



Advancing a Sustainable Green Economy: Cooperation, Strategic Resources, and the Future of Industrial Transformation

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Abstract

This paper discusses Indonesia's strategic position in the global transition towards a sustainable green economy, particularly through its substantial critical mineral resources and nickel downstreaming policy. Indonesia holds a significant share of global nickel reserves and possesses other critical minerals required for clean technology development. The presentation argues that responsible downstreaming can increase domestic value creation, support economic transformation, and contribute to Indonesia's long-term development targets. Nevertheless, green industrial policies may produce exclusionary effects when international standards, trade measures, and regulatory requirements restrict market access or disregard the domestic frameworks of producer countries. Cooperative green industrial measures should therefore expand clean technology capacity, accelerate industrial decarbonisation, distribute value fairly across supply chains, and recognise equivalent domestic regulations. The presentation proposes three principles for sustainable industrial standards: mutual recognition between domestic and international frameworks, support for technology transfer, investment, capacity development, and skills, and appropriate market recognition for responsibly produced goods. It concludes that producers, consumers, standard-setting bodies, and other relevant stakeholders should jointly formulate interoperable rules rather than allow any single bloc to determine global standards unilaterally.

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Published by Lemhannas Press.

Keywords: Critical Minerals, Green Economy, Industrial Decarbonisation, Nickel Downstreaming, Regulatory Cooperation.

Introduction

The transition towards a sustainable green economy has become one of the defining challenges of contemporary global development. Rising geopolitical fragmentation, intensifying competition for critical minerals, and increasingly diverse sustainability standards have reshaped the international policy landscape, requiring countries to balance economic growth, industrial competitiveness, and environmental responsibility. These developments present challenges for resource-rich economies striving to strengthen their position within global value chains while maintaining equitable access to international markets.

Indonesia occupies a strategic position within the global critical minerals industry. The country possesses the world's largest nickel reserves together with substantial deposits of cobalt, tin, copper, and other critical minerals that support clean technology industries. This resource endowment provides important opportunities to accelerate industrial transformation through downstream processing, expand domestic value creation, and strengthen national economic resilience. Consequently, downstream industrialisation has become an integral component of Indonesia's long-term development strategy to support higher economic growth and the transition towards Indonesia Emas 2045.

Achieving these objectives requires industrial policies that integrate economic development with environmental sustainability. Green industrial development should promote cleaner production, encourage technological innovation, strengthen industrial competitiveness, and create broader economic opportunities while supporting climate objectives. Rather than treating economic growth and environmental protection as competing priorities, both should reinforce one another through responsible resource management and sustainable industrial transformation.

The growing fragmentation of international sustainability standards also presents important policy challenges for developing economies. Sustainability frameworks should encourage cooperation, facilitate technology transfer, strengthen investment, and improve market access. However, when standards, regulations, or industrial policies become instruments that restrict trade or disadvantage producing countries, they risk functioning as barriers that weaken rather than strengthen international cooperation. Developing more inclusive governance arrangements based on mutual recognition and shared responsibility therefore becomes increasingly important for supporting sustainable industrial development within an evolving global economy.

Result and Discussion

Indonesia occupies a strategic position in the global critical minerals' economy. The presentation highlighted that the country possesses approximately 60 million tonnes of nickel reserves, representing around 44 percent of global nickel deposits. Indonesia also holds substantial reserves of several other critical minerals, including tin, cobalt, bauxite, and copper, placing the country in a favourable position to support the future development of global clean technology industries. Figure 1 illustrates Indonesia's leading position in global nickel reserves and mine production, together with its substantial resource potential and processing capacity, highlighting the country's strategic role in the global critical minerals supply chain. The presentation further noted that these strategic advantages provide important opportunities for Indonesia to contribute to the future development of critical mineral industries.

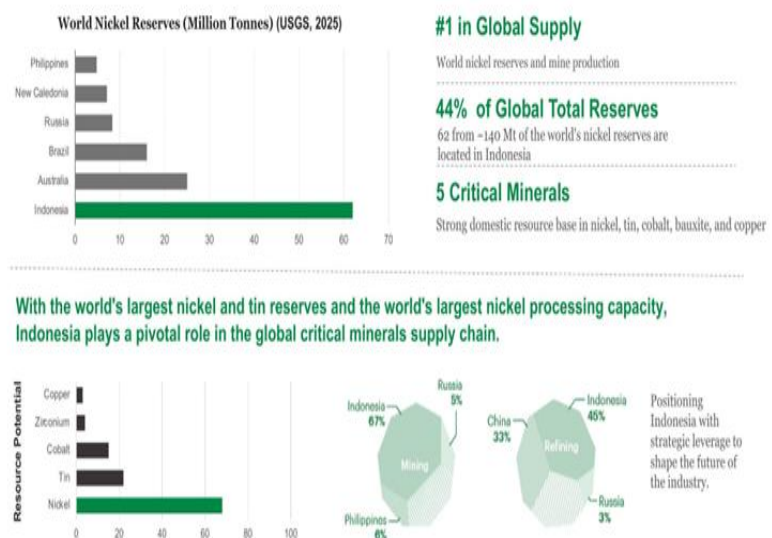


Figure 1. Indonesia's Strategic Position in the Global Critical Minerals Economy
Source: WRI Indonesia presentation, based on USGS (2025)

The presentation further explained that Indonesia's downstream policy has become one of the government's strategic priorities for increasing domestic value creation. Rather than exporting raw nickel, Indonesia has increasingly expanded downstream processing industries to produce higher-value products. According to the presentation, the value of downstream nickel exports increased from approximately USD 3 billion in 2010 to around USD 34 billion in 2022-2023, demonstrating the growing contribution of downstream industrialisation to national economic development. Figure 2 illustrates the substantial increase in downstream nickel export value and highlights downstream industrialisation as a foundation for expanding

value-added processing across other strategic commodities with high economic potential.

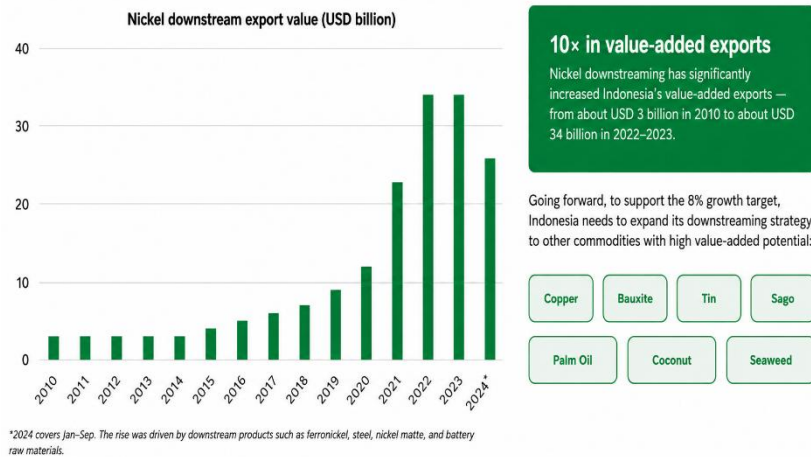


Figure 2. Nickel Downstreaming as a Strategic Driver of Economic Growth
 Source: Trade Map; RPJMN 2025–2029. Presented by WRI Indonesia.

The presentation emphasised that economic transformation should proceed together with environmental sustainability. Green industrial development should therefore support climate action while simultaneously strengthening industrial competitiveness and inclusive economic growth. Responsible nickel downstreaming was presented as one of the principal strategies for achieving Indonesia's long-term economic transformation.

The presentation acknowledged that increasing fragmentation of international sustainability standards presents important challenges for developing economies. Green industrial policies should therefore expand cooperation, accelerate industrial decarbonisation, and generate shared value across global supply chains rather than creating exclusionary trade measures or non-tariff barriers. Figure 3 illustrates the ESG performance of major nickel-producing countries, showing that Indonesia, Brazil, and the Philippines collectively account for approximately 61% of global nickel production despite recording relatively low ESG rankings. The comparison highlights the importance of strengthening environmental, social, and governance performance alongside industrial development to enhance long-term competitiveness within global supply chains.

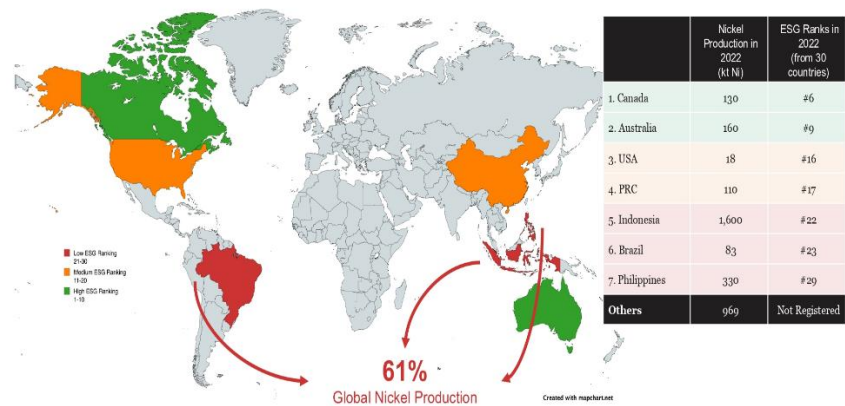


Figure 3. ESG Performance of Major Nickel-Producing Countries

Source: Adapted from WRI Indonesia (2025), based on BloombergNEF, Global Battery Supply Chain Rankings (2022) and United States Geological Survey (USGS) (2023)

The presentation referred to a long-term assessment conducted by WRI Indonesia to examine Indonesia's future development pathways. According to the assessment, a green economy pathway offers stronger long-term economic growth than a business-as-usual scenario and provides a more favourable trajectory towards Indonesia's transition to a high-income economy. The assessment further indicates that the green economy pathway sustains stronger economic performance over the long term, whereas growth under the business-as-usual scenario gradually declines after 2045. Industrial competitiveness, environmental sustainability, and inclusive development should therefore progress together as integral components of national economic transformation. Figure 4 compares the projected economic performance under a green economy pathway and a business-as-usual scenario.

Shared Standards Can Accelerate Global Decarbonization

Cooperation stays mutually beneficial along the value chain (continued from the previous slide).

The existence of global standards (widely and transparently established) with specific provisions can motivate countries engaged in trade to pay greater attention to sustainability aspects in global decarbonization efforts.

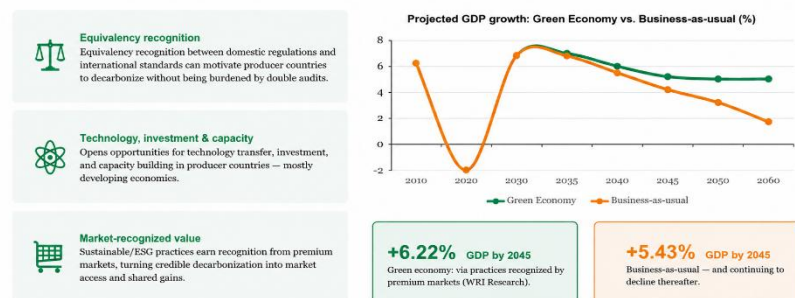


Figure 4. Projected GDP Growth: Green Economy versus Business-as-Usual

Source: WRI Research.

The presentation further argued that many differences between domestic regulations and international sustainability

standards arise from variations in regulatory approaches rather than from an absence of environmental or social safeguards. Greater mutual recognition between domestic regulations and international standards therefore represents an important step towards creating a more inclusive global industrial system. Three guiding principles strengthen future green industrial cooperation. First, domestic regulations and international standards should receive equivalent recognition whenever they pursue comparable objectives. Second, sustainability frameworks should promote technology transfer, investment, capacity building, and skills development. Third, sustainability standards should create shared value across global supply chains while supporting responsible production and fair market access.

The presentation concluded that no single country or regional bloc should determine global sustainability standards independently. Governments, producing countries, consuming countries, standard-setting organisations, financial institutions, and other relevant stakeholders should jointly develop interoperable standards based on cooperation, mutual recognition, and shared responsibility. Collective action remains essential for supporting sustainable industrial transformation while maintaining an open and inclusive international trading system.

Three guiding principles were presented for strengthening future green industrial cooperation. First, domestic regulations and international standards should receive equivalent recognition whenever they pursue comparable objectives. Second, sustainability frameworks should promote technology transfer, investment, capacity building, and skills development. Third, sustainability standards should generate shared value across global supply chains while supporting responsible production and fair market access.

Finally, the presentation emphasised that no single country or regional bloc should determine global sustainability standards independently. Governments, producing countries, consuming countries, standard-setting organisations, financial institutions, and other relevant stakeholders should instead jointly develop interoperable standards based on cooperation, mutual recognition, and shared responsibility. Cooperative standard-setting remains essential for supporting sustainable industrial transformation while maintaining an open and inclusive international trading system.

Conclusion

The presentation concluded that Indonesia's abundant critical mineral resources provide a strong foundation for sustainable industrial transformation and long-term economic development. However, maximising these advantages requires downstream industrialisation, responsible resource

management, and the integration of environmental sustainability with national economic priorities.

The presentation further emphasises that green industrial policies should promote cooperation rather than economic exclusion. International sustainability standards should facilitate technology transfer, investment, capacity building, and equitable market access while avoiding their use as discriminatory trade measures or non-tariff barriers. Greater interoperability and mutual recognition between domestic regulations and international standards were identified as important elements for supporting an inclusive and balanced global industrial system.

Finally, the presentation emphasises that the governance of critical minerals should be developed through collaborative international engagement involving producing countries, consuming countries, standard-setting organisations, financial institutions, and other relevant stakeholders. This cooperation is considered essential for advancing a sustainable green economy while strengthening economic resilience, industrial competitiveness, and shared prosperity within an increasingly fragmented global environment.

Publication Note

This article presents an academic adaptation of the presentation delivered at the 10th Jakarta Geopolitical Forum (JGF X) 2026. Editorial revisions were limited to structure, language, and readability, while the speaker's original arguments, meaning, and policy recommendations remain unchanged.

References

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