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# INDONESIA LOGISTICS SECTOR REVIEW: PERFORMANCE, CHALLENGES, AND FUTURE GROWTH

**Handy Bugiman[1]*, Tota Pirdo Kasih[2], Zheng Kai[3]**
[1] Faculty of Engineering, Bina Nusantara University / School of Economics and Management, Beijing Jiaotong University
[2] Faculty of Engineering, Bina Nusantara University
[3] School of Economics and Management, Beijing Jiaotong University
E-mail: handy.bugiman@binus.ac.id , tkasih@binus.edu , zhengkai@bjtu.edu.cn

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**Abstract**
This paper provides a comprehensive review of Indonesia's logistics sector, analyzing its performance, structural challenges, and strategic outlook through 2030. As the world's largest archipelago with a robust GDP growth of 5% in 2024, Indonesia possesses a resilient domestic market yet faces significant hurdles in logistics efficiency. The study highlights that Indonesia ranks 61st in the World Bank's Logistics Performance Index (LPI), lagging behind ASEAN peers due to critical bottlenecks in customs clearance and physical infrastructure. To address these issues, the sector is currently being reshaped by a "triad" of strategic policies: investment liberalization through the Omnibus Law, digitalization via the National Logistics Ecosystem (NLE), and improved maritime connectivity through the Sea Toll program, which has successfully reduced regional price disparities from 14,2% to 10,25%. Furthermore, the paper projects a transformative shift toward a green and decentralized supply chain, driven by the implementation of the B50 biodiesel roadmap, a 49% growth in the domestic electric vehicle market, and the relocation of the capital to Nusantara (IKN). The findings conclude that while high logistics costs persist, the convergence of infrastructure continuity and digital reform is positioning Indonesia to evolve from a fragmented market into a pivotal maritime logistics hub.

**Keywords:** Indonesia Logistics Strategy, National Logistics Ecosystem (NLE), Maritime Connectivity, Green Supply Chain, Infrastructure Development

## INTRODUCTION

Indonesia, as the world's largest archipelagic nation, occupies a strategic position between two oceans and two continents, making it a major center of gravity for global trade flows. With over 13,558 islands and a population estimated at 282 million in 2024, Indonesia's geographic and demographic structure creates a unique logistics dynamic: rich in potential but fraught with structural challenges. Indonesia's stable economic growth, with a GDP growth rate of around 5 percent, has driven a significant increase in demand for transportation, distribution, and supply chain management. However, the national logistics sector still faces high distribution costs, uneven infrastructure, and suboptimal operational efficiency compared to other ASEAN countries.

As a developing country with a huge domestic market, Indonesia is at a critical juncture in its logistics modernization and integration efforts. In the 2023 Logistics Performance Index (LPI) report, Indonesia ranked 61st globally, lagging behind neighboring countries such as Malaysia, Thailand, and Vietnam. The main obstacles lie in infrastructure and customs clearance, which have prolonged dwell times and increased overall logistics costs. In contrast, Indonesia's timeliness score is quite good, indicating that once goods have passed through the administrative process and entered the transportation network, distribution is relatively stable. This gap indicates that Indonesia's logistics problem lies not in its distribution capacity, but in bureaucratic barriers, physical connectivity, and intermodal integration.

The Indonesian government has responded to these challenges through a series of strategic policies that in recent years have formed a "national logistics transformation framework." These policies center on three main axes: (1) deregulation and investment liberalization through the Omnibus Law and the Positive Investment List; (2) digitalization of logistics and trade procedures through the National Logistics Ecosystem (NLE); and (3) strengthening maritime connectivity through the Sea Toll program, which has been proven to reduce price disparities between regions, particularly in Eastern Indonesia. Furthermore, the energy transition through the development of B50 biodiesel and the accelerated adoption of electric vehicles is creating a new configuration in the energy and transportation supply chain that is more environmentally friendly.

Meanwhile, the acceleration of physical infrastructure development also plays a significant role. The construction of toll road networks, port expansion, airport modernization, and the arrival of the Jakarta-Bandung high-speed train mark a new era of connectivity. The expansion of freight train lines in Sumatra, Sulawesi, and Kalimantan demonstrates the country's efforts to shift the logistics burden from truck-based land transportation to more efficient modes. In parallel, the planned relocation of the capital city to the Indonesian archipelago (IKN) has shifted the economic center of gravity from Java to Kalimantan, creating new opportunities for logistics, construction, and transportation service providers.

On the industry side, the Indonesian logistics market exhibits a moderately fragmented structure, with intense competition between domestic and global players. The courier, express, and parcel (CEP) sector is dominated by local companies such as JNE, J&T, SiCepat, and Pos Indonesia, which are growing rapidly thanks to e-commerce. Conversely, the international freight forwarding market is dominated by large companies such as DHL, Kuehne Nagel, and DSV, including following the acquisition of DB Schenker in 2025, which further consolidated the power of global players.

Sustainability has also become a new dimension in Indonesia's logistics operations. Pelindo's 2024 sustainability report shows a significant reduction in carbon emissions and a surge in renewable energy utilization at ports. This underscores the transformation toward green logistics, in line with Indonesia's commitment to decarbonization and national energy efficiency. While these advances represent positive developments, fundamental challenges remain: high logistics costs (as a percentage of GDP), disparities in infrastructure quality between regions, congestion in major cities like Jakarta, and a strong dependence on land transportation. Amidst increasingly competitive global dynamics, the need for a standardized, integrated, and technology-based logistics system is becoming increasingly urgent.

In response to these dynamics, this paper presents a comprehensive overview of Indonesia's logistics sector, covering the country's situation, transportation infrastructure conditions, logistics operational performance, and a SWOT analysis, along with projections of future trends leading up to 2030. Furthermore, the paper discusses policy evolution, industry participation, and strategic opportunities that could strengthen Indonesia's position as a key player in maritime logistics in the Indo-Pacific region. Through an integrated analytical framework, this study aims to provide a deep understanding of how Indonesia can leverage fiscal, technological, and policy momentum to transform its fragmented logistics system into a more efficient, connected, and sustainable ecosystem. In doing so, Indonesia is expected to not only improve its position in the global supply chain but also strengthen its role as a strategic maritime logistics hub for Southeast Asia and the world.

## LITERATURE REVIEW

### Logistics Performance in Emerging Economies

Literature shows that developing countries generally face high logistics costs due to fragmented transportation networks, limited infrastructure, and inefficient customs processes. A World Bank study (2023) confirmed that LPI indicators, particularly infrastructure, customs, and logistics service quality, are key determinants of trade competitiveness. Indonesia still lags behind several ASEAN countries due to bottlenecks in port efficiency and clearance time.

### Infrastructure Development and Multi-Modal Connectivity

Previous research has emphasized that the development of toll road, port, airport, and railway transportation infrastructure directly correlates with lower national logistics costs. In the context of an archipelagic nation like Indonesia, multimodal integration is critical. Studies by Hasan (2021) and Arimbhi et al. (2021) show that an imbalance in the east-west network leads to high freight costs and suboptimal cargo returns.

### Digitalization in Logistics Systems

Digital transformation through integrated logistics platforms has been proven to improve administrative efficiency and reduce dwell times. The concept of a National Single Window and national logistics platforms (such as NLEs) is widely discussed in the literature as instruments to reduce data duplication and accelerate the flow of goods. A study by Hatta et al. (2024) emphasized that digitalization is key to long-term reform of Indonesia's logistics sector.

### Maritime Connectivity and Archipelagic Trade

Literature on maritime nations highlights the challenges of inter-island distribution, particularly related to price disparities and logistical access in remote areas. Connectivity programs such as the "Sea Toll" have been shown to reduce price disparities and strengthen distribution equity. Studies by Simatupang and the Ministry of Trade demonstrate a direct correlation between scheduled shipping frequency and regional price stability.

### Sustainability, Green Logistics, and Energy Transition

Recent studies highlight the global shift toward green logistics through the adoption of electric vehicles, low-carbon technologies, and biofuels. Indonesia is among the countries aggressively developing biodiesel (B30–B50) and EV infrastructure. Global literature emphasizes that the green transition is not just an environmental issue, but a long-term efficiency strategy, especially for countries with high land transportation volumes.

### Competitive Landscape in Logistics Markets

Studies of the logistics market show a moderately fragmented industry structure, with global players dominating freight forwarding, while local companies dominate the courier and last-mile delivery sectors. Global consolidation, such as DSV's acquisition of DB Schenker, has been identified in the literature as a factor changing the dynamics of international competition.

## METHOD

This study uses a descriptive-qualitative approach with literature-based analysis to comprehensively review the condition, performance, and development direction of Indonesia's logistics sector. The data analyzed is a combination of secondary data, including official government reports, international agency publications, national regulations, and academic research.

### Data Collection

Data collection was carried out through three main sources:

- Official Statistical Documents – including BPS (Statistical Yearbook, Transport Statistics), Ministry of Transportation, and reports from state-owned enterprises such as Pelindo, KAI, MRT.
- International Reports – such as the World Bank Logistics Performance Index (LPI), UNCTAD Maritime Profile, and global publications related to logistics and trade.
- Academic Literature & Grey Literature – includes journals, policy papers, industry reports (Mordor Intelligence), and official government news articles.

All data used is public data available until November 2025, so the analysis results take into account the latest context and developments.

### Data Analysis Technique

The analysis process is carried out in several stages:

- Content Analysis – identifying key themes related to logistics performance, infrastructure, policies and future trends.
- Comparative Framework – compares Indonesia's logistics indicators with other ASEAN countries using LPI data, port efficiency, and dwell time.
- Thematic Synthesis – integrates the results of studies on infrastructure, digitalization, policy, and energy trends in one analytical framework.
- SWOT Analytical Mapping – compiling a map of strengths, weaknesses, opportunities, and threats based on a combination of quantitative data and literature interpretation.

### Scope and Limitations

The scope of the research covers three main domains:

- Transportation and Logistics Infrastructure
- Operational Performance (LPI, port efficiency, freight flow)
- Future Policies and Trends (NLE, Sea Toll, EV, B50, IKN)

The study's limitations primarily lie in its reliance on secondary data, which excludes interviews or field observations. Furthermore, future projections are influenced by policy changes that may still occur after 2025.

## RESULTS AND DISCUSSION

### Logistics Infrastructure Performance

Analysis of Indonesia's logistics infrastructure shows that the country has a vast multimodal transportation network, but it is not yet fully integrated and efficient. Statistics Indonesia (BPS) data from 2024 confirms that non-toll roads reached 543.720 km, while toll roads only reached 2.652,7 km, highlighting a heavy reliance on land networks, the quality of which varies across regions. Similarly, the 5.483 km rail network has shown significant development, particularly with the arrival of the Jakarta-Bandung high-speed train and the expansion of routes to Sulawesi and Kalimantan.

In the maritime sector, the increase in sea freight volume to 38,91 million tons in January 2025 (a 31,4% year-on-year increase) demonstrates that maritime connectivity remains the backbone of domestic distribution. However, performance remains uneven, as most logistics activities remain concentrated in Java. This contributes to high national logistics costs.

Overall, infrastructure results show that capacity is growing, but efficiency and equity remain key challenges.

Tabel 1 National Infrastructure Network

| Network mode | Key metric | Figure | Year Update | Notes | Source |
|---|---|---|---|---|---|
| Road (Non-highway) | Total lane-km | 543.720 | 2023 | 58,6 % paved | BPS |
| Toll Road | Total lane-km | 2.653 | 2023 | 65,4 % in Java Island | BPS |
| Rail | Track-km | 5.483 | 2019 | | World Bank |
| Sea | Port | 3.672 | 2023 | Top-5: Tanjung Priok (Jakarta) , Tanjung Perak (Surabaya), Belawan (Medan), Balikpapan & Makassar | Department of Transportation |
| Air | Number of Airport | 251 | 2023 | 3 largest: CGK Jakarta , DPS Balo , SUB Surabaya | BPS |
| Pipeline | km | 22.533 | 2024 | Transmission, Distribution and Household Pipeline | BPH Migas |

## Logistics Performance Index (LPI) Evidence

Findings from *the World Bank Logistics Performance Index 2023* confirm that Indonesia ranks 61st out of 139 countries, with a score of 3,0, relatively low compared to other ASEAN countries such as Thailand, Vietnam, and Malaysia. The *Customs* (2,8) and *Infrastructure* (2,9) sub-indicators are the weakest, indicating that the main obstacle is not transportation capacity volume, but rather operational and administrative processes.

Interestingly, the *Timeliness component* (3,3) scored the highest, indicating that once goods enter the distribution network, timeliness is relatively well maintained. However, delays early in the chain (customs, clearance, and dwell time) remain a substantial bottleneck.

These results confirm that physical development is not enough without process reform and digitalization of the national logistics system.

Table 2 Logistics Performance Index (LPI)

| Country | Continent | Logistic Performance Index | | | | | | | | Lead time data for container shipping, 2022 | | Lead time data for aviation, second quarter of 2022 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Grouped Rank | LPI Score | Customs Score | Infrastructure Score | International Shipments Score | Logistics Competence Score | Timeliness Score | Tracking & Tracing Score | Number of services | Turnaround time at port (days) - mean | Average Number of Partners (incoming and outgoing) | Import Dwell Time - Mean (days) |
| Singapore | Asia | 1 | 4,3 | 4,2 | 4,6 | 4,0 | 4,4 | 4,3 | 4,4 | 240 | 1,2 | 124,5 | 0,3 |
| Finland | Europe | 2 | 4,2 | 4,0 | 4,2 | 4,1 | 4,2 | 4,3 | 4,2 | 30 | 1,4 | 104,0 | 1,7 |
| Denmark | Europe | 3 | 4,1 | 4,1 | 4,1 | 3,6 | 4,1 | 4,1 | 4,3 | 17 | 0,8 | 123,0 | 1,8 |
| Germany | Europe | 3 | 4,1 | 3,9 | 4,3 | 3,7 | 4,2 | 4,1 | 4,2 | 119 | 1,7 | 149,5 | 1,5 |
| Canada | North America | 7 | 4,0 | 4,0 | 4,3 | 3,6 | 4,2 | 4,1 | 4,1 | 48 | 2,7 | 147,0 | 1,3 |
| Hong Kong SAR, China | Asia | 7 | 4,0 | 3,8 | 4,0 | 4,0 | 4,0 | 4,1 | 4,2 | 185 | 0,7 | 135,5 | 0,7 |
| United Arab Emirates | Asia | 7 | 4,0 | 3,7 | 4,1 | 3,8 | 4,0 | 4,2 | 4,1 | 85 | 1,6 | 136,0 | 1,3 |
| Japan | Asia | 13 | 3,9 | 3,9 | 4,2 | 3,3 | 4,1 | 4,0 | 4,0 | 206 | 0,5 | 135,0 | 1,8 |
| Taiwan, China | Asia | 13 | 3,9 | 3,5 | 3,8 | 3,7 | 3,9 | 4,2 | 4,2 | 141 | 0,8 | 104,0 | 1,3 |
| Korea, Rep. | Asia | 17 | 3,8 | 3,9 | 4,1 | 3,4 | 3,8 | 3,8 | 3,8 | 268 | 1,0 | 129,0 | 1,0 |
| United States | North America | 17 | 3,8 | 3,7 | 3,9 | 3,4 | 3,9 | 3,8 | 4,2 | 223 | 2,1 | 158,0 | 1,2 |
| Australia | Oceania | 19 | 3,7 | 3,7 | 4,1 | 3,1 | 3,9 | 3,6 | 4,1 | 58 | 2,0 | 98,5 | 0,8 |
| China | Asia | 19 | 3,7 | 3,3 | 4,0 | 3,6 | 3,8 | 3,7 | 3,8 | 590 | 1,1 | 127,0 | 2,5 |
| Malaysia | Asia | 26 | 3,6 | 3,3 | 3,6 | 3,7 | 3,7 | 3,7 | 3,7 | 208 | 1,2 | 111,0 | 0,8 |
| Thailand | Asia | 34 | 3,5 | 3,3 | 3,7 | 3,5 | 3,5 | 3,5 | 3,6 | 89 | 1,0 | 120,0 | 2,1 |
| India | Asia | 38 | 3,4 | 3,0 | 3,2 | 3,5 | 3,5 | 3,6 | 3,4 | 117 | 1,1 | 133,0 | 1,9 |
| Philippines | Asia | 43 | 3,3 | 2,8 | 3,2 | 3,1 | 3,3 | 3,9 | 3,3 | 66 | 1,3 | 92,5 | 2,4 |
| Vietnam | Asia | 43 | 3,3 | 3,1 | 3,2 | 3,3 | 3,2 | 3,3 | 3,4 | 180 | 0,9 | 98,0 | 2,4 |
| Brazil | South America | 51 | 3,2 | 2,9 | 3,2 | 2,9 | 3,3 | 3,5 | 3,2 | 33 | 1,0 | 116,5 | 1,7 |
| Chile | South America | 61 | 3,0 | 3,0 | 2,8 | 2,7 | 3,1 | 3,2 | 3,0 | 18 | 1,5 | 63,5 | 1,5 |
| Indonesia | Asia | 61 | 3,0 | 2,8 | 2,9 | 3,0 | 2,9 | 3,3 | 3,0 | 118 | 1,8 | 104,0 | 2,4 |
| Peru | South America | 61 | 3,0 | 2,6 | 2,5 | 3,1 | 2,7 | 3,4 | 3,4 | 25 | 0,9 | 56,0 | 2,6 |
| Mexico | North America | 66 | 2,9 | 2,5 | 2,8 | 2,8 | 3,0 | 3,5 | 3,1 | 49 | 1,1 | 100,5 | 1,9 |
| Argentina | South America | 73 | 2,8 | 2,7 | 2,8 | 2,7 | 2,7 | 3,1 | 2,9 | 23 | 1,8 | 84,5 | 1,4 |
| Sri Lanka | Asia | 73 | 2,8 | 2,5 | 2,4 | 2,8 | 2,7 | 3,3 | 3,0 | 67 | 1,3 | 76,0 | 3,0 |
| Nigeria | Africa | 88 | 2,6 | 2,4 | 2,4 | 2,5 | 2,3 | 3,1 | 2,7 | 23 | 3,4 | 93,5 | 5,2 |
| Russian Federation | Europe | 88 | 2,6 | 2,4 | 2,7 | 2,3 | 2,6 | 2,9 | 2,5 | 45 | 2,2 | 85,0 | 2,5 |
| Cambodia | Asia | 115 | 2,4 | 2,2 | 2,1 | 2,3 | 2,4 | 2,7 | 2,8 | 12 | 0,9 | 56,5 | 3,5 |

## Sustainability Performance (Pelindo Case Study)

An analysis of *the Pelindo Sustainability Report 2024* demonstrates significant achievements in the decarbonization of port logistics. Total GHG emissions decreased from 380.301 tons CO2e (2023) to 330.226 tons CO2e (2024), primarily due to a decrease in fuel oil consumption and a dramatic increase in solar farm utilization, which jumped from 87 GJ to 256.947 GJ.

These results indicate two points:

1. Energy transformation in ports is starting to have a real impact, especially in reducing the maritime sector's carbon footprint.
2. Renewable energy integration supports operational efficiency, which in the long term can lower logistics costs by reducing the use of fossil fuels.

However, the increase in *Scope 2 emissions* shows that the energy transition still faces challenges in full electrification and the availability of clean energy from the PLN grid.

Table 3 Pelindo Sustainability Report

| Metric | 2024 | 2023 | 2022 | Note |
|---|---|---|---|---|
| Energy Consumption | | | | |
| Electricity Purchased from State Electric Grid (PLN) (GJ) | 1.068.926 | 908.031 | 872.692 | |
| Solar Farm Utilization (GJ) | 256.947 | 87 | 50 | |
| Fuel Oil Consumption (GJ) | 1.523.583 | 2.357.780 | 2.266.018 | |
| Water Consumption | | | | |
| Total Water Consumption ($m^3$) | 5.421 | 8.736 | 561 | |
| GHG Emissions | | | | 2023 data includes Pelindo Subholding (restated); 2022 data excludes Pelindo Subholding. |
| Scope 1 Emissions (Ton CO2eq) - Diesel Consumption | 116.986 | 181.039 | 173.993 | |
| Scope 2 Emissions (Ton CO2eq) - Electricity Purchased from State Electric Grid (PLN) | 213.240 | 199.262 | 191.507 | |
| Total GHG Emissions (Ton CO2eq) | 330.226 | 380.301 | 365.500 | |

**Market Dynamics and Competitive Landscape**

Market analysis shows that Indonesia's logistics industry is **moderately fragmented**, with no single player dominating the national market. The international segment is dominated by global companies like DHL, Kuehne+Nagel, and DSV (which recently acquired DB Schenker in 2025), while the domestic segment is dominated by local CEP companies like JNE, J&T, SiCepat, and Pos Indonesia.

The growth of e-commerce is a major driver of the domestic sector's dominance, with the domestic CEP market share reaching 64%**,** far surpassing the international sector (36%). This finding demonstrates a trend that demand for last-mile distribution continues to increase, requiring larger warehousing and transportation networks.

The results of this market study show that Indonesian logistics competition is moving from an international orientation towards domestic market dominance based on consumption.

**Effectiveness of Key Policies (NLE, Omnibus Law, Sea Toll)**

Policy analysis shows that three main pillars of government have different impacts on national logistics performance:

1. National Logistics Ecosystem (NLE)

Study findings indicate that the NLE has reduced document redundancy, integrated public and private platforms, and streamlined *clearance processes* at several major ports. The impact is beginning to be seen, but implementation is not yet uniform nationwide.

2. Omnibus Law / Positive Investment List

Data shows that investment liberalization has successfully increased FDI interest in cold chain and warehousing infrastructure. However, the complexity of regional regulations remains a barrier to implementation on the ground.

3. Sea Toll Program

The results show that the Sea Toll program has the most measurable impact, reducing inter-regional price disparities from 14,2% (2015) to 10,25% (2024)**.** This means the Sea Toll is effective in reducing the logistics gap between the western and eastern regions.

Of the three policies, Sea Toll is the program with the strongest empirical evidence, while the NLE is currently in the optimization stage and the Omnibus Law serves as a foundation for long-term investment.

**SWOT Analysis of Indonesia**

Building on the performance metrics and regulatory landscape established in the previous chapters, this section evaluates Indonesia's competitive position through a strategic SWOT analysis. While the nation grapples with structural inefficiencies in customs and infrastructure—as reflected in its LPI ranking—these weaknesses are counterbalanced by robust macroeconomic fundamentals and aggressive policy reforms. The following framework synthesizes these internal capabilities and external dynamics to identify the core drivers that will shape the sector's trajectory through 2030

| **STRENGTHS (Internal)** | **WEAKNESSES (Internal)** |
|---|---|
| **Strategic Geography:** As the world's largest archipelago located between the Indian and Pacific Oceans. Indonesia is a natural maritime hub for global trade routes.<br>**Robust Economic Growth:** With a consistent GDP growth of 5% (2024) and a massive domestic consumption base of over 282 million people, the demand for logistics is structural and resilient (World Bank. 2025).<br>**Infrastructure Continuity:** Following the political transition in 2024, the new government has signaled a strong commitment to maintaining continuity in strategic infrastructure spending, ensuring long-term stability for logistics investors (Indonesia's Sea Toll Cuts Price Disparities across Regions: Minister. 2024). | **High Logistics Costs:** Logistics costs remain high relative to regional peers, driven by a fragmented multi-modal network and high domestic shipping margins.<br>**Infrastructure Disparity:** There is a significant gap in infrastructure quality between Western Indonesia (Java/Sumatra) and Eastern Indonesia. although the price disparity has improved from 14,2% to 10,25% due to the Sea Toll program (Akbar et al.. 2024).<br>**LPI Performance:** Indonesia's 2023 LPI rank (61st) lags behind ASEAN competitors like Malaysia (26th) and Thailand (34th), particularly in Customs and Infrastructure scores (Logistic Performance Index 2023. 2023). |
| **OPPORTUNITIES (External)** | **THREATS (External)** |
| **Green Energy Leadership:** The B50 biodiesel roadmap positions Indonesia to become a global leader in renewable fuel logistics, reducing exposure to volatile oil import prices.<br>**EV Supply Chain Integration:** The domestic EV market has demonstrated significant expansion that outpaces regional peers. This growth allows logistics providers to electrify fleets earlier than anticipated, reducing long-term operational costs (Indonesia's EV Market Grew by 49%. 2025).<br>**Digitalization (NLE):** The National Logistics Ecosystem (NLE) offers immense potential to cut bureaucracy and dwell times by integrating private and public sector data platforms. | **Global Economic Volatility:** As an open economy relying on commodity exports (Coal, CPO), global price shocks can rapidly alter trade volumes and freight demand.<br>**Regulatory Complexity:** While the Omnibus Law has streamlined investment, overlapping regulations between central and regional governments can still create friction for "last-mile" implementation.<br>**Climate Change:** Extreme weather events pose a physical threat to maritime and road infrastructure, particularly in coastal and flood-prone areas. |

## Strength and Challenges

### Core Strengths

- **Macroeconomic Resilience:** Indonesia's logistics sector benefits from a robust macroeconomic backdrop, with GDP growth projected at **5% in 2024,** creating a sustained demand for freight and warehousing services. This domestic consumption base is reinforced by Indonesia's geographic advantage as a critical transshipment hub for global trade flows moving between Asia, Europe, and the Americas (World Bank. 2025).
- **Policy Success (Sea Toll Program):** Government interventions have yielded measurable improvements in connectivity. Moga Simatupang, Director General of Domestic Trade at the Ministry of Trade, noted that the Sea Toll program is a collaborative effort involving several Ministries, Institutions, regional governments, and shipping operators. He confirmed that the program has successfully stabilized regional economies by consistently narrowing the price gap between Western and Eastern Indonesia over the last decade, proving the effectiveness of government intervention in market equity. (Indonesia's Sea Toll Cuts Price Disparities across Regions: Minister. 2024).
- **Digital and Green Transformation:** The sector is undergoing rapid modernization. The adoption of electric vehicles (EVs) in logistics fleets is accelerating, demonstrating strong early market readiness and a rapid shift toward decarbonization that outpaces regional competitors. Simultaneously, port modernization efforts are converting traditional hubs into "green ports" to reduce carbon footprints (Indonesia's EV Market Grew by 49%. 2025).

### Critical Challenges

- **High Logistics Costs & Fragmentation:** Despite the improvements in price disparity mentioned above. Indonesia's logistics costs remain structurally high compared to developed economies. This is primarily driven by a fragmented multi-modal network and high domestic shipping margins, where moving goods from Java to remote Eastern regions can still be more costly than international shipments.
- **Infrastructure Disparity:** A sharp gap persists between Western and Eastern Indonesia. While Java benefits from modern toll roads. Eastern Indonesia grapples with limited access, creating a "return cargo" imbalance—ships travel full from west to east but often return empty, driving up shipping rates.
- **Operational Friction (Congestion):** Severe traffic congestion in major urban hubs remains a massive drain on efficiency. Recent data indicates that traffic congestion in Greater Jakarta alone causes estimated economic losses of **Rp 100 trillion (approx. USD 6,1 billion) annually**, eroding the efficiency gains made in other areas (Jakarta Traffic Jams Cost $6 Billion Annually. Deputy Governor Says. 2025)

## Future Trend and Strategic Outlook

This section projects the trajectory of Indonesia's logistics sector through 2030, focusing on two transformative trends: the rapid electrification of transport fleets and the strategic shift toward energy sovereignty through high-blend biodiesel.

### 1. Electrification Ecosystem: Fleet Transformation and Infrastructure Readiness

The electrification of Indonesia's transport sector has evolved from a regulatory ambition into a rapid market reality. In 2025, the domestic electric vehicle (EV) market defied broader automotive headwinds to record a **49% growth,** with adoption rates reaching **18% of total vehicle sales** (Indonesia's EV Market Grew by 49%. 2025). This momentum is setting the stage for a massive scaling of logistics fleets. According to the national *Electric Vehicle Roadmap,* the cumulative number of electric vehicles is projected to surge by 2030, targeting **2,19 million electric cars** and **13,02 million electric motorcycles**. This fleet transformation is explicitly designed to decarbonize operations, with projected energy savings of **29,79 MBOE** and a reduction in greenhouse gas emissions by **7,23 million tons of CO2e** annually by 2030 (ENERGY TRANSITION IN INDONESIA AND FUTURE MOBILITY. 2023).

To sustain this exponential fleet growth. the government has synchronized infrastructure development

through the *SPKLU Development Plan (2025–2030)*. The strategy shifts from linear growth to an aggressive expansion phase starting in 2028, targeting a total of **62.918 Public Electric Vehicle Charging Stations (SPKLU) by 2030**, a massive leap from the ~3.200 units operational in 2024. Crucially, this plan aims to optimize the charging ecosystem by tightening the EV-to-Charger ratio from **17:1 in 2024** to a more efficient **15:1 by 2030**. For logistics investors, this coordinated expansion reduces "range anxiety" and validates the feasibility of deploying electric vans and trucks for long-haul domestic distribution (Sosialisasi Keputusan Menteri ESDM Nomor 24.K/TL.01/MEM.L/2025 Tentang Rencana Pengembangan SPKLU Tahun 2025 s.d.2030. 2025).

**2. Energy Sovereignty: The B50 Biodiesel Roadmap**

Parallel to electrification, Indonesia is accelerating its transition toward energy sovereignty by reducing dependence on imported diesel. The national energy roadmap explicitly targets the implementation of **B50 (50% palm oil blend) by 2026**. This mandate is projected to increase domestic biodiesel consumption to approximately **20 million KL by 2026**, effectively absorbing surplus Crude Palm Oil (CPO) production and shielding the national trade balance from global oil price volatility. For the logistics sector, this necessitates immediate planning regarding fleet maintenance cycles to adapt to higher biofuel blends (Executive Summary Peta Jalan (Roadmap) Hilirisasi Investasi Strategis Komoditas Biofuel . 2022; Indonesia Begins B50 Biodiesel Road Test Ahead of 2026 Launch. 2025).

**3. The Cold Chain Logistics Boom**

Beyond general freight. the "cold chain" sector is emerging as a high-growth engine, driven by the rising demand for fresh food delivery and pharmaceutical distribution. The Indonesia cold chain logistics market is projected to reach a valuation of **USD 7,15 billion in 2025**, growing at a CAGR of **4,37%** through 2030. This growth is structurally supported by the government's "SiNasLog" program, which has successfully incentivized the development of temperature-controlled warehouses and "reefer" (refrigerated) transport fleets. This trend is critical for reducing food waste and supporting Indonesia's ambition to become a global exporter of fisheries and aquaculture products (Indonesia Cold Chain Logistics Market. 2025).

**4. New Economic Gravity: Nusantara Capital City (IKN)**

The relocation of the capital to Nusantara (IKN) in East Kalimantan is creating a new center of gravity for national logistics. The government has approved a development budget of **IDR 48,8 trillion (approx. USD 2,95 billion)** for IKN construction through 2028, which is stimulating massive demand for project logistics and construction material transport outside of Java. This strategic shift is decentralizing the nation's supply chain; logistics providers are now racing to establish hubs in Balikpapan and Samarinda to serve the new capital, effectively reducing the historical "Java-centric" dominance of the logistics network (IKN Becomes a New Economic Centre. 2024) .

**5. Revitalization of Rail Freight Connectivity**

To mitigate the high costs of road-based logistics, the government is aggressively expanding the role of rail freight, particularly for bulk commodity transport. PT Kereta Api Indonesia (KAI) has set a strategic target to increase freight volume by **15% by 2029**, aiming to transport **111,2 million tons of coal** and **10,9 million tons of non-coal commodities** annually (KAI Transports 39.2 Million Tons Of Goods In 2025. Coal Domination 82.83 Percent. 2025).

This growth is underpinned by two major infrastructure priorities:

- **Sumatra Coal Corridor:** The completion of the Lahat-Kertapati Logistics Railway and the expansion of the Tarahan II Terminal are critical national strategic projects designed to unblock coal supply chains from South Sumatra to Java/Bali power plants. These upgrades are projected to increase the corridor's absorption capacity by up to **18 million tons annually** (KAI Transports 39.2 Million Tons Of Goods In 2025. Coal Domination 82.83 Percent. 2025).
- **New Growth Centers (Sulawesi & Kalimantan):** Beyond Java and Sumatra, the rail network is expanding to support industrial downstreaming. **According to a study by the University of Western Australia (UWA)**, the **Trans-Sulawesi Railway** (Makassar–Parepare) is vital for the

nickel and cement industries. with full network completion targeted for **2030** (Martinus et al.. 2024). Simultaneously, the government has designated the **East Kalimantan Logistics Railway** as a National Strategic Project (PSN) to directly support the supply chain for the new capital city, Nusantara (KAI Targets 2026 for Railway Expansion beyond Java. 2025).

## CONCLUSION

Indonesia stands at a critical inflection point in its logistics evolution. As the world's largest archipelago. the nation has successfully transitioned from a fragmented collection of local markets into a cohesive, albeit somewhat complex, maritime economy. This paper has analyzed the structural transformation of the sector, driven by a triad of strategic forces: aggressive infrastructure development, regulatory liberalization, and a decisive pivot toward green energy sovereignty.

The findings indicate that Indonesia's logistics sector is underpinned by exceptional macroeconomic resilience. With a consistent GDP growth of 5% (2024) and a domestic consumption base of over 282 million people, the demand for logistics services is structural and expanding. Government interventions, specifically the Sea Toll Program, have produced tangible results by successfully narrowing the price disparity between Western and Eastern Indonesia, proving the significant impact of maritime connectivity on market equity. Further, the implementation of the National Logistics Ecosystem (NLE) has begun to dismantle historical bureaucratic bottlenecks, signaling a shift from manual inefficiencies toward digital integration. However, significant challenges remain. The logistics cost structure remains high compared to regional peers. This is primarily driven by the dominance of road freight and the stark infrastructure gap between Java and the outer islands. While "hard infrastructure" (toll roads, ports) has expanded rapidly, "soft infrastructure" (customs speed, inter-modal connectivity) still requires optimization. Moreover, traffic congestion in urban hubs like Jakarta continues to impose an estimated economic cost of USD 6,1 billion annually, underscoring the urgent need for mass transit and rail freight solutions.

Looking ahead to 2030, the sector is poised for a radical transformation defined by decarbonization and modernization. The government's aggressive roadmap for B50 biodiesel by 2026 and the target of 2,19 million electric cars by 2030 present a dual opportunity: reducing the sector's vulnerability to global oil price shocks while creating a new, localized green supply chain. Simultaneously, the revitalization of rail freight anchored by the Trans-Sumatra and Trans-Sulawesi projects offers a scalable solution to the high cost of bulk commodity transport, while the development of Nusantara Capital City (IKN) is creating a new center of gravity for logistics flows outside of Java.

In conclusion, while Indonesia faces persistent hurdles inherent to its geography, the convergence of political will, infrastructure continuity, and digital reform positions the country to emerge not just as a regional market. but as a pivotal maritime logistics hub for the Indo-Pacific. The trajectory is clear: Indonesia is moving from a high-cost economy toward a hyper-connected, energy-independent logistics ecosystem.

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