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Unmined Potential?

Opportunities for Development Finance to Support Sustainability and Inclusion in Transition Mineral Supply Chains

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Copper Mine, Peru. Photo by Jose Luis Stephens via Shutterstock.



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GLOSSARY OF ACRONYMS

ADB	Asian Development Bank
ADBC	Agricultural Development Bank of China
AfDB	African Development Bank
AIIB	Asian Infrastructure Investment Bank
BRI	Belt and Road Initiative
CAHRA	Conflict-affected and high-risk area
CAO	Compliance Advisor/Ombudsman of the International Finance Corporation
CBIRC	China Banking and Insurance Regulatory Commission
CCCMC	China Chamber of Commerce of Metals, Minerals and Chemicals Importers and Exporters
CCDR	Country Climate and Development Report
CDB	China Development Bank
CHEXIM	Export-Import Bank of China
CIA	Cumulative impact assessment
CIF	Cost, Insurance and Freight
CFI	Consejo Federales de Inversiones
COP16	16th Conference of the Parties to the United Nations Convention on Biological Diversity, 2014
COP30	30th Conference of the Parties to the United Nations Framework Convention on Climate Change, 2025
CSDDD	Corporate Sustainability Due Diligence Directive of the European Union
CSMMI	Climate Smart Mining Initiative
CSRC	China Securities Regulatory Commission
EBRD	European Bank for Reconstruction and Development
ECA	Export Credit Agency
EIA	Environmental Impact Assessment
EIB	European Investment Bank
EITI	Extractive Industries Transparency Initiative
emde	Emerging Markets and Developing Economies
ESAP	Environmental and Social Action Plan of the International Finance Corporation
ESG	Environmental, Social and Governance
ESRM	Environmental and Social Risk Management
ESRS	Environmental and Social Review Summary of the International Finance Corporation
FI	Financial intermediary
GAPFREE	Green Africa Pre-feasibility Fund for Renewable Energy and Energy Efficiency
GIFP	Green Investment and Finance Partnership

G7	Group of 7
HI	High-income (countries)
ICBC	Industrial and Commercial Bank of China
IDB	Inter-American Development Bank
IDC	Industrial Development Corporation of South Africa
IDFC	International Development Finance Club
IEA	International Energy Agency
IFC	International Finance Corporation
IRENA	International Renewable Energy Agency
JBIC	Japan Bank for International Cooperation
JETP	Just Energy Transition Partnership
JICA	Japan International Cooperation Agency
LAC	Latin America and the Caribbean
LMI	Low- and middle-income (countries)
MDB	Multilateral Development Bank
MEE	Ministry of Ecology and Environment of the People's Republic of China
MIGA	Multilateral Investment Guarantee Agency
MIIT	Ministry of Industry and Information Technology of the People's Republic of China
MoF	Ministry of Finance of the People's Republic of China
MOFA	Ministry of Foreign Affairs of the People's Republic of China
MOFCOM	Ministry of Commerce of the People's Republic of China
NDB	National Development Bank
NDRC	National Development and Reform Commission of the People's Republic of China
NFRA	National Financial Regulatory Administration of the People's Republic of China
OECD	Organization for Economic Co-operation and Development
PBOC	People's Bank of China
PDFI	Public Development Finance Institutions
PGI	Partnership for Global Infrastructure and Investment
PRI	Principles of Responsible Investment
RCI	Responsible Critical Minerals Initiative
RDB	Regional Development Bank
RE	Renewable Energy
RMAP	Responsible Minerals Assurance Program
RMI	Responsible Mining Initiative or Rocky Mountain Institute
TDB	Eastern and Southern African Trade and Development Bank
TM	Transition Mineral
US DFC	United States International Development Finance Corporation

EXECUTIVE SUMMARY

Demand for energy transition minerals (TMs) is set to expand many-fold as global investors and nations embrace the ongoing global energy transition. The task of establishing sustainable and inclusive production methods for these supply chains is an urgent one for source countries – most of which are developing countries located in Latin America and the Caribbean (LAC), Africa and Asia, and the Pacific – to continue making progress toward the United Nations 2030 Sustainable Development Goals.

In this context, public financial institutions such as public development finance institutions (PDFIs) and export credit agencies (ECAs) are uniquely well-positioned to play crucial roles in three ways:

- Direct financial support for TM production, relying on their "patient capital" (lending below market rates for long periods of time), and high-level environmental and social risk management (ESRM) policies to set standards and expectations across growing industries;
- Policy support for institutional capacity development in the government agencies tasked with ensuring that productive sectors benefit – or at least do not harm – local communities and the ecosystems that support them; and
- Consultation and coordination with governments to develop strategies, plans and policies to maximize the benefits and minimize the risks of these expanding sectors.

PDFIs and ECAs take a variety of approaches to these three avenues. As China accounts for over half of all global TM import demand, China's institutions have a long history of being highly active in supporting Chinese firms' overseas investments. In this aspect, China is unique in the scale of geographic breadth of its PDFI operations. More recently, western national PDFIs such as the United States International Development Finance Corporation (US DFC) have joined the industry, although the US DFC itself is a recent entrant, having only begun operations in the last decade. Multilateral development banks (MDBs), and particularly the World Bank, have been active in policy and institutional support for minerals governance and in direct cooperation and coordination with source country governments.

This policy report provides findings following a systematic review of PDFIs' ESRM frameworks, interviews with key stakeholders (including major PDFIs with exposure to the transition mineral supply chain), and a workshop held in September 2024 with practitioners and researchers focused on transition mineral ESRM.

It maps PDFI and ECA involvement in all three avenues, and identifies the following significant remaining gaps:

- PDFIs are limited in their ability to apply patient capital and high-level ESRM to direct TM support in several ways. First, without mineral traceability, it is impossible to fully apply environmental and social standards to project clients' suppliers, as required by the International Finance Corporation Performance Standards. Second, several PDFIs and ECAs are relatively new to directly supporting TM production or relatively new to developing their own ESRM policies and practices, and they lack the needed institutional resources to successfully establish industry standards through their actions.
- PDFI support for policy and institutional capacity varies widely by region. Although this
 support can be crucial for lower-income countries with few institutional resources across
 all productive sectors, few of the countries targeted by this type of support are those with

burgeoning TM sectors. The expansion of concessional finance to middle-income countries, as envisioned by the World Bank evolution road map, may facilitate this step.

 Country platforms for strategy and coordination, including the World Bank's Country Climate and Development Report (CCDR) series and the Just Energy Transition Partnerships, have not yet incorporated environmental and social governance strategies for TM sectors in a robust fashion. Thus, PDFI and ECA support for these goals is necessarily limited.

This report offers the following lessons and recommendations to address these gaps and maximize the potential benefit of the advantages of PDFIs and ECAs, through collaboration with other international bodies:

- A just energy transition must include sustainable and inclusive TM supply chains, though this aspect is often absent from existing energy transition platforms.
- The ongoing green finance reforms in China's financial sector especially including the recent Green Finance Guidelines will set expectations for the performance of Chinese firms' overseas activity. It is crucial that these include transparent and verifiable key performance indicators.
- It is crucial for PDFIs with strong written ESRM policies to resist pressure to weaken them in
 order to expedite future projects. The 2025 International Finance Corporation Performance
 Standards review, presents such an opportunity and must be met with a commitment to
 maintain "gold standard" practices.
- Several nascent industry governance initiatives have promise and could benefit from financial support and coordination from PDFIs. These include the minerals traceability initiative introduced by Colombia at the 2024 United Nations Biodiversity Conference (COP16) and due to be presented for a vote at the 2025 UN Climate Conference (COP30), as well as the expansion of minerals industry certification initiatives such as the Copper Mark, the Responsible Minerals Initiative (RMI) and Responsible Critical Minerals Initiative (RCI). Extending support to these industry-based initiatives could develop the public information necessary for PDFIs to expand their own activities with confidence.
- Transition mineral ESG standards should be underwritten by robust independent monitoring
 as well as grievance and accountability mechanisms within PDFIs. The complaints and
 consultation platform of RCI, while nascent, provides an important avenue for communitybased accountability. Chinese PDFIs that directly support TM production would be wise to
 coordinate with the RCI on the use of this innovative platform. As it develops, it may yield
 lessons for other PDFIs without their own accountability mechanisms.

While PDFIs exist in a constellation of national and international TM governance and production actors, both private and public, their unique policy mandates, patient capital, high-level ESRM and capacity as "knowledge banks" makes them crucial allies with important roles to play in establishing climate justice throughout energy transition supply chains. These recommendations can help PDFIs and ECAs take meaningful steps into that role.

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Salar del Hombre Muerto, Argentina. Photo by JoseFernandoCata via Shutterstock.

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INTRODUCTION

Public development finance institutions (PDFIs) and export credit agencies (ECAs) – including multilateral development banks (MDBs), national development banks (NDBs) and others – play an important role in coordinating and overseeing investment needs for the global low-carbon energy transition.¹ While the urgency for this transition is well recognized by PDFIs, the task is made more complex by the fact that a sustainable and just energy transition requires PDFIs to focus not only on the shift of investment from fossil fuels towards low-carbon technologies, but also the responsible management of upstream energy transition supply chains, such as the extraction of aluminum, bauxite, cobalt, copper, lithium and nickel, among others.

The International Energy Agency (IEA) projects a sixfold increase in mineral demand from 2020 to 2040 under the net zero by 2050 scenario, while the International Renewable Energy Agency (IRENA)'s scenario pushes the estimate even higher (Hund et al. 2020; IEA 2021). Recent literature has revealed the significant and unevenly distributed environmental, social and governance (ESG) risks due to mining for energy transition technologies (Carr-Wilson, K. Pattanayak, and Weinthal 2024; Matanzima and Loginova 2024; Owen et al. 2023). The Business & Human Rights Resource Centre's Transition Minerals Tracker has identified a total of 631 allegations of abuses of labor, environmental and community rights related to transition mineral mining across six minerals (cobalt, copper, lithium, manganese, nickel and zinc) between 2010 and 2023 (Business & Human Rights Resource Centre 2024). In addition to the social, environmental and economic governance challenges that have emerged from the previous commodity booms, the transition mineral boom poses novel challenges to PDFIs in environmental and social risk management (ESRM) due to new geographies, the speed and scale of expansion, and in some cases, newly commercialized mineral extraction techniques with distinctive socio-environmental risks.

PDFIs are uniquely poised to play an influential role in establishing sustainable and inclusive supply chains to power the world for the next century, thanks to their development mandate and role as first movers in new markets. As PDFIs expand low-carbon financing portfolios built upon the expansion of transition mineral frontiers, it is essential to review the preparedness of PDFIs' ESRM frameworks in light of the unique challenges presented by transition mineral production. This is crucial not only for catalyzing the sustainable transition of host countries and ensuring the sustainable livelihoods of communities and workers at transition mineral frontiers, but also for PDFIs to mitigate the social, environmental and economic risks they face in low-carbon investments.

This report includes 17 critical minerals for energy transitions, or transition minerals (TMs) profiled in the World Bank's seminal report *Minerals for Climate Action: The Mineral Intensity of the Clean Energy Transition* (Hund et al 2020). They include aluminum (bauxite), chromium, cobalt, copper, graphite, indium, iron, lead, lithium, manganese, molybdenum, neodymium, nickel, silver, titanium, vanadium and zinc. Several of these are mature industries drawing on centuries of production experience, while others have only recently attracted investment attention.

This policy report will present findings based on a systematic review of PDFIs' ESRM frameworks, interviews with key stakeholders (including major PDFIs with exposure to the transition mineral supply chain), and a workshop held in September 2024 with practitioners and researchers focused on transition mineral ESRM. The report proceeds as follows: first, it establishes the unique role of

¹ PDFIs are publicly-owned financial institutions with mandates to support policy as well as (or instead of) commercial goals. ECAs are national financial institutions with mandates to support the exports of a country's good and services and that country's overseas investors. Some institutions, such as the Export-Import Bank of China (CHEXIM), span multiple categories. Thus, this analysis includes both PDFIs and ECAs.

PDFIs in shaping the social and environmental implications of transition mineral supply chains. Subsequently, it takes stock of existing PDFI activities in terms of a) direct financial support for transition mineral projects, b) policy support for the development of sector-specific environmental and social protection frameworks, and c) inclusion of transition minerals in national energy transition strategies. It then delineats the core challenges and areas of opportunity for transition mineral supply chain governance identified during the workshop, noting the critical importance of PDFI engagement with host country governments, project-affected communities and private sector initiatives. The final section summarizes key takeaway findings and recommendations.

TRANSITION MINERAL PRODUCTION AND TRADE: GLOBAL TRENDS AND THE IMPORTANCE OF CHINA

This report gives particular emphasis to current and potential roles for Chinese PDFIs in supporting sustainability and inclusion in TM supply chains. That choice is based in the unique importance that China plays in this industry. China announced its dual carbon goals in 2020: to achieve peaking carbon emissions before 2030 and carbon neutrality before 2060 (Luo et al. 2022). In moving towards these goals China relies heavily on its relationship with the Global South. Figure 1 compares the distribution among regions for 2023 trade in all goods and trade in TM ores and concentrates. While global trade in all goods is focused on the North Atlantic region, with Europe and North America together accounting for nearly half of all global exports (X) and over half of all global imports (M), the same is not true for TM trade. In the global trade of TM ores and concentrates, China's imports account for 71.2 percent of all global trade. Most of China's imports – 40.4 percent of all global trade – is comprised of China's imports from Latin America and the Caribbean (26.2 percent), Africa (7.9 percent) and low- and middle-income (LMI) Asia/Pacific countries (6.2 percent). High-income (HI) Asian and Pacific countries (particularly Australia, a major producer of iron) comprise most of the remainder of China's TM imports.



Figure 1: Global Trade Distribution for All Goods and TM Ores and Concentrates, 2023

Source: Author compilation from UN Comtrade data.

Note: TMs included are those highlighted by Hund et al (2020). Trade is calculated on a cost, insurance and freight (CIF) basis, based on reported imports, to account for incomplete export data. Does not include imports from other regions such as "Areas, not otherwise specified." Does not include indium or neodymium, which are not individually tracked in trade data. Intra-China trade indicates trade between Hong Kong, Macao and mainland China. LMI = Low- and middle-income; HI = high-income.

However, not all TMs have similar production growth or growth prospects. Hund et al. (2020) estimate the global production growth requirements for 16 TMs to meet energy transition targets in 2050, compared to a baseline year of 2018. Table 1 shows these 16 TMs, the growth requirements found by Hund et al. (2020) compared to actual global production growth since 2018 and required additional growth by 2050 in order to meet energy transition goals.

	Avg. Annual Growth, 2018-2050	Avg. Annual Growth, 2018-2023	Additional Avg. Annual Growth, 2023-2050 (Needed for R.E. goals)
Mineral	(Needed for R.E. goals)	(Actual)	(Needed for R.E. goals)
Aluminum	0.3%	1.9%	-
Chromium	0.0%	-1.0%	0.2%
Cobalt	5.4%	9.2%	4.7%
Copper	0.2%	1.5%	-
Graphite	5.2%	7.4%	4.8%
Indium	3.8%	6.0%	3.4%
Iron	0.0%	0.8%	-
Lead	0.5%	-0.3%	0.6%
Lithium	5.4%	13.6%	3.9%
Manganese	0.1%	1.1%	-
Molybdenum	0.3%	-2.6%	0.9%
Neodymium	1.0%	N/A	1.0%
Nickel	2.1%	8.4%	1.0%
Silver	1.4%	-0.7%	1.8%
Titanium	0.0%	8.6%	-
Vanadium	3.4%	7.0%	2.8%

Table 1: Average Annual Growth in Projected and Actual TM Production, by Weight

Source: Author calculations using Hurd et al. (2020), USGS Minerals Yearbook.

Note: Zinc is omitted as Hurd et al. (2020) do not project needed zinc production growth. Neodymium actual production growth is unavailable.

As Table 1 shows, TM production is already growing quickly. Five of the 16 minerals have already seen production expand enough to meet the needs of renewable energy goals by 2050 (assuming nonenergy demand for these TMs remained constant): aluminum (bauxite), copper, iron, manganese and titanium. Seven of the remaining 11 minerals are on track to meet their 2050 goals, growing at least as quickly needed to meet renewable energy goals.

Figure 2 shows detailed world trade flows in ores and concentrates of two categories of TMs: the five that have already met the production growth goals in Hund et al. (2020) and those still requiring further growth. China's trade relationship with a few regions is particularly crucial for TMs still requiring growth: over half (51.6 percent) of global trade in these commodities is accounted for by China's imports from LAC (29.2 percent), Africa (12.9 percent) and LMI Asia/Pacific countries (9.5 percent). Thus, it is likely that these relationships will continue to grow in importance in the coming years.

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Figure 2: World Trade in TMs, 2023, by Growth Projections

TMs that Have Met Growth Goals (\$287.2b)

TMs Needing Additional Growth (\$37.2b)



Source: Author compilation from UN Comtrade data.

Note: TMs included are those studied by Hund et al. (2020). Trade is calculated on a CIF basis, based on reported imports, to account for incomplete export data. Does not include imports from other regions such as "Areas, not otherwise specified." Does not include indium or neodymium, which are not individually tracked in trade data. Intra-China trade indicates trade between Hong Kong, Macao and mainland China.

Figure 3 further explores the TMs that need additional growth to meet renewable energy targets. Four TMs comprise 74.8 percent of trade in this category: lithium, molybdenum, chromium and nickel. LAC accounts for most of world lithium and molybdenum exports, Africa accounts for most chromium exports, and Asia/Pacific region accounts for most nickel exports. Thus, these regions' minerals extraction sectors are likely to receive continued investment growth, particularly from China. The following sections explore the possible roles for PDFIs – particularly Chinese PDFIs – in supporting sustainability and inclusion as these sectors grow.

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Figure 3: 2023 Trade, Top TMs Needing Additional Growth for 2050 Renewable Energy Goals



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PDFI AND TRANSITION MINERALS: PATIENT CAPITAL, ENVI-RONMENTAL AND SOCIAL RISK, AND THE ROLE OF CHINA

According to Wood Mackenzie's estimates, mining companies need to invest nearly \$1.7 trillion in the next 15 years to produce TMs needed for the global energy transition (Desai 2021). Mining projects and companies can secure funding from a range of sources, including government funding, PDFIs and ECAs, commercial banks, private equity funds, end users, as well as other players in the value chain such as commodity traders (Beatty, Walton, and Papworth 2023). However, despite what seems to be the start of a new cycle of commodity boom, access to capital in the mining sector remains challenging (Bontje and Duval 2022).

In the mining sector, the pro-cyclical nature of commercial investment may lead to boom-and-bust cycles that pose risks to local communities without consistent environmental and social protections, for example in Latin America (Albright et al. 2023; Gallagher and Yuan 2017; Le Billon and Good 2016; Ray et al. 2023). Private investors themselves face associated risks, delays, suspensions, cancellations and investor-state disputes, due to complaints from or conflicts with local communities. To avoid repetition of past mining cycles' problems, the "patient capital" that differentiates state finance of PDFIs and ECAs can play a powerful role. Lin and Wang (2017b, 2017a, 2024) proposed this "patient capital" framework for the Belt and Road Initiative (BRI) to fill infrastructure financing gaps. Its application as a framework has since broadened to encompass the comparative advantage of PDFIs and ECAs globally (Deeg and Hardie 2016; Kim 2019). While recent mineral booms driven by energy transitions are attracting private capital at high speed and intensity, sustainable and inclusive growth of the transition mineral supply chain requires patient capital brought in by PDFIs and ECAs to support closing the financing gap with high-level environmental and social performance.

Existing evidence indicates that PDFIs and ECAs currently account for a very limited proportion of total investments in the transition minerals sector, which on the other hand signals a potential growth opportunity for PDFIs and ECAs. Such potential exists because of PDFIs' longer-term decision-making horizons and development mandate.

Environmental and Social Risk and Transition Minerals

The mining of transition minerals pre-dates the rise of the commodity boom engendered by the energy transition. While these minerals may contribute to a cleaner energy future, it is important to consider the environmental and social risks from the lessons learned in past commodity booms (and busts) and from the ongoing expansion of transition mineral frontiers.

In addition, the environmental and social impacts are distributed unevenly at transition mineral frontiers, especially in peripheries and affecting Indigenous communities, as well as ecologically fragile regions that face water stress (Carr-Wilson et al. 2024). Some existing projects, with or without PDFI or ECA involvement, have been subject to conflicts, controversies and judicial disputes. These include land and relocation disputes with local communities and may imply project delay or cancellation, impacting businesses and investors. For example, two of IFC's projects related to transition minerals² have been subject to community complaints submitted to the Office of the Compliance Advisor/Ombudsman (CAO), the International Finance Corporation (IFC) independent accountability mechanism (CAO 2024).

² The Oyu Tolgoi copper and gold mine in Mongolia and the Sangaredi bauxite mine in Guinea (CAO 2024).

While disputes relating to extractive industries are sometimes unavoidable, accountability mechanisms such as IFC's CAO provide important channels for communities to raise and address concerns (Day and Liang 2023). A comprehensive ESRM framework that includes accountability and grievance mechanisms forms an essential part of the governance of patient capital for sustainable development. As PDFIs and ECAs exist to provide coordinated finance for policy goals, with shared principles of green finance adopted through Finance in Common, it is crucial for them to be equipped with adequate ESRM to manage environmental and risks and prevent the development mandate from being undermined. Cases have already emerged in which the principles of green finance and ESRM are integrated in the projects or strategic planning among PDFIs. For example, the Inter-American Development Bank (IDB)'s recent technical cooperation project on transition minerals in LAC, "A future-ready region: critical minerals for growth," includes addressing the challenges of managing socio-environmental impacts (IDB 2024).

Further, external pressure including national and regional regulations on supply chain due diligence and transparency is increasing incentives of companies and investors to prioritize sustainable supply chains. These include, for example, the Dodd-Frank Act Section 1502 (which mandated US-listed companies to carry out due diligence on minerals sourced from the Democratic Republic of Congo and neighboring countries), the EU Battery Amendment Regulation (2022), and the more recently approved EU Corporate Sustainability Due Diligence Directive (CSDDD). These regulations, despite being enacted in Europe or the US, will extend to companies around the world, including mining companies and investors, through upstream tracing of transition mineral supply chains. International frameworks such as the Equator Principles and OECD's common approaches also provide important frameworks for PDFIs and ECAs to manage environmental and social risks.

Although existing financing facilities may enable PDFIs to exit the projects before the end of their lifecycle, socio-environmental impacts exist across the project lifecycle and even after the closure of mines. It is thus important to take a lifecycle approach in enhancing the ESRM at PDFIs and associated monitoring and accountability mechanisms. Table 2 presents an overview of common ESRM governance themes across the project lifecycle, providing a framework for our comparative review of the ESRM across PDFIs.

Lifecycle stage	Common governance themes
Preparation	Project pre-feasibility study support (technical and financial)Inclusion/exclusion lists
Planning	Impact/risk rating systemConsultation with potentially affected communities
Construction	Disclosure of lender/borrower documentsIndependent monitoring
Operations	Grievance/accountability mechanismProject completion/evaluation provisions

Table 2: Common ESRM Governance Themes Across Project Lifecycle

Source: Authors' compilation. CCICED 2022; Gallagher and Qi 2021; Zhou, Shi and Gallagher 2021.

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Most PDFIs and ECAs review and update their ESRM on a regular basis. This provides an opportunity to take the risks of the upstream transition mineral supply chains into consideration.

In upstream project lifecycle stages, PDFIs and ECAs have the opportunity to expand their reach through greater technical and financial support for project preparation, in order to create pipelines of project proposals that will be able to meet ESRM requirements. At the downstream extreme, many PDFIs lack end-of-project evaluation provisions, creating exposure to risks related to mine closure and post-mining reclamation investment needs.

The Unique Role of Chinese PDFIs

As detailed above, Chinese demand explains over half of world trade in TMs. In the coming years, this importance is likely to grow, particularly China's TM investments in Africa, LAC and developing Asia/Pacific countries. This unique role positions China in the center of global TM supply chains, trade demand and investment.

China is unique in another aspect as well: the unparalleled role of its PDFIs. The China Development Bank (CDB) is the world's largest PDFI, although unlike many other PDFIs it does not receive direct subsidies, and it selects projects on a commercial basis. The Export-Import Bank of China (CHEXIM) is the world's third-largest PDFI; it is not only an ECA but also the avenue through which China extends most of its overseas concessional finance. Together they amount to \$3.5 trillion in assets: more than any global or regional PDFI. While several countries' PDFIs and ECAs are involved in TM supply chain development, the sheer scale of China's TM demand and its PDFIs necessarily give China and its institutions a central role in global TM supply chain management. These two PDFIs provide the backing for Chinese firms to participate in transition mineral supply chains overseas. For this reason, the Chinese PDFIs are a key avenue through which the ESG of Chinese firms' international operations can be impacted. In transition mineral supply chain governance, ongoing ESRM reforms in Chinese PDFIs will apply to an important share of global TM development.

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TAKING STOCK OF PDFI PARTICIPATION IN TRANSITION MINERAL SUPPLY CHAINS

This section surveys major PDFIs with exposure to the mining sector based on publicly available disclosures, as well as broader literature and databases. There are three major ways that developing countries, and firms operating there, can seek support from PDFIs and ECAs for their transition minerals sectors: direct financial support for projects; policy support for the development of sector-specific environmental and social protection frameworks; and inclusion in national energy transition strategies. This section considers PDFI/ECA support in each of these three avenues. PDFIs and ECAs included in this stock-taking are those with public project databases or for which third-party databases have been compiled, as listed in Table 3.

Assets (USDb) Year Est'd. Scope Lending type Global World Bank 1945 598.0 Global Sovereign International Financial Corporation (IFC) 1956 108.2 Global Non-Sovereign Regional 1965 Africa African Development Bank (AfDB) 46.4 Both Asian Development Bank (ADB) 1966 301.4 Asia Both Global Asian Infrastructure Investment Bank (AIIB) 2016 60.9 Both 1985 25 African Eastern and Southern African Trade and 9.3 Both Development Bank (TDB) countries European Bank for Reconstruction and 1990 81.3 Global Both Development (EBRD) European Investment Bank (EIB) 1958 605.3 Global Both 1959 LAC Inter-American Development Bank (IDB) 152.0 Sovereign IDB Invest 1984 13.6 LAC Non-Sovereign National PDFIs/ECAs operating abroad China Development Bank (CDB) 1994 2,638.5 Global Both Export-Import Bank of China (CHEXIM) 1994 903.2 Global Both Industrial Development Corporation of South 1940 Southern Non-Sovereign 8.5 Africa (IDC) Africa 2,190.7 Global Japan International Cooperation Agency 1974 Sovereign (JICA) Japan Bank for International Cooperation 1999 143.0 Global Non-Sovereign (JBIC) United States Development Finance 2019 20.0 Global Non-Sovereign Corporation (DFC)

Table 3: PDFIs and ECAs Included in this Analysis

Source: Compiled by authors.

Note: Assets from latest-available financial statements published in 2024.

The PDFI and ECAs listed above are approximately equally split between those that specialize in support for policy and institutional development (discussed in sections 2 and 3 below) and those that specialize in direct industrial support (section 1).

Direct Industrial Support for Transition Mineral Projects

Traditionally a handful of PDFIs and ECAs have been very active in directly supporting mining operations around the globe. Table 4 provides a summary of major PDFIs and ECAs that are either long-time active players or have recently started to enter the mining sector.

Table 4: Overview of Major PDFIs and ECAs Active in the Mining Sector

Category	Region	PDFI/ECA
Long-time active players	Global	International Finance Corporation (IFC)
	Africa	Industrial Development Corporation (IDC)
	Asia	China Development Bank (CDB) Export-Import Bank of China (CHEXIM) Japan Bank for International Cooperation (JBIC)
	Europe	European Bank for Reconstruction and Development (EBRD)
Recent entrants	Africa	Trade & Development Bank (TDB)
	LAC	IDB Invest
	North America	US International Development Finance Corporation (DFC)

Source: Compiled by authors.

While some PDFIs have long been active in the mining sector, including minerals associated with energy transitions, it remains challenging to identify the scale of PDFIs' involvement in the transition mineral supply chain due to fragmented disclosure. This lack of transparency can form a barrier to accountability and responsible governance of the transition mineral supply chain.

Table 5 displays a selection of PDFI and ECA projects with direct participation in TM extraction over the last decade (2015-2024). In addition to the projects listed in Table 5, a few PDFIs have been actively engaged with the sector long before the current mineral boom driven by energy transition, as far back to the 1990s and early 2000s (including for example IFC's loan to Sadiola Hill Gold Project in Mali and China Africa Development Fund's equity investment in Huayou Cobalt). Furthermore, China's PDFIs may have exposure to projects beyond those in Table 5, as the table does not include investment facilities such as China Africa Development Fund (Moses, Gormley and Springer 2022). Furthermore, although Table 5 relies on publicly reported information, CDB and CHEXIM do not publish lists of approved projects. Thus, it is likely that these institutions' TM financing is many times that shown in Table 5.

In the direct financing of transition mineral projects, a variety of tools have been adopted, including direct loans, syndicated loans and equity investment. The financed projects, although mainly focused on mining, also increasingly extend to the refinery and processing sections of the supply chain. This to some extent corresponds with the broader context that mineral-rich countries such as the Democratic Republic of the Congo and Indonesia have started to restrict the export of raw minerals with the intention to strengthen domestic value-added processing and manufacturing supply chains.

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Table 5: Selected* PDFI and ECA Direct Support for Transition Mineral Projects, 2015-2024

PDFI and Project	Country	Mineral/ Product	Financing Type	Amount	Approval Year	
GLOBAL PDFIs and ECAs						
IFC						
Guinea Alumina Project	Guinea	Bauxite	Loan	\$150m USD	2017	
Sal de Vida	Argentina	Lithium	Loan	\$130m USD	2023	
REGIONAL PDFIs and ECAs						
EBRD						
Oyu Tolgoi	Mongolia	Copper	Loan	\$400m USD	2015	
Voskhod Chromium	Kazakhstan	Chromium	Loan	\$242m USD	2015	
Koktaszhal Mine	Kazakhstan	Copper	Loan	\$100m USD	2015	
AYA Gold & Silver	Morocco	Silver	Loan	\$92m USD	2023	
IDB Invest						
Sal de Vida (Canceled)	Argentina	Lithium	Loan	\$50m USD	2023	
TDB						
Trafigura Copper and Cobalt Development Financing Facility	DRC	Cobalt, Copper	Syndication	\$600m USD	2022	
NATIONAL PDFIs and ECAs operati	ng abroad					
CDB						
Chinalco - Toromocho Project ³	Peru	Copper	Loan	\$125m USD	2015	
WP&RK ⁴	Indonesia	Nickel	Loan	\$34m USD	2016	
Chinalco - Toromocho Project ⁵	Peru	Copper	Loan	\$118m USD	2017	
CHEXIM						
Asmara Project ⁶	Eritrea	Cu, Zn	Loan	¥250m CNY	2016	
Kuru-Tegerek Project	Kyrgyzstan	Copper	Loan	Unknown	2017	
Aktogay Project ⁷	Kazakhstan	Molybdenum	Loan	\$800m USD	2019	
Serbia Zijin Copper Doo Bor	Serbia	Copper	Loan	\$68m USD	2021	
Asmara Project	Eritrea	Copper	Loan	\$86m USD	2023	
DBSA						
Mahenge Graphite Project ⁸	Tanzania	Graphite	Loan	\$59.6m USD	2023	
IDC						
Gilgamesh Mineral Processing	South Africa	Cobalt	Loan	\$500m ZAR	2024	

³ Chinalco 2015

⁸ FDIMarkets

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⁴ Jinchuan Group 2021

⁵ Hidalgo 2017

⁶ https://finance.sina.com.cn/jjxw/2023-02-09/doc-imyezuta6308260.shtml.

⁷ https://www.rns-pdf.londonstockexchange.com/rns/9538B_1-2020-2-4.pdf.

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PDFI and Project	Country	Mineral/ Product	Financing Type	Amount	Approval Year	
JBIC						
Escondida Copper Mine (Expansion)	Chile	Copper	Loan	\$300m USD	2017	
US DFC						
Compagnie des Bauxites de Guinee	Guinea	Bauxite	Loan	\$150m USD	2016	
TechMet Limited	Brazil	Ni, Co	Loan	\$25m USD	2020	
TechMet Limited	Brazil	Ni, Co	Equity	\$30m USD	2022	
Twigg Exploration and Mining	Mozambique	Graphite	Loan	\$150m USD	2023	
Phalaborwa Mine	S. Africa	REE**	Equity	\$50m USD	2024	

Source: PDFI and ECA websites except where noted.

Note: 'List intended for illustrative, not comprehensive representation. No major direct mineral extraction projects were found for AIIB, CAF, DBSA, IDB, AfDB and ADB. US DFC years are fiscal years. 'Rare earth elements including neodymium.

While PDFIs' involvement in the transition mineral supply chain is limited compared to private companies and investors' engagement, it is worth noting that the role of PDFIs in norm and governance diffusion could potentially bring in spillover effects through building institutional capacity and expectations for high-level ESRM protections. The role of PDFIs as equity investors also increasingly stipulates PDFIs' responsibility as shareholders. As one of the interviewees that sit on the board of one of the investee companies indicated, "we would be alerted first-hand about incidents and risks."

Through the preliminary survey of the ESRM across national, regional and global PDFIs and ECAs, four broad categories emerge:

- The IFC stands alone in the first category, as a PDFI with a long history of developing ESRM practices and supporting minerals extraction projects.
- A second category, including national institutions such as China's CDB and CHEXIM as well as Japan's JBIC and South Africa's IDC, have a long history of supporting minerals extraction projects but have more recently adopted (or begun the process of adopting) ESRM practices, and have faced the challenge of adapting new policies to existing financing lines.
- A third category, including regional MDBs such as IDB Invest and the Eastern and Southern African Trade and Development Bank (TDB), have ESRM policies that pre-date their involvement in minerals extraction, presenting challenges of adapting existing policies to new sectors.
- Finally, the US DFC was so recently established (in 2019) as to have begun its operations with ESRM standards in place and has already begun to finance significant TM extraction activity.

A review of PDFIs' ESRM and the interviews with PDFI practitioners indicate that IFC's performance standards have become the 'gold standard' for PDFIs to follow, which corresponds with the findings from earlier studies (Gallagher and Yuan 2017). Table 6 provides an overview of the comparison of the ESRM across PDFIs and ECAs with exposure to the transition mineral supply chain. While all the PDFIs and ECAs included here have shown some extent of ESRM provisions, the transparency in terms of project level disclosure varies widely. The Chinese PDFIs (CDB and CHEXIM) are the only PDFIs surveyed that lack a formal community consultation mechanism. However, as will be discussed below, some of these missing elements of ESRM correspond with recent developments in Chinese green

finance policies and industry initiatives, including those that focus on or have implications for the BRI. Further, few PDFIs meet the IFC transparency level of publishing Environmental and Social Review Summary (ESRS) and Environmental and Social Action Plan (ESAP) disclosures for each project.

Table 6: Overview of ESRM Across PDFIs and ECAs Active in the Mining Sector

	Global	al Regional		National					
	IFC	EBRD	IDB Invest	TDB	CDB	CHEXIM	IDC	JBIC	US DFC
Preparation									
Technical support	Х	Х	Х		*	*	Х		
Financial support	Х	Х	Х		*	*	Х		
Planning									
Risk/impact rating system	Х	Х	Х	Х			Х	Х	Х
Community consultation	Х	Х	Х	Х	**	**	Х	Х	Х
Implementation									
Disclosure of lender doc's.	Х	Х	Х					Х	Х
Disclosure of borrower doc's.	Х	Х	Х					Х	
Independent monitors	Х	Х	Х	Х				Х	Х
Operations and Completion									
Project completion/eval.	Х	Х	Х	Х	Х	Х			Х
Accountability mechanism	Х	Х	Х	Х	** *** 1	** *** 1			Х

Sources: Author compilation, Zhang and Gallagher 2023; Nedopil Wang and Bing 2022; Accountability Counsel and Inclusive Development International 2023.

Note: Chinese ongoing reforms include * Green Investment and Finance Partnership (2023) ** Green Finance Guidelines (2022) *** RCI Grievance Mechanism (2023).

It is important to note that there is no "one size fits all" solution to ESRM, especially considering the diverse geographies and the varied local socio-political contexts across the transition mineral supply chain. When projects encounter environmental and social problems, PDFIs may take a variety of approaches, including the suspension of financing or changes in engagement. For example, both IFC and IDB Invest committed to providing financing support for Sal de Vida, a project for the development, construction and operation of a lithium facility in Argentina's Catamarca Province. This project has presented a complex challenge for PDFIs, including the impossibility of conducting a cumulative impact assessment (which should incorporate the effect of this new project in addition to other existing local lithium projects) as other projects in the region did not have published EIAs. This project is profiled in more detail below. It illustrates the challenges in implementation of ESRM policies and procedures, and the complexity of responding responsibly to call for remedy and "responsible exit" when projects encounter environmental and social problems (Doig 2023).

In addition to direct investment or loan provision exemplified in Table 5, PDFIs also extend financing through financial intermediaries (FI), which may indirectly expose PDFIs to mining sector investments and associated environmental and social risks (Doig 2023).

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Case Study of Direct DFI Support: Sal de Vida Lithium Project, Argentina

The Sal de Vida lithium project, in the Salar del Hombre Muerto salt pan in Catamarca, northwest Argentina, highlights the complexity of DFI application of ESRM measures when they directly support minerals extraction projects.

The Sal de Vida project received support commitments from two DFIs – IFC and IDB Invest – which are among those with the most comprehensive *de jure* ESRM policies. Both PDFIs require clients to conduct cumulative impact assessment ("CIAs"), taking into account the effects on ecosystems and local livelihoods when the current project is added to other existing activities in the region (IDB Invest 2020; IFC 2012). The IFC in particular has developed a detailed guidebook on cumulative impact assessment and management for clients (IFC 2013). However, as the IFC guidebook notes, "CIA is evolving and there is no single accepted state of global practice" (IFC 2013), a statement that is directly quoted in the project's Rapid CIA summary (IDB Invest 2023a). Thus, there is no simple metric for evaluating the adequacy of a project's CIA, and it is beyond the scope of the present exercise to evaluate the robustness and effectiveness of the environmental reports conducted for the IDB Invest and IFC (IDB Invest 2023b; IFC 2021).

Both IDB Invest and IFC classified Sal de Vida as risk level "A," indicating high potential for impacts and requiring the most thorough due diligence processes. The IDB Invest ESAP specifically directs project owners to update practices to better incorporate potential cumulative impacts of the project in conjunction with other projects already active in the area (IDB Invest 2023b).

Nonetheless, the project faced difficulties in the form of local communities' access to information regarding the cumulative impacts to the local Los Patos River watershed from the multiple lithium project present, including not only Sal de Vida but also several other lithium projects in the same salt pan, which together pose much greater risks than any one project alone (Asamblea Pueblos Catamarqueños et al. 2023).

Concerns over access to environmental information appear to be generally well-founded for lithium activity in the Salar del Hombre Muerto region. For example, Marconi, Arengo and Clark (2022) identify eight active lithium projects in the Salar del Hombre Muerto. However, the Argentine public research center Consejo Federales de Inversiones (CFI) notes, in the literature review of its independent Los Patos basin hydrogeological study, that it was able to identify and incorporate Environmental Impact Assessments (EIAs) from just four lithium projects, including Sal de Vida (CFI 2019). CFI specifically identifies another project developer – Galan Lithium Ltd with two active projects – as not having cooperated with CFI requests for information. CFI's final recommendations call for significantly more intensive hydrogeological study and a stepwise increase in local efforts to monitor water levels (CFI 2021). Without EIAs from neighboring projects, it is impossible for new projects to conduct truly cumulative impact assessments.

While these transparency concerns apply to the entire Los Patos watershed, Sal de Vida itself was not without its own transparency difficulties. According to civil society reports, it notably relied on QR codes – in an area too remote for widespread internet access – to advertise upcoming community consultations (Asamblea Pueblos Catamarqueños et al. 2023). This type of application of common industry practices in inappropriate cultural and physical locations is difficult for DFIs such as IFC and IDB Invest to track from distant headquarters and requires the oversight of local institutions.

Indeed, local institutions became central in the oversight of Sal de Vida and its neighboring projects in 2022. Local concerns over water management grew after the depletion (and in some places disappearance altogether) of the Los Patos River, used in local lithium projects' groundwater pumping operations as well as a crucial source of freshwater for local communities. The cacique of one such

community, Elías Guitan of the Comunidad Originaria Atacameños del Altiplano, responded in 2022 by filing suit in Catamarca provincial court to halt the licensing of Livent lithium, also in the Salar del Hombre Muerto region.

Over the course of the suit, two major developments occurred. First, Sal de Vida developer Galaxy Mining (later Allkem) applied for and received approval for IFC financing, which was signed in July 2023 (IFC 2025). Second, in January 2024, Allkem merged with Livent (the subject of the Catamarca lawsuit) to form Arcadium Lithium. By the time of the final court ruling, the Sal de Vida project – now with IFC support – was owned by the company at the center of the lawsuit.

The Catamarca Supreme Court issued its decision on March 13, 2024. It suspended the issuance of new lithium licenses until the Catamarca provincial government carried out a cumulative environmental study of all lithium extraction projects in the Salar del Hombre Muerto region, and the impacts of this group of projects on the landscape, flora and fauna, climate and environment as well as the quality of life of the region's inhabitants and affected Indigenous communities (Poder Judicial Catamarca 2024).

That same month, IDB Invest noted that Arcadium Lithium requested the cancellation of its loan, before any disbursement (IDB Invest 2025). Seven months later, in October 2024, mining major Rio Tinto announced its intention to purchase Arcadium (Rio Tinto 2024). Although the IFC has not made a public statement regarding the project, as of January 2025 it lists the project as "completed" (IFC 2025).

Taken together, then, the history of DFI support for the Sal de Vida project showcases several complexities of DFIs' task of applying robust standards to an emerging, high-risk sector. First, as with many mineral extraction projects, its remote location necessitates a culturally and geographically appropriate approach to stakeholder engagement, perhaps beyond what DFIs can effectively monitor from their distant headquarters without significant local government oversight. Secondly, as with many evaporative lithium projects, it shares a salt pan with several other lithium producers. While Sal de Vida published environmental and social impact assessments, including summary CIAs, the coverage of these reports is seriously limited when other local producers do not publish their own reports, making the cumulative impacts difficult to estimate. This complication – especially in light of the results of the Catamarca Supreme Court case – highlights the importance of a well-informed local government with robust environmental information and the political will to enforce existing standards. Finally, the process of smaller firms merging with larger ones over the span of a mine's life cycle is not uncommon, and can further complicate accountability, even embroiling DFI clients in high-profile environmental lawsuits through their mergers with other firms.

PDFI Policy Support for Sustainable and Inclusive TM Sector Development

As the Sal de Vida example shows, successful ESRM requires informed and involved local government regulators in addition to the oversight of lenders and investors. Among PDFIs and ECAs that specialize in supporting policy and institutional capacity development, only a few have provided significant lending or grants for projects with the explicit aim of developing social and environmental protection or management for mining sectors. These are not typically differentiated by the type of metal or mineral extracted. Thus, Table 7 displays policy and institutional capacity support for sustainable and inclusive mining sectors in general, by PDFI and region.

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Table 7: Policy Support for Social and Environmental Governance of Minerals Sectors, 2014-2023, estimated USDm

Region	ADB	AfDB	IDB/IDB Invest	World Bank	TOTAL
Africa		3.4		1,744.6	1,748.0
Asia	600.0			172.0	772.0
Europe				1.1	1.1
LAC			33.0	40.0	72.7
Oceania				10.0	10.0
Global				0.9	0.9
TOTAL	600.0	3.4	33.0	1,968.5	2,604.6

Source: PDFI and ECA websites.

Note: JICA projects, such as the KAMPAI (Kabwe Mine Pollution Amelioration Initiative) project in Zambia, are not included as financial commitment amounts are not available. World Bank includes International Bank for Reconstruction and Development (IBRD) and International Development Association (IDA). AfDB = African Development Bank.

Figure 4 compares each country's share of PDFI mineral governance policy support and their share of global TM exports, among emerging market and developing economies (EMDEs). Countries with high participation in TM export markets are shown in red, those receiving a high share of PDFI mineral governance policy support are shown in blue, and those with high shares of each would be shown in purple if any such countries existed. As Figure 4 shows, PDFI policy support has predominantly been targeted at the lowest-income countries, particularly Burkina Faso, which has received an estimated \$495 million in World Bank lending related to mining governance, or approximately one-fourth of all World Bank lending in this area. The lowest-income countries undoubtedly have tremendous need for such support. However, the absence of purple countries in Figure 4 indicates that MDB policy support for minerals governance has not yet begun to significantly extend to TM exporters.

Figure 4: National PDFI commitments in mining policy support, 2014-2023, and TM exports, 2023 (EMDEs only)



Source: Author compilation from UN Comtrade data, PDFI websites.

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Figure 4 shows that there is vanishingly little overlap between the countries receiving direct mining support and those receiving policy support for sustainability and inclusion. The only country with significant representation in both Table 5 and Figure 4 is the Democratic Republic of the Congo, which accounted for 74 percent of global cobalt production in 2023, according to the United States Geological Survey (USGS 2024).

The lack of strong representation of countries with significant transition mineral production among countries receiving policy support for transition mineral supply chains indicates that these countries are not yet reaching out to MDBs for policy support. However, an opportunity to extend policy support to largely middle-income TM exporters may emerge through the World Bank "evolution" process, which envisions extending concessional finance to middle-income countries (World Bank 2022). If this expansion occurs, it will enable the expansion of MDB policy support – at least through the World Bank – to the largely middle-income countries most active in TM production and exports.

National Policy Strategies and Goals

Finally, in addition to direct minerals and mineral policy lending, PDFIs may play an advisory role, compiling research and developing global and national strategies. Some recent PDFI initiatives also feature high-level commitments and related advisory services in view of the intensifying climatedriven demand for minerals. For example, the World Bank Group and IFC launched the "Climate Smart Mining Initiative (CSMMI)" in 2019 to address the climate and material footprints of the mineral sector in resource-rich developing countries (World Bank n.d.).

The relative lack of specific PDFI policy support for developing sustainable and inclusive transition mineral supply chains is not surprising given the lack of national engagement with the topic through energy transition strategy reports, specifically the World Bank Country Climate and Development Reports (CCDRs). CCDRs are produced by the World Bank, IFC, Multilateral Investment Guarantee Agency (MIGA) and International Monetary Fund (IMF), with input from national governments, civil society and academic experts. CCDRs coalesce country strategies for engaging with global energy transitions in a way that is economically as well as environmentally sustainable. CCDRs represent a major avenue through which these international financial institutions guide and support energy transition strategies at the national level.

As of November 2024, CCDRs have been produced for 54 low- and middle-income countries. Approximately half of those 54 countries, 22 specifically mention the potential for economic gains from transition mineral deposits, demonstrating the global significance of this sector for developing countries' future growth trajectories. For each of these 22 countries, Table 8 summarizes the extent to which the CCDR mentions the goal of incorporating environmental and/or social protections, or strategies in place to ensure sustainable and inclusive sector development. For 18 countries, a general goal is mentioned of minimizing negative impacts. For half of these – 9 countries – the CCDR suggests a strategy for meeting goal, such as regulating informal mining, improving land rights records and developing multi-stakeholder engagement processes. Based on these results, it is clear that a significant gap remains for developing national strategies and frameworks for sustainable transition mineral sector development.

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Table 8: Sustainable Mining Recommendations in CCDRs with TM Components

Country	Approach	Selected recommendation(s)
Africa Region		
DRC	Specific	"foster supply chain transparency, improve working conditions, eradicate child labor, enhance environmental responsibility, and promote gender equality."
Ethiopia	None	
Ghana	Specific	"Regulating and allocating areas for small-scale mining to reduce land degradation Enforcing miners' land rehabilitation obligations upon completion of mining activities."
Liberia	Specific	"Establishing a cadastre of customary land rights would legally identify landowning communities and enable targeted programs for ensuring their participation and consultation on mining activities occurring under their land."
Malawi	General	"climate change impacts exacerbated by defore station caused by mining activities."
Mozambique	Specific	" sound land-use planning and impact assessments."
Sahel G5 ²	General	"minimizing environmental impacts."
South Africa	None	
Zimbabwe	Specific	"A transparent and competitive allocation of mining concessions with green mining standards."
East Asia, Pacific Reg	gion	
Indonesia	Specific	"Reduce deforestation [and] forest degradation on mineral soils"
Viet Nam	Specific	"Effective multi-stakeholder assessment and engagement should be undertaken"
Europe, Central Asia	Region	
Kazakhstan	None	
North Macedonia ³	General	
Serbia ⁴	General	"more sustainable mining would require improvements in the regulatory, institutional, and governance frameworks"
Latin America, Carib	bean Region	
Argentina	General	" producing more knowledge on the social and environmental impacts of lithium mining"
Brazil	General	" adopting forest-smart mining practices to avoid and minimize negative impacts to forested areas, and robustly managing geological data and environmental impacts"
Ecuador	Specific	"formalizing artisanal mining with a progressive tax system and rigorous environmental and social requirements"
Peru	Specific	"curtail small-scale mining and logging, which contribute to high deforestation rates"

Source: World Bank CCDRs (World Bank 2024a).

Notes: 1. "General" means a mention of the goal of managing social and environmental risks. "Specific" means mention of a specific policy strategy to help reach that goal.

2. Sahel G5 includes Burkina Faso, Chad, Mali, Mauritania and Niger.

3. North Macedonia and Serbia appear in Western Balkans 6 CCDR. Other countries in this regional CCDR do not have minerals highlighted for their cases.

4. Totals include all individual countries represented in the Sahel G5 CCDR.

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Another form of PDFI involvement in country platforms is through participation in countries with Just Energy Transitions Partnership (JETPs) platforms. However, as of 2024, PDFI involvement in JETP platforms has not prioritized sustainable and inclusive TM supply chains. JETPs facilitate coordination between national governments and international investors, PDFIs and donors to reduce countries' dependence on fossil fuel energy and maximize benefits of interfacing with global energy transitions. As of 2024, the two countries with the most advanced JETPs are South Africa and Indonesia. South Africa's CCDR highlights the economic potential of developing iron and vanadium deposits, but its JETP focuses entirely on early retirement of existing coal-fired power facilities and replace them with renewable energy generation, without mention of policy to support sustainable or inclusive development of these resources (World Bank 2023). For its part, Indonesia is responsible for roughly half of global nickel production, a fact highlighted in the country's CCDR (as shown in Table 8). Indonesia's JETP Comprehensive Investment and Policy Plan includes five areas of focus, one of which is renewable energy supply chain enhancement. However, this focus area includes only strategic participation in solar power-related manufacturing rather than establishing sustainable and inclusive nickel production processes. PDFIs such as the World Bank and the Asian Development Bank have been closely involved in Indonesia's JETP process, particularly through providing support for expanding electrification and planning early retirement for existing coal-fired power facilities (see for example ADB 2024; World Bank 2024b). However, PDFI involvement in JETP country platforms has not yet included TM sector governance.

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The Boston University Global Development Policy Center (GDP Center) hosted a workshop in September 2024 for practitioners and researchers to discuss PDFI and ECA ESRM policies and practices in relation to transition minerals. The participants included a diverse group of experts, including PDFI practitioners, policymakers, academics and civil society representatives. The workshop objectives were to identify opportunities for PDFIs and ECAs to play a proactive role in promoting inclusive and sustainable patterns of transition mineral investment to ensure a just energy transition, with particular attention to China's ongoing ESRM reforms. Workshop participants included:

- Hylla Barbosa, Senior Associate, Rocky Mountain Institute
- Tony Bebbington, International Program Director, Natural Resources and Climate Change Ford Foundation and Professor, Clark University
- Alvin Camba, Critical Minerals Specialist, Associated Universities Incorporated
- Chen Yingjie, Project Manager, Greenovation Hub
- Juan Luis Dammert, Latin America Director, Natural Resource Governance Institute
- Margaux Day, Executive Director, Accountability Counsel
- Hilton Lazarus, SBU Head, Chemicals, Medical and Industrial Mineral Products, Industrial Development Corporation
- Tsitsi Musasike, Professor of the Practice of Global Development Policy, Boston University
- Cynthia Sanborn, Director, Universidad del Pacífico Center for China and Asia-Pacific Studies
- Rachel Zhou, Secretary General, Responsible Critical Minerals Initaitive
- Zou Yang, Post-doctoral fellow, Peking University Institute for New Structural Economics

Table 9 lists the key topics and guiding discussion questions covered during the workshop. The panels focused on the role of PDFIs and ECAs in ESRM governance and norms, recent PDFI reforms, the obstacles to PDFI ESRM implementation, industry initiatives and upstream project development. The final session of the panel proposed ideas for concrete policy recommendations that address the most urgent challenges and opportunities in transition mineral supply chain governance for PDFIs, ECAs and broader stakeholders.

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Table 9: Key Workshop Topics and Guiding Questions

Key Topics	Guiding Questions
The role of PDFIs and ECAs in sustainable mineral governance	 What roles do PDFIs and ECAs play in governance and norms? How can these roles be leveraged to support the governance of the transition minerals supply chain? What are the opportunities for PDFIs and ECAs to play a more proactive role in ensuring inclusive and sustainable patterns of transition mineral investment? e.g., green or sustainability-linked bond? What are the stages of investment and project lifecycle that need more PDFI and ECA attention and engagement?
PDFIs' ESRM related to transition minerals: challenges and opportunities	 How can PDFIs and ECAs enhance the transparency and inclusion of transition mineral investment projects? What can PDFIs and ECAs do to overcome the capacity barrier and enhance the accountability and traceability of the TM supply chain investment? e.g., through internal and external collaboration? What are the implications of China's recent policies and reforms on PDFIs and BRI for the transition minerals supply chain?
PDFIs and other stakeholders: towards multi-stakeholder collaboration	 How effective are existing PDFI and ECA accountability and grievance mechanisms? What are the opportunities for collaboration, among PDFIs and ECAs and between them and other stakeholders? e.g., how can country platforms be utilized? To what extent can PDFIs and ECAs and broader stakeholders engage with industry certification initiatives and RCI's new grievance mechanism? From policy to practice: How can PDFIs and ECAs overcome implementation gaps?

Source: Author compilation.

The Role of PDFIs and ECAs

Workshop participants coincided with the central argument of this report, that PDFIs and ECAs have a unique role to play in transition mineral ESG. This is in part because of their direct support for projects relating to the transition mineral supply chain, including mining companies, technology development and use of tailings resources, among others. In general, PDFIs and ECAs serve as a catalyst to crowd in the private sector for green transition minerals. With relation to ESG, PDFIs and ECAs influence governance and norms directly through lending agreements as well as by participating on company boards or steering committees. PDFIs and ECAs can also shape norms more informally by educating companies on the importance of ESG, which in turn can have knock-on industry impacts through signaling to other peer companies. Because PDFIs and ECAs can facilitate collaboration among industry actors, this could potentially propagate stronger ESRM practices.

IFC's recent loan to the Sal de Vida project, which was structured as a "green and sustainabilitylinked loan", serves as an example of PDFIs' potential innovation in structuring their financing approaches to support the governance of mineral projects and the sustainable development of mining communities. This was the first "sustainability-linked loan" in the mining sector, with repayment terms linked to sustainability targets including increasing the percentage of women in Sal de Vida's workforce from 10 percent in 2022 to 26 percent by 2030 and expanding the use of renewable energy in the production cycle to 50 percent by 2030 (IFC 2023). However, workshop participants also noted trends that impede such positive impacts, or that may do so in the future. First, there were concerns that PDFI ESG standards might be weakened as part of the push to support green energy projects. The pressure to get money "out the door" to finance green energy could incentivize PDFIs and ECAs to fast-track projects, including by relaxing environmental and social standards. For example, both the IFC Performance Standards and the Equator Principles are up for review next year and there will likely be pressure (especially from senior staff and executives of the PDFIs) to weaken them as a way to address the climate crisis. In addition, participants noted that some PDFIs are being used as tools to support geopolitical goals as part of the rivalry between the US and China. This prioritization of geopolitical interests, including investment targeted at national security or defense technology, may lead to the neglect of sustainable development outcomes. The issue of prioritizing the defense industry for energy transition is also morally fraught.

An important example of this risk is the 2025 IFC Performance Standards review. When the World Bank and ADB updated their own ESRM frameworks, they did so after reviews of the effectiveness of their prior frameworks, conducted by the ADB Independent Evaluation Department (ADB 2020; Dani, Freeman and Thomas 2011). The IFC Independent Evaluation Group has undertaken no such study recently, leaving the IFC vulnerable to pressure to weaken Performance Standards to expedite project approval. Such a move would have ramifications far beyond the walls of the IFC itself, as many other PDFIs use the IFC Performance Standards as a "gold standard" of ESRM and are likely to follow its example.

Even when ESG issues are codified in PDFI and ECA policies and procedures, there are still important challenges to implementing such standards. General challenges with stakeholder engagement and accountability were a central topic of discussion — both are addressed in separate sections below. In addition, participants debated the problems with integration of ESG standards into transition mineral supply chains. Although PDFIs and ECAs tend to follow IFC Performance Standards, which do apply to inputs from suppliers, they lack the tools to trace the origins of these inputs (specifically with regards to the extraction of transition minerals).

To address this gap, there was discussion on whether PDFIs should issue policy loans to support traceability (discussed further below), similar to zero-deforestation commitments in agriculture. In particular, workshop participants noted the potential utility of Colombia's new proposal for global minerals traceability, unveiled at the United Nations Convention on Biological Diversity (UN COP16 2024). Colombia has pledged to lead a working group to develop and propose a binding international agreement on the topic at the 2025 United Nations Climate Change Conference (COP30) in Brazil (Koop and Lo Lau 2024). The establishment of such a scheme is also a direct recommendation of the United Nations Secretary-General's Panel on Critical Energy Transition Minerals (UN Panel 2024). Nonetheless, it will be important to develop such a scheme with sensitivity to the wide variety small-scale TM producers, which vary dramatically including operations plagued by organized crime (which traceability may help curtail) and those characterized by stable, long-term operations (which will need additional support to meet reporting standards) (Espin and Perz 2021; Warneck 2024).

A notable recommendation that emerged is for PDFIs and ECAs to account for the net impacts of PDFI-financed projects rather than focusing solely on specific project assessments (Zarsky and Stanley 2013). Some PDFIs, including the Industrial Development Corporation of South Africa (IDC), are making strides forward by adopting new monitoring models that gather environmental metrics. However, there remains a need for robust accounting methods to better measure and track progress across environmental and social standards. Once measured, PDFIs could also provide financing plans that are pegged to sustainability performance indicators, such as reducing greenhouse gas emissions. For example, in the aluminum industry, CHEXIM Shandong offered a financing plan for a loan to Hongqiao Group Ltd that uses fluctuating costs based on sustainability performance.

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Another recommendation was to increase collaboration among PDFIs and ECAs with regards to transition mineral supply chain financing. Co-financing, for example, has been demonstrated to enhance project outcomes (Lu et al. 2024). Examples in the transition mineral sectors exist, such as CHEXIM and the African Development Bank (AfDB) co-financing in cobalt in Indonesia. Higher levels of co-financing could help diffuse best practices and improve institutional capacity to implement ESRM. In general, PDFI collaboration could potentially mitigate some of the downward pressure on standards discussed above.

Workshop participants also emphasized that PDFIs and ECAs operate alongside host countries, civil society organizations and client firms that together shape transition mineral ESG outcomes. Indeed, PDFIs are worthy of particular attention precisely because of their oversight and coordination roles with relation to these other actors. PDFIs and ECAs can therefore be seen as representing a governance "pinch point" that can bring about significant change to the ways in which ESG is carried out across many different country and sector contexts. The sections that follow describe key challenges and recommendations in relation to each of these actors, based on discussions from the workshop. Key points are summarized in Table 10.

Table 10: Challenges Present in ESRM for Transition Minerals

Category	Challenges	
PDFI policy reforms	 New green finance project development facilities increase demand for transition minerals, but lack backwards traceability and thus cannot address ESRM gaps 	
	 There is a risk that PDFI and ECA ESG standards might be weakened to fast- track energy transition projects 	
	 Chinese PDFIs are subject to recent reforms intended to improve ESRM, however, these generally lay out broad objectives rather than clear rules 	
	 PDFIs and ECAs may lack information to effectively monitor transition mineral projects (example: IDC experiences with mining companies that may or may not comply fully with IDC guidance, also RCI limited oversight of smelters in Indonesia) 	
	 There are concerns that PDFIs and ECAs are being used as tools for geopolitical goals which may prioritize the use of transition minerals for defense or narrow national interests 	
Host country responsibility	 Host countries bear the burden of ESG oversight and enforcement, yet many governments lack robust policy frameworks for transition mineral ESRM 	
	 Host country interaction with Chinese companies, in particular, tends to be bilateral (example: Indonesia, flexibility to respond to needs of local actors) which limits the entry points for multilateral influence 	
	 Host country ESG standards have been shown to loosen in response to drops in commodity prices, which means standards governing transition minerals are vulnerable to downward pressure 	
Community engagement	Consultations can be manipulated by host country governments that support the project	
	• Consultations may exclude certain individuals or groups within communities, especially if communities are divided over the project in question	
	• For many Latin American countries, states own underground resources so communities cannot legally reject mining (meaning consultations lack "teeth")	

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Category	Challenges
Accountability & grievance	• Even PDFIs with strong accountability mechanisms struggle to fully address complaints, especially in relation to environmental issues
	 Contexts in which civic space is restricted can be a barrier to use of accountability and grievance redress mechanisms
	 Risk of reprisals are a major factor suppressing complaints (complainant anonymity mitigates but does not eliminate this risk)
	 Lack of transparency can also be a barrier to accountability, as information on PDFI financing of transition mineral projects may not be public
Certifications & traceability initiatives	• Verifying claims about commodity origins is difficult; only 1 percent of companies are able to declare their products conflict-free
	 Nonfungible environmental and social harms (including impacts to water, land use or biodiversity) that cannot be offset or credited should be addressed through sector-specific traceability systems that are not currently in place at scale
	• Private traceability and certification schemes are often responsive to the requirements of investors rather than to the needs of local communities

Source: Author compilation.

Upstream Project Development and (Cross-) Country Platforms

The global just energy transition calls for coordinated initiatives and partnerships that can address the investment needs as well as the environmental, social and governance risks across the value chain from transition minerals to renewable energy technology deployment. Some initiatives such as the JETPs, which was first announced at COP26 in 2021 to support South Africa's energy transition away from coal-fired power capacity, and the Green Investment and Finance Partnership (GIFP) announced at the BRI Forum in 2023, focus more on the decarbonization of the energy systems.

While it is unclear whether JETPs and GIFP will extend environmental and social impact considerations towards the upstream supply chain, there are other programs, such as the Global Gateway Initiative by the European Union and the Partnership for Global Infrastructure and Investment (PGI) by the Group of 7 (G7), that aim to promote broader infrastructure investment and involve establishing partnerships with mineral-rich countries in Africa and Latin America to support upstream project development. Table 11 provides a summary of these two (cross-) country platforms that address the global investment needs in energy transition, as well as examples of ESRM linked with the initiatives.

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Table 11: Cross-Country Initiatives Related to Transition Minerals Supply Chains

	Global Gateway Initiative	Partnership for Global Infrastructure and Investment (PGI)
Countries	European Union	G7 Countries
Background	The Global Gateway Initiative is a strategy by the EU to invest in infrastructure projects, with EUR 300 billion public and private investment over the period 2021-2027.	The PGI was rolled out in 2022, with the aim to mobilize USD 600 billion, most of which to be raised through the private sector in the form of public-private partnerships, to promote high-quality infrastructure investment.
Transition mineral relevance	The EU has established strategic partnerships on raw materials with Canada (June 2021), Ukraine (July 2021), Kazakhstan, Namibia (November 2022), Argentina (June 2023), as well as DRC and Zambia (November 2023) on promoting secure, sustainable and resilient raw materials value chains.	The Lobito Corridor is the first strategic economic corridor and a key project launched under the PGII. It is a railway project connecting the port of Lobito in Angola to the city of Kolwezi in the Democratic Republic of the Congo (DRC) and the copper belts in Zambia. It is expected to expand the transportation of transition minerals such as copper and cobalt.
ESRM	For example, in the MOU signed by the EU and Chile on the cooperation in sustainable raw materials value chains, "aligning with environmental, social and governance (ESG) criteria and international standards" and "developing infrastructure with minimal environmental impact" are listed among the five key areas of the partnership.	The Blue Dot Network is a multilateral initiative developed by the USA, Australia and Japan, and endorsed by the G7, as a standard that covers ESG and other aspects of quality infrastructure. But it is unclear to what extent it applies to mining related projects.

Source: Author compilation.

Global institutional investors have also made progress in taking responsible shareholder responsibilities, including engaging with mining companies that are involved in the mining sector, including the transition mineral supply chain. One of the initiatives is the "Global Investor Commission on Mining 2030," which has created a collaborative engagement group on Principles of Responsible Investment (PRI)'s collaboration webpage, with a steering committee comprised of large asset owners such as pension funds in Europe (PRI 2023). The collaborative engagement approach of institutional investors could be of reference for PDFIs, in view of pooling resources for a more collaborative approach in addressing environmental and social risks. This is especially relevant as PDFIs increasingly invest through equity shareholding and also collaborate with each other across geographies, ranging from syndication to co-investment, where different organizations need to align on the environmental and social standards and procedures.

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The Role of Host Countries

Workshop participants came to a general consensus that PDFIs' and ECAs' governance of transition mineral supply chains is heavily shaped by host country standards. Ultimately, it is the countries where investments take place that bear the burden of ESG oversight and enforcement, yet many host governments lack robust policy frameworks for transition mineral ESRM, institutional capacity for their enforcement or robust coalitions to support their development.

General host government policy frameworks also lay the groundwork for transition mineral ESG, for example, policies regarding land titling, community recognition and rule of law. These policies – and crucially, their implementation – are shaped by complex domestic political factors over which PDFIs have little control, especially in the short term. An example of domestic political economy complicating ESG includes Peru's temporary suspension from Extractive Industries Transparency Initiative (EITI) from December 2023 through July 2024 due to an interruption in reporting amidst a period of political instability.⁹ EITI's updated 2023 standards addressed transition minerals and created a unique multi-stakeholder group including industry, civil society and government.

Furthermore, host country ESG standards may lower in response to drops in commodity prices, as has been shown for Latin American countries (Ray et al. 2023). The prices for several transition minerals have fallen recently, which may impact ESG. For example, participants shared that some host country governments such as Indonesia set low ESG standards and do not provide meaningful enforcement, even in sectors that add value beyond extraction such as smelting. Smelting and refining of transition minerals are disconnected from Indonesia's green industrial policies, national level climate commitments and JETP. These climate-oriented commitments are considered long-term goals and have relatively small budgets as compared with, for example, the nickel smelting industry.

Latin American countries in particular boast environmental and social commitments that are among the strongest in the world. The region accounts for 15 of 24 countries that have ratified the International Labour Organisation's Resolution 169, the Indigenous and Tribal Convention of 1989, which recognizes the rights of Indigenous communities to free, prior and informed consultation regarding developments that will affect them through environmental risks (ILO 1989). Even more Latin American countries – 17 – have ratified the Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean, commonly known as the Escazú Agreement. The Escazú Agreement establishes the rights of all affected peoples to information, participation and accountability regarding environmental impacts of developments that affect them. The scale of this ambition coupled with the dramatic volatility of national environmental protections cited above creates a tension that is likely to complicate local authorities' ability to effectively oversee TM projects without additional support and capacity building.

Chinese PDFI Policy Reforms

As discussed in the introductory section, a substantial share of demand for transition minerals is driven by China as a world leader in renewable power industries. As compared to other PDFIs, Chinese financing demonstrates greater flexibility to collaborate with host country leaders (as opposed to, for example, US financing focused on mitigating risk for private investment). A panelist also noted that the Agricultural Development Bank of China (ADBC) has strong ESG performance at the domestic level because of its local coverage via county-level branches. More broadly, at the national level Chinese companies operate under stringent regulations, including in the mining sector. However, important gaps remain in ESRM from a project lifecycle perspective, especially abroad. In particular,

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⁹ https://www.gob.pe/institucion/minem/noticias/989675-ministro-mucho-anuncia-la-reincorporacion-del-peru-a-la-iniciativa-para-la-transparencia-en-las-industrias-extractivas

CDB and CHEXIM lack formal community consultation and accountability mechanisms. Workshop participants emphasized collaboration through international partnerships like the International Development Finance Club (IDFC) to improve Chinese capacity in ESRM.

Nevertheless, it is important to recognize that Chinese PDFIs, including CDB and CHEXIM, have adopted various green investment principles and frameworks over the past decade. For example, the Green Finance Guidelines established in 2022 requires Chinese banks and insurers to set up their own accountability mechanisms. This requirement implies that policy banks and commercial banks alike may also be encouraged to set up accountability channels (Day and Liang 2023). Table 12 provides an overview of some of the latest Chinese guidelines and policies that are applicable to, or have potential impacts on, companies and financial institutions that engage in overseas investment, including in the transition minerals supply chain.

Table 12: Overview of Recent Chinese Green Finance Guidelines and Policies

Year	Policy/Guideline	Ministry/Department
2012	Green Credit Guideline	CBIRC (now NFRA)
2013	Guidelines for Environmental Protection in Foreign Investment and MOFCOM, MEE Cooperation	
2017	Guiding Opinions on Promoting the Construction of Green "One Belt One Road"	NDRC, MOFCOM, MEE, MOFA
2021	Green Development Guidelines for Foreign Investment and Cooperation	MOFCOM, MEE
2022	Guidelines for Ecological Environmental Protection of Foreign Investment Cooperation and Construction Projects	MOFCOM, MEE
2022	Opinions on the Joint Implementation of Green Development in the Belt and Road Initiative	NDRC, MOFCOM, MEE, MOFA
2022	Green Finance Guidelines for the Banking and Insurance Industry	CBIRC (now NFRA)
2023	Green Investment and Finance Partnership	BRI International Green Development Coalition
2024	Guidelines on Financial Support for Green and Low-carbon Development	PBOC, NDRC, MIIT, MoF, MEE, CSRC

Source: Authors' compilation based on publicly available policy documents, with reference to Nedopil and Song, 2023; Ran and Zhang, 2023.

Note: CBIRC: China Banking and Insurance Regulatory Commission; CSRC: China Securities Regulatory Commission; MEE: Ministry of Ecology and Environment; MIIT: Ministry of Industry and Information Technology; MoF: Ministry of Finance; MOFA: Ministry of Foreign Affairs; MOFCOM: Ministry of Commerce; NDRC: National Development and Reform Commission; NFRA: National Financial Regulatory Administration; PBOC: People's Bank of China.

Nevertheless, panelists emphasized that the process for implementing and monitoring these principles remains unclear, including in their application to the mining sector. The aforementioned trends in Indonesia among Chinese smelting companies, for example, do not suggest major departure from established operating patterns, despite new green initiatives. Workshop participants called for the disclosure of implementation plans for the Chinese guidelines, including more clear rules and benchmarks.

Through increasing international experience as well as collaboration with MDBs and private sector actors, Chinese PDFIs and broader financial institutions are learning to better manage environmental and social risk overseas. For example, Industrial and Commercial Bank of China (ICBC) recently withdrew from an overseas project that had significant biodiversity risk. This is a relatively new way

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of operating for Chinese PDFIs, but there is growing recognition that neglecting ESG for overseas investments can result in worse performance. Problems with project performance can damage the image of both PDFIs and companies, whereas robust ESRM such as accountability mechanisms can allow for grievances to be resolved without hurting investors' reputations.

With particular significance for transition minerals ESRM, substantial progress has emerged from RCI, with input from the China Chamber of Commerce for Metals, Minerals and Chemicals Importers and Exporters (CCCMC) and the Organization for Economic Co-operation and Development (OECD). RCI has made strides in developing ESG standards for Chinese mining companies operating abroad. CCCMC's efforts to establish standards and guidelines for the mining sector in China dates back to over a decade ago, including through the Chinese Due Diligence Guidelines for Mineral Supply Chain and an ESG management standard and assessment tool. These standards encompass governance, human rights, labor and environmental issues. Table 13 provides an overview of the guidelines and new mechanism that have been published by CCCMC and RCI, which are applicable to Chinese companies' overseas investment in mineral supply chains.

Table 13: Overview of RCI/CCCMC Guidelines and Mechanisms

Year	Guideline / Mechanism	Context
2011 Revised 2017	Guidelines for Social Responsibility in Outbound Mining Investments	The guidelines were developed under the "Sino- German CSR Project" to enhance the sustainability capacity building of the mineral sector in Chinese overseas investment.
2015 Revised 2022	Chinese Due Diligence Guidelines for Mineral Supply Chain	CCCMC developed the 1st edition of the Guidelines in collaboration with the OECD. The guidelines were revised in May 2022. CCCMC has also developed the Mineral Supply Chain Due Diligence Assessment Tool for smelters and refineries.
2023	RCI/CCCMC Mediation and Consultation Mechanism for the Mining Industry and Mineral Value Chain	The mechanism aims to build a mediation and consultation platform with industry coordination, expert support and voluntary participation throughout the entire life cycle of the mineral value chain, including exploration, feasibility study, construction, operation and mine closure.

Source: Authors' compilation based on publicly available policy documents, with reference to Nedopil and Song, 2023; Ran and Zhang, 2023.

As of January 2025, RCI is developing a new complaint and consultation platform, the Mediation and Consultation Mechanism for Mining Industry and Mineral Value Chain, based on the experience from the past decade's engagement with companies and feedback from international stakeholders (Accountability Counsel & Inclusive Development International 2023; CCCMC 2022). The mechanism is considered a voluntary "mediation mechanism" compared to other existing grievance or accountability mechanisms. This is also the first of such that aims to build a "two-way channel" for bridging the communication and mediating disputes between mining companies and communities in host countries. The mechanism is currently in a pilot stage focusing on countries where ESG issues have arisen in the past such as Indonesia, Zimbabwe and the Democratic Republic of the Congo. Workshop attendees recommended that this process engage communities on the ground in addition to local government actors, while learning from the experience of existing accountability mechanisms (discussed further below).

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Regarding pathways by which civil society actors might encourage PDFI reform, it was noted that Chinese PDFIs are heavily influenced by regulatory institutions like the People's Bank of China and the China Banking and Insurance Regulatory Commission. Those interested in strengthening transition mineral ESRM could work with these institutions to demonstrate the importance of ESG and make the case for why it should be incorporated into financial regulations.

Engagement with Local Communities

Activities along the transition mineral supply chain will inevitably lead to some degree of impact on local communities — especially at sites of extraction — including but not limited to deforestation, pollution, labor and water use. Because of these impacts and the controversies that may arise surrounding them, a common thread throughout the workshop was that it is beneficial for the longevity and productivity of projects to engage meaningfully with local communities. Indeed, complaints relating to stakeholder engagement (especially lack of consultation) are among the most prevalent brought to existing PDFI accountability mechanisms to date. Participants were united in their observation that stakeholder engagement with projects is critical for inclusivity, better relations with local communities and governance (including reducing issues of corruption). However, consultations are not a silver bullet for meaningful engagement. Consultations can be manipulated by governments or even within communities, especially for contentious or politically sensitive projects.

Workshop participants noted that community relations at the project level can often come down to the behavior of individual firms. However, PDFI and ECA standard-setting and at times direct involvement can prove helpful in intervening in these relations. In particular, community engagement provides an early warning system for problems with projects, giving PDFIs and ECA the opportunity to mitigate issues before harm has occurred. The question for PDFIs and ECAs, then, is how to close the distance between themselves and local communities in order to improve ESRM. Participants agreed that there is a general need for more robust upstream community engagement to prevent grievances. The 2022 revision of the Japan Bank for International Cooperation (JBIC) Environmental Guidelines provides a positive example: they now require responses to complaints from local residents as well as from government authorities during project monitoring.

Throughout the workshop, there were discussions of how inclusion should go beyond the "do no harm" principle with relation to local communities. Instead, PDFIs and ECAs would be wise to incorporate community input at the highest practicable level of decision making and planning as well as provide direct benefits. For example, while the IDC lacks a formal participation mechanism, workshop participants cited its experience in the development of communities' and workers' trusts, also placing community members on company boards in some cases. They also supported the re-skilling of communities whose livelihoods were impacted by IDC activities (namely, exit from coal projects).

Accountability and Grievance

Although prevention of social and environmental harm is always preferable, accountability and project-level grievance mechanisms represent an important avenue for improving ESG outcomes if negative impacts do occur. This includes for transition mineral projects such as the IFC-financed Rio Tinto copper mine in Mongolia. In the Rio Tinto case, local herders negotiated a case through the IFC's independent accountability mechanism, which then facilitated a mediated dialogue. The negotiation process resulted in an agreement from the company to implement stronger environmental protections, provide access to fresh water and compensation for harm, among other remedies. Civil society groups estimate that 10 percent of accountability mechanism cases globally relate to mining — approximately 200 out of 2,000 total cases filed to date.

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From the perspective of PDFIs and ECAs, grievance mechanisms are an avenue by which banks can hold their clients accountable to maintaining ESG standards. On paper, the PDFIs with the strongest accountability mechanisms include the Green Climate Fund (GCF), IFC and AfDB. Fortunately, almost all PDFI accountability mechanisms no longer require national remedies to be exhausted before they can be used. This is a positive step in terms of ESRM, because national court cases significantly delay the complaints process and may allow negative project impacts to continue or worsen.

Nevertheless, there are additional concerns regarding the impact of existing PDFI and ECA accountability mechanisms, including the IFC CAO which has been considered a "gold standard" for private sector lending. Only a fraction of accountability mechanism cases to date have resulted in resolutions that address community concerns, according to formal reporting. With particular relevance for transition mineral supply chains, environmental harms are rarely remedied (perhaps due to the difficulties of reversing such damage).

Furthermore, civic space is critical for enabling accountability and grievance mechanisms to function well. Complainants may face challenges like repression and the risk of retaliation in some host countries, including some countries where transition mineral supply chains are located. Complainant anonymity helps to assuage these risks, though closed civic space still has a chilling effect that neither PDFIs nor civil society groups may be able to fully address.

Although accountability mechanisms are flawed, they still represent an important pathway for communities to contest projects. They are therefore a necessary component of ESRM and should be strengthened rather than neglected. The workshop participants recommended that PDFIs without accountability mechanisms adopt them — including the Chinese PDFIs — where possible learning from the past experiences of existing mechanisms like the CAO. In addition, it was suggested that PDFIs could go farther in assuring social and environmental accountability by establishing contingency funds or escrow until ESG targets are met. These could be used to compensate communities if necessary (analogous to an insurance policy against community harm).

Certification and Traceability Initiatives

As mentioned above, green transition projects financed by PDFIs are a major source of demand for transition minerals and existing standards (namely the IFC Performance Standards) require that ESG apply to inputs. Upstream pipeline initiatives such as the Green Africa Pre-feasibility Fund for Renewable Energy and Energy Efficiency (GAPFREE), focused on pre-feasibility studies for renewables projects, would also ideally take environmental and social standards for inputs into consideration (Musasike et al. 2024). However, PDFIs and ECAs currently lack the capability to determine whether commodities like transition minerals were produced with high ESG standards throughout the supply chain. This is a substantial hurdle, given that it is exceedingly rare for companies to be able to verify claims about commodity origins (for example, only 1 percent of companies are able to declare their products conflict-free).

Traceability initiatives attempt to tackle this issue by enabling verification of the history of an item through documented identification. They thereby differentiate commodities based on their performance in avoiding non-fungible damages (such as negative impacts on water, land use, biodiversity and local communities). Rocky Mountain Institute (RMI), for instance, has developed a sector-specific "chain of custody" model to link claims about a final consumer product to verified units of production for aluminum, from mining to smelting. Transition mineral producers that are seeking to demonstrate their sustainability standards and performance to potential investors and funders – including PDFIs – may work with a variety of industry-based assurance programs. Two of the most notable are profiled here: the Responsible Minerals Assurance Program (RMAP) and The Copper Mark.

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The Responsible Minerals Assurance Program (RMAP) is overseen by RMI and works with smelters and refiners as "pinch points" in mineral supply chains (with relatively few actors and decision-makers). Smelters and refineries can be classified as "conformant," indicating successful completion of an assessment against RMI standards, or "active," indicating an ongoing assessment process. Refineries and smelters can work with RMAP in 11 mineral supply chains: cobalt, copper, gold, lithium, mica, nickel, silver tantalum, tin, tungsten and zinc (Responsible Minerals Initiative 2024a, b). Regardless of the mineral, producers must show that they trace the origin and, where applicable, the chain of custody for the raw materials they process, and ensure that their suppliers have policies that address risks related to money laundering or financing of terrorism, with a particular focus on identifying supplies from conflict-affected and high risk areas (CAHRAs) where such policies may be weakly enforced. As of August 2024, RMI reports 418 participating smelters, with the highest concentration in China (111 smelters), Indonesia (39), Japan (39), the Democratic Republic of the Congo (23) and South Africa (22).

The Copper Mark has developed sustainability standards for the copper, molybdenum, nickel and zinc supply chains at the mining site level. Compliance is based on the use of approved Copper Mark assessors and interviews with affected communities and workers. Producers can be graded as fully meeting Copper Mark criteria (indicating the presence and implementation of a qualifying ESRM system, and tracking and reviewing progress and performance toward those ESRM performance standards); not meeting Copper Mark criteria (lacking an adequate ESRM system or implementation thereof); or partially meeting Copper Mark criteria (falling between the other two categories). The Copper Mark has also developed the Copper Mark Chain of Custody Standard that applies to copper products and covers their entire supply chain (The Copper Mark 2022, 2024). Currently, The Copper Mark reports 79 sites or manufacturers that are participating in at least one of these programs globally, with the highest participation in Chile (26 participants) and the United States (19).

Private sector certification schemes support ESG standards by incentivizing companies to improve their performance and enabling consumers to support such efforts. PDFIs and ECAs could play a role in strengthening and supporting such industry-driven certifications, as well as frameworks like the International Sustainability Standards Board. Workshop participants recommend that such traceability models could be scaled up alongside the development of tracking and auditing technology, product-level standards to drive commodity differentiation and more stringent procurement regulations. PDFIs could benefit from supporting such initiatives, both in a) improving their own enforcement of performance standards and b) contributing to the development of new markets for differentiated, ethically sourced commodities.

However, participants noted based on their experiences that these private initiatives are largely directed towards satisfying investors' requirements. There is a need for these certifications to be more responsive to the local communities where extraction takes place, including by providing them with accessible information and mechanisms for participation. In general, certification and traceability initiatives should be developed in such a way that they are capable of addressing local-level needs. To do so, it is helpful to move beyond industry-led initiatives to also incorporate inter-governmental coordination. For example, in October 2024, the Colombian government presented a proposal at COP16 to form a working group to develop an international minerals traceability platform, with plans to present it for a binding vote at COP30 (Rodriguez 2024). This proposal reflects a growing recognition among minerals exporting countries that transparency is a necessary precursor to any successful certification scheme, and that inter-governmental bodies are well-suited to such a role. If and when such a minerals traceability scheme becomes reality, host countries can benefit from PDFI financial and policy support in applying it and enforcing its use.

TAKEAWAYS AND RECOMMENDATIONS

PDFIs, including both multilateral and national development banks, play a unique role in the governance of transition mineral supply chains. PDFIs combine financial and developmental objectives, particularly in regions and sectors where private capital might otherwise be limited or absent. With regard to transition mineral supply chains, several PDFIs have historically been active in mining sectors and others are likely to be increasingly more so in light of the demands brought on by the green transition.

However, PDFIs institutions do not operate alone: rather, they are part of networks of actors, including host countries, civil society organizations and client firms that together shape transition mineral projects, including their environmental and social outcomes. These actors influence resources, regulations and incentive structures with relation to ESRM. Indeed, PDFIs are worthy of particular attention precisely because of their oversight and coordination roles in relation to all of these actors. PDFIs can be seen as representing a governance "pinch point" that can bring about significant change to the ways in which ESG due diligence is carried out across many different country and sector contexts. They also often provide technical assistance and advisory services alongside their financial investments, helping firms to understand and integrate ESG principles into their operations. As such, PDFIs provide a point of entry for improving environmental and social outcomes on a broad scale.

In summary, the key findings of this report are as follows:

- PDFIs are limited in their ability to apply patient capital and high-level ESRM to direct TM support in several ways. First, without mineral traceability, it is impossible to fully apply environmental and social standards to project clients' suppliers, as required by the International Finance Corporation Performance Standards. Second, several PDFIs and ECAs are relatively new to directly supporting TM production or relatively new to developing their own ESRM policies and practices, and they lack the needed institutional resources to successfully establish industry standards through their actions.
- PDFI support for policy and institutional capacity varies widely by region. Although this
 support can be crucial for lower-income countries with few institutional resources across
 all productive sectors, few of the countries targeted by this type of support are those with
 burgeoning TM sectors. The expansion of concessional finance to middle-income countries,
 as envisioned by the World Bank evolution road map, may facilitate this step.
- Country platforms for strategy and coordination, including the World Bank's Country Climate and Development Report (CCDR) series and the Just Energy Transition Partnerships, have not yet incorporated environmental and social governance strategies for TM sectors in a robust fashion. Thus, PDFI and ECA support for these goals is necessarily limited.

In light of these findings, workshop participants put forward an array of recommendations to strengthen PDFI and ECA ESRM in relation to transition mineral supply chains. These recommendations, elaborated in the previous sections, include:

- A just energy transition must include sustainable and inclusive TM supply chains, though this aspect is often absent from existing energy transition platforms.
- The ongoing green finance reforms in China's financial sector especially including the recent Green Finance Guidelines will be crucial to set verifiable expectations for the performance of Chinese firms' overseas activity. It is crucial that these include transparent and accountable key performance indicators.

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- It is crucial for PDFIs and ECAs with strong written ESRM policies to resist pressure to weaken them in order to expedite future projects. The 2025 International Finance Corporation Performance Standards review, presents such an opportunity and must be met with a commitment to maintain "gold standard" practices.
- Several nascent industry governance initiatives have promise and could benefit from financial support and coordination from PDFIs. These include the minerals traceability initiative introduced by Colombia at the 2024 United Nations Biodiversity Conference (COP16) and due to be presented for a vote at the 2025 UN Climate Conference (COP30), as well as the expansion of minerals industry certification initiatives such as the Copper Mark, the Responsible Minerals Initiative (RMI) and Responsible Critical Minerals Initiative (RCI). Extending support to these industry-based initiatives could develop the public information necessary for PDFIs to expand their own activities with confidence.
- Transition mineral ESG standards should be underwritten by robust independent monitoring
 as well as grievance and accountability mechanisms within PDFIs. The complaints and
 consultation platform of RCI, while nascent, provides an important avenue for communitybased accountability. Chinese PDFIs that directly support TM production would be wise to
 coordinate with the RCI on the use of this innovative platform. As it develops, it may yield
 lessons for other PDFIs without their own accountability mechanisms.

Taken together, these recommendations begin to chart a path by which PDFIs can support the green energy transition while also contributing to transition mineral investment that is inclusive and sustainable.

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Taking Stock of PDFI Participation in Transition Mineral Supply Chains

Transition Mineral Workshop Findings

Takeaways and Recommendations

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