the policy mix and on the agenda of the environmental movement²⁶, but there is a need for greater consensus across stakeholders in this area.

First, the trade-offs between ease of dismantling, reuse and recyclability on the one hand, and durability on the other hand, are not always well understood.²⁷ In addition, these trade-offs need to be balanced with the safety and technical requirements for different uses of batteries. Globally comparable information will

facilitate an informed debate on policy and guidance for industry regarding battery design as a driver for a reduced material footprint. The EU's Battery Regulation and draft Eco-design Directive are leading the way in requiring information on durability, dismantling and battery state-of-health in extended producer responsibility rules and safety standards, informing both business and consumer decision-making.²⁸

Second, policymakers should strive to a greater policy consensus and predictability on demand-side levers, such as incentives for rightsized batteries or smaller vehicles, shared use of vehicles via public transport and other means, and shared use of batteries. Innovative business models of "Batteries as a Service" and battery swapping can release demand-side pressure through the full utilization of an individual battery, as well as make collection and recycling more efficient.²⁹

3. Channel financing to sustainable scaling of critical battery minerals value chains, especially to diversifying refining and processing capacity, via innovative and coordinated action.

The positions of countries as investors, consumers and producers along the value chain are changing rapidly, due to the speed of growth of the EV and batteries market share in Asia, and as other emerging markets follow. Competition for access to resources on the one hand, and for investment on the other, define leverage on prices and sustainability expectations in each mineral value chain. It is therefore important that countries across the value chain work together to define common ESG performance criteria that meet policy and developmental objectives. These ESG Performance requirements need to be reflected in investment decisions and must be enforced consistently.

Opportunities for cooperation.

Policymakers and public finance institutions can create incentives for actors across the supply chain, as well as private and public end consumers, to source the most sustainable minerals via “green premiums”. They can amplify the demand signal by educating end consumers via sustainability ratings for EVs.³⁰ Mineral producing countries can strive to obtain such premiums for their production as a source of investment into the development of sustainable mining and recycling practices. Voluntary sustainability initiatives like the GBA Battery Passport can contribute to establishing a marketplace for sustainable products by independently benchmarking and validating sustainability performance through the GBA quality seal or ESG score.

Policymakers can also develop an international taxonomy, standards and control mechanisms on sustainable and responsible mining and refining, to channel investment. This can take place under common global standards that allow for a harmonized classification of projects along their environmental-social-economic impact and technical feasibility such as the UNFC, which has been adopted for example by the EU’s Critical Raw Materials Act (CRMA) and with those countries that have signed Strategic Partnerships with the EU. National regulators and international organisations can build upon sectoral and national taxonomies, such as the EU Taxonomy Regulation, to create and encourage uptake of harmonised guidance for investors globally.³¹ In addition to climate and environmental targets, taxonomies can cover the full range of ESG and due diligence risks, in line with the EU Batteries Regulation and the GBA’s mapping of salient risks along the battery value chain.³²

It is important that countries across the value chain work together to define common ESG investment criteria that meet policy and developmental objectives and enforce them consistently.

Policymakers should better coordinate amongst each other, with domestic industry players, and with partner countries regarding investing in strategic projects. The US-EU mineral security partnership (MSP) forum is an example of coordinated action between investor and producer nations. It and other public-private financing mechanisms can enforce requirements to follow high ESG standards in related private sector projects, and implement associated financing and capacity building for partner countries in a coordinated, transparent manner.³³ The MSPs can incentivize good ESG performance by tying investment criteria to ESG metrics and strive for greater clarity and transparency on the sustainability criteria for eligibility. They can channel funding into improving and building capacity on ESG criteria.³⁴

A resounding area of agreement among stakeholders is the need to channel financing to refining and processing of minerals, where the supply chains are most concentrated. Today, over 85% of capacity

is concentrated in China.³⁵ Despite targets and incentives in the EU's CRMA and incentives of the US Inflation Reduction Act on domestic or partner country refining, these are unlikely to be sufficient to meet the need for minerals and to diversify supply chains for nickel, lithium, cobalt and copper.³⁶ Some analysts question whether domestic refining targets can be met.³⁷ Refining materials closer to source can be less carbon intensive, if investment in renewable energy and environmentally responsible mining proceed (see next section), is consistent with climate goals such as the EU's Carbon Border Adjustment Mechanism (CBAM).³⁸ This also supports value-addition objectives of mineral producing countries.³⁹ MSPs, multilateral development banks, and private investors should focus on investing in diversifying this part of the value chain and applying ESG and due diligence standards on mineral processing, to achieve these objectives.

Opportunities for consensus-building

Mineral producing countries can benefit from the opportunity of increasing demand for minerals by cooperating regionally to pool resources as well as overcome competition for investment in refining capacity. Multilateral development financing institutions and countries investing in mineral projects via strategic mineral partnerships, can coordinate with producing countries, and amongst each other, to invest in developing regional value chains.⁴⁰ Critical minerals investment is an important opportunity to move past previous competition in developing regional value chains, and good examples are already emerging from the DRC-Zambia Lobito corridor and elsewhere. It is essential to increase the awareness of downstream actors and investors on the importance of regional partnerships and coordinated action as well as high sustainability performance. This approach can ensure a joined-up implementation of investments and associated capacity to support the delivery of development and sustainability objectives.⁴¹

Crucially, MSPs and other strategic investment projects need to more systematically incorporate the perspectives, concerns, and priorities of producing countries into the development of sustainable critical mineral strategies. Policymakers should facilitate dedicated dialogue and knowledge-sharing platforms that bring together stakeholders from producer nations, enabling mutual understanding, capacity-building, and co-creation of solutions that align with local socio-economic and environmental contexts. Producing country policymakers should ensure that local and regional stakeholders representing communities and other affected groups, participate in these platforms as well.

4. Adopt the social and environmental license to operate as a principle underpinning critical minerals projects and build capacity policymakers and investors in new mining jurisdictions.

Stakeholders stress the need to build the capacity of policymakers and other actors on critical minerals regulation and governance at the global level, including in consumer nations of the US and the EU. As battery chemistries evolve, and demand shifts from one mineral to another, coupled with bringing in new mining and investor nations and industry actors, such as OEMs with direct stakes, it is especially urgent to ensure that these new actors, who may lack the experience and expertise to ensure environmentally and socially responsible practices, can implement high ESG standards.

Opportunities for cooperation

Implementing stakeholder consultation to obtain acceptance for mining and refining is critical. Preventing, mitigating and remedying risks such as child labour or forced labour, poor working conditions, and health and safety practices, and providing grievance mechanisms and compensation where violations have occurred, according to the ILO Declaration on Fundamental Principles and Rights at Work and other core conventions, are among priority social issues raised.⁴² The mining industry has longstanding experience of engagement with affected stakeholders and therefore, can share lessons with other parts of the value chain and which may be relevant for manufacturing and recycling projects. Policymakers can facilitate these exchanges and extend the same ESG requirements across the value chain for example through leveraging the Battery Passport rulebooks as a common set of performance expectations.

As battery chemistries evolve, and demand shifts from one mineral to another, it is urgent to ensure that also new jurisdictions and investors can implement high ESG standards.

Policymakers' capacity to mitigate environmental impacts can be strengthened by adopting the minimum criteria of no net loss to the environment across projects. Furthermore, policymakers can promote nature positive targets in critical minerals projects. Stakeholders have recognised the benefit of a global understanding of carbon footprint methodology, and correspondingly, are calling for a globally harmonised understanding and application of methodologies for mineral-specific and geography-specific footprints of environmental pressure points (such as water, waste and biodiversity). Significant advances can be made through collaboration on the management of water resources, through joint action on raising awareness on biodiversity and deforestation, and by using less carbon intensive production methods of e.g. graphite. Regulators can advance interoperable standards that include progressive targets and tools (such as the mitigation hierarchy) and mainstream these requirements throughout regulations, standards and investment criteria.⁴³

A key area of focus for policymakers across jurisdictions is to effectively reduce the battery carbon footprint. Policymakers can adopt common calculation methods of greenhouse gas (GHG) emissions across the value chain. The GBA's globally applicable Greenhouse Gas rulebook and its calculation method for a global baseline⁴⁴ and UNECE's activities on the carbon footprint of automotive value chain⁴⁵ can inspire other initiatives, including the EU Batteries Regulation's Delegated Act on GHG targets, standards under development by SAE International tasked with defining battery traceability in the US, and China's New Electric Vehicles Industrial Development Plan, among others.

Opportunities for consensus-building

Despite agreement on the importance of obtaining an environmental and social license to operate as the

backbone for sustainable battery value chains, performance expectations on specific issues vary across standards and stakeholders. Sufficient consultation and consent are among the areas in need for further consensus amongst stakeholders, including in the EU. This is particularly contentious regarding projects that have impacts on Indigenous Peoples – according to some estimates, more than half of the critical minerals which are needed for the energy transition, are located on or near the lands of Indigenous Peoples and communities.⁴⁶ The EU can lead the way by integrating the principles of Free, Prior and Informed Consent (FPIC) according to the UN Declaration on the Rights of Indigenous Peoples (UNDRIP) and International Labour Organisation (ILO) definitions in the CRMA and its strategic partnership projects. Other global regulators can adopt the same approach.⁴⁷ Joint natural resource planning with Indigenous communities can be explored as opportunities for partnership and cooperation.⁴⁸ Another important aspect related to consultation relates to concerns around a restricted civic space in some jurisdictions, including that of organised labour. Stakeholders stress the importance of the right for collective bargaining and of including trade unions in meaningful stakeholder engagement.

A priority issue raised by investors, international institutions and non-governmental organisations, is the need to address governance challenges, such as corruption risks, in permitting and licensing processes. Concerns have been raised when licensing decisions are fast-tracked to advance strategic projects. Building consensus with industry, and mainstreaming good practices of transparent and clear licensing criteria in line with recognised frameworks⁴⁹, help to de-risk investment in new jurisdictions, and can lower the cost of capital. The EU can strengthen the coverage of risk areas of corruption, as well as the requirements for accountability in the Batteries Regulation.

Finally, stakeholders urge awareness of potential blind spots that may impact the sustainability of battery value chains in the future. Consensus will need to be built on the application of the precautionary principle to frontier modes of production, such as deep seabed mining, and the definition and creation of incentives to respect no-go zones.

Ways forward: The GBA will advance the creation of a globally harmonised Battery Passport and use sustainability data and insights for dialogue and impact.

With the Battery Passport, the GBA continues to define globally harmonised performance expectations across the value chain, generating data, and increasing transparency to drive collaboration. This can help inform policymaking, encourage the industry's race to the top, and support civil society oversight. The GBA collaborates with actors along the value chain to demonstrate the impact of measuring and acting on sustainability data on the ground, by piloting the Battery Passport rulebooks, informing investment decisions, supporting compliance, and incentivising participating companies and governments to raise the bar.

Under the Critical Minerals Advisory Group, the GBA fosters collaboration, policy dialogue, learning and raising attention to pressing and emerging issues in the battery value chain. The GBA continues to produce technical and policy-relevant thought leadership to overcome both the impediments of circular and materially efficient design of batteries and critical bottlenecks to the circular economy of critical minerals.

The GBA guards its global, multi-stakeholder, pre-competitive nature. It offers a neutral space for dialogue, committing not to promote or demote specific technologies nor political or strategic interests. In doing so, the GBA is committed to increased engagement with producer countries and civil society around the world, to systematically build in development perspectives into the Battery Passport framework and in other lines of work.

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| African Development Bank | International Nickel Association |
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| Cobalt Institute | Responsible Business Alliance |
| Extractive Industries Transparency Initiative | Responsible Business Roundtable (UNDP Responsible Business and Human Rights Forum, Asia-Pacific) |
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| | Organisations who prefer to remain anonymous |

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References

- ¹ These minerals are referred to as critical, strategic, transition, green, and other terms, depending on the context. In this communiqué and the consultations building to it, we refer to them as “critical battery minerals”. The focus of the consultations was on cobalt, copper, graphite, lithium, manganese and nickel, found on most countries’ critical/strategic minerals lists, but the consultations have not excluded other metals and minerals needed for batteries, such as aluminium, mica, phosphate and rare earths.
- ² McKinsey and GBA (2023), [Battery 2030: Resilient, sustainable, and circular](#); IEA (2024), [Batteries and Secure Energy Transitions](#)
- ³ IEA (2024), [Global Critical Minerals Outlook 2024](#) and [Global Electric Vehicle Outlook](#) show that demand for cobalt, copper, lithium, nickel, graphite, manganese and others grows by 2-fold to 2030 in the Stated Policies Scenario and EV battery demand grows by four-and-a-half times by 2030. In the NZE Scenario, mineral demand grows by fourfold.
- ⁴ IEA (2024), [Global Critical Minerals Outlook 2024](#)
- ⁵ IEA (2023), [Energy Technology Perspectives 2023 – Analysis - IEA](#)
- ⁶ IEA (2024), [Batteries and Secure Energy Transitions](#); IEA (2021), [The Role of Critical Minerals in Clean Energy Transitions](#). Prices for cobalt and lithium have been particularly volatile over the last years.
- ⁷ IEA (2021), [The Role of Critical Minerals in Clean Energy Transitions](#) and McKinsey and Global Battery Alliance (2023), [Battery 2030: Resilient, sustainable, and circular](#), World Economic Forum (2024), [Energy Transition and Geopolitics: Are Critical Minerals the New Oil?](#) and others have documented risks and impacts on Indigenous Peoples, key biodiversity areas, water and energy intensity, pollution, lack of transparency, poor working conditions and unfair sharing of benefits, among others.
- ⁸ IEA (2024), [Batteries and Secure Energy Transitions](#)
- ⁹ IMF (2023), [A Critical Matter by Evans and Santoro](#)
- ¹⁰ GBA (2022), [Climate Conference of the Parties Roundtable — Harmonized Principles for Data Authentication and Protection to Realize the Paris Goals](#)
- ¹¹ <https://www.globalbattery.org/battery-passport/>
- ¹² OECD (2023), [The role of sustainability initiatives in mandatory due diligence](#)
- ¹³ Such as the recently launched [UN Secretary-General’s Panel on Critical Energy Transition Minerals](#)
- ¹⁴ IPIS and PAX (2023), [The EU Conflict Minerals Regulation: High Stakes, Disappointing Results](#)
- ¹⁵ “[Tonko, Graves Introduce Critical Material TRACE Act](#)”, Washington, May 1, 2024; “[Japan to mandate disclosure of EV battery production emissions](#)”, 20 September 2023
- ¹⁶ According to the IEA (2023) [Sustainable and Responsible Critical Mineral Supply Chains](#) report, data is not consistently reported across industry, making comparison between companies and an industry-wide assessment challenging.
- ¹⁷ IGF (2023), [What makes Minerals and Metals Critical](#)
- ¹⁸ [Code of Risk-mitigation for ASM engaging in Formal Trade – CRAFT. These schemes can build on GBA’s Cobalt Action Partnership and the responsible cobalt sourcing framework in the DRC, and scale to other minerals and geographies](#)
- ¹⁹ European Partnership for Raw Materials (2024), [ASM and the Energy Transition](#)
- ²⁰ International Council on Clean Transportation (2023), [Scaling up reuse and recycling of electric vehicle batteries: assessing challenges and policy approaches](#)
- ²¹ Black mass is the metal-rich product obtained from shredding end-of-life batteries in the recycling process. The British Standards Institute, for example, has been working on taxonomies of black mass.
- ²² See for example: GIZ programme on [Environmentally and socially responsible handling of e-waste ; and](#) UNEP’s work on [Electric Vehicle Lithium-ion Batteries in Lower- and Middle-income Countries](#) and on [Used EVs, battery end-of-life & circularity on the African continent](#)
- ²³ The IEA measures this as battery capacity per passenger kilometre. IEA (2024), [Batteries and Secure Energy Transitions](#).
- ²⁴ The IEA (2024) [Global Critical Minerals Outlook 2024](#) estimates that by 2040, recycled quantities of copper, lithium, nickel and cobalt from clean energy applications could reduce primary supply requirements for key minerals by 10-30%

- ²⁵ IEA (2024), [Batteries and Secure Energy Transitions](#)
- ²⁶ Transport & Environment, 17 July 2023, “[Smaller cars can reduce demand for critical metals by almost a quarter – report](#)”
- ²⁷ The technological needs, optimal battery chemistries and mineral demand vary across battery- powered products from EVs to two- and three-wheelers, aviation, maritime, energy storage and defence.
- ²⁸ Battery Pass (2024), [The Value of the EU Battery Pass](#), Version 0.9.
- ²⁹ Systemiq and OSF, (2024), [Bridging Divides: Building Multi-Stakeholder Dialogue on Europe’s Transition Materials Challenges](#); Dr Shantanu Bhattacharya & Lipika Bhattacharya (2022) [NIO’s Battery-as-a-Service Strategy](#)
- ³⁰ Such as the [EV Leader Board](#) released annually by the Lead the Charge coalition
- ³¹ [EU taxonomy for sustainable activities - European Commission \(europa.eu\)](#), [Revised climate marker handbook_FINAL.pdf \(oecd.org\)](#); [Climate Bonds Taxonomy | Climate Bonds Initiative](#)
- ³² McKinsey and GBA (2023), [Battery 2030: Resilient, sustainable, and circular](#);
- ³³ Natural Resource Governance Institute (2023), [The DRC-Zambia Battery Plant: Key Considerations for Governments in 2024](#)
- ³⁴ The IEA (2024) [Global Critical Minerals Outlook 2024](#)
- ³⁵ IEA (2024), [Batteries and Secure Energy Transitions](#)
- ³⁶ IHS Markit (2023), [Impact of the IRA on Critical Metals and Minerals](#)
- ³⁷ [WWF \(2024\) Bringing Batteries Production to Europe - In A Green and Responsible Way](#)
- ³⁸ [WWF \(2024\) Bringing Batteries Production to Europe - In A Green and Responsible Way](#)
- ³⁹ [FACT SHEET: Partnership for Global Infrastructure and Investment at the G7 Summit | The White House; https://www.state.gov/minvest](#)
- ⁴⁰ These standards include: US [Mineral Security Partnerships](#), the [EU’s Strategic Partnerships on Raw Materials and the EU’s Global Gateway](#), the Japan Organization for Metals and Energy Security (JOGMEC), investment by Saudi Arabia, United Arab Emirates (UAE) and China.
- ⁴¹ European Council for Foreign Relations (2024), [How can Europe and Africa become green industry partner of choice in critical minerals](#)
- ⁴² International Labour Organisation (ILO) (1998) [ILO Declaration on Fundamental Principles and Rights at Work](#) as amended in 2022
- ⁴³ The International Finance Corporation (IFC) includes specific requirements on the application of the Mitigation Hierarchy
- ⁴⁴ The GBA has spearheaded the development of a methodology for the battery carbon footprint in the [Greenhouse Gas Rulebook](#).
- ⁴⁵ [UNECE](#) is developing a globally harmonized methodology for the carbon footprint of automotive products from cradle to grave
- ⁴⁶ Rainforest Foundation Norway (2024) [Short circuits: Exploring the broken links of mineral supply chain policies in the electric vehicle industry](#), May 2024
- ⁴⁷ Systemiq and OSF, (2024), [Bridging Divides: Building Multi-Stakeholder Dialogue on Europe’s Transition Materials Challenges](#)
- ⁴⁸ [First Nations Critical Minerals Strategy](#) (2024)
- ⁴⁹ Extractive Industries Transparency Initiative (EITI), Organisation for Economic Cooperation and Development (OECD) Responsible Business Conduct (RBC) Guidance, OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas, and others