

# The Role of Land Transportation in The Economic Development of Underdeveloped Villages in West Seram Regency: Bridging Isolation

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## Abstract

*This study examines the role of land transportation infrastructure in the economic development of underdeveloped villages in West Seram Regency, with particular attention to household dynamics, gender dimensions, and social capital. Employing a descriptive qualitative approach, data were collected through semi-structured interviews, participatory observation, and document analysis in three underdeveloped villages in Elpaputih District: Abiolo Village, Abio Village, and Watui Village. The findings indicate that severely deteriorated road conditions, the absence of public transportation, and high vulnerability to weather-related disruptions have resulted in geographic isolation that reinforces a high-cost economy. High logistics costs, ranging from 14-34% of household income, significantly reduce profit margins, constrain market access, and intensify dependence on subsistence-based economic activities. Further, gendered impacts are evident, as women disproportionately bear the burden of mobility constraints. At the same time, communities demonstrate resilience through gotong royong (mutual cooperation) and local innovations, such as the use of bamboo rafts. However, these adaptive strategies function as a form of “shock absorber” that unintentionally sustains the status quo of infrastructure failure rather than addressing its structural causes. Policy recommendations include accelerating infrastructure improvement through participatory approaches that leverage local social capital, developing multimodal transportation systems integrating land and river transport, and implementing gender-responsive interventions to enhance women’s economic access. This study concludes that without comprehensive structural interventions, these villages are likely to remain trapped in a locked-in subsistence economy.*

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## INTRODUCTION

Poor transportation infrastructure has long constituted a chronic structural problem in many of Indonesia’s underdeveloped regions, including West Seram Regency in Maluku. In mountainous areas such as Elpaputih District, land routes that should function as the backbone of local economic activity are instead characterized by severe deterioration and, during the rainy season, are often impassable for four-wheeled vehicles (Arifin et al., 2023). This condition generates acute geographic isolation, severing rural communities’ access to service centers, markets, and economic growth hubs at both district and regency levels. Such disconnection exacerbates household economic vulnerability, particularly where livelihoods are dominated by low-productivity subsistence agriculture. As a result, these villages become entrenched in a persistent cycle of poverty, in which limited access reinforces underdevelopment, and underdevelopment further marginalizes communities from mainstream development processes.

The economic consequences of this situation are multidimensional and mutually reinforcing. Escalating logistics costs, estimated to consume between 14-34% of monthly household income, significantly erode profit margins for small-scale farmers and traders (Rachmawati et al., 2021). Delays and difficulties in transporting goods on timely manner reduce product quality and market prices, while access to alternative markets remains extremely limited. Moreover, the absence of formal public transportation forces the communities to rely on informal, costly, and often unsafe transport modes. This reliance constrains labor mobility, restricts livelihood diversification, and ultimately entrenches a rural high-cost economy in which elevated transaction costs become a major barrier to productivity growth and capital accumulation.

These challenges are further compounded by pronounced gender dimensions. Women, many of whom in this study are primarily responsible for household management while also engaging in small-scale trade or agricultural activities, bear a disproportionate burden arising from inadequate transportation. The lack of safe and affordable public transport restricts their mobility to access markets, expand economic activities, or even reach basic health services (Arifin et al., 2023). Paradoxically, in the context of state failure to provide adequate infrastructure, communities have developed resilience mechanisms rooted in social capital and local resources. Collective initiatives, as a form of *gotong royong* (mutual cooperation), such as the construction of bamboo rafts along the Tala River, represent emergency adaptations aimed at sustaining economic mobility (Papilaya & Tuapattinaya, 2020).

However, these survival strategies may unintentionally function as a “shock absorber” that prolongs the status quo of infrastructure failure. Local governments may perceive such community adaptations as evidence that residents are coping independently, thereby reducing the urgency of structural intervention. This phenomenon underscores the tension between community participation and genuine empowerment, where *gotong royong* often substitutes for, rather than complements, the state’s responsibility to provide sustainable public infrastructure.

Although the relationship between transportation infrastructure and economic growth has been widely examined, significant academic gaps persist in the context of underdeveloped regions, such as West Seram Regency. Existing studies tend to emphasize macro-level and quantitative analyses, focusing on the effects of infrastructure investment on regional gross domestic product (GDP) while overlooking micro-level socio-economic dynamics at the household and community levels (Rachmawati et al., 2021). Such approaches frequently marginalize local voices and lived experiences of isolation, resulting in policy recommendations that lack contextual sensitivity. Furthermore, rural transportation research in Indonesia remains heavily concentrated on Java and Sumatra, whereas Eastern Indonesia, particularly archipelagic regions with extreme topography such as Maluku, has received comparatively limited scholarly attention.

In addition, many studies continue to treat rural communities as homogeneous entities, despite clear variations in how infrastructure constraints affect individuals across gender roles. While Arifin et al. (2023) have begun to address the intersection of gender, infrastructure, and rural economies, explicit links between transportation access, women’s mobility, and their capacity to participate in productive economic activities remain underexplored. This gap is particularly consequential given that rural women often shoulder dual responsibilities as household managers and contributors to family income. Similarly, much of the literature positions communities as passive recipients of policy interventions rather than as active agents with adaptive capacities and locally embedded resources. For instance, Setyawan and Maulana (2022), in their study of agro-processing industries, emphasized technical and formal institutional factors while largely

overlooking the role of gotong royong and community resilience within local economic systems. Recent studies on rural adaptation strategies to geographic isolation also tend to frame such practices as temporary solutions, without sufficiently examining their long-term implications for economic structures. Adaptations, like bamboo raft transportation, are frequently portrayed as evidence of resilience, yet are rarely analyzed as mechanisms that may lock communities into a high-cost equilibrium and hinder capital accumulation (Wijaya & Putra, 2021).

Based on this preceding background, this present study offers a substantive contribution through a holistic approach that integrates four analytical dimensions often examined separately: physical infrastructure, household economics, gender disparities, and social capital. This integrated framework enables a more comprehensive understanding of how poor transportation infrastructure shapes not only the flow of goods, but also intra-household power relations, survival strategies, and community cohesion in underdeveloped regions. Such an interdisciplinary perspective remains relatively limited in Indonesian rural transportation studies, which are typically fragmented along disciplinary lines (Setyawan & Maulana, 2022).

Accordingly, this research seeks not merely to document existing conditions, but to analyze how the interaction between constraints and local support mechanisms generates a locked-in subsistence economy in underdeveloped villages, using an interdisciplinary regional development perspective. Specifically, this study addresses three interrelated research questions: (1) What is the current condition of land transportation infrastructure in underdeveloped villages of West Seram Regency? (2) How does the existing condition of land transportation infrastructure affect economic development in underdeveloped villages of West Seram Regency? and (3) What factors act as barriers and enables in the role of land transportation infrastructure in supporting economic development in underdeveloped villages of West Seram Regency? The findings are expected to contribute theoretically by enriching the academic literature on rural development and infrastructure through demonstrating how inadequate connectivity, when coupled with strong social capital, can sustain short-term resilience yet perpetuate a locked-in subsistence economy. Practically, this study provides an empirical basis for policy formulation by identifying critical transportation bottlenecks and highlighting the need for participatory, multimodal, and gender-responsive infrastructure interventions, underscoring that without comprehensive structural action, underdeveloped villages are likely to remain economically marginalized

## **METHODS**

This study employed a descriptive-qualitative approach to examine the role of land transportation in the economic development of underdeveloped villages in West Seram Regency, Maluku Province. This approach was chosen to capture social and economic conditions in their real-life context based on direct field evidence. Qualitative research is particularly suitable for understanding complex social realities from the perspectives of affected communities (Sugiyono, 2019).

The research was conducted in underdeveloped villages in Elpaputih District, selected based on three criteria: classification as underdeveloped according to the Village Development Index, high dependence on land transportation for daily economic activities, and limited transportation infrastructure. The study population consisted of village residents whose livelihoods are directly

influenced by transportation conditions. Using purposive sampling, the research focused on communities in Ahiolo Village, Abio Village and Watui Village, which meet these criteria.

Data were collected through semi-structured interviews, participatory observation, and document analysis. Semi-structured interviews allowed for an in-depth exploration of participants' experiences and perceptions while maintaining flexibility during fieldwork (Sugiyono, 2019). Participatory observation was conducted to assess the condition of transportation infrastructure and related economic activities, while secondary data from official reports, regional development plans, and transportation statistics complemented the primary data.

Data analysis followed the interactive model of Miles and Huberman, consisting of data reduction, data display, and conclusion drawing. First, data reduction was carried out by selecting, simplifying, and focusing the data on information relevant to the research objectives. Second, data presentation involved organizing the reduced data into descriptive narratives, tables, and diagrams to enhance clarity and interpretability. Third, conclusion drawing and verification were undertaken by identifying recurring patterns, relationships, and themes within the data. This process was conducted iteratively to identify patterns and ensure analytical consistency. To enhance data credibility, triangulation was applied by cross-checking information from multiple sources and key informants, including village officials and community leaders.

## RESULTS AND DISCUSSION

### *Respondent Profile*

This study was conducted in mountainous villages in Elpaputih District and involved 30 respondents drawn from three villages selected through a combination of purposive and random sampling. The respondents were distributed across Ahiolo Village (9 respondents), Abio Village (9 respondents), Watuy Village (4 respondents),).

When examined through the lens of primary occupation, a clear gendered pattern emerges. All female respondents (13 individuals) identified their main role as housewives, while male respondents were predominantly engaged in farming (14 individuals), with one respondent working as a trader. This pattern reflected a traditional division of labor in which men were positioned as primary income earners in the agricultural sector, while women assumed responsibility for domestic work, despite often contributing through secondary or informal economic activities.

The age of respondents ranged from 23 to 62 years old, with an average age of approximately 43.8 years old. The largest proportion of respondents fell within the 40-53 age group (18 individuals), representing a mature and economically productive cohort. In contrast, only two respondents were under the age of 30 (23 and 29 years old), suggesting a tendency for younger adults to migrate out of the villages in search of education or employment opportunities elsewhere. Meanwhile, four respondents aged 60 and 62 years old remained actively engaged in farming and household roles, indicating a high level of labor participation even at older ages.

Table 1. Respondents' Occupations

Primary Occupation	Total (Individual)	Percentage (%)
Farmer	15	50
Housewife	13	43.3
Trader	1	3.3
Female P3K Employee	1	3.3
Total	30	100

Note: P3K = Government Employee with Fixed-Term Contract

Source: Field observation, 2025

The findings further reveal that nearly all respondents engaged in secondary occupations, including small-scale trading, wage labor, and agro-processing activities. This pattern highlighted the prevalence of livelihood diversification as a key survival strategy within the constrained rural economy. Such occupational pluralism reflected households' efforts to mitigate income instability and compensate for the limited returns from primary agricultural activities.

With respect to household dependency burdens, the data show that family size ranges from 3 to 9 members, with an average of 5.6 persons per household. Approximately 60% of households consist of five or more members, indicating the predominance of extended family structures typical of rural settings. Notably, 9 households (30%) have 7 or more members, a condition that potentially generates substantial economic pressure, particularly in the context of limited and unstable income sources. The data also indicate that no households consist of only 1 or 2 members, underscoring the absence of small or nuclear household arrangements in the study area.

Monthly household income among respondents ranges from IDR 500,000 to IDR 2,000,000, with a mode of IDR 1,000,000, reported by 21 respondents (70%). The average monthly income is IDR 1,033,333, suggesting generally low earning capacity. A clear gender-based disparity is evident: the average income of male respondents is IDR 1,117,647, compared to IDR 916,667 for female respondents. The highest income level (IDR 2,000,000) was reported by a female P3K employee in Elpaputih District, which likely reflected access to formal employment with a stable salary. This contrast underscored the importance of formal sector opportunities in shaping income security, particularly in rural and infrastructure-constrained contexts.

### ***Conditions of Land Transportation Infrastructure in West Seram Regency***

Based on field survey data from 22 respondents across Abio Village, Ahiolo Village, and Watui Village, the conditions of land transportation infrastructure in West Seram Regency can be characterized as severely inadequate. Most respondents consistently reported that the main roads connecting residential areas with economic centers and public services are in poor condition. Twenty-three out of 30 respondents described the roads as "damaged," while three others referred to them as "severely damaged," indicating the absence of road surfaces suitable for four-wheeled vehicles. Only a small number of respondents characterized the roads as "steep" or "mountainous," which reflected natural geographic challenges rather than infrastructure degradation.

This infrastructure damage is not merely structural, but is also highly vulnerable to

weather conditions, particularly during the rainy season. Nearly all respondents reported that the roads become impassable or extremely hazardous during rainfall, with recurrent references to flooding and muddy surfaces. Several respondents noted that flooding and mud consistently occur during the rainy season, resulting in complete isolation of certain villages. These weather-related disruptions are not episodic but systematic, pointing to the absence of adequate drainage systems and durable road surfacing capable of withstanding tropical rainfall intensity.

Poor geographic accessibility is further compounded by the lack of an organized public transportation system. All respondents indicated the absence of reliable formal transport options, including rural public transport, motorcycle taxis, or car-based taxis. As highlighted by Arifin et al. (2023) in their study of remote rural areas, women often bear a disproportionate burden from transportation limitations, as they rely more heavily on safe and affordable public transport for economic and social activities. In this context, improving transportation infrastructure has the potential to serve as a critical instrument for women's economic empowerment in underdeveloped villages. Further, the absence of formal transport services forces the communities to depend on private vehicles or informal transport modes that are costly, limited in capacity, and often unsafe. Consequently, mobility to access healthcare, education, and markets is severely constrained, particularly for vulnerable groups such as women, children, and the elderly.

In terms of road networks, the findings show that underdeveloped villages are connected primarily by dirt or stone roads lacking binding surfaces, such as asphalt or concrete. Reports of "severely damaged" roads from respondents, including Abigail Haikutty and Hero Patu, suggested that some road segments may have collapsed or been covered by landslide material, rendering them accessible only on foot or by specialized off-road vehicles. Descriptions of "steep" and "mountainous" terrain from respondents in certain areas further confirm that hilly topography significantly complicates the construction of roads that meet basic safety standards.

These infrastructure constraints are also reflected in the absence of quantitative distance data between households and village centers, markets, and health facilities. This lack of reporting suggests that distance itself is not the primary barrier; rather, road conditions constitute the main obstacle to accessibility. In this context, a distance of 5 kilometers on damaged and flood-prone roads may be far more difficult to traverse than 15 kilometers on paved roads, resulting in substantially higher travel time and costs.



**Figure 1. Road Access to Villages in the Mountainous Area of Elpaputih District**

In response to these conditions, the local communities have developed alternative

transportation systems based on locally available resources. All respondents reported gotong royong initiatives to construct bamboo rafts used for river transport along the Tala River when land routes become impassable. While this adaptation demonstrates strong community resilience, it simultaneously exposes the failure of land transportation systems to meet basic mobility needs. The reliance on bamboo rafts reflects a shift toward river-based transport as an emergency substitute, despite inherent safety risks and dependence on fluctuating river conditions.



Figure 2. Use of Bamboo Rafts as a Mode of Transportation from Villages in the Mountainous Area of Elpaputih District

From an economic perspective, transportation costs borne by farmers and traders are substantial, ranging from IDR 700,000 to IDR 1,700,000 per given period. These costs appear disproportionate to travel distance and are instead driven by poor road conditions that increase vehicle maintenance expenses, fuel consumption, and additional loading and unloading costs due to limited access. Key agricultural commodities such as copra, cocoa, and nutmeg, intended to serve as primary income sources, are significantly burdened by these logistical inefficiencies.

Poor infrastructure conditions also shape agricultural marketing strategies. Respondents noted that selling prices tend to remain “fixed,” with sales volumes adjusted to meet target income levels. This indicates limited bargaining power, as farmers and traders are unable to manage time deliveries strategically to benefit from price fluctuations due to transportation constraints. As a result, income remains suboptimal and highly vulnerable to losses.

Empirical findings further demonstrate that land transportation problems are multidimensional. Beyond technical challenges, such as difficult terrain and road damage, institutional and financial barriers also play a significant role. Respondents identified budget

constraints, inaccessible terrain, land ownership issues, and high construction costs as major obstacles to road development and maintenance. These factors suggest that the problem extends beyond physical infrastructure to include deficiencies in planning, budgeting, and land acquisition processes that fail to adequately address the needs of underdeveloped villages.

Conversely, the primary enabling factor identified is community initiative. The provision of bamboo as raw material for raft construction exemplifies how local resources are mobilized to overcome infrastructure limitations. While this *gotong royong* represents strong social capital, without complementary government intervention, the burden of infrastructure provision continues to fall on communities with limited economic capacity. The social implications of these conditions include restricted inter-village interaction and limited connectivity between villages and sub-district or regency centers. This spatial isolation risks evolving into broader social, economic, and informational isolation, ultimately slowing human development and reducing community participation in wider development processes. Younger generations, in particular, may seek opportunities elsewhere, leading to a gradual erosion of productive human capital in rural areas.

Further analysis indicates that transportation infrastructure problems are systemic and closely interconnected with other sectors. Poor road conditions hinder agricultural distribution, suppress farmer incomes, reduce households' ability to invest in education and health, and constrain access to public services such as community health centers. In this sense, poor land transportation infrastructure serves as the starting point of a cycle of underdevelopment in these villages. While this finding aligns with broader studies on underdeveloped regions in Indonesia, the case of West Seram Regency is distinctive in its community-driven adaptation through river transport. This local practice holds potential for integration with land-based infrastructure to form a multimodal transportation system. However, such potential has yet to be recognized and optimized within existing development policies.

### **The Impact of Transportation on Economic Development in Underdeveloped Villages of West Seram Regency**

Based on the comprehensive survey data from 30 respondents across three underdeveloped villages, it can be observed that land transportation conditions exert profound and multidimensional effects on local economic development. Although existing transportation infrastructure is severely poor, the local communities remain dependent on it for the distribution of agricultural commodities, albeit at high economic cost and under constraints that significantly limit growth. Key commodities, such as copra, cocoa, nutmeg, cloves, and various fruits, all require reliable market access which cannot be adequately supported by damaged infrastructure. This situation reinforces a cycle of poverty in which high logistics costs undermine the competitiveness of local products.

The most immediate impact is evident in the structure of production and distribution costs. Respondents engaged in plantation commodity trade (copra, cocoa, nutmeg, and cloves) reported transportation expenses of up to IDR 1,700,000, while fruit traders incurred costs of approximately IDR 700,000. These figures are substantial when compared to the monthly income of most respondents, which averages around IDR 1,000,000. Consequently, transportation costs absorb between 14-34% of monthly income, indicating severe economic inefficiency and extremely thin profit margins, which in several cases may result in net losses when all costs are considered (Rachmawati et al., 2021).

Transportation constraints also shape pricing strategies and market behavior. All respondents indicated that selling prices tend to remain “fixed” and that sales volumes are adjusted to meet minimum income targets. This response suggests that farmers and traders possess limited bargaining power, as they are unable to access alternative markets or strategically time sales in response to price fluctuations. As a result, they function largely as price takers, accepting prices determined by buyers who themselves factor in access difficulties and the risk of product damage during transport. At the same time, respondents demonstrated a high level of awareness regarding the economic potential of improved transportation. All agreed that better road conditions would “greatly assist communities in selling agricultural and plantation products.” This perception is grounded in lived experience, as residents directly confront the constraints imposed by poor roads and therefore understand how infrastructure improvements could increase sales volume, expand market reach, and potentially improve prices through faster and safer delivery.

Community adaptation through the construction of bamboo rafts for river transport represents an economic response to the failure of land transportation. This local innovation illustrates the community’s capacity to develop its own solutions, but it also entails significant opportunity costs. Time and resources devoted to building and operating rafts could otherwise be allocated to more productive economic activities if adequate land transportation were available. Moreover, river transport is inherently limited in capacity and reliability, as it depends on seasonal conditions and water flow. Studies in underdeveloped regions of Maluku suggest that such adaptations tend to be short-term and unsustainable in the absence of technical and regulatory support (Papilaya & Tuapattinaya, 2020). Nevertheless, the collective construction of rafts reflects strong social capital, which could be more effectively integrated into community-based transportation policies.

Further analysis indicates that poor transportation infrastructure affects not only output marketing chains, but also input supply chains. Farmers face difficulties accessing fertilizers, improved seeds, agricultural tools, and technical knowledge due to limited mobility. As a result, agricultural productivity remains low, product quality is suboptimal, and commodity diversification is constrained by factors that could otherwise be alleviated through improved transportation access. Indirect economic impacts are also evident in the limited development of agro-processing enterprises. Commodities such as cocoa, nutmeg, and cloves offer greater value-added potential when processed into semi-finished or finished products prior to sale. However, unreliable transportation for raw materials and processed goods, coupled with difficulties in attracting skilled labor due to geographic isolation, hampers the growth of small-scale processing industries at the village level (Setyawan & Maulana, 2022).

The findings also reveal that transportation constraints significantly hinder the utilization of other local economic potentials, such as tourism. Mountainous villages often possess natural and cultural attractions that could be developed into tourism destinations if supported by adequate infrastructure. However, road conditions described as “severely damaged,” “steep,” and “mountainous,” along with the absence of public transportation, render these locations largely inaccessible to visitors. As a result, employment opportunities in the service sector fail to materialize. In terms of labor mobility, limited transportation further restricts access to non-agricultural employment in district or regency centers. Young people seeking opportunities outside subsistence agriculture face substantial access barriers, leading many either to remain in low-productivity farming or to migrate permanently to other regions, thereby reducing the

number of productive human capital in their home villages.

Another notable finding is the uniformity of economic responses across villages. Despite differences in location and commodity profiles, respondents from all villages reported remarkably similar patterns in transportation costs, challenges faced, and expectations for improvement. This convergence suggests that transportation problems constitute a systemic issue that transcends local variation and requires an integrated, regency-level policy response. Economic-psychological impacts are also apparent, as respondents consistently expressed willingness to “help with the work to speed up the process” should road improvements be initiated. This willingness indicates that communities are not passive, but rather constrained by the absence of governmental support. The social capital evident in collective raft construction could similarly be mobilized for road development, provided that clear budgetary commitments and technical guidance are supported by the local government.

Improvements in land transportation would not only increase incomes directly by reducing logistics costs, but would also generate multiplier effects within village economies. Enhanced access could facilitate economic diversification, stimulate investment, support the growth of small and medium enterprises, expand access to financial services, and improve human capital through better access to education and training. Overall, the empirical evidence consistently demonstrates that inadequate land transportation constitutes a primary structural constraint on economic development in underdeveloped villages of West Seram Regency. Its impacts are multidimensional, encompassing high production costs, restricted market access, weak bargaining power for farmers, and limited economic diversification. At the same time, the findings reveal substantial transformative potential if transportation infrastructure is improved in ways that harness strong local social capital and communities’ readiness to participate actively in development processes.

### **Factors Constraining and Enabling Land Transportation in Promoting Economic Development in Underdeveloped Villages of West Seram Regency**

Based on survey data from 30 respondents across three underdeveloped villages, the constraining and enabling factors of land transportation can be clearly identified, revealing a complex interaction between infrastructure limitations, community capacity, and the policy environment. Existing constraints are multidimensional and mutually reinforcing, while enabling factors largely stem from community initiatives and local resources, albeit with limited scale and impact. The following section presents and discusses the main empirical findings.

#### ***Constraining Factors of Land Transportation***

##### **a) Severely Deteriorated Condition of Road Infrastructure**

All respondents described the main roads as “damaged,” “severely damaged,” “steep,” or “mountainous.” Such physical conditions directly impede the mobility of goods and people. In several segments, roads are completely impassable for motorized vehicles, forcing the communities to rely on human or animal labor to transport agricultural commodities. This situation substantially increases both transportation costs and travel time, thereby undermining economic efficiency.

##### **b) Vulnerability to Weather**

Twenty-eight out of 30 respondents reported that roads become “flooded” or “muddy” during rainfall. Although seasonal, this vulnerability recurs regularly and can result in temporary but total isolation of villages. The immediate economic consequence is delayed

delivery of agricultural products to markets, which often leads to declining quality and lower prices, particularly for perishable commodities such as fruits and cocoa.

c) Absence of Formal Public Transportation

All respondents confirmed that no public transport services operate in their villages. As a result, the communities depend on limited private vehicles or costly informal transport arrangements. This condition disproportionately affects vulnerable groups, such as women, older adults, and households without vehicles, by restricting their access to markets, health centers, and other essential service hubs.

d) Financial and Institutional Barriers

Respondents consistently identified limited budgets, difficult terrain, land ownership issues, and high construction costs as key obstacles to road development. These responses suggest insufficient allocation of local government funding for infrastructure in underdeveloped villages. Land tenure issues further complicate planning and road widening, creating technical and administrative delays in infrastructure provision.

e) Geographic Isolation and Challenging Topography

Roads described as “steep” and “mountainous” reflect natural conditions that increase the cost and technical complexity of infrastructure development. When combined with already damaged roads, these conditions produce a form of double isolation that restricts economic interaction with surrounding areas and limits the flow of goods, services, and information.

f) Impacts on Local Economic Value Chains

Transportation costs ranging from IDR 700,000 to IDR 1,700,000 constitute a very large share of respondents’ monthly incomes, which range between IDR 500,000 and IDR 2,000,000. Such high logistics costs erode profit margins for farmers and traders, hinder capital accumulation, and reduce the capacity to reinvest in productivity improvements or business diversification.

### ***Enabling Factors of Land Transportation***

a) Social Capital and Strong Gotong Royong

All respondents noted that urgent transportation needs are addressed through gotong royong, particularly by collectively constructing bamboo rafts for river transport along the Tala River. This collective initiative reflects high levels of social cohesion and the community’s ability to organize independent solutions in the face of infrastructure limitations. Such social capital represents a critical asset that could be mobilized within participatory development programs.

b) Natural Resources-Based Local Innovations

The use of bamboo, readily available in the area, to build rafts demonstrates low-technology innovation. While limited in terms of safety and capacity, these rafts function as alternative transport systems that sustain economic activities when land routes fail to function. In this sense, local resource-based innovation plays a vital role in maintaining basic economic connectivity.

c) Strong Collective Awareness of the Importance of Transportation Infrastructure

All respondents expressed the same priority: the construction of asphalt roads connecting villages such as Abio, Ahiolo and Watui. This shared aspiration indicates a high level of social consensus regarding development needs, which can form a solid foundation for community advocacy and participatory planning. Importantly, the communities are not passive recipients of development but active in identifying solutions.

d) Community Readiness for Active Participation

Respondents explicitly stated their willingness to contribute labor to road construction in order to accelerate completion. This commitment is a significant enabling factor for participatory development models, as it can reduce construction costs, enhance local ownership, and improve the sustainability of infrastructure investments.

e) Relative Stability of Certain Commodity Prices

Although transportation conditions are poor, several respondents noted that “prices remain fixed, and sales are therefore adjusted to meet income targets.” In certain contexts, this price stability, although often at a relatively low level, provides a minimal degree of certainty for household economic planning. However, this condition reflects an adaptive response to structural constraints rather than a genuine driver of economic development.

f) Presence of River Transportation Alternative

The presence of the Tala River serves as a natural asset that enables an alternative transportation corridor. Although river transport cannot substitute for adequate road infrastructure, it functions as an economic “lifeline” when land routes are inaccessible. The potential for developing safer and more organized river transport, such as motorized boats and basic docking facilities, remains largely untapped and represents an opportunity for targeted development intervention.

These constraining and enabling factors illustrate a clear interaction that has produced a locked-in subsistence economy in the underdeveloped villages of West Seram Regency. Structural constraints, such as severely damaged roads, the absence of public transportation, and limited government budgets, create a highly restrictive external environment. At the same time, community-based enabling factors, including gotong royong and bamboo raft innovation, function primarily as survival mechanisms rather than pathways to growth. These adaptations divert community energy from productive and value-adding activities toward coping strategies, resulting in a high-cost equilibrium in which basic economic activities can be sustained, but productivity gains and economies of scale remain unattainable.

This interaction reveals a paradox between resilience and development. Strong community resilience, expressed through gotong royong and local innovation, allows an inadequate system to persist without structural change. From a policy perspective, such resilience may unintentionally reduce the perceived urgency of large-scale infrastructure intervention, as communities appear capable of “coping on their own.” However, these emergency solutions carry significant economic opportunity costs. Time and labor devoted to constructing and operating bamboo rafts, along with commodity losses caused by poor land transport, represent resources that could otherwise be allocated to increasing production, improving marketing, or processing agricultural outputs. In this sense, the very factors that enable communities to survive also indirectly reinforce the persistence of structural constraints by acting as a “shock absorber” that prevents crisis conditions from triggering faster and more decisive policy responses.

## CONCLUSION

This study reveals that the poor condition of land transportation infrastructure in West Seram Regency, particularly in Elpaputih District, is a critical factor hampering the economic development of underdeveloped villages. Based on qualitative data analysis from three sample villages (Ahiolo, Abio, and Watui), the following conclusions can be drawn:

1. Land transportation infrastructure is in a state of severe disrepair, vulnerable to weather conditions, and not supported by an adequate public transportation system. This creates acute geographic isolation, limiting community access to markets, health services, education, and economic growth centers. Completely damaged and impassable roads during the rainy season impede the mobility of goods and people and significantly increase logistics costs.
2. High transportation costs (reaching 14–34% of household income) contribute to a high-cost economy in rural areas. These costs erode profit margins for farmers and traders, hinder capital accumulation, and limit communities' ability to invest in productivity improvements and economic diversification. As a result, these villages are trapped in a locked-in subsistence economy.
3. The impact of poor transportation is multidimensional, with a prominent gender dimension. Women, who act as housewives and other economic actors, bear a greater burden of mobility. Limited access to safe and affordable transportation limits their participation in productive economic activities, thus reinforcing gender inequality in rural development.

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