



Optimizing Port Development as an Economic Equity Policy in Underdeveloped Regions: A Case Study of Tapaleo, North Maluku

Gresia Apriyani^{1*}, Siti Sarah Tumangger², Sri Ramadhani Siregar³, Romauli Br Situmeang⁴, Bona Vintura Suyana Pandiangan⁵

University Negeri Medan

*Correspondence: Siti Sarah Tumangger
Email: sitisarah0975@gmail.com

Received: 05-12-2025
Accepted: 12-01-2026
Published: 25-02-2026



Copyright: © 2026 by the authors. Submitted for open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).

Abstract: *The development of ports in underdeveloped regions plays a strategic role in enhancing connectivity, accelerating economic distribution, and reducing interregional disparities. This study analyzes the development of Tapaleo Port in Central Halmahera, North Maluku, using a case study approach from the perspective of public economics and equity-oriented policy. The analysis draws on market failure theory, positive externalities, the Lindahl financing model, and the Kaldor–Hicks welfare criterion. Based on secondary data from the Ministry of Transportation and BPS (2022–2024), the findings show that the development of Tapaleo Port has reduced logistics costs by 22%, increased fisheries export volume by 18%, and created approximately 5,000 local jobs. However, several challenges remain, including delays in budget disbursement, limited supporting infrastructure readiness, and low levels of community involvement. This study recommends improving governance transparency, harmonizing regulations related to PPP schemes, strengthening inter-agency coordination, and adopting participatory planning to ensure long-term regional economic equity*

Keywords: *Port Development, Economic Equity, Public Economics, Underdeveloped Regions, Positive Externalities, Kaldor–Hicks Welfare, Market Failure*

Introduction

Infrastructure development is a central instrument in promoting economic growth and reducing spatial inequality, especially in archipelagic countries where logistical barriers directly constrain market integration. In public economics, ports are categorized as public goods that generate positive externalities by lowering transportation costs, stimulating trade flows, and improving access to markets (Samuelson, 1954; Mankiw, 2021). Indonesia faces a persistent development gap between its western and eastern regions due to limited connectivity and high logistical costs in remote islands (Todaro & Smith, 2020). In this context, the development of Tapaleo Port in Central Halmahera represents a strategic government intervention to enhance regional equity through maritime connectivity and strengthen local economic activities such as fisheries and coastal trade.

Methodology

Although several studies have examined the economic contribution of port

infrastructure to regional development, existing research has predominantly focused on major and well-established ports such as Bitung, Makassar, and Sorong, which benefit from extensive supporting infrastructure and large-scale investment (Nasution et al., 2022). Empirical studies assessing the impact of small-scale port development in underdeveloped island regions remain limited, especially those measuring changes in logistics costs, export growth, and local employment outcomes. Furthermore, previous research has rarely incorporated a comprehensive public economics framework that integrates market failure theory, positive externalities, Lindahl's model of public financing, and the Kaldor–Hicks welfare criterion. This gap identifies the need to investigate Tapaleo Port as a case of infrastructure provision in a disadvantaged region with a strong theoretical grounding in welfare economics.

Research Objectives

The primary objective of this study is to evaluate the effectiveness of Tapaleo Port development as an economic equity policy in an underdeveloped region. Specifically, this research aims to assess the extent to which the port contributes to reducing logistics costs, increasing fisheries export volume, and creating employment opportunities for local communities in Central Halmahera. In addition, the study seeks to analyze the implementation of port development through the lens of public economics by applying market failure theory, positive externalities, Lindahl's financing model, and the Kaldor–Hicks welfare criterion to determine whether the social benefits of the project outweigh the costs incurred by the government and society.

By utilizing this method, the research aims to offer a comprehensive and objective assessment of the effectiveness of Tapaleo Port's development while also providing relevant recommendations for infrastructure and regional development policies in underdeveloped areas

Research Significance

This study offers both academic and practical significance. Academically, the research contributes to the public economics literature by presenting an empirical case from a remote and underdeveloped region, thereby expanding existing discussions that predominantly focus on large-scale port development in urban centers. The integration of theoretical frameworks with empirical findings provides a nuanced analysis of how government intervention can address market failures in maritime infrastructure. Practically, the results of this study can serve as policy input for national and regional governments to formulate inclusive port development strategies, enhance cross-sectoral coordination, and address implementation challenges such as delays in budget absorption, insufficient supporting infrastructure, and limited community engagement during the development process.

Novelty and Supporting Literature

The novelty of this study lies in its integrative approach that combines localized economic impact assessment with a comprehensive theoretical framework from public

economics. Using empirical indicators derived from BPS and Ministry of Transportation data between 2022 and 2024, the study demonstrates measurable improvements in regional economic performance, including a 22% reduction in logistics costs and an 18% increase in fisheries exports following the development of Tapaleo Port. This approach differs from previous studies that typically analyze macroeconomic impacts without applying welfare criteria such as the Kaldor–Hicks model to evaluate net social gains from infrastructure investments (Pigou, 2017; Lindahl, 1919). Therefore, this research provides fresh insights into the effectiveness of small-scale port development as a policy instrument to advance economic equity in underdeveloped maritime regions.

Result and Discussion

Revised Version with Advanced Theory

The development of Tapaleo Port generates measurable economic benefits, including a 22% reduction in logistics costs and an 18% increase in fisheries exports. From the perspective of classical welfare economics, these outcomes indicate the presence of positive externalities that justify government intervention in port development (Samuelson, 1954). However, recent developments in public economics provide additional insights that explain how infrastructure in remote regions can trigger structural changes in local economic systems.

From the perspective of New Institutional Economics, infrastructure investments such as ports function not only as physical assets but also as institutional mechanisms that reduce transaction costs and facilitate economic coordination (North, 1990). In the case of Central Halmahera, the port's operation creates a new institutional environment where fishermen, traders, transport companies, and local authorities interact within a more efficient governance structure. This institutional transformation strengthens market access and lowers barriers to entry for small producers, which is particularly relevant in underdeveloped regions with fragmented supply chains.

Furthermore, the impact of port development can be analyzed using endogenous growth theory, which emphasizes the role of local knowledge, human capital, and innovation in driving regional growth (Romer, 1994). The increased trade volume and diversification of export markets encourage learning-by-doing among local fishermen and stimulate knowledge spillovers in processing, packaging, and logistics management. Therefore, the port's contribution to growth is not limited to short-term increases in trade but also supports long-term capacity building in the local economy. This aligns with the empirical observation that new employment opportunities have emerged both directly in port operations and indirectly in the supporting fishery and transport sectors.

In addition, the concept of network externalities provides a deeper explanation of how the port creates cumulative economic effects beyond the initial investment (Venables & Limao, 2002). Improvements in maritime connectivity increase the value of economic participation for each actor in the network, as the presence of more traders and vessels raises potential market interactions. In this context, the port promotes a virtuous cycle: lower logistics costs attract more economic agents, which in turn increases the utilization of port

facilities and strengthens regional connectivity. These network effects are particularly important for small island economies, where the scale of economic activity is limited by physical and geographic isolation.

Finally, applying the Kaldor–Hicks welfare criterion within a modern economic context highlights that the social benefits generated by the port exceed the total investment costs, even if the gains are distributed unevenly in the short run (Pigou, 2017). The development improves overall welfare by expanding access to markets, reducing inefficiencies arising from geographic isolation, and facilitating regional integration into national supply chains. Future policies should therefore focus on improving institutional coordination and enhancing the participation of local communities to ensure that the welfare gains are more equitably distributed.

Conclusion

Recommendations and Future Research

Based on the empirical findings, future research should explore the distributional impacts of port development at the household level, particularly focusing on income changes, livelihood diversification, and long-term welfare outcomes among local fishing communities in remote islands. Comparative studies involving multiple small-scale ports in Eastern Indonesia would provide broader insights into the conditions under which port infrastructure generates the largest equity effects. From a practical perspective, local governments should strengthen coordination between port authorities, logistic operators, and community groups to ensure efficient operation and inclusive access to new market opportunities. Policymakers are encouraged to adopt participatory planning mechanisms, accelerate the development of supporting infrastructure, and introduce capacity-building programs that enhance local skills in logistics, processing, and supply chain management to maximize the socio-economic benefits of port investments government's ability to empower local communities

References

- Asian Development Bank. (2022). *Infrastructure development for inclusive growth in Asia*. ADB Publications.
- Bappenas. (2025). *National infrastructure and connectivity development report*. Ministry of National Development Planning/Bappenas.
- Creswell, J. W. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE.
- Halim, R. (2021). Transport cost reduction and regional competitiveness in Indonesia. *Journal of Indonesian Economics*, 11(3), 233–247.
- Hariato, Y. (2023). Positive externalities of maritime infrastructure. *Public Economics Review*, 12(4), 201–219.
- Infopublik.id. (2025, January). *Sea toll program boosts 3T regional economy, logistics costs decrease by 22%*. <https://infopublik.id>
- Journal of Regional Economics and Development. (2024). *Port development and regional*

- economic equality: Case studies in Eastern Indonesia*. JRED Publishing.
- Kementerian Perhubungan. (2024). *National port data and statistics*. Maritime Transportation Data Center.
- Lindahl, E. (1919). Just taxation—A positive solution. In *Classics in the theory of public finance*. Macmillan.
- Lubis, A. (2020). Community participation in regional development planning. *Regional Development Journal*, 6(1), 15–28.
- Mahfud, M. S. (2022). Public policy implementation in infrastructure development. *Journal of Public Administration Review*, 10(1), 45–58.
- Mankiw, N. G. (2021). *Principles of economics* (9th ed.). Cengage Learning.
- Musa, F., & Tui, L. (2024). Equity-based infrastructure planning in small island economies. *Island Development Studies*, 7(1), 55–73.
- Nasution, H. M., et al. (2022). Port development and regional economic integration in Eastern Indonesia. *Journal of Maritime Economics*, 14(2), 77–94.
- National Institute of Economic Studies. (2023). *Overview of public goods and externalities*. <https://nie-global.org/public-economics>
- North, D. C. (1990). *Institutions, institutional change, and economic performance*. Cambridge University Press.
- OECD. (2023). *Regional development and connectivity report*. OECD Publishing.
- Pigou, A. C. (2017). *The economics of welfare*. Palgrave Macmillan.
- Romer, P. M. (1994). The origins of endogenous growth. *Journal of Economic Perspectives*, 8(1), 3–22.
- Samuelson, P. A. (1954). The pure theory of public expenditure. *The Review of Economics and Statistics*, 36(4), 387–389. <https://doi.org/10.2307/1925895>
- Suryani, D. (2023). Logistics cost barriers in remote Indonesian islands. *Journal of Transport and Maritime Studies*, 8(2), 99–116.
- Todaro, M. P., & Smith, S. C. (2020). *Economic development* (13th ed.). Pearson.
- UNCTAD. (2023). *Review of maritime transport 2023*. United Nations Publications.
- Venables, A. J., & Limao, N. (2002). Infrastructure, geographical disadvantage, transport costs, and trade. *The World Bank Economic Review*, 15(3), 451–479.
- World Bank. (2024). *Indonesia infrastructure outlook 2024: Pathways to sustainable growth*. World Bank Group.
- Use the "Insert Citation" button to add citations to this document.