e-ISSN: 3109-6425
p-ISSN: 3109-6433

Proceeding Jakarta Geopolitical Forum
Lembaga Ketahanan Nasional Republik Indonesia (LEMHANNAS RI)
Volume 9 | 2025
WEB : https://proceeding.lemhannas.com/index.php/jgf
DOI : https://doi.org/10.55960/jgf.v9i1.304

Conference Paper

SUSTAINABLE STRATEGIES IN ENERGY RESILIENCE AND DOWNSTREAM DEVELOPMENT: DOWNSTREAMING AND SUSTAINABILITY ARE A MUST

Edi Permadi, Margaretha Hanita
Prodi Kajian Ketahanan Nasional, Universitas Indonesia

Abstract.

The 9th Jakarta Geopolitical Forum 2025 focused on "Geoeconomic Fragmentation and Energy Resilience." The discussions underscored the urgent requirement to balance industrial growth, environmental sustainability, and economic resilience amid global trade tensions, decarbonization challenges, and the renewable energy transition. At national level, Indonesia faces structural disparities as archipelagic nation. The industrial activity concentrated in Java while Eastern Indonesia underdeveloped. The study use the New Structural Economics framework, the Environmental Social Governance principles (ESG), and the national interest concept (*Wawasan Nusantara)*. Empirical studies show that Indonesia's government has banned raw material exports, progress in building smelters and bioenergy industries, while cases of similar policy from China and Malaysia demonstrate both opportunities and constraints in advancing domestic value addition. The study found that downstreaming, renewable energy initiatives, and multi-stakeholder collaboration is strategic to strengthen competitiveness, reduce external vulnerabilities, and expand growth beyond Java. By embedding national resilience and archipelagic integrity into industrial and energy strategies, Indonesia positions itself as a regional leader in shaping equitable energy transitions. The study concludes that consistent regulation, advanced technology, skilled workers, and cooperation with other countries are for achieving resilience, inclusivity, and sustainability in fragmented global order.

Keywords: downstreaming; energy resilience; geoeconomic fragmentation; ESG; structural transformation; *wawasan nusantara*

Corresponding Author:
Edi Permadi
Email: edi.permadi@ui.ac.id

Article History:
Received : 12-03-2025
Revised : 15-05-2025
Accepted : 28-06-2025

Published by Lemhannas Press.

Introduction

Jakarta Geopolitical Forum (JGF) was created in 2017 to bridge global geopolitical and geoeconomic discussions (1,2). The 9th Jakarta Geopolitical Forum was held in 2025 under the theme "Geoeconomic Fragmentation and Energy security" discussed interlinking global challenges that are trade wars, transition to renewable energy, industrial downstreaming, and energy resilience in the Indo-Pacific (3,4). The forum stressed the importance of reconciling the growth of industry, environmental sustainability, and economic resilience in a world order that are quickly evolving.

At the country level, Indonesia encounters problems with structural inequality (1,2). Western Indonesia, especially the island of Java (covering only 7% of the land in the country), has 60% of the population and 90% of industry. Eastern Indonesia which accounts for 67.5% in land area, however only contributes 4.4% of the nation's industrial output and has less than one-fifth of the population. This disparity shows needs for strategies of energy and downstream to enhance resilience and competitiveness as well as spatial equity throughout the archipelago.

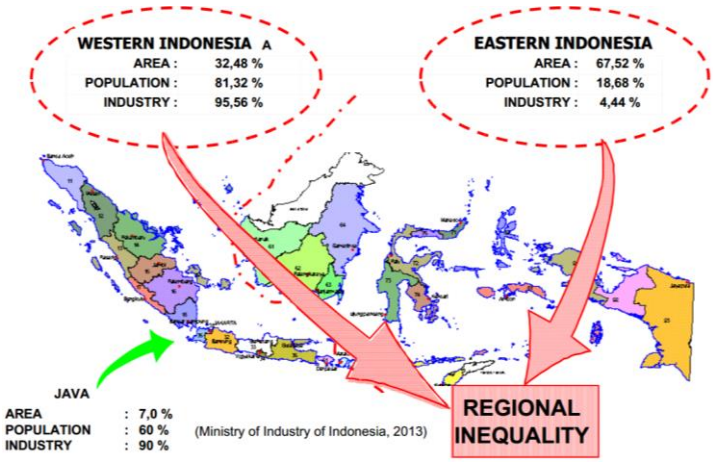

Figure 1. Regional Inequality of Industrial activity distribution
Source: Permadi (2025)

Literature Review

Theoretical Studies

Three trends emerge from the perspective of the global economy and energy. The first of these related elements is the centrality of technology and innovation as critical factors shaping how resources are exploited (5,6). Secondly, volatile oil prices are still very sensitive to geopolitical strife (7,8). Third, the use of coal in power generation in the Asia-Pacific region remains high and causes a disparity of CO2 emissions between developed and developing countries (1,2). These trends emphasize the need to

combine industrialization and decarbonization. The likes of coal gasification and liquefaction show how tech innovation can both cut emissions and boost the economy.

The New Structural Economics framework offers a theoretical reference for how developing countries develop industrial policies based on their resource endowments and institutional ability (9,10). This framework underscores productivity-led growth and stresses on five types of capital i.e., financial, human, infrastructure, institutional and entrepreneurial, as the bases of long-term industrial competitiveness (11,12). In line with this, rather than adapting an "offshore balancing," Indonesia's Wawasan Nusantara proposes a distinctively Indonesian understanding of geopolitics by making the unity of the nation's jurisdiction, maritime consciousness, and strategic geography as a primaryshaping factor in generating energy and industry policies (1,2). By incorporating national resilience and archipelagic integrity into economic policy, wawasan nusantara highlights the salience of sovereignty and inclusivity in facing global challenges (13,14). Simultaneously, Environmental, Social, and Governance (ESG) principles help ensure that river basin strategies for funnelling those impacts downstream to robust economic resilience also serve social justice and ecological sustainability (1,2).

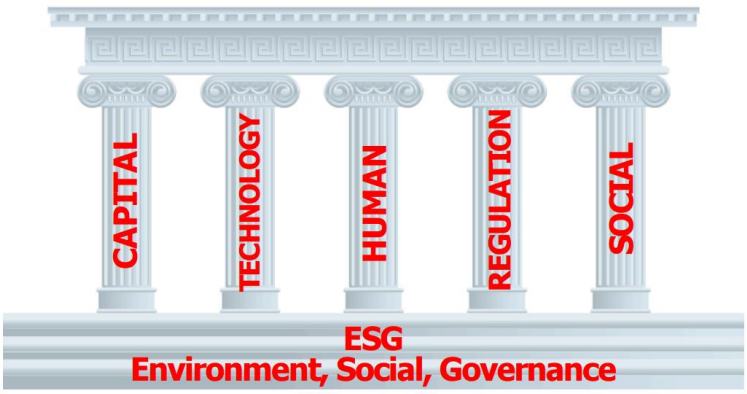

Figure 2. Pilar of Downstreaming
Source: Permadi (2025)

Empirical Studies

Indonesia expresses a break in industrial policy where central relevance is given to downstreaming, renewable energy and selective protectionism for increased addition of domestic values (15,16). The ban on raw material exports in nickel and bauxite are classic examples of the state-led approach which conflicts with the free-market orthodoxy (17,18). Advancement in domestic smelters, copper refineries, and biofuels industries indicate a slow shift to industries of higher value, but technological dependence and road constrains continue to be a challenge (19,20).

Comparative cases provide important lessons. China and Chile attained fast productivity-led growth through integrating industrial policy within a package of long-term institutional reform, while Malaysia's downstreaming of aluminium demonstrated the importance of focused R&D and talent development (1,2). In urban governance, the adaptive measures taken by Jakarta represent the translation of global climate goals and strategies into local processes, in the form of the low-carbon city development, mass rapid transit-oriented zones, and renewable energy-based (mass) public transportation systems (21,22). Also, South Australia, Ho Chi Minh and Shanghai provide best practice examples of policy coherence (1,2), community engagement and renewable integration, ensuring resilience (23–28).

Methods

The study adopts qualitative content analysis method defined as a "systematic way of deriving valid, replicable inferences from information source that are not themselves the primary focus of the analysis" (29,30). The study investigates policy discourses, strategic concepts, and expert assessments on Indonesia's downstreaming, industrial transformation, and energy resilience in global geopolitical changes. Primary sources comprise of government policy papers, institutional reports, international treaties and academic literature that has been published within the last 20 years. Selection criteria underscore relevance to energy resilience, decarbonization, industrialization and sustainable development, with special attention to Indonesia's structural transformation policies and regional cooperation architectures. The focus of analysis is on state-driven policies, institutional arrangements and regulatory reforms that link domestic industrial imperatives with international climate commitments. All articles, regardless of whether published in print or online only, receive editorial review, and data reliability is ensured through official documents and data and/or a triangulation process with official publications, peer-reviewed articles, and independent expert analyses to offer full coverage of both national and global perspectives.

Results and Discussion

The results point out that downstreaming and the energy resilience are alternative strategies for the Indonesia's structural transformation (31,32). Combining resource-based industrialization with renewable energy schemes, Indonesia augments the competitive position while diminishing external vulnerabilities. There are opportunities in coal gasification, nickel downstreaming, and bioenergy manufacturing for balancing decarbonization and economic development (17,18).

Nonetheless, the efficacy is contingent upon regulatory coherence, over-endowment, technical capability, and trained human resources (33,34). In this sense, downstreaming is also consistent with Wawasan Nusantara. By downstreanming industry beyond Java and Western Indonesia, not only inequality in the former and the latter will lessen, but the downstreaming strategy would also materialise Indonesia as a united nation and a fair society that uses a variety of territorial potentials for sustainable development (1,2).

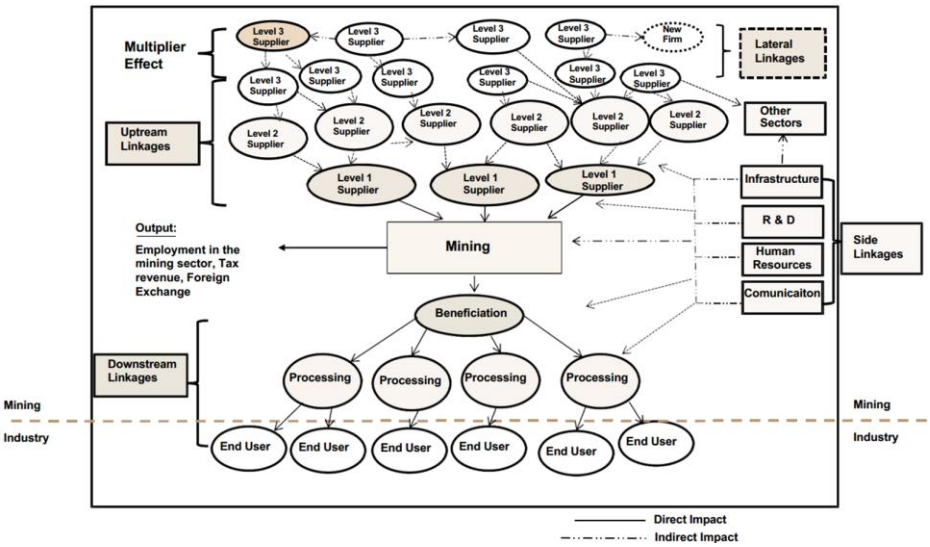

Figure 3. Multiplier Effect of Natural Resource Management
Source: Permadi (2025)

A fragmented world means greater risks from investments due to broken supply chains, carbon border taxes and resource nationalists. Predicting this risk, Indonesia's industrial policies should not exclusively ensure domestic energy and raw material supplies but also place the country into global clean energy value chains (35,36). The APG, transnational green finance, and regional industry cooperation also provide a basis for the higher level of integration (37,38). At the same time, innovation for urban sustainability in Jakarta and other comparable cities in the world can show how adaptive governance can be used to reconcile the local with the global in sustainability terms (21,22).

The discussion also emphasizes the importance of multi-stakeholder partnership. The model of the five helix the government authorities, private sector, academia, civil society and the NGOs to catalenge the face down and the renewable sources (1,2). Universities provide by R&D and capability development, industries adopt by incorporating ESG standards and the local community stimulates sustainability through involvement and social approval. Collectively, these institutions bolster a country's preparedness to confront the effects of global climate change, supply chain dislocation and economic retardation.

Conclusion

Downstream industrialisation and energy resilience are the key platforms of the economic transformation agenda of Indonesia. These approaches help ensure that natural resource riches drive growth but also channel into long-term sustainability and social equity. By integrating ESG values, promoting productivity-led growth, and enhancing multi-stakeholder engagement, Indonesia is placing itself as a regional and global player, contributing to a more inclusive energy transition." The threats of climate crisis, geo-political competition and economic decline require structural change in favour of resilience, inclusion and sustainability. Success is based on strategic investment in capital, technology, manpower, policy, regulation, and stakeholder participation. With these foundations established, Indonesia can attain high-income status with a value added to global economic stability, sustainable development and energy resilience.

Acknowledgments
The author extends sincere gratitude to Lembaga Ketahanan Nasional Republik Indonesia for their invaluable support throughout the various stages of developing this article

References

1. Permadi E. Jakarta Geopolitical Forum IX/2025. 2025 [cited 2025 Aug 23]. Final Note Wrap-Up The Jakarta Geopolitical Forum (JGF) IX/2025 "Geoeconomic Fragmentation and Energy Security." Available from: https://www.youtube.com/watch?v=9VSWkAXLb4U&t=3424s
2. Permadi E. Final Note Wrap-Up The Jakarta Geopolitical Forum (JGF) IX/2025 "Geoeconomic Fragmentation and Energy Security." Jakarta; 2025.
3. Syadzily AH. Jakarta Geopolitical Forum IX/2025. 2025 [cited 2025 Aug 10]. Opening Remarks of the Governor of the National Resilience Institute of the Republic of Indonesia at the Jakarta Geopolitical Forum IX 2025: Geoeconomic Fragmentation and Energy Security. Available from: https://www.youtube.com/watch?v=DK6je9dj94I&t=18180s
4. Syadzily AH. Sambutan Gubernur Lemhannas RI pada Jakarta Geopolitical Forum IX Tahun 2025: "Fragmentasi Geoekonomi dan Ketahanan Energi." Jakarta; 2025.
5. Yusgiantoro P. Trends of The Global Economy and The Balance of Power in Advancing Renewable Energy Policy. Bogor; 2025.
6. Yusgiantoro P. Jakarta Geopolitical Forum IX/2025. 2025 [cited 2025 Aug 10]. Balancing Growth and Sustainability: Indonesia's Energy Transition in a Changing Global Landscape. Available from: https://www.youtube.com/watch?v=DK6je9dj94I&t=18180s%0A
7. Kuncoro A. The Relevance of Renewable Energy for Indonesia in the New Constellation of Geopolitics and Geoeconomic. Depok; 2025.
8. Kuncoro A. Jakarta Geopolitical Forum IX/2025. 2025 [cited 2025 Aug 10]. Geopolitics, Market Contestability, and Indonesia's Strategic Position in the Global Energy Transition. Available from: https://www.youtube.com/watch?v=9VSWkAXLb4U&t=3424s
9. Sandys D. Jakarta Geopolitical Forum IX/2025. 2025 [cited 2025 Aug

10]. Advancing Renewable Energy Policy in a Fractured Global Economy: A New Structural Economics Approach for Developing Nations. Available from: https://www.youtube.com/watch?v=DK6je9dj94I&t=18180s
10. Sandys D. Advancing Renewable Energy Policy in a Fractured Global Economy: A New Structural Economics Approach for Developing Nations. Singapore; 2025.
11. Tan KT. Jakarta Geopolitical Forum IX/2025. 2025 [cited 2025 Aug 10]. Downstreaming towards Indonesia Emas. Available from: https://www.youtube.com/watch?v=DK6je9dj94I&t=18180s
12. Tan KT. Downstreaming towards Indonesia Emas. Jakarta; 2025.
13. Satria A. Downstreaming and Reindustrialization of Food & Energy in Response to Change Contemporary Geopolitics. Bogor; 2025.
14. Satria A. Jakarta Geopolitical Forum IX/2025. 2025 [cited 2025 Aug 10]. Downstreaming and Reindustrialization of Food & Energy in Response to Change Contemporary Geopolitics. Available from: https://www.youtube.com/watch?v=DK6je9dj94I&t=18180s
15. Lahadalia B. Jakarta Geopolitical Forum IX/2025. 2025 [cited 2025 Aug 22]. Downstreaming, Industrialisation, and Energy Resilience in Response to Changing Contemporary Geopolitics. Available from: https://www.youtube.com/watch?v=DK6je9dj94I&t=18180s
16. Lahadalia B. Downstreaming, Industrialisation, and Energy Resilience in Response to Changing Contemporary Geopolitics. Jakarta; 2025.
17. Mendes V. Powering Indonesia's Green Revolution: Leading the Charge in Sustainable Energy Solutions. Jakarta; 2025.
18. Mendes V. Jakarta Geopolitical Forum IX/2025. 2025 [cited 2025 Aug 16]. Powering Indonesia's Green Revolution: Leading the Charge in Sustainable Energy Solutions. Available from: https://www.youtube.com/watch?v=9VSWkAXLb4U&t=3424s
19. Ngabdi J. Trends of the Global Economy and the Balance of Power in Advancing Renewable Energy Policy. Jakarta; 2025.
20. Ngabdi J. Jakarta Geopolitical Forum IX/2025. 2025. Advancing Indonesia's Role in the Global Copper Supply Chain: Downstream Integration, Production Capacity Expansion, and Energy Transition Implications. Available from: https://www.youtube.com/watch?v=DK6je9dj94I&t=18180s
21. Rahmania AN. Jakarta Adaptive Strategy for Enhancing Energy and Economic Resilience. Jakarta; 2025.
22. Rahmania AN. Jakarta Geopolitical Forum IX/2025. 2025 [cited 2025 Aug 16]. Jakarta Adaptive Strategy for Enhancing Energy and Economic Resilience. Available from: https://www.youtube.com/watch?v=9VSWkAXLb4U&t=3424s
23. Ying Z. Global Cities Adaptive Strategy and Economic Resilience. Beijing; 2025.
24. Ying Z. Jakarta Geopolitical Forum IX/2025. 2025 [cited 2025 Aug 17]. Global Cities Adaptive Strategy and Economic Resilience. Available from: https://www.youtube.com/watch?v=9VSWkAXLb4U&t=3424s
25. Broomfield C. Jakarta Geopolitical Forum IX/2025. 2025 [cited 2025 Aug 16]. Energy Security and The Energy Transition. Available from: https://www.youtube.com/watch?v=9VSWkAXLb4U&t=3424s
26. Broomfield C. Energy Security and The Energy Transition. Canberra ACT; 2025.
27. Le TH. Adaptive Cities in a Fragmented World: Strategies for Energy and Economic Resilience. Hanoi; 2025.

28. Le TH. Jakarta Geopolitical Forum IX/2025. 2025 [cited 2025 Aug 16]. Adaptive Cities in a Fragmented World: Strategies for Energy and Economic Resilience. Available from: https://www.youtube.com/watch?v=9VSWkAXLb4U&t=3424s
29. Saunders M, Lewis P, Thornhill A. Research Methods for Business Students by Mark Saunders, Philip Lewis and Adrian Thornhill 8th edition. [Internet]. Research Methods For Business Students. 2015. 768 p. Available from: https://www.google.co.id/books/edition/Research_Methods_for_Business_Students/0DHFsgEACAAJ?hl=en
30. Krippendorff K. Content Analysis: An Introduction to Its Methodology [Internet]. SAGE Publications; 2018. 472 p. Available from: https://methods.sagepub.com/book/mono/content-analysis-4e/toc
31. Lee J. Jakarta Geopolitical Forum IX/2025. 2025 [cited 2025 Aug 10]. Geopolitical and Investment Barriers in the Global Energy Transition: Challenges for Developing Economies. Available from: https://www.youtube.com/watch?v=DK6je9dj94I&t=18180s
32. Lee J. Trends of the Global Economy & Balance of Power in Advancing Sustainable Energy Policy. London; 2025.
33. Wagner T. Renewable Resources Export Opportunities Accelerating Development. Jakarta; 2025.
34. Wagner T. Jakarta Geopolitical Forum IX/2025. 2025 [cited 2025 Aug 1]. Renewable Resources Export Opportunities: Accelerating Development. Available from: https://www.youtube.com/watch?v=DK6je9dj94I&t=18180s
35. Supriyanto E. The Relevance of Renewable Energy in the Changing Global Geopolitics and Economics. Johor Bahru; 2025.
36. Supriyanto E. Jakarta Geopolitical Forum IX/2025. 2025 [cited 2025 Aug 10]. Strategic Pathways for Indonesia's Renewable Energy Transition: Geopolitical Positioning, Critical Minerals, and Net-Zero Ambitions. Available from: https://www.youtube.com/watch?v=9VSWkAXLb4U&t=3424s
37. Ing LY. Accelerating ASEAN Energy Transition. Jakarta; 2025.
38. Ing LY. Jakarta Geopolitical Forum IX/2025. 2025 [cited 2025 Aug 16]. Accelerating ASEAN Energy Transition. Available from: https://www.youtube.com/watch?v=9VSWkAXLb4U&t=3424s