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Maritime trade and development in Papua New Guinea: Challenges, opportunities, and the way forward

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Abstract

Papua New Guinea (PNG) is one of the most maritime-dependent economies in the Pacific. Its mainland coastline is 5,152 km (3,201 mi). Sea transport is the dominant and often only viable mode for domestic and international trade. PNG recorded a GDP of USD 31.02 billion and merchandise trade of USD 18.24 billion in 2023, with a trade surplus of USD 7.42 billion, largely driven by commodity exports. However, the maritime potential of the country remains under-realised, with transport services exports negligible, liner connectivity weak, and many communities experiencing high logistics costs and unreliable services. Drawing on UNCTAD maritime profiles, World Bank and Asian Development Bank reports, PNG Ports Corporation documents, national policy papers and recent industry commentary, this paper analyses PNG's maritime trade and development from a systems perspective. It reviews trends in trade flows, fleet composition, port activity, infrastructure investment and governance reforms, and contrasts PNG's position with that of a global hub such as Singapore. The findings show that PNG's 15 out of 23 ports operated by PNG Ports handle around 7–10 million tonnes of cargo annually and more than 90% of the country's international trade, with Lae and Port Moresby/Motukea now ranked in the top 50% of Oceania ports in the World Bank Container Port Performance Index. However, limited hinterland connectivity, low shipping frequency on domestic routes, lack of shipbuilding capacity and a persistent deficit in transport services trade continue to constrain inclusive, sustainable growth. The paper concludes that PNG needs an integrated maritime strategy that combines port modernisation, blue-economy initiatives, coastal shipping reform, human-capital development and climate-resilient infrastructure, aligned with the National Oceans Policy 2020–2030 and the Ports Infrastructure Investment Program.

1. Introduction

Papua New Guinea, located in the south-western Pacific, has an estimated population of over 10.5 million and a land area of about 452,860 km². The country comprises more than 600 islands, and the mainland coastline is 5,152 km (3,201 mi), giving it substantial marine resources and strategic importance in Oceania. Historically, mountainous terrain, dispersed settlements and high infrastructure costs have limited the development of road and rail networks. PNG has no railway system, weak and discontinuous highways and expensive air

links. Consequently, maritime transport is not only the backbone of external trade but also a lifeline for domestic connectivity, particularly for coastal and island communities.

PNG is richly endowed with oil, gas, minerals, timber and fisheries, and is a significant exporter of petroleum, gas, gold, copper ore, rough wood, palm oil and fish products. These commodities are predominantly shipped through Lae, Port Moresby (Motukea) and a set of regional ports. Despite strong fundamentals such as a consistent merchandise trade surplus and growing fleet tonnage, the country's maritime trade has been hampered by infrastructure constraints, high internal transport costs and weak transport-services exports.

PNG is pursuing ambitious reforms and investments. The National Oceans Policy (NOP) 2020–2030, the Integrated Ocean Management System and the Ports Infrastructure Investment Program (PIIP) seek to align port development, environmental protection and blue-economy objectives. AIFFP-financed upgrades to Kimbe and other ports, long-term concessions to International Container Terminal Services Inc. (ICTSI) in Lae and Motukea, and digitalisation of port operations have begun to improve efficiency and global rankings.

This paper examines how Papua New Guinea's maritime sector has evolved and where it is heading. It focuses on three areas: changes in trade volumes and connectivity, the condition and reform of port infrastructure, and policy priorities for unlocking maritime potential sustainably and inclusively. Together, these perspectives offer a holistic view of PNG's maritime economy and the opportunities and challenges shaping its future development.

2. Literature review

Academic and empirical studies on maritime trade in the Pacific consistently highlight PNG's geographic dependency on shipping as a structural feature of its economy. Scholars of Pacific transport economics argue that dispersed islands, rugged terrain and high inland logistics costs make sea transport the most viable mode for trade and mobility (ADB Transport Working Paper Series, 2021). Research published in Maritime Policy & Management and Maritime Economics & Logistics further emphasises that countries such as PNG exhibit high export concentration, where resource dependency amplifies exposure to commodity price shocks and reinforces the necessity for efficient ports and supply chains. Case studies of Lae and Port Moresby ports show that investment in container handling equipment, dredging and ICT-enabled port procedures contributes to measurable improvements in vessel turnaround times and trade throughput "PNG Ports Operational Study, 2020". Similar research observes that shipping networks in PNG are dual-structured dominated by a few large operators while supplemented by feeder services and that fleet capacity expansion often follows mining and LNG investment cycles rather than pure cargo demand patterns "Pacific Maritime Transport Review, 2023". Taken together, scholarly work positions maritime connectivity as both a driver of PNG's economic growth and a bottleneck to diversification when infrastructure remains underdeveloped.

Institutions provide broader policy interpretations of PNG's maritime evolution. UNCTAD Maritime Transport Review (2023) classifies PNG as a small but regionally relevant fleet holder, while the World Bank's Pacific Transport Strategy underscores persistent logistical

constraints, particularly inland transport gaps, weak intermodal links and high operating costs that limit manufacturing and value-added exports. The Asian Development Bank's Pacific Maritime Sector Assessments identify that PNG's port performance has improved through PPP concessions such as ICTSI in Lae and Motukea (Port Moresby), digitalisation and AIFFP funded infrastructure upgrades, yet resilience to climate change and governance reforms remain priority areas.

Meanwhile, UNESCAP and IMO blue-economy dialogues point to the National Oceans Policy 2020–2030 and PNG's Integrated Ocean Management System as progressive frameworks aligning maritime development with sustainability, marine ecosystem protection and cost-recovery principles. These institutional perspectives reinforce that while PNG has made significant strides in maritime reform, unlocking long-term potential requires coordinated investment, regulatory strengthening and integration of the maritime economy into national development planning.

3. Methodology of the study

This study employs a qualitative research approach based on secondary data rather than collecting new primary evidence. It methodically combines statistics, reports, and expert commentary from reputable institutions to create a comprehensive narrative. Key datasets originate from international institutions such as UNCTAD, the World Bank, and IMF, while local insights are derived from PNG Ports Corporation releases, national planning documents, and portfolio notes from Kumul Consolidated Holdings. Policy and investment viewpoints are included through National Oceans Policy publications and AIFFP-related port development materials. Industry perspectives from Business Advantage PNG and media coverage further enhance the analytical foundation, offering operational insights and commentary on port performance, shipping movements, and sectoral reforms.

Analytically, the study applies descriptive statistics to summarise trade volumes, fleet structures, and service performance, while trend analysis highlights shift over time, such as changes in export composition between 2018 and 2023. Comparative benchmarking against Singapore helps illuminate governance, infrastructure and efficiency gaps. A thematic synthesis approach organises the findings across economic, infrastructural, governance and environmental dimensions to reveal emerging patterns and constraints. Although the research faces limitations, including unavailable container throughput figures, gaps in coastal shipping data, and reliance on grey literature rather than peer-reviewed sources, the triangulation of multiple datasets helps strengthen validity. It provides a robust interpretation of PNG's evolving maritime trajectory.

4. Maritime trade and development of PNG

4.1 PNG's Economic Overview

In 2023, Papua New Guinea recorded a GDP of approximately USD 31.02 billion with growth of around 2.7%, supported by merchandise trade valued at USD 18.24 billion. Export earnings of USD 12.83 billion significantly outweighed imports of USD 5.41 billion, resulting in a merchandise trade surplus of USD 7.42 billion. This export-driven pattern remained evident in

early 2025, when PNG registered a record quarterly trade surplus of about PGK 10.3 billion, well above its long-term average of PGK 2.8 billion, highlighting the economy's deep reliance on commodity exports and external market demand.

4.2 Merchandise presentation

Table 4.1 shows that Papua New Guinea's merchandise trade has expanded significantly over time. Exports increased steadily from USD 3.27 billion in 2005 to USD 13.40 billion in 2024, while imports rose more modestly from USD 1.73 billion to USD 4.69 billion over the same period. As a result, the trade balance strengthened substantially, growing from a surplus of USD 1.55 billion in 2005 to USD 8.71 billion in 2024, reflecting PNG's increasing reliance on export-driven growth.

Table No: 4.1 Papua New Guinea – Merchandise Trade Performance (2005–2024)
(US$ million)

Year	Exports	Imports	Trade Balance
2005	3,273	1,729	**1,545**
2010	5,742	3,950	**1,792**
2015	8,453	2,551	**5,902**
2024	13,396	4,686	**8,711**

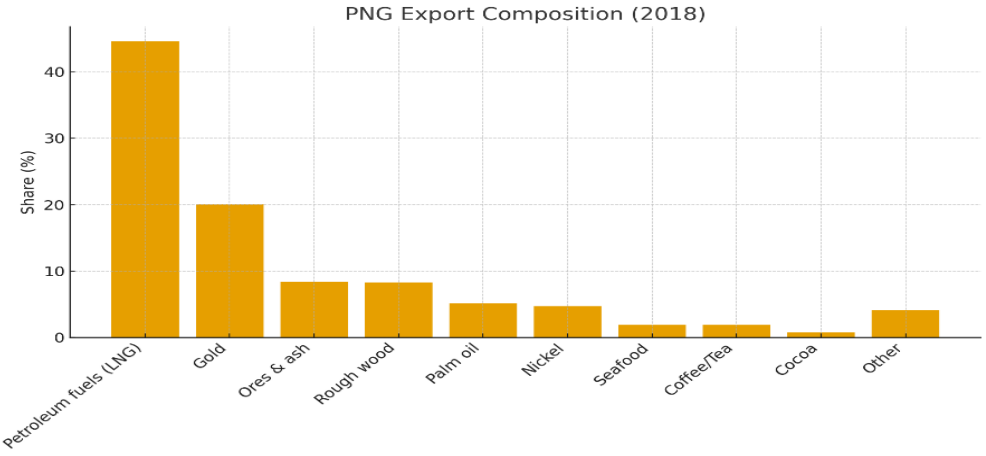
4.3 Export Composition and Trading Partners

Papua New Guinea's export structure is highly concentrated, dominated by a narrow set of commodities rather than diversified value-added products. As shown in Table 4.2, petroleum fuels, including LNG, account for nearly half of PNG's total exports at 44.6%, underscoring the country's heavy dependence on the energy sector. Gold follows as the second largest export at 20.1%, while ores, wood, palm oil and nickel make up mid-range shares between 4.7% and 8.4%. Agricultural and food-related products such as seafood, coffee, tea, spices and cocoa contribute very small proportions, collectively below 5%. Updated assessments indicate that by 2023 petroleum and LNG earnings expanded further, with modest growth in cocoa and other agricultural products, but overall, the export basket remains highly skewed. This concentration illustrates PNG's vulnerability to commodity price fluctuations and highlights the need for diversification to enhance economic resilience and broaden trade benefits.

Table 4.2: Export Composition and Trading Partners

Sl.No.	Export Category	Share (%)
1	Petroleum fuels (incl. LNG)	44.60%
2	Gems & precious metals (gold)	20.10%
3	Ores, slag & ash	8.40%
4	Rough wood	8.30%
5	Animal/vegetable fats & oils (palm oil)	5.20%

6	Nickel	4.70%
7	Meat/seafood preparations	1.90%
8	Coffee, tea & spices	1.90%
9	Cocoa	0.80%
10	Other products	4.10%

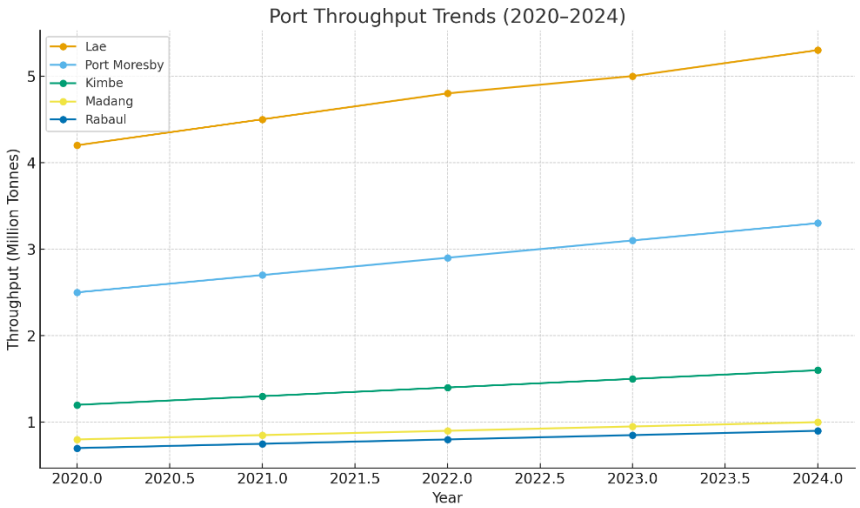


4.4 Maritime fleet and port system

UNCTAD maritime profile indicates that Papua New Guinea's national fleet comprises 210 vessels with a combined capacity of around 220,000 deadweight tonnes (DWT), of which approximately 127,000 DWT are domestically owned. The fleet is dominated by general-cargo vessels 143,100 DWT, followed by container ships 36,200 DWT and a mix of other vessel types 31,400 DWT. Fleet capacity grew by about 10.3% in 2023, although PNG has no significant domestic shipbuilding or ship-recycling facilities, meaning ships are largely acquired and serviced overseas.

Table 4.3: Estimated Port Throughput (2020–2024, million tonnes)

Sl.No.	**Year**	**Lae**	**POM/ Motukea**	**Kimbe**	**Madang**	**Rabaul**
1	2020	4.2	2.5	1.2	0.8	0.7
2	2021	4.5	2.7	1.3	0.85	0.75
3	2022	4.8	2.9	1.4	0.9	0.8
4	2023	5	3.1	1.5	0.95	0.85
5	2024	5.3	3.3	1.6	1	0.9



PNG maintains 23 declared ports, with 15 operated by PNG Ports Corporation and the remainder managed by local authorities or private operators. PNG Ports provides core services such as landlord functions, pilotage and wharf operations, with tariff regulation overseen by the Independent Consumer and Competition Commission (ICCC). Collectively, these ports handle an estimated 7–10 million tonnes of cargo each year, with Lae, Port Moresby (Motukea), Kimbe, Madang and Rabaul serving as the main gateways. Cargo trends between 2020 and 2024 show steady growth: Lae's throughput rising from about 4.2 to 5.3 million tonnes, Port Moresby from 2.5 to 3.3 million tonnes, Kimbe from 1.2 to 1.6 million tonnes, and smaller increases in Madang and Rabaul. While exact volumes differ across sources, all evidence points to increasing port activity and Lae's growing role as a strategic regional trans-shipment hub.

4.5 Port performance and financial outcomes

PNG Ports (2020) recorded revenues of approximately K300 million in 2020, with Lae accounting for around 43% of earnings and Port Moresby contributing about 26%. Despite disruptions caused by COVID-19, the corporation posted a net profit of K83 million for the year and returned more than K21 million in dividends to the state. Operationally, the World Bank's 2023 Container Port Performance Index ranked both Port Moresby (Motukea) and Lae in the upper tier of Oceania ports for time-in-port efficiency, outperforming several larger ports in Australia and New Zealand. Their performance continued to improve in the 2025 index, supported by investments from ICTSI in ship-to-shore cranes, upgraded yard equipment and enhanced digital systems. These upgrades have reportedly reduced vessel turnaround time by roughly 45% and boosted container-handling productivity by around 30%, signalling meaningful progress in port efficiency and service capability.

4.6 Transport services trade and Port connectivity

Despite strong merchandise trade performance, Papua New Guinea remains weak in transport services. According to UNCTAD, transport services accounted for just 0.7% of PNG's total services exports in 2023, equivalent to about USD 1 million, while transport imports reached USD 261 million, generating a deficit of roughly USD 260 million. This sizeable gap highlights the country's dependence on foreign shipping, logistics and maritime service providers, and its

limited ability to capture value in higher-end activities such as ship management, marine insurance and freight forwarding. PNG's limited maritime capability is also reflected in port activity in 2023, the country recorded only 782 container vessel calls, a relatively small number by international standards. UNCTAD's liner connectivity metrics further position PNG among the least connected economies in the Pacific, reliant on indirect hub-and-spoke routes through Australia and major Asian ports rather than direct services.

4.7 Comparative perspective: Singapore vs PNG

A comparison between Papua New Guinea and Singapore highlights the stark infrastructure and governance divide in maritime development. Singapore, despite its small land area of just 728.6 km² and coastline of roughly 193 km, has evolved into a global shipping hub with advanced shipbuilding and repair capabilities, cutting-edge logistics systems, highly digitalised port operations and strong regulatory oversight through the Maritime and Port Authority of Singapore. PNG, in contrast, possesses a far larger landmass and extensive coastline but lacks a domestic shipbuilding industry, has limited maintenance facilities and continues to develop its regulatory and institutional framework. While Singapore consistently ranks among the world's leading container ports for throughput and operational efficiency, PNG's ports are only now reaching mid-tier regional performance levels. This comparison demonstrates that geographical advantage alone does not ensure maritime competitiveness—effective governance, investment in infrastructure and skilled human capital are critical drivers of success.

5. Summary and conclusion

The findings reveal a fundamental paradox in Papua New Guinea's maritime sector, the country is heavily dependent on seaborne trade, yet its transport and logistics systems remain fragmented and under-connected. Although more than 90% of PNG's international trade moves by sea, weak hinterland road networks, irregular coastal shipping services and inadequate facilities in secondary ports constrain domestic mobility and raise freight costs, particularly for remote agricultural producers and small enterprises. These structural gaps are reinforced by limited data availability, making evidence-based planning difficult.

Despite these challenges, PNG is entering a period of transformation. Major infrastructure programs, including the AIFFP -funded upgrades to Kimbe and improvements in Lae, Kavieng, Daru and Oro Bay, are expanding capacity, improving climate resilience and aligning port development with emerging blue-economy priorities such as fisheries, eco-tourism and value-added processing. Governance reforms, corporatisation of PNG Ports, tariff oversight by the ICCC, and long-term concessions with ICTSI, signal progress in operational efficiency and service delivery, though institutional roles, regulatory clarity and competition policy still require strengthening. Meanwhile, growing port throughputs and fleet expansion are driving future demand for skilled maritime personnel, encouraging emphasis on training, competency development and gender inclusion. Climate risks remain significant, reinforcing the need for resilient design, environmental safeguards and low-carbon technologies in port operations.

Overall, PNG's maritime system stands at a pivotal transition point. Strong export earnings, rising port throughput and improving international performance rankings indicate positive momentum, yet structural weaknesses, limited service-sector capacity and high commodity dependence persist. To unlock its oceanic potential, PNG will need an integrated strategy built around five core pillars: modernising infrastructure and connectivity; expanding human capital and maritime services; deepening governance and regulatory reforms; leveraging ports as catalysts for diversified blue-economy growth; and embedding climate resilience and ocean stewardship across all investments. If pursued coherently, PNG can evolve from a resource-rich but under-connected nation into a diversified, efficient and inclusive maritime economy that better serves its communities and regional partners.

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