POLICY BRIEFING

CATALYSING POLICY REFORM TO ENABLE INVESTOR SUPPORT FOR AN ECONOMY-WIDE TRANSITION IN CHINA AND SOUTHEAST ASIA

October 2025

To inform this paper, the following group has been consulted: the China Regional Policy Reference Group, as well as the broader signatory and stakeholder base.

While the policy recommendations herein have been developed to be globally applicable, the PRI recognises that the way in which policy reforms are implemented may vary by jurisdiction and according to local circumstances. Similarly, the PRI recognises that there may be circumstances where there are merits to allowing market-led initiatives to precede regulatory requirements.

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The Principles for Responsible Investment (PRI) works with its international network of signatories to put the six principles for responsible investment into practice. Its goals are to understand the investment implications of environmental, social and governance (ESG) issues and support signatories in integrating these issues into investment and ownership decisions. The PRI acts in the long-term interests of its signatories, the financial markets and economies in which they operate, and ultimately the environment and society as a whole. The six principles for responsible investment are a voluntary and aspirational set of investment principles that offer a menu of possible actions for incorporating ESG issues into investment practice. The principles were developed by investors, for investors. In implementing them, signatories contribute to developing a more sustainable global financial system. For more information, visit www.unpri.org.

ABOUT THIS BRIEFING

This briefing aims to support institutional investors, policy makers, and broader stakeholders by providing insights into how policy can improve the role of responsible investment in the just transition to a sustainable economy in China and Indonesia. The research focuses on the electric vehicle (EV) value chain between these two countries, given its importance for both climate goals and economic development. However, many of the findings extend beyond the EV value chain, as the integration of real-world sustainability and economic outcomes into investor decision-making is a common underlying theme across sustainability issues.

This briefing is informed by the high-level framework for a sustainable and just economic transition outlined in our report Investing for the economic transition: The case for whole-of-government policy reform. The research focused on the policy landscape and market practices to understand existing frameworks. Stakeholder engagements, including interviews and workshops with PRI signatories, policy makers, companies, and broader subject matter experts, provided valuable insights that furthered our understanding of perceived opportunities. This briefing will support our ongoing engagements with key stakeholders and contribute to efforts advancing a sustainable and just economic transition in China and Indonesia.

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EXECUTIVE SUMMARY

Emerging sectors in China and Indonesia, including the critical minerals and electric vehicle (EV) industries, present significant investment opportunities amid the global economic transition and pursuit of sustainability goals such as the Paris Agreement and the Global Biodiversity Framework (GBF). However, critical minerals linked to the upstream EV value chain also pose sustainability risks, such as carbon emissions, biodiversity loss, and just transition challenges. These factors create trade-offs and uncertainties for investors' long-term value creation. It is therefore imperative for policy makers to establish an enabling policy environment that helps investors capture opportunities while effectively managing sustainability risks to support a just and sustainable transition.

Key insights from this paper include:

The EV value chain in China and Indonesia offers significant opportunities for economic growth, industrial upgrading, and progress toward national climate goals. However, it also poses environmental and social risks, including deforestation, pollution, labour safety, and community displacement. While companies have made climate risk governance progress, critical gaps remain in supply chain oversight, particularly concerning minerals such as nickel and cobalt, as well as in traceability, transparency, science-based targets, and nature-related risk management.

Investors seek to align capital with the transition to meet the goals of the Paris Agreement and the GBF and to create long-term value. However, the externalities and inherent trade-offs within the EV value chain create challenges that require policy intervention. Strengthening environmental and social safeguards can help address these externalities, while greater supply chain transparency and more robust audits can enhance the credibility and accountability of corporate sustainability disclosures.

Public policy plays a key role in advancing economic and sustainability goals, managing systemic risks, and aligning financial and real-economy objectives to drive the economic transition. In China, rapid progress toward climate goals can create trade-offs with nature-related objectives, highlighting the need for stronger policy coherence between climate and biodiversity policies, particularly when these impacts occur upstream and across borders. Financial policies, such as corporate disclosure, investor duties, due diligence standards, stewardship, and public finance, require better alignment with economic transition policies to systematically address externalities in the EV value chain and support a just and sustainable transition.

In Indonesia, strengthening environmental and social safeguards can help investors better identify and manage risks, increase investment certainty, and support more resilient long-term value creation. Greater institutional coordination, regulatory consistency, and local government capacity are key to developing an enabling investment environment. Enhancing investor participation in the transition through encouraging active ownership is also essential. Additional support can come from aligning industrial and trade policies, offering targeted fiscal incentives, and advancing sustainable finance through clearer taxonomies and improved corporate disclosure.

CRITICAL MINERALS AND EV VALUE CHAIN IN CHINA AND INDONESIA

INTRODUCTION

The 2015 Paris Agreement laid the foundation for achieving net zero emissions and driving a global economic transition toward sustainable, low-carbon systems. This transformation from extractive, unsustainable models to equitable, resilient economies presents both risks and opportunities for investors,[1] particularly as clean industries expand and high-emission sectors undergo restructuring. Key emerging sectors, such as critical minerals and EV-related industries, are fuelling strong global demand and unlocking significant investment potential. China and Indonesia, both of which have made economic transition a strategic priority, are central players in the EV value chain: China serves as the world's leading EV manufacturing hub, accounting for over 70% of global production, while Indonesia is a key supplier of nickel, a critical raw material for EV batteries.[2] While strategically important to both countries' economic growth and transition efforts, the EV value chain also poses environmental and human rights risks that may have financial implications for investors.

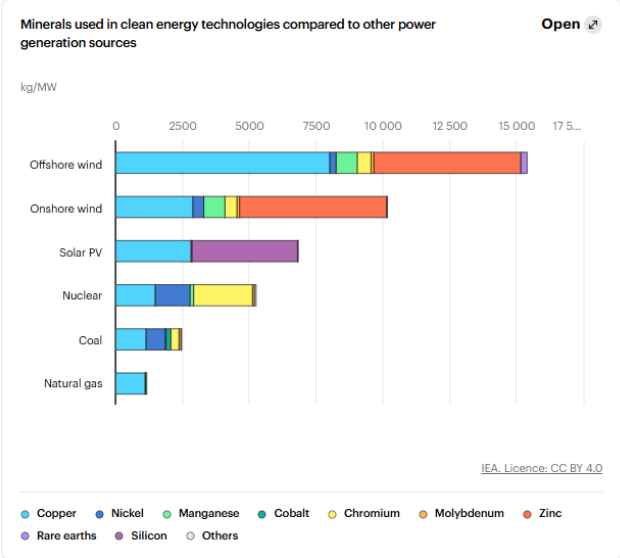
This paper analyses the dynamics of the EV value chain between China and Indonesia to help policy makers in both countries, as well as global investors, address relevant opportunities and risks. It aims to assess policy gaps and provide recommendations to policy makers, supporting investors in capitalising on the sector's vast potential while mitigating sustainability risks related to climate change, biodiversity, and human rights. Promoting an enabling policy environment will further facilitate responsible investment and enhance investors' ability to contribute to the economic transition.

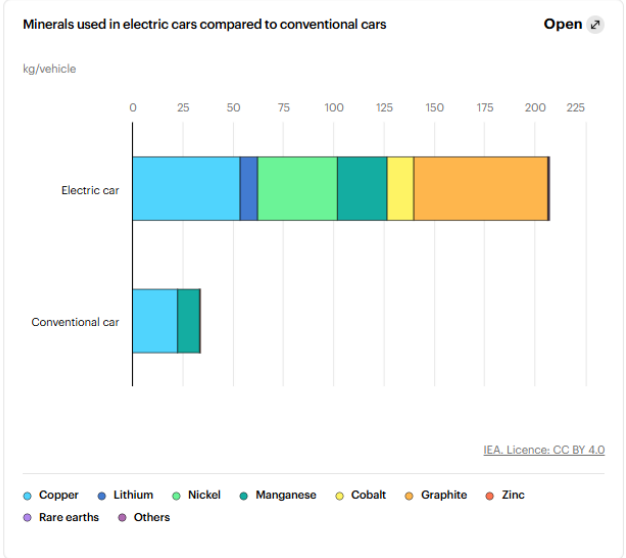
CRITICAL MINERALS AND THE EV VALUE CHAIN AS LEVERS FOR ECONOMIC TRANSITION

A key pillar of the economic transition is the shift from fossil fuels to cleaner, renewable energy sources. However, clean energy technologies are significantly more mineral-intensive than their fossil fuel counterparts.[3] According to the International Energy Agency, an electric vehicle requires six times more mineral input than a conventional car (see Figure 1). As the deployment of these technologies accelerates, global demand for critical minerals such as nickel, lithium, and cobalt is expected to triple by 2030 and quadruple by 2040. In the EV sector alone, mineral demand is projected to increase more than thirtyfold by 2040.[4]

[1] Investing for the economic transition: The case for whole-of-government policy reform, PRI.
[2] Global EV Outlook 2025, IEA.
[3] The term 'mineral' in this context refers to critical raw materials indispensable for the deployment of clean energy technologies. These include lithium, cobalt, nickel, copper, rare earth elements, and others, which are essential inputs for renewable power generation, energy storage systems, and the manufacture of electric vehicles.
[4] The Role of Critical Minerals in Clean Energy Transitions, Executive Summary, IEA.

Figure 1. Mineral use in clean energy technologies and electric vehicles versus traditional energy sources





The EV value chain intersects with multiple industries, including mining, refining, energy, battery manufacturing, automobile production, charging infrastructure, and waste management. While the EV sector's rapid growth in emerging markets can drive economic gains and accelerate the energy transition, the associated expansion of mining activities – often in ecologically sensitive or socially vulnerable areas – raises significant environmental, social, and governance challenges. Without adequate environmental and social safeguards and enabling policies, the EV sector's rapid growth may exacerbate issues such as deforestation, water pollution, land disputes, and labour violations. This makes the EV sector a critical case study for understanding how emerging economies can advance the economic transition while addressing sustainability-related risks.

WHY CHINA AND INDONESIA

China has positioned economic transition as a central public policy goal, identifying electric vehicles as a key strategic industry. The 14th Five-Year Plan (2021–2025) and the 2025 Government Work Report both emphasise a coordinated green transformation, explicitly promoting the large-scale development of new energy vehicles (NEVs). The New Energy Vehicle Industry Development Plan (2021–2035), issued by the State Council, outlines targeted support for the EV sector through fiscal subsidies, tax incentives, and charging infrastructure. To accelerate the global expansion of the EV industry, the government has also issued policy guidelines to strengthen international operations, enhance financial support, and promote trade. **Driven by strong market demand and enabling policies, Chinese EV value chain companies have continued to expand their operations across Southeast Asia, particularly in Indonesia.**

Indonesia has similarly positioned the EV industry as a strategic pillar of its broader economic transition. Central to this strategy is the development of an integrated EV value chain, from critical mineral extraction to battery production and vehicle assembly. Indonesia's critical mineral reserves, especially nickel and cobalt, place it among the world's leading producers.[5] Meanwhile, domestic demand for EV batteries is projected to reach 108.2 GWh by 2030, while EV sales had already

[5] Indonesia - Mining by the numbers, S&P Global.

doubled year-on-year by late 2024.[6] Achieving the government's target of 20 million EVs would require 780 GWh of battery capacity, whereas existing domestic smelters can currently produce only 373 GWh of raw materials, highlighting substantial investment opportunities.[7] Indonesia is also investing in battery waste management, with plans to launch a recycling facility by 2031. Supported by government incentives and rising market demand, the country is expected to reach domestic ownership of 2 million electric cars and 13 million electric motorcycles by 2030.[8]

China has become Indonesia's most influential partner in its EV transition, driven by geographic proximity, trade agreements such as the RCEP and ACFTA, and large-scale investments under the Belt and Road Initiative (BRI).[9] Chinese companies dominate EV-related investments across Indonesia's value chain, particularly in upstream nickel mining and processing, where firms such as CATL, Zhejiang Huayou Cobalt, and Tsingshan Group have established a strong presence. By 2024, 99% of Indonesia's nickel smelter furnaces were affiliated with Chinese firms.[10] In the midstream and downstream segments, BYD and SAIC-GM-Wuling have invested over a combined USD 2 billion in vehicle manufacturing and sales, consolidating China's position as a key player in Indonesia's EV production landscape. Meanwhile, Indonesian companies such as ANTAM and Harita Nickel remain focused on upstream activities, often through joint ventures with Chinese partners. Although downstream manufacturing in Indonesia remains predominantly foreign-led, domestic companies such as VKTR Teknologi Mobilitas are beginning to emerge in higher-value segments, such as electric bus production, signalling early signs of local industry participation.

OPPORTUNITIES AND RISKS IN THE EV VALUE CHAIN

The advancement of the EV value chain offers Indonesia opportunities for economic growth and industrial upgrading by attracting investment, boosting exports, and shifting from raw material exports to higher-value manufacturing. However, the sector also poses environmental and social risks, particularly from nickel mining, including deforestation, pollution, community displacement, poor working conditions, and uneven socioeconomic development. This section discusses the key opportunities and risks from economic, environmental, and social perspectives.

ECONOMIC GROWTH AND INDUSTRIAL UPGRADING

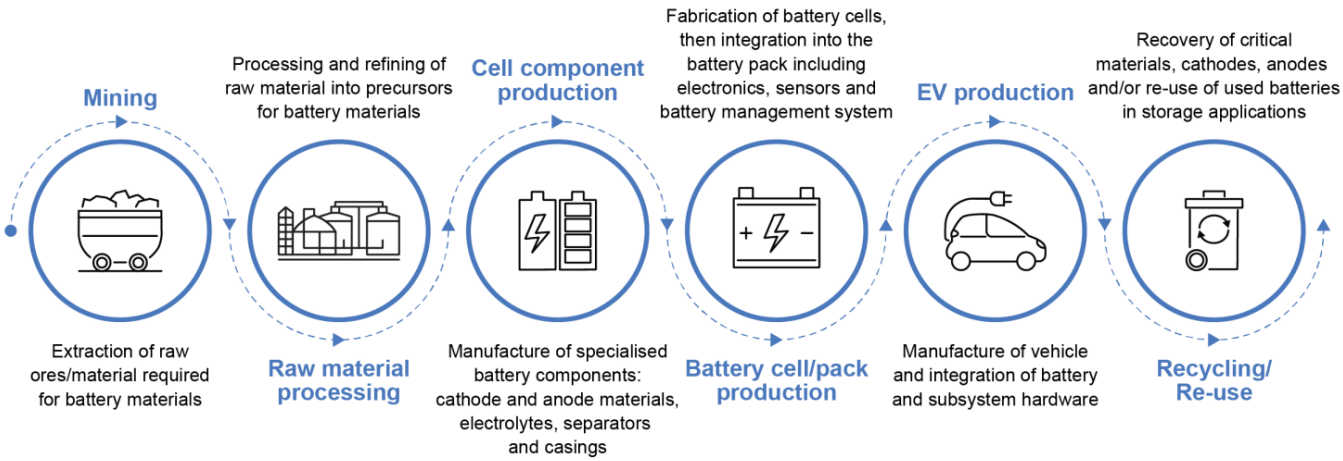
Indonesia has maintained steady economic growth over the decades, recording a GDP increase of 5.05% year-on-year. However, the industrial sector's share of GDP has declined from 20.99% in 2015 to 18.5% in 2024. To address this trend, the government is pursuing industrial upgrading by leveraging its vast critical mineral reserves, particularly nickel, copper, and bauxite, while promoting downstream processing, infrastructure development, and private investment.[11] Foreign direct investment (FDI) in mining and metal processing rose by more than 40% from 2021 to 2022.[12]

[6] Indonesian Automotive Industry Association (Gaikindo), 2024.
[7] Kementerian ESDM RI - Hilirisasi Nikel Hasilkan Nilai Tambah Industri Baterai Kendaraan Listrik.
[8] Indonesian Electric Vehicle Boom: A temporary trend or a long-term vision, IISD.
[9] Indonesia and China to Reinforce Cooperation and Investment.
[10] Prakarsa, Tracking Financing Footprint Environmental and Social Impacts of the Nickel Industry In Indonesia.
[11] RJPMN 2025-2029 (National Medium-Term Development Plan).
[12] Investment Realizations for 2024, Ministry of Investment and Downstream Industry/BKPM.

Chinese companies play a central role in the upstream segment, investing approximately USD 4.88 billion across four smelter projects in the country.[13] CATL alone has committed USD 6 billion to integrated nickel and battery production, while BYD is investing USD 1.3 billion in EV manufacturing,[14] and Wuling has invested over USD 1 billion since 2015.[15] South Korean companies are also major players, with LG Energy Solution investing USD 2.4 billion in battery materials and partnering with Hyundai on a USD 1.1 billion battery cell plant.[16] These investments are transforming Indonesia's industrial base, boosting domestic value capture, creating jobs, and positioning the country as a key hub in the global EV and clean energy supply chains.

ENVIRONMENTAL AND SOCIAL IMPACTS AND RELATED RISKS

Figure 2. Environmental and social risks in Indonesia's EV value chain[17]



Mining	Raw material processing	Cell component production	Battery cell/pack production	EV production	Recycling/ Re-use
Environmental risks • Deforestation and biodiversity loss • Water scarcity and contamination • Pollution from hazardous metals **Social risks** • Land rights violations • Lack of FPIC and weak regulation enforcement • Labour safety issues • Displacement of local livelihoods • Gender inequality	**Environmental risks** • High carbon emissions • Heavy reliance on coal • Air and waste pollution from smelting **Social risks** • Occupational safety risks in smelters • Limited local employment benefits	**Environmental risks** • Energy-intensive manufacturing increasing carbon footprint **Social risks** • Labor and gender inclusion risks in supply chains	**Environmental risks** • Coal-powered electricity heightening emissions **Social risks** • Limited skilled workforce participation; potential job displacement	**Environmental risks** • Manufacturing carbon emissions **Social risks** • Industrial transition risk • Workforce reskilling needs and job losses	**Environmental risks** • Growing battery waste • Low material recovery efficiency due to weak recycling systems **Social risks** • Regulatory uncertainty delaying investment • Limited policy incentives for circular economy jobs

[13] Hearing Meeting with Commission VII of the Indonesian House of Representatives, Ministry of Industry.
[14] Statement by BYD Motor Indonesia President Director.
[15] Statement from Indonesian Minister of Industry and SAIC-GM-Wuling.
[16] Statement made by Investment Minister Bahlil Lahadalia.
[17] This figure is based on the EV battery supply chain by the IEA.

Risks associated with extraction and production: The EV value chain, particularly in the extraction and production stages, poses significant environmental and social risks. In Indonesia, nickel mining has led to approximately 76,000 hectares of deforestation across 329 mining sites (MODI, 2023) and exposure to hazardous metals, threatening biodiversity and ecosystems.[18] [19] [20] Mining operations also demand substantial water resources, raising concerns about scarcity and contamination. From 2019 to 2023, the Alliance of Indigenous Peoples of the Archipelago (AMAN) documented 301 land grabbing cases, affecting 8.5 million hectares of indigenous land primarily in Sulawesi and Kalimantan.[21] These conflicts highlight limited enforcement of land regulations and the lack of Free, Prior, and Informed Consent (FPIC).

Whole EV lifecycle carbon risks: As coal accounts for a large share of Indonesia's energy mix, approximately 40% in 2023,[22] it significantly increases the carbon footprint of EV-related nickel mining, which emits 58.6 tonnes of CO_2 per tonne, above the global average,[23] while battery manufacturing adds up to 5.3 tonnes of CO_2 per unit, making total EV production emissions comparable to those of internal combustion vehicles.[24] This challenges Indonesia's decarbonization targets under its Enhanced NDC, which aims to cut GHG emissions by 31.89% unconditionally and 43.20% with international support by 2030.[25] Battery waste is projected to reach 410 MWh by 2030, but recycling efforts are constrained by unclear regulations, a lack of incentives, and delayed infrastructure, with the first facility expected to be operational only by 2025.[26]

Workforce, labour, and industrial transition risks: The transition to EVs is reshaping jobs across sectors, yet many communities in nickel mining regions such as Sulawesi and Maluku still require support to navigate this transition. Locals, primarily employed in agriculture or fishing, lack the skills or opportunities to enter the industrial workforce, while environmental impacts from mining, such as declining fish stocks and abandoned farmland, have disrupted traditional livelihoods.[27] [28] Gender and social inclusion are also overlooked, with women and women-led SMEs underrepresented in mining-linked supply chains. Labour safety remains a major concern: from 2015 to 2022, 53 deaths and 76 injuries were recorded at 15 nickel smelters, with incidents continuing into 2024 due to poor enforcement of safety protocols.[29] [30] Meanwhile, the shift from internal combustion engines is expected to affect nearly half of domestic auto component producers, as many traditional parts are no longer needed for EVs, threatening jobs and requiring rapid industry adaptation.[31] [32]

[18] Mighty Earth (2024), From Forests to EVs, Page 31.
[19] Mining Is Increasingly Pushing into Critical Rainforests and Protected Areas, WRI.
[20] Auriga Nusantara via AP, 2024.
[21] Indigenous Peoples Alliance of the Archipelago (AMAN).
[22] Handbook of energy and economic statistics of Indonesia 2023, Ministry of Energy and Mineral Resource Republic of Indonesia.
[23] Financial Times (2024), EV transition drives Indonesia's 'dirty' nickel boom.
[24] An Analysis of Five Years of Electric Vehicle Regulation, Investment, and Industry Development in Indonesia.
[25] Enhanced Nationally Determined Contribution Republic of Indonesia 2022.
[26] Indonesia Electric Vehicle Outlook 2023, IESR.
[27] Report: Nickel for the Energy Transition – A Developmental Perspective, Federal Ministry for Economic Cooperation and Development.
[28] Human Rights and Environmental Abuses in Southeast Asia's Nickel Supply Chain, Business & Human Rights Resource Centre (2023).
[29] Nickel Downstreaming Leads to Poor Conditions and Rampant Accidents, Trend Asia (2024).
[30] Statement from South Sulawesi Police Chief Inspector General Agus Nugroho.
[31] Association of Automotive Parts and Components Industries (GIAMM).
[32] Ministry of Industry (Kemenperin).

CORPORATE SUSTAINABILITY PRACTICES ASSESSMENT

This section analyses the sustainability practices of key industrial players from China and Indonesia across the EV value chain, focusing on their approaches in addressing related sustainability risks. The case studies highlight corporate implementation gaps, establishing a robust foundation for analysing how investors and policy makers can improve sustainability outcomes.

This research focuses on key Chinese and Indonesian players in the EV value chain, selected based on market size, operational presence, and impact. These companies include EV manufacturers (BYD, SAIC-GM-Wuling, VKTR), battery producers (CATL), and upstream mining firms (Huayou Cobalt, Tsingshan Group, ANTAM, Harita Nickel), whose practices are assessed in building a sustainable EV value chain. The following insights are derived solely from this defined scope. The assessment methodology is structured around two key perspectives: (1) business operations, strategy, and risk management; and (2) supply chain management. For the detailed assessment methodology, please refer to the Appendix.

BUSINESS OPERATIONS, STRATEGY, AND RISK MANAGEMENT

Companies demonstrate relatively strong governance structures and active policy engagement on climate-related issues. However, further progress is needed in setting science-based targets with interim milestones and in translating commitments into concrete actions. Few companies have disclosed specific budgets for environmental protection and energy-saving efforts.

Nature-related issues are an emerging area of focus for both Chinese and Indonesian companies. While high-level commitments are in place, practices such as board-level oversight, risk assessments, and measurable target setting remain in development. Social issues are increasingly acknowledged in corporate statements, though their integration into governance and risk management systems remains at a formative stage, with future opportunities to enhance transparency and policy engagement. Chinese companies have recognised the importance of engaging with local communities and are actively advancing this through partnerships with local NGOs.

SUPPLY CHAIN MANAGEMENT

Policy and commitment: Chinese and Indonesian companies have made public commitments to addressing sustainability risks, including responsible sourcing and broader environmental and labour practices. In some cases, these policies extend to subsidiaries and partners. However, commitments related to the protection of Indigenous rights and the oversight of critical minerals such as nickel and cobalt remain less common, indicating an area requiring further attention.

Implementation and management: Chinese and Indonesian companies generally report the implementation of risk assessment and mitigation measures, grievance mechanisms, and some degree of supply chain oversight. However, the implementation of traceability systems and external audits remains relatively limited. Given the scale and complexity of the EV supply chain, tracing beyond tier-2 suppliers, especially upstream actors such as local mines, remains highly challenging and largely beyond companies' direct influence.

Transparency in company reporting: Chinese and Indonesian companies exhibit limited transparency in supply chain traceability and risk management. Most do not disclose detailed supplier information, such as specific locations, which may challenge investors' ability to assess regional risks.

Reporting on grievance and remediation outcomes, supplier risk assessments, and external audit results remains rare.

INVESTOR ACTION TO ENABLE THE ECONOMIC TRANSITION AND A SUSTAINABLE EV VALUE CHAIN

Sustainability concerns such as biodiversity loss, climate change, and human rights are increasingly central to investment decisions. Currently, 55% of global GDP (approximately USD 58 trillion) is moderately or highly dependent on nature,[33] while environmental degradation and climate disasters could cost the global economy up to USD 23 trillion by 2050.[34] Human rights violations, especially in global supply chains, can lead to reputational damage, legal consequences, and operational disruptions that negatively impact investor returns. In the EV value chain, the rapid expansion of nickel mining has raised concerns over deforestation, carbon emissions, and labour rights abuses. Without responsible business practices, these risks could undermine the financial performance of companies across the EV supply chain, creating uncertainty and potential losses for investors.

To support a sustainable EV value chain, investors should proactively address key sustainability risks by integrating material issues into investment decisions, engaging in active ownership, and ensuring transparency through robust disclosures. This involves assessing material risks such as deforestation linked to mining, emissions from carbon-intensive production, and labour rights violations. Investors are encouraged to embed these considerations into policies, due diligence, risk assessments, and engagement strategies, aligning investments with long-term sustainability goals. Through active ownership, investors can promote accountability by disclosing active ownership policies, exercising voting rights, filing shareholder resolutions, and participating in collaborative initiatives such as Spring, Climate Action 100+, and Advance. Transparent reporting on nature, climate, and human rights policies, along with implementation and outcomes, is essential at both investor and investee levels. Frameworks such as the PRI's Reporting Framework provide structured guidance to enhance disclosure and drive responsible investment practices.

CURRENT PRACTICES AND CHALLENGES FROM INVESTORS

Investors seek to support the transition, contribute to the goals of the Paris Agreement and the GBF, and generate long-term value through the process. While the EV value chain offers substantial investment opportunities, it also presents challenges and trade-offs, many of which involve externalities that require targeted policy intervention. This research draws on interviews with PRI signatories involved in the Spring, Climate Action 100+, and Advance initiatives, whose experience with companies across the EV value chain in China and Indonesia provides critical investor insights. Key findings are summarised below.

As investors increasingly integrate climate, nature, and social considerations into their investment processes, they have identified specific sustainability risks across the EV value

[33] Managing nature risks: From understanding to action, PWC.
[34] The economic case for net zero is irresistible, Swiss Re Group.

chain. In the upstream segment, key risks identified include land-use change, deforestation, water consumption, and social impacts on local communities. In the downstream segment, significant emphasis is placed on supply chain engagement to ensure compliance with environmental and social standards, as well as on waste management, particularly the responsible disposal and recycling of end-of-life batteries.

While companies have made progress in supply chain management in recent years, transparency in sustainability disclosures remains inadequate, potentially undermining investor confidence. While most companies disclose sustainability risk assessments, significant gaps remain between corporate practices and investor expectations. Risk assessments often cover only part of the supply chain, and the results are rarely disclosed. Limited transparency hinders investors' ability to evaluate environmental and social risks, with concerns over commercial confidentiality further restricting supplier information. Investors increasingly call for independent third-party audits to strengthen accountability and expect clearer disclosure of sustainability-related budgets to enhance the credibility of corporate sustainability commitments.

Investors face ongoing uncertainty in addressing nature-related issues due to the lack of clear guidance and implementation plans under national targets such as GBF. While climate risk assessment benefits from established methodologies and frameworks, evaluating nature-related risks remains relatively challenging due to the absence of industry standards and measurable indicators. Currently, investors largely rely on evaluating companies' nature-related commitments and policies, with limited clarity on how to develop concrete and comparable metrics to measure nature-related impacts. Therefore, investors are calling on policy makers to take a more active role in establishing unified industry guidance, including clear disclosure metrics, to enable coordinated action and support the achievement of national biodiversity goals.

Policy misalignments – including trade-offs between climate and nature objectives, gaps between national commitments and local implementation, and inconsistencies between domestic and international sustainability standards – can create uncertainty for investors pursuing long-term value. While China and Indonesia are committed to global frameworks such as the Paris Agreement and the GBF, a strong emphasis on climate goals can create trade-offs with nature-related objectives, underscoring the need for coherent climate and biodiversity policies. Inconsistencies between domestic and international standards on sustainability disclosure and due diligence may also create compliance challenges for companies and investors. In response, investors encourage companies to engage in international initiatives on responsible mining and supply chain management.

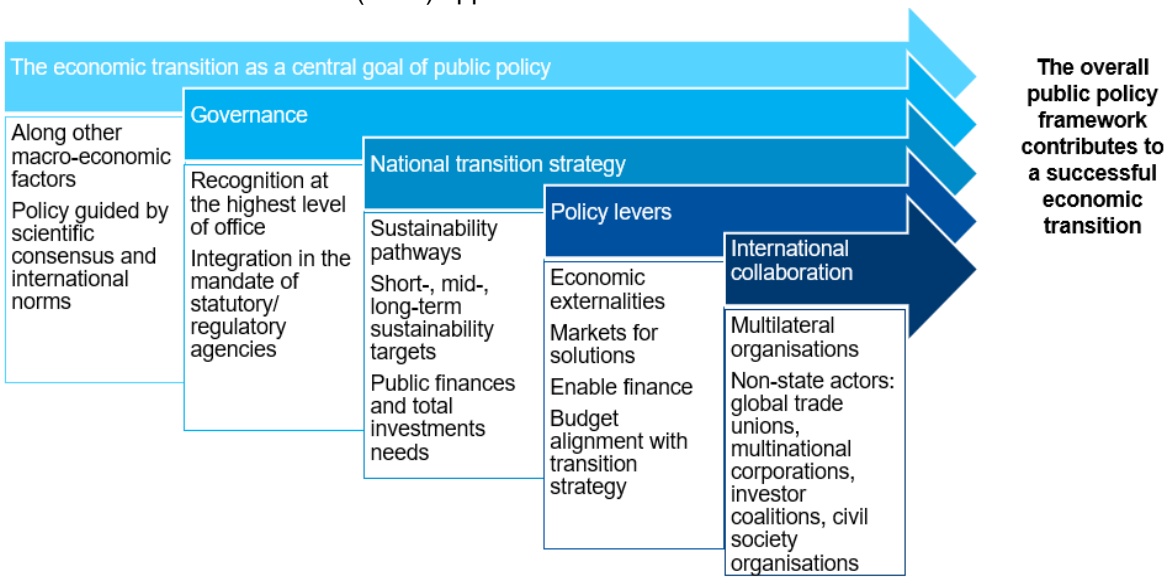
POLICY REFORM OPPORTUNITIES AND RECOMMENDATIONS

Investors face substantial opportunities alongside sustainability risks that may impact long-term value creation during the economic transition, highlighting the need for stronger policy instruments to capture opportunities while effectively managing risks. This section analyses existing policies, gaps, and potential policy solutions in the EV value chain in China and Indonesia. It draws on prior discussions with companies, investors, and local communities, as well as insights from the April Jakarta workshop and August Beijing seminar, which engaged key stakeholders across the value chain, including policy makers, investors, companies, and think tanks.

THE NEED FOR POLICY REFORMS

Public policy plays a critical role in advancing economic and sustainability goals, managing systemic risks, and aligning financial and real-economy objectives to drive the economic transition. Targeted policies, including the efforts of China and Indonesia in regulating mining and promoting responsible EV investment, illustrate how governments can foster sustainable supply chains and unlock long-term value. Building on PRI's white paper on the economic transition, the Whole-of-Government (WoG) framework, and the socioeconomic paper, this report underscores the need for coordinated action across jurisdictions and stakeholders. Applying this approach in China and Indonesia requires engaging investors, companies, workers, and communities, while leveraging all policy tools to address economic externalities, incentivise markets for solutions, and enable finance to support the transition.

Figure 3. A Whole-of-Government (WoG) approach to accelerate economic transition

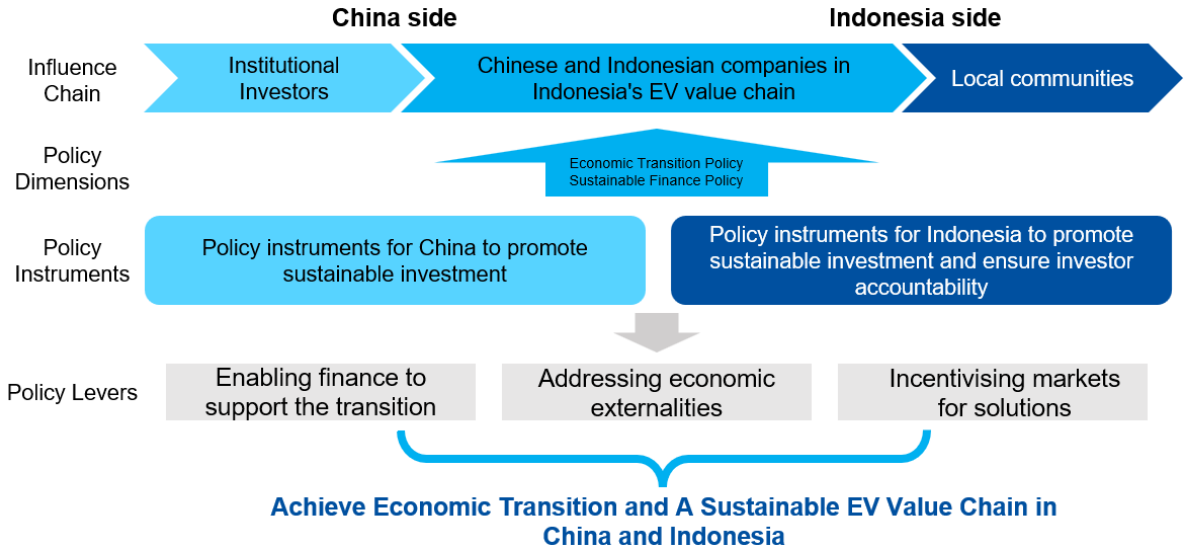


POLICY MODEL FOR EV TRANSITION IN CHINA AND INDONESIA

Adapted from the WoG approach, the model below maps the policy landscape in China and Indonesia. It focuses on stakeholder dynamics, particularly the influence of investors and downstream companies, and the cross-border impact of corporate practices on local communities in Indonesia. The model identifies three key policy levers: (1) **addressing externalities** through regulations that internalise environmental and social costs, such as emissions or labour violations; (2) **incentivising market solutions** by aligning business and financial incentives with sustainability goals; and (3) **enabling finance for the transition** by mobilising capital through robust sustainable finance policies.

In this research, the policy analysis for China focuses on two levers to narrow the scope: addressing economic externalities and enabling finance to support the transition. The analysis for Indonesia covers all three levers.

Figure 3. Policy model to accelerate the economic transition and a sustainable EV value chain in China and Indonesia



CHINA: POLICY APPROACH AND OPPORTUNITIES FOR CONSIDERATION

The primary government regulatory bodies covered in this research include the National Development and Reform Commission (NDRC), the Ministry of Commerce (MOFCOM), the Ministry of Ecology and Environment (MEE), the China Securities Regulatory Commission (CSRC), and the National Financial Regulatory Administration (NFRA). Among these, the NDRC, MOFCOM, and MEE are primarily responsible for overseeing outbound investment by companies, while the CSRC and NFRA regulate financial institutions.

While China's outbound investment policies incorporate sustainability, financial policies require better alignment with economic transition policies to systematically address externalities in the EV value chain and support a just, sustainable transition. This includes mainstreaming sustainability for investors, integrating nature considerations into disclosures, clarifying due diligence requirements, strengthening incentives and accountability for transition plans, enhancing support for stewardship collaborative engagement, and further refining public finance tools to meet diverse financing needs. Details are provided in the table below.

Policy levers	Policy instruments	Current policy approach	Policy opportunities for consideration
Addressing Economic Externalities	Corporate Outbound Investments (COI) Policies	China's corporate outbound investment is primarily governed by the NDRC and MOFCOM's Administrative Measures, alongside the MEE's Green Development Guidelines. These frameworks promote environmental and labour protections, which are largely principle-based. While sustainability oversight exists, regulatory clarity on transparency and accountability is limited, and implementation progress has not been publicly disclosed, leaving gaps and opportunities unclear.	Enhance coordination between financial and economic transition policies by issuing clearer corporate outbound investment guidelines. Establishing a cross-ministerial group can further align COI activities with national sustainability objectives.
	Environmental Safeguard	The Administrative Measures issued by the MEE focus on corporate disclosure of environmental information related to domestic production and operations, without explicitly addressing overseas activities. They cover pollution emissions and environmental penalties but do not specifically include nature-related risks such as biodiversity loss or land degradation. China has issued the Biodiversity Conservation Strategy and Action Plan (2023–2030) and established a State-Council-led coordination mechanism to strengthen biodiversity protection.[35] However, challenges remain, including data gaps, fragmented regulation, and insufficient policy coordination. The strong emphasis on climate goals also creates trade-offs with nature-related objectives.	Regulatory requirements for overseas operations and nature-related risks should be integrated into MEE-governed corporate environmental disclosures. Stronger coordination is required between fragmented nature policies, and between climate and nature goals, to synergistically address climate, biodiversity, and pollution challenges, supporting a comprehensive green economic transition.
Enabling Finance to Support the Transition	Financial Sustainability Regulations	In the banking and insurance sectors, regulators require ESG integration into risk management frameworks and assessments of overseas projects, particularly under the Belt and Road Initiative.[36] For institutional investors, the Asset Management Association of China (AMAC) issued the Green Investment Guidelines (Trial) in 2018, encouraging fund managers to integrate environmental factors into investment decision-making and develop green investment products. More recently, the State Council's 'five initiatives' outlined China's approach to financial sustainability regulation, though greater consistency in standards, enforcement, market development, and regulatory coordination is still required.	Clear guidance on investors' roles and actionable pathways to support national commitments under the Paris Agreement and the GBF is required. Aligning investor practices – especially in overseas sustainability risk management – with these targets requires stronger policy coherence with real economy objectives.

[35] Ministry of Ecology and Environment.
[36] The former CBIRC issued Green Finance Guidelines for the Banking and Insurance Sectors, requiring institutions to support the Belt and Road Initiative's green transition and strengthen ESG risk management for overseas projects, in line with local laws and international standards. Other relevant policies include: the Plan for the Green Finance Evaluation of Banking Financial Institutions, Guidelines on Green Finance for the Banking and Insurance Sectors, and Implementation Plan for High-Quality Development of Green Finance in the Banking and Insurance Industry.

	Corporate Sustainability Disclosure	China has made significant progress in corporate sustainability disclosure. Key developments include: the introduction of ESG disclosure guidelines by China's three stock exchanges; the release of the Corporate sustainability disclosure standards - Basic standard and corporate sustainability disclosure standards No.1 - climate; the CSRC incorporating sustainability reports into mandatory disclosure requirements through the newly issued corporate disclosure regulation rules. For listed companies controlled by central state-owned enterprises, further standardization efforts led by the State-owned Assets Supervision and Administration Commission of the State Council (SASAC).	The implementation scope should be expanded and better aligned with ISSB standards to enhance guidance on 'impacts and dependencies' disclosure under S1/S2, including nature-related risk trade-offs from clean technology. The long-term goal is for these disclosures to foster discussion on integrating nature and climate considerations.
	Due Diligence Requirements	China's new corporate sustainability disclosure guidelines require some listed companies to report on the sustainability impacts of procurement and investment. However, they do not mandate comprehensive environmental and human rights due diligence across supply chains and lack detailed implementation rules and third-party audit requirements. The focus remains largely domestic, with limited oversight of cross-border supply chains. Most due diligence efforts are voluntary and industry led, such as the Chinese Due Diligence Guidelines for Mineral Supply Chains.	Clear and comprehensive environmental and human rights due diligence regulations, aligned with international standards and supported by third-party audits, can help investors better manage sustainability risks across domestic and cross-border supply chains during the transition.
	Transition Plans	Transition plans centred on the dual carbon goals have been integrated into China's national top-level design. Various ministries have introduced detailed industry transition plans for key polluting and high-energy-consuming sectors. At the corporate level, new sustainability disclosure guidelines require companies to disclose transition plans. The PBOC, together with other financial regulators, encourages financial institutions to develop transition finance and encourage companies to disclose transition plans to access financing. However, there is still a lack of dedicated guidance on how to develop and implement these plans to ensure alignment with sectoral and national transition strategies.	Corporate transition planning remains at an early stage in China, highlighting the need for stronger incentives, clearer accountability, and better guidance for investors on its relevance to investment decisions. Additional clarity on rationale and implementation is required to ensure private sector transitions are aligned with national pathways and objectives.
	Stewardship	Chinese regulators have issued various guidelines encouraging financial institutions to strengthen post-investment management and exercise shareholder rights. The 2022 Guidelines on Investor Relations Management of Listed Companies incorporated ESG information into investor communications, providing a policy basis for stewardship. Also in 2022, the Insurance Asset Management Association of China (IAMAC) launched a stewardship initiative for insurance asset managers, followed by a pilot program in 2023 that included a draft *Stewardship Code*. In early 2025, AMAC introduced the Rules for Publicly Raised Securities Investment Fund Managers Participating in the Corporate Governance of Listed Companies to formalise fund managers' stewardship responsibilities. However, China has yet to introduce national-level regulations explicitly governing stewardship. While no laws prohibit collaborative engagement, concerns over acting-in-concert regulations and competition law enforcement may deter cooperation.	The current fragmentation of stewardship guidance underscores the need for a consolidated code that provides clear guardrails for investors to address disincentives. A formal stewardship code – covering asset owners, managers, and service providers – should articulate the core elements of effective stewardship, including governance, ESG integration, collaborative engagement, transparency, and conflict management. This would align investor responsibilities with beneficiaries' long-term interests and enable collective initiatives with real impact.
	Public Finance	China is actively developing green finance through a range of financial instruments. In addition to issuing green bonds, the PBOC launched the Carbon Emission Reduction Facility (CERF) to support carbon reduction, clean energy, and environmental protection. Financial institutions are encouraged to offer preferential loans for key projects in these areas. Transition finance is also gaining momentum with the newly released Green Finance Support Project Catalogue (2025 Edition), which incorporates low-carbon energy transition into financial support. However, current carbon reduction instruments remain insufficiently attractive to large companies and provide limited support for projects related to biodiversity and other nature-related objectives.	Strengthen the green and transition finance system through coherent policies on instruments, standards, disclosure, and accounting. Ensure effective implementation of transition policies, such as taxonomies, to channel affordable capital to sectors with real transition financing needs. Expand blended finance and refine carbon reduction tools to support the financing needs of companies of varying sizes, while increasing support for nature-related projects, including biodiversity initiatives.

INDONESIA: POLICY APPROACH AND OPPORTUNITIES FOR CONSIDERATION

The economic transition as a central goal of public policy: Indonesia is aligning its economic strategy with global sustainability trends to attract foreign direct investment (FDI) and enhance the overall policy framework. National commitments, such as updated emission reduction targets in the Enhanced NDC, a net-zero goal by 2060, and long-term low-carbon strategies, are embedded in planning documents such as the RPJPN 2025–2045 and RPJMN 2025–2029, which emphasise resource-based industrial development, including in the nickel and EV sectors.

To enhance investor confidence in the country, effective institutional coordination, regulatory consistency, and strong accountability mechanisms are essential. The Presidential Task Force (Kepres No. 1/2025) has been established to enhance cross-ministerial alignment and streamline downstream priorities. Further efforts to create an enabling policy environment that supports investors in seizing opportunities during the economic transition include addressing environmental and human rights risks, strengthening industrial and trade policies, offering targeted fiscal incentives, advancing sustainable finance through green taxonomies, and improving corporate sustainability disclosure and investor stewardship. Details are provided in the table below.

Policy levers	Policy instruments	Current policy approach	Policy opportunities for consideration
Addressing Economic Externalities	Environmental Safeguard	The Environmental Impact Assessment (AMDAL, Law No. 32/2009) process faces challenges regarding streamlining and implementation consistency, particularly in non-priority regions. Overlapping and conflicting spatial data contribute to land-use disputes and unauthorized mining activities.	Enhancing the clarity and consistency of AMDAL regulations, incorporating ecological no-go zones similar to China's Ecological Conservation Redline (ECR), where most development and disruptive activities are prohibited, would safeguard national ecological security and sustain ecosystem services. Adopting a unified spatial database could further support integrated planning and oversight.
	Human Rights Safeguard	The Investment Law (UU No. 25/2007) requires investment companies to prioritize employing Indonesian workers, provide training, settle industrial relations, and conduct site restoration activities in accordance with applicable regulations. However: ● Regulation on enforcement consequences remains limited, with reported incidents indicating room for improvement. ● Protections for Indigenous communities and local participation in industrial development are also limited, partially due to insufficient skills training and the absence of a strategic roadmap for upskilling the EV sector workforce.	Strengthening due diligence aligned with international labour and human rights standards, applying Free, Prior, and Informed Consent (FPIC), and expanding training initiatives may support more inclusive outcomes and local industry participation in the EV supply chain.
Incentivising Markets for Solutions	Industrial Policy	Export bans on nickel (2020) and bauxite (2023), together with Domestic Content Requirements (TKDN), have accelerated the growth of Indonesia's downstream processing industries by attracting investment and increasing refined product exports. The TKDN policy, which mandates up to 80% local content in EVs by 2030, supports domestic manufacturing and technology development.[37] Despite motorcycles being the dominant mode of transport, two-wheel EV adoption remains low (approximately 1%), with incentives primarily focused on four-wheel vehicles. Indonesia's transition to widespread EV adoption also faces regulatory and policy barriers, challenges in domestic manufacturing and supply chain development, and limitations in	Greater emphasis is required to address regulatory barriers, enhance supply chain resilience, and improve affordability and accessibility. Strengthening local manufacturing infrastructure for battery recycling and the two-wheel EV sector can support the TKDN policy, improve industry resilience, and drive sector growth.

[37] Industrial Empowerment, Legal and Regulatory Database of BPK's JDIH.

		affordability and charging infrastructure. Strengthened regulations are required to ensure safe and scalable EV deployment.	
	Fiscal Incentives	Numerous fiscal incentives support the EV industry in Indonesia, including VAT and import duty exemptions, [38] [39] tax holidays,[40] [41] and subsidies for purchasing electric vehicles.[42] In addition to financial incentives, there are also Special Economic Zones for EV-related industries and other policies simplifying the operation of EV-related activities (the Omnibus Law, the Online Single Submission platform, and the Priority Project List).	Incorporating environmental and social safeguards into fiscal incentives can help reinforce national sustainability commitments while promoting the responsible growth of the EV industry.
Enabling Finance to Support the Transition	Sustainable Taxonomy	The Financial Services Authority (OJK) has established a Taxonomy for Indonesian Sustainable Finance to guide financial institutions in classifying projects and investments into three categories: green (do no significant harm, apply minimum safeguards, provide positive environmental impact, and align with the Taxonomy's environmental objective), yellow (do no significant harm), and red (harmful activities). However, in practice, challenges remain in applying this classification. For example, while nickel is considered a key material for the energy transition, increased investment in the sector has also led to the construction of coal-fired power plants (PLTUs) to power smelters (which are only classified as green if they are on track to be phased out by 2040).	Strengthening the Sustainable Finance Taxonomy by clarifying criteria for transitional activities, tightening enforcement, encouraging third-party verification of taxonomy-aligned bonds and loans, and deepening engagement with domestic and foreign investors to enhance credibility.
	Corporate Sustainability Disclosure	Sustainable and transition finance in Indonesia is gaining momentum through initiatives such as Danantara, Green Sukuk, BPDLH, and the Just Energy Transition Partnership (JETP), offering promising avenues for mobilising capital. However, limited corporate disclosure remains a barrier for investors seeking to make informed decisions and for public finance instruments aiming to identify eligible projects. The upcoming update to POJK No. 51/POJK.03/2017 on the issuance and submission of sustainability reports, intended to align, in principle, with ISSB's IFRS S1 and S2 global standards, marks a positive step. Further adjustments will be required to reflect Indonesia's market, which is dominated by SMEs and high-impact non-listed companies.[43]	Expanding disclosure requirements to cover high-impact, non-listed companies, with stronger reporting on the financial materiality of climate and human rights impacts. Developing scalable sustainability reporting frameworks tailored to SMEs to enhance compliance across the value chain. Providing incentives and tools to reduce disclosure costs, enabling companies to better meet disclosure requirements for transition financing.
	Investor Stewardship	Investors can play a greater role in helping companies address sustainability risks. However, limited guidance on exercising their rights through stewardship activities constrains their impact. As Indonesian investment managers increasingly serve international clients with higher sustainability expectations, they are well positioned to bridge the gap between local practices and global standards.	Providing clearer policy guidance by developing a Stewardship Policy, issuing practical stewardship guidance, and offering capacity-building incentives for investment managers to align with international best practices.

[38] Regulation of the Minister of Finance of the Republic of Indonesia Number 8 of 2024.
[39] Amendment to Presidential Regulation Number 55 of 2019 on the Acceleration of the Battery Electric Vehicle Program for Road Transportation Electrification.
[40] Import Duty Exemption, Ministry of Finance, Directorate General of Customs and Excise.
[41] Regulation of the Minister of Finance of the Republic of Indonesia.
[42] Regulation of the Minister of Industry Regulation Number 6 of 2023 on Guidelines for Government Assistance for the Purchase of Battery-Based Electric Motor Vehicles.
[43] Indonesia's Sustainable Finance Taxonomy, version 2 (2025), OJK.

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APPENDIX

ASSESSMENT METHODOLOGY

This assessment evaluates the practices of key companies in establishing a sustainable EV value chain. It aligns with investor expectations outlined in the PRI's Spring Initiative, launched in 2023, and incorporates frameworks for responsible mineral sourcing and due diligence. The methodology is structured around two key perspectives, as outlined below.

Business operations, strategy, and risk management: This category examines companies' operational practices to determine whether they publicly commit to addressing key risks in the EV value chain. It evaluates the establishment of board oversight for risk assessment and management; the regular monitoring, assessment, disclosure, and mitigation of these risks; the setting of time-bound, science-based targets with interim milestones to effectively address them; and policy engagement practices on relevant sustainability issues.

Supply chain management: The assessment indicators are designed to evaluate companies' supply chain management practices in mineral sourcing, with a particular focus on the risks highlighted in the previous analysis. These indicators draw from established frameworks on responsible mineral sourcing and due diligence, including the OECD Due Diligence Guidelines for Responsible Business Conduct, the OECD Handbook on Environment Due Diligence in Mineral Supply Chains, the UN Guiding Principles on Business and Human Rights, and the Exploring the broken links of mineral supply chain policies in the electric vehicle industry report by Rainforest Foundation Norway and AidEnvironment. Regarding transparency in company reporting, the assessment also refers to the GRI Standards, the Task Force for Nature-Related Financial Disclosures, and the Task Force on Climate-related Financial Disclosures (TCFD). The indicators are categorised into three key aspects:

- **Policy and commitments**: Companies' policies and commitments to responsible procurement, focusing on biodiversity, climate change, human rights, mineral sourcing, and recycling.
- **Implementation and management**: How companies conduct risk assessments and management activities across their supply chains, including risk assessment, audits, traceability systems, grievance mechanisms, and risk mitigation strategies.
- **Transparency in company reporting**: The transparency of company reporting, focusing on disclosures related to procurement compliance, traceability systems, supplier information, and outcomes of risk assessments, grievances, and audits.

The indicators in the assessment were developed to analyse companies' business operations and due diligence practices in relation to mineral sourcing, with a specific focus on biodiversity, climate change, and human rights. Therefore, the assessment does not evaluate the actual impacts the company causes, contributes to, or is directly linked with.