

Collaborative Governance of Clean Water Security for the Sustainability of Small Island Tourism Businesses: A Case Study of Gili Meno

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Abstract : Clean water is a key determinant of destination competitiveness and community wellbeing, yet its availability on Gili Meno is limited because the island has no rivers or lakes and depends solely on rainwater infiltration and an undersea pipeline supply from Lombok. Surges in tourist arrivals during peak seasons intensify pressure on water supplies, while previous studies have not integrated physical, socio-institutional, and business adaptation dimensions. This study aims to analyse the effects of clean water scarcity on tourism business operations, identify factors causing water supply vulnerability, and formulate a water resilience management model. The study employed a qualitative case-study approach through observation, in-depth interviews with five informants, and documentation, analysed using an interactive model with source and methodological triangulation. The findings show that water resilience directly affects operating costs and hotel service quality. Water supply vulnerability results from interacting natural, anthropogenic, and governance factors. This study formulates a water resilience management model based on three time horizons and three main components: water resource conservation, strengthened institutional governance, and sustainable business practices. These findings provide a basis for collaborative policies to safeguard tourism business sustainability and the well-being of small-island communities.

Keywords : Water Resilience, Tourism Business, Gili Meno, Water Governance, Sustainability

Abstrak : Air bersih merupakan penentu utama daya saing destinasi dan kualitas hidup masyarakat, namun ketersediaannya di Gili Meno sangat terbatas karena pulau ini tidak memiliki sungai atau danau serta hanya mengandalkan resapan air hujan dan pasokan pipa bawah laut dari Lombok. Lonjakan kunjungan wisatawan pada musim puncak memperparah tekanan terhadap pasokan air, sementara penelitian terdahulu belum mengintegrasikan dimensi fisik, sosial-kelembagaan, dan strategi adaptasi bisnis secara simultan. Penelitian ini bertujuan menganalisis pengaruh keterbatasan air bersih terhadap operasional bisnis pariwisata, mengidentifikasi faktor penyebab kerentanan pasokan air, serta merumuskan model manajemen ketahanan air. Penelitian menggunakan pendekatan kualitatif dengan desain studi kasus, melalui observasi, wawancara mendalam terhadap lima informan, dan dokumentasi, yang dianalisis menggunakan model interaktif dengan triangulasi sumber dan teknik. Hasil penelitian menunjukkan bahwa ketahanan air berpengaruh langsung terhadap biaya operasional dan kualitas layanan hotel. Kerentanan

pasokan air disebabkan oleh faktor alam, antropogenik, dan tata kelola yang saling berinteraksi. Penelitian ini merumuskan model manajemen ketahanan air berbasis tiga horison waktu dan tiga komponen utama, yaitu konservasi sumber daya air, penguatan tata kelola kelembagaan, dan praktik bisnis berkelanjutan. Temuan ini penting sebagai dasar kebijakan kolaboratif guna menjaga keberlanjutan bisnis pariwisata dan kesejahteraan masyarakat pulau kecil.

Kata Kunci : Ketahanan Air, Bisnis Pariwisata, Gili Meno, Tata Kelola Air, Keberlanjutan

INTRODUCTION

Clean water is a basic necessity that is absolutely essential for sustaining human life and preserving the environment (Haning et al., 2025). In addition to being a basic necessity for people and the environment, the availability of clean water is also an absolute prerequisite for supporting a high-quality, long-term tourism sector (Fatina et al., 2023). The lack of an adequate water supply will hinder the operation of tourism-supporting infrastructure, ranging from the accommodation sector and food services to recreational facilities (Dwipayanti et al., 2022). Thus, the availability of clean water serves as a key determinant of a tourist destination's competitiveness as well as a measure of the local community's quality of life (Issn et al., 2023). Gili Meno, which is part of the triumvirate of small islands in the waters northwest of Lombok, has a very limited land area just 150 hectares, or 22.3% of the village's total administrative area (Ma'rifat & Suraharta, 2025). The island's geography is characterized by the absence of rivers or lakes as major sources of surface water. As a result, freshwater needs are met entirely through local rainwater collection and external supplies distributed via an undersea pipeline network from the island of Lombok (Tschaikowski & Putra, 2024). These factors make Gili Meno highly sensitive to seasonal changes, with its vulnerability increasing sharply when the dry season arrives.

As the Gili Islands have grown in popularity internationally, the number of tourists visiting the three Gili Islands has surged significantly in recent years, reaching 3,000 to 3,500 travelers per day during the peak season from July through September 2025 (Eider et al., 2023). This surge in the number of tourists has driven demand for clean water far beyond the existing supply capacity (Ricart et al., 2024). The situation has worsened due to recent changes in rainfall patterns and rising sea surface temperatures. These changes in natural conditions have also accelerated the process of evapotranspiration, which has drastically reduced water availability (Lingkungan, 2023). This problem is exacerbated by the intrusion of seawater, which contaminates underground freshwater reserves. This occurs as a direct result of excessive groundwater extraction to meet daily needs (Lingkungan et al., 2023). This process results in irreversible damage to the soil aquifer layer. As a result, this groundwater source loses its function as a provider of clean water for the future (Asih et al., 2024). This dilemma has sparked a polarization of interests between the tourism industry's demand for a stable water supply and the need to meet the domestic needs of the local community. This imbalance in distribution has the potential to significantly escalate social conflict while also undermining the legitimacy of the tourism industry in the region (Rosalina et al., 2025).

Previous research has examined water issues in small islands, but significant gaps remain. According to Jarrod et al. (2024) conducted a hydrogeological study of the Gili Meno aquifer and found severe salinization due to overexploitation, but has not yet integrated the social institutional dimensions or community adaptation strategies. In addition, a study conducted by Dwipayanti et al. (2022) examined inequities in access to water in the context of inclusive tourism in Labuan Bajo, but did not address the dynamics of isolated small islands such as Gili Meno. A subsequent study by Isnaini, (2025) revealed the adaptive strategies of island communities in Meranti, Riau; however, the peatland context differs significantly from the karst characteristics and tourism pressures on Gili Meno, so the findings cannot be generalized. Unlike those three studies, this research simultaneously inte-

grates physical water resilience conditions, business operators' adaptation strategies, and collaborative governance within a single framework for analyzing tourism business risk management an approach that has not been extensively studied in the context of small tourist islands.

This research is crucial given that the water crisis on Gili Meno is not merely a routine environmental issue, but a real threat to the sustainability of the tourism industry due to soaring operational costs, declining service quality, and the risk of social conflict factors that have not been extensively addressed in previous studies. Through this study, it is hoped that concrete solutions will be identified that can balance the economic interests of the industry with the fundamental rights of the local community. Based on the above discussion, this study formulates three main research questions: (1) how do clean water security conditions affect tourism business operations on Gili Meno; (2) what factors contribute to the vulnerability of the clean water supply; and (3) what water security management model can support the sustainability of the tourism business and the well-being of the local community. In line with this research question, this study aims to analyze the impact of clean water scarcity on tourism business operations in Gili Meno, identify the factors causing water supply vulnerability, examine business operators' adaptation strategies, analyze patterns of collaboration among stakeholders in water governance, and formulate a water resilience management model that supports the long-term sustainability of the tourism industry as well as the well-being of the local community.

RESEARCH METHODOLOGY

This study employs a qualitative method using a case study design to conduct an in-depth analysis of the issue of clean water security, its impact on tourism operations, the survival strategies of business operators, and water management practices on Gili Meno. The case study approach is considered the most appropriate because the issues raised are highly dependent on the unique context of Gili Meno a small island without surface water sources that is currently facing a crisis due to the rapid growth of the tourism industry (Kurniawan et al., 2022). The study was conducted on Gili Meno Island, Gili Indah Village, Pemenang Subdistrict, North Lombok Regency, West Nusa Tenggara Province, on May 29, 2026. The location was selected based on three considerations: the hydrological characteristics of Gili Meno, which lacks surface freshwater sources and is therefore representative for studying the challenges of clean water supply on small islands; additional pressure on water availability due to tourism development; and rainwater harvesting practices that have been passed down from generation to generation as a form of local wisdom in water resource management.

Primary data were collected through field observations, in-depth interviews, and documentation, while secondary data were obtained from village government documents, population data, clean water management reports, tourism statistics, and relevant scientific literature. Research informants were selected using purposive sampling based on their level of knowledge and involvement in clean water issues and tourism activities. The sample consisted of five individuals: one employee of the Gili Indah Village Office, two local residents, and two lodging managers. Interviews with each informant lasted approximately 20 minutes and were terminated upon reaching data saturation that is, when the information obtained showed recurring patterns without any significant new findings.

The field data collection process relied on three techniques implemented simultaneously. First, non-participant observation was used to examine the availability of water resources, water supply infrastructure, distribution activities, and the dynamics of water use by local communities and tourism industry stakeholders; all findings were recorded in field notes and photographic documentation. Second, in-depth interviews were conducted using semi-structured instruments tailored to each group of informants (Tables 1–3) to explore issues of water availability, the root causes of the crisis, socioeconomic impacts, and adaptation mechanisms. Third, a documentary study was carried out by collecting textual documents, archives, formal reports, and field photographs as a triangulation effort to strengthen the validity of the research findings. The validity of the data is ensured through source triangulation that is, comparing information from the village government, the local community, and tourism business operators as well as through methodological triangulation that is, comparing the results of observations, interviews, and documentation.

The data analysis in this study applies Rijali's (2018) interactive analysis model, which consists of three main stages: data reduction, data presentation, and drawing conclusions. In the data reduction stage, information from interviews, observations, and documents was selected and then grouped into several core themes: the state of clean water resilience, its impact on the tourism sector, business owners' adaptation strategies, stakeholder governance, and water management models. The reduced data is then presented in the form of descriptive analyses and thematic matrices to identify patterns of relationships among social, economic, and institutional factors. Finally, conclusions are drawn in stages through a verification process involving triangulation of sources and techniques to ensure that the findings of this study are credible, reliable, and valid.

RESULTS AND DISCUSSION

The research findings indicate that clean water security has a direct and significant impact on tourism operations on Gili Meno. As a small island spanning 150 hectares with no surface freshwater sources, the area faces extremely high ecological vulnerability to disruptions in the water supply. These conditions force business operators to allocate substantial additional operational costs to secure alternative water supplies from outside the island. Consequently, this inequality in access not only squeezes the industry's profit margins but also fuels escalating social tensions with local communities competing for increasingly limited resources (Ma'rifat & Suraharta, 2025). Gili Meno is heavily dependent on a shallow aquifer that is vulnerable to seawater intrusion, so hotels, homestays, and restaurants must rely on water supplied from Lombok and non-potable groundwater to support their operations (Kurniawan et al., 2022).

According to the hotel manager, water scarcity has exponentially increased operational expenses due to the need to periodically source water from Lombok Island; this financial burden escalated significantly when inclement weather halted shipping operations (H1). In addition to the financial burden, the stability of the water supply is directly correlated with travelers' comfort, and disruptions in this area have been shown to degrade the quality of hotel service (H2). These findings align with confirmation from previous interviews, which indicated that complaints from both domestic and international travelers regarding the visual (color) and odor of the water when supply volumes decrease risk reducing the digital reputation (online ratings) of accommodations, which in the long term undermines the destination's competitiveness on a macro level.

From a business administration perspective, these findings confirm that clean water is not merely a support for operations, but a strategic resource that influences business sustainability, customer satisfaction, and the social legitimacy of businesses in small-island tourist destinations. Therefore, this uncertainty in water supply must be viewed as a macro-level business risk that requires the integration of supply chain management and comprehensive crisis mitigation strategies. Failure to manage this vital resource will not only undermine a company's internal financial stability but may also result in the loss of the "social license to operate" from local communities due to distribution inequities (Haning et al., 2025). The instability of the clean water supply creates a domino effect on the company's operational risks. The negative impacts range from soaring operating costs and declining hotel service quality to a potential long-term decline in tourist interest in visiting the area if this issue continues to be left unaddressed.

Based on the factors contributing to the vulnerability of the clean water supply, the study identified three groups of factors that collectively cause vulnerability in the clean water supply on Gili Meno. Natural factors, such as seasonal rainfall, make the availability of rainwater unpredictable throughout the year. As a result, local residents can only rely on water collected in barrels and storage tanks during the rainy season. When the long dry season arrives, these rainwater reserves are quickly depleted, forcing the community to rely on water supplies from outside the island. However, the most critical factor is the problem of seawater intrusion, which has caused the majority of wells on Gili Meno to become brackish or salty, rendering the water unfit for consumption. This situation is corroborated by residents' testimonies stating that their well water can now only be used for bathing and washing, not for drinking (M3).

The ongoing anthropogenic exploitation of groundwater to meet domestic and tourism needs is increasing pressure on aquifers with limited capacity. The growth in the number of hotels and

homestays in recent years, coupled with an annual increase in tourist visits, has amplified aggregate water consumption without being offset by new water sources. This imbalance between the rate of extraction and natural recharge has pushed the island's groundwater ecosystem to the brink of its ecological resilience. If these uncontrolled exploitation practices continue unchecked, land subsidence and the permanent salinization of the aquifer will be the inevitable consequences.

Governance issues stemming from limited clean water infrastructure have led communities and businesses to rely heavily on water supplies from outside the island via maritime transport, which is prone to disruptions during bad weather and high waves. This situation is exacerbated by weak regulations governing groundwater use, resulting in suboptimal control over aquifer exploitation. The village government itself acknowledges that water management is still carried out in a fragmented manner and is not yet supported by an integrated system involving the government, the community, and tourism businesses (P1). This lack of integration confirms the existence of sectoral self-interest and institutional gaps in the formulation of public policy at the local level. Therefore, an adaptive governance model based on multi-stakeholder governance is needed to unify the vision of environmental conservation and economic sustainability. The interaction of these three factors indicates that the vulnerability of the clean water supply on Gili Meno is multidimensional it is not merely a matter of limited natural resources, but also a result of the pressures of tourism-driven economic growth that are not balanced by institutional capacity to regulate the sustainable use of resources. This study formulates a clean water resilience management model structured around three strategic horizons and three main components.

Mitigation strategies are grouped by time horizon to ensure effective implementation on the ground. In the short term, interventions focus on improving water use efficiency in hotel operations and establishing emergency distribution mechanisms in the event of weather disruptions—similar to the tactical measures taken by some accommodation operators, such as stockpiling water in advance and limiting pool refills during the dry season. For the medium term, the focus shifts to the structured development of rainwater harvesting systems, accompanied by the rehabilitation of infiltration zones to optimize the island's freshwater retention capacity. Meanwhile, the long-term strategy is directed toward the adoption of seawater desalination technology, the implementation of digital monitoring systems to control groundwater extraction, and the reconstruction of community-based governance that integrates the roles of the government, industry stakeholders, and local communities on an equal footing. The components of the three-horizon management model are summarized in a model consisting of: (1) water resource conservation, including rainwater harvesting, control of groundwater exploitation, rehabilitation of recharge areas, and environmentally friendly desalination; (2) strengthening institutional governance through integrated coordination among local governments, village governments, communities, and businesses; and (3) sustainable tourism business practices, including the adoption of water-saving technologies, consumption efficiency, and corporate social responsibility programs focused on water conservation.

These findings confirm the relevance of Freeman's (1984) stakeholder theory, which emphasizes that the effectiveness of shared resource governance rests on the collective capacity of all stakeholders not on the efforts of any single party alone in building sustainable collaboration. In the context of Gili Meno, this principle indicates that the resilience of the tourism industry and the maintenance of domestic well-being will not be achieved through the individual maneuvers of business actors, but rather require the institutionalization of collective mechanisms such as a tourism business consortium, a water management cooperative, or a joint financing syndicate to meet clean water infrastructure needs. Consequently, the water resilience management model articulated in this study has the potential to achieve three significant outcomes simultaneously: mitigating the risk of supply disruptions to ensure the continuity and competitiveness of the tourism sector; elevating the standard of living for local communities through the democratization of access to water with economic value; and preserving the ecological carrying capacity of small islands through restrictions on aquifer exploitation and the long-term preservation of water resources.

Table 1. Interview questions posed to the administrators of the Gili Indah Village Office

No	Question	Answers
1.	What is the current situation regarding clean water availability on Gili Meno?	The availability of clean water on Gili Meno remains very limited at this time. Our island has no natural sources of fresh water, such as rivers or springs. The local community and tourism businesses rely heavily on water transported from the Lombok mainland by boat, while a small number also make use of collected rainwater. The water supply often falls short of demand, especially during the dry season and when the number of tourists increases sharply.
2.	What is the main cause of the clean water crisis on Gili Meno?	There are several key factors contributing to the clean water crisis on Gili Meno. First, geographically, the island is small and lacks surface water sources. Second, the rapid growth in tourist numbers has not been matched by adequate water management infrastructure. Third, reliance on an off-island water distribution system results in an unstable supply, particularly during inclement weather that disrupts deliveries. Fourth, there is currently no large-scale desalination or seawater treatment system operating sustainably on the island.
3.	How does the shortage of clean water affect the community?	The impact is keenly felt by local residents. People must purchase clean water at relatively high prices, which adds to their household expenses. Basic needs such as cooking, bathing, and sanitation are often not fully met. During the dry season, this situation worsens as water supplies dwindle. Some residents are also forced to use water of poor quality, which can lead to health problems such as diarrhea and skin diseases.
4.	What impact will this have on the tourism sector?	The tourism sector has also been significantly affected. Accommodations, restaurants, and tourist facilities require a large and stable water supply. When the water supply is disrupted, the quality of service provided to tourists declines, which ultimately affects Gili Meno's reputation as a tourist destination. Some business owners report having to incur higher operating costs just to meet their water needs. If not addressed promptly, there are concerns that this situation will reduce tourists' interest in visiting and negatively impact the income of residents who depend on the tourism sector.
5.	Have community members ever filed complaints or taken action regarding clean water issues?	Yes, residents have voiced their complaints on several occasions, both directly to village officials and through community meetings. The complaints generally concern high water rates, an unstable supply, and water quality that sometimes falls short of standards. So far, there have been no large-scale protests, but pressure from residents has prompted the village government to take a more active role in seeking solutions and coordinating with the North Lombok Regency government.

6. In your opinion, what is the most effective solution to address the clean water crisis on Gili Meno? In our view, the most effective solution is the construction of a seawater desalination plant that is managed professionally and sustainably. In addition, community-scale rainwater harvesting systems need to be developed, and the water distribution network across the island needs to be improved. We also hope for full support from both the central and local governments in the form of funding and technology. Public education and outreach to the community and tourism stakeholders regarding water efficiency must also continue to be promoted.
7. What are the village government's expectations regarding clean water management in the future? Our hope is to establish a self-sufficient, sustainable, and affordable clean water management system for all residents of Gili Meno. We hope that local and national governments will give more serious attention to water infrastructure on small islands like Gili Meno. Moving forward, we want Gili Meno to have a fully operational desalination plant so that the community is no longer entirely dependent on external supplies. With an adequate water supply, residents' quality of life will improve, and Gili Meno can continue to thrive as a comfortable and highly competitive tourist destination.

Source: Data processed in 2026

Table 2. Respondent Information

Kode	Nama	Pekerjaan	Usia	Tanggal
P1	Hamzah	Operator SID	32	29 Mei 2026



Figure 1. Gili Indah Village Office

Table 3. Interview Questions for the Gili Meno Community

No	Question	Answers (M1)	Answers (M2)
1.	Where does the water we use every day come from?	We usually use water purchased from off island suppliers, though sometimes we also use well water for specific purposes.	I use refillable gallon jugs of water for drinking, and well water for bathing and washing.

- | | | |
|--|---|---|
| 2. What is the water used for? | For bathing, doing laundry, and cooking. As for drinking, we buy bottled water. | For all household needs. Well water for bathing and washing, and purchased water for cooking and drinking. |
| 3. Is the well water on Gili Meno safe to drink? | We can't the well water here tastes salty and is a bit cloudy. It's not safe to drink straight from the well.. | No, the well water is brackish. If you force yourself to drink it, you might get a stomachache. We never drink it straight from the well. |
| 4. In your opinion, what is the quality of the water available on Gili Meno? | The quality isn't very good. The well water is cloudy and has an odor, while the delivered water is expensive and sometimes arrives late. | The quality is far below standard. The well water isn't clear, and clean, safe water has to be bought at a high price. |
| 5. Have you ever had trouble getting clean water? | This happens very often, especially during the dry season or when the weather is bad. Water deliveries from outside can be interrupted for several days. | It's happened many times. When supplies were delayed, we were forced to cut back drastically even to the point of having to wait in line for water. |
| 6. How do you get drinking water on a daily basis? | Buy refillable gallon jugs of water from retailers on the island; they are indeed more expensive than on the mainland of Lombok. | Buy refillable water jugs. Sometimes, when we run out, we buy bottled water, which is much more expensive. |
| 7. Do you collect rainwater? If so, how do you collect it? | Yes, we collect rainwater in large drums and barrels placed in front of the house. We use that water for bathing and washing. | Yes, I installed gutters on the roof of my house that drain into a large water tank. Rainwater is very helpful when the water delivery is delayed. |
| 8. What do you do during a long dry season? | We're being very frugal we only shower once a day. We're buying more delivered water even though the price has gone up. Sometimes we borrow water from our neighbors. | Reduce water usage as much as possible. Buy more water than usual and store it in a reserve tank. |
| 9. What happens if the water supply from off the island is delayed? | Our daily activities have been severely disrupted. The children can't take a shower, and even cooking has become difficult. We've been forced to use well water even though it's not safe to drink. | My business has also been affected. I've lost customers because I can't serve them well. My reserve water supply has become my main lifeline. |

10.

What are your expectations of the government regarding the provision of clean water on Gili Meno?

I hope the government will quickly build a sea-water desalination facility so that we don't have to keep relying on supplies from outside.

I hope there will be affordable, permanent clean water systems, so that ordinary people like me won't be burdened by high water bills.

Source: Data processed in 2026

Table 4. Respondent Information:

Kode	Nama	Pekerjaan	Usia	Tanggal
M1	Dandi	Nelayan	30	29 Mei 2026
M2	Sari	Pedagang	31	29 Mei 2026



Figure 2. Interview with Dandi



Figure 3. Interview with Ms. Sari

Table 5. Interview Questions for Accommodation Managers on Gili Meno

No	Question	Answers (H1)	Answers (H2)
1.	Where does the hotel/lodging get its water supply?	We use a combination of water brought in from off the island by tanker boats and water from deep wells for non-potable uses such as watering plants and cleaning outdoor areas.	Our main water source comes from clean water deliveries from mainland Lombok. In addition, we also collect rainwater as a reserve during the rainy season.
2.	Does the hotel use groundwater, municipal water, or water brought in from off the island?	We do not use the municipal water supply because it is not yet available on Gili Meno. We use groundwater only for toilet and general cleaning purposes, as its quality is not suitable for drinking. Water for drinking and guest bathrooms comes entirely from off-island sources.	There is no municipal water service here. We rely on water brought in from outside the island for nearly 80% of our needs. Groundwater is used occasionally for washing linens and for non-potable kitchen purposes only.
3.	What kind of water storage system is used (water tanks, reservoirs, etc.)?	We have two main storage tanks, each with a capacity of 5,000 liters, located atop a tower, plus one underground reservoir with a capacity of 20,000 liters serving as our primary reserve. This system allows us to operate for up to 5 days without a new supply.	We use three large plastic tanks on the roof of the building with a total capacity of about 12,000 liters. In addition, there is a fiberglass rainwater collection tank behind the inn with a capacity of 8,000 liters.
4.	Have there ever been complaints from guests regarding water quality?	It has happened a few times. The most common complaint is that the water doesn't smell very fresh when the supply is running low and we have to mix it with well water. Some guests also complain about low water pressure during the dry season.	Yes, especially from international tourists, who are very sensitive to water quality. They complained about the slightly yellowish color of the water and the unpleasant odor. This temporarily affected our accommodation's star rating on online platforms.
5.	What is the hotel's strategy for addressing water shortages during the dry season?	We ordered water deliveries early, before the dry season began, and stocked up more than usual. In addition, we posted notices asking guests to use water wisely and limited	Our strategy is to maximize rainwater collection during the rainy season, order large bulk shipments of water at once to save on costs, and implement water-conservation

the filling of the swimming pool during the peak of the dry season. programs such as replacing towels only upon guest request.

Source: Data processed in 2026

Table 6. Respondent Information

Kode	Nama	Pekerjaan	Usia	Tanggal
M1	Randy	Manajer dari <i>Coco Bale</i>	35	29 Mei 2026
M2	Dewi	Pemilik <i>Ora Resort</i>	45	29 Mei 2026



Figure 4. Interview with the Manager of Coco Bale



Figure 5. Interview with the Owner of Ora Resort



Figure 6. Water Conditions at Gili Meno



Figure 7. General View of Gili Meno

Source: {Peta Dasar <https://id.scribd.com/document/674148262/profil-des>}

Based on 2024 data from Gili Indah Village, the distribution of the population across the three Gili islands reflects communities of varying sizes. Gili Air is home to approximately 2,160 people (1,115 men and 1,031 women), while Gili Trawangan leads as the most populous island with approximately 2,266 residents (1,150 men and 1,140 women). On the other hand, Gili Meno has the smallest population, at only about 840 people, comprising 435 men and 395 women. These differences in population size have implications for the volume of daily water consumption for domestic needs in each area. However, for Gili Meno, the challenge of fulfilling the right to clean water is more complex because the small size of the community means that the bargaining power of local residents is often overlooked by large-scale infrastructure provision policies.

Table 7. Population and Number of Households in Gili Indah Village

DATA JUMLAH PENDUDUK DESA GILI INDAH TAHUN 2024						
No	Nama Kades	Dusun	Jenis Kelamin			
			KK	Jiwa	Laki-Laki	Perempuan
1	SUKDING	GILI AIR	675	2.160	1.115	1.031
2	MASRUN	GILI MENO	290	840	435	395
3	M. HUSNI	GILI TRAWANGAN	692	2.266	1.150	1.140
Total			1.657	5.266	2.700	2.566

Source: Aggregate Data from the Directorate General of Civil Registration and Population

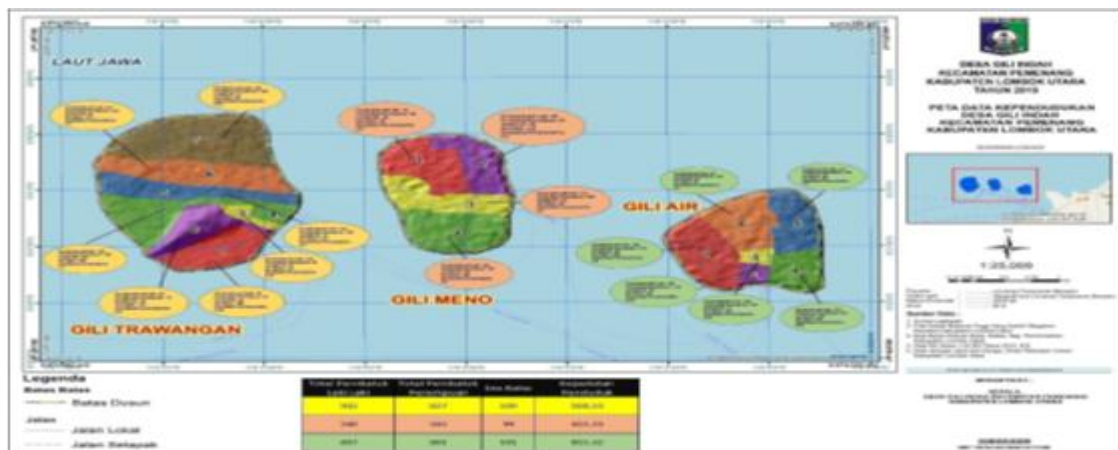


Figure 8. Population Map

CONCLUSION AND RECOMMENDATIONS

This study shows that clean water security has a direct and significant correlation with the operational sustainability of the tourism business on Gili Meno. As a small island without surface freshwater sources, the reliance on water supplied from Lombok and shallow aquifers vulnerable to seawater intrusion causes business operators particularly hotels, homestays, and restaurants—to face increased operating costs and the risk of declining service quality, which impacts guest satisfaction and the destination's reputation. The vulnerability of the clean water supply on Gili Meno is multidimensional, stemming from the interaction of three groups of factors: natural factors (seasonal rainfall and seawater intrusion, which render most wells unfit for consumption), anthropogenic factors (increasing groundwater exploitation due to the growth in the number of accommodations and tourist visits), and governance factors (limited distribution infrastructure and weak regulations on groundwater use). These three factors underscore that the water crisis in Gili Meno is not merely a matter of limited natural resources, but is also the result of the pressures of tourism-driven economic growth that have not been balanced by adequate institutional capacity.

In response to these issues, this study formulates a water resilience management model based on three time horizons (short-term, medium-term, and long-term), which is summarized in three main components: water resource conservation, strengthening of institutional governance, and sustainable tourism business practices. This model aligns with stakeholder theory, which asserts that the successful co-management of water resources can only be achieved through collective collaboration among the government, the community, and tourism businesses not through individual efforts alone. The implementation of this model has the potential to maintain the continuity and competitiveness of the tourism industry, improve the well-being of local communities through equitable access to water, and support the long-term environmental sustainability of small islands.

Tourism businesses should strengthen short-term water conservation through early water supply planning, reduced non-essential use, and gradual investment in water-saving technologies and rainwater harvesting systems. Meanwhile, local and regional governments should establish stricter groundwater regulations, monitor aquifer use, and develop a multi-stakeholder water governance forum involving government, communities, and businesses. Local communities are also encouraged to revitalise collective rainwater harvesting through communal reservoirs to reduce dependence on external supplies. In the medium and long term, feasibility studies on environmentally friendly small-scale seawater desalination should be conducted. Future research should expand to Gili Trawangan and Gili Air and apply quantitative or mixed-methods approaches to examine the relationship between water availability, operational costs, and tourist satisfaction.

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