

## Research Article

# Sister Village Collaboration Model: A Comparative Analysis of Village Development Strategies in Economic, Social, and Environmental Sectors in East Lombok and Lebak Regencies, Indonesia

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**Abstract.**

This study presents a comparative analysis of village development strategies in the economic, social, and environmental sectors in East Lombok Regency, West Nusa Tenggara Province, and Lebak Regency, Banten Province, Indonesia. It uses a mixed-method approach, combining qualitative case studies with quantitative descriptive analysis. Focusing on Grenengan Timur Village in East Lombok and Malabar Village in Lebak, the study examines the disparities in resource accessibility, community participation, and environmental awareness between developing and underdeveloped villages in pursuing sustainable rural development. The findings reveal significant differences in economic access, social support systems, and environmental management practices between the two villages. While Grenengan Timur demonstrates better economic accessibility and stronger social networks, Malabar strives for challenges in infrastructure development and community engagement. Addressing the disparities, the study proposes a “sister village” collaboration model, emphasizing knowledge transfer and best practice sharing between developed and underdeveloped villages. This research contributes to the understanding of rural development dynamics in Indonesia and provides practical recommendations for accelerating progress in underdeveloped villages through inter-village collaboration and targeted interventions in economic, social, and environmental sectors.

**Keywords:** sister village, collaboration, sustainable rural development

## 1. Introduction

Rural development remains a critical challenge in Indonesia, with significant disparities existing between regions, including both East Lombok and Lebak Regencies. *First*, East Lombok Regency is located in the eastern part of Lombok Island, West Nusa Tenggara Province. Geographically, the district is located at coordinates around 8°25'-8°55' south latitude and 115°57'-116°31' east longitude. This geographical location makes the

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district bordered by Central Lombok Regency in the west, North Lombok Regency in the north, Sumbawa Regency in the east, and the Indian Ocean in the south. According to data from Statistics Indonesia (BPS) in 2023, the area of East Lombok Regency reached 1,605.55 km<sup>2</sup> with a population of around 197,630 people, which means that the average population density is around 115 people per km<sup>2</sup>.

Administratively, East Lombok Regency consists of 21 sub-districts and 239 villages, with significant variations in population density between sub-districts. Despite not having any underdeveloped villages, BPS data in 2023 showed that the percentage of poor people in this district reached 15.24 percent. Puncak Jeringo village in the Suela sub-district has the lowest Village Development Index (IDM) of 0.64, only 0.1 different from the average IDM of disadvantaged villages. This significant poverty rate reflects the complexity of village development in East Lombok Regency, which requires accelerated community empowerment through innovative and holistic collaboration strategies.

*Second*, in contrast to NTB, Banten Province faces a more complex poverty problem. The 2023 data shows that there are 7 villages with very underdeveloped IDM status and 146 underdeveloped villages. Most of the very underdeveloped villages are in Lebak District with 6 villages, and one village in Pandeglang District. In addition, in Lebak District, there are 100 underdeveloped villages.

Third, between Lombok and Lebak had its lowest point when the devastating earthquake, these two regions also often experience large earthquakes, such as those that occurred in 2018. Since then Lombok has improved in various ways.

This study focuses on a comparative analysis of village development strategies in those two distinct areas. The research aims to examine the differences in development approaches and outcomes between these regions, with a particular focus on economic, social, and environmental dimensions. The analysis on two specific villages: Grenengan Timur in East Lombok, classified as a developing village, and Malabar in Lebak, categorized as an underdeveloped village. By comparing these two villages, we seek to understand the factors contributing to their different development statuses and propose strategies for accelerating progress in underdeveloped areas.

The primary objective of this research is to develop a “Sister Village” collaboration model as a strategy to accelerate development in underdeveloped villages. This model aims to facilitate knowledge transfer and best practice sharing between villages at different stages of development, potentially offering a scalable solution to address rural development challenges in Indonesia.

The sister village collaboration concept, which focuses on village community empowerment, goes beyond helping villages with low IDM or high rates of poverty. Through environmental preservation, social network system strengthening, and local economic empowerment and development, this strategy seeks to achieve sustainable independence. Previously marginalized villages can become hubs of sustainable multi-sector growth by putting the sister village collaboration model into practice. A thorough analysis of the village's social, economic, and environmental dynamics is necessary to accomplish this goal. The purpose of this study is to present an overview of village development partnership strategies between two distinct IDM-status villages with similar challenges in economic, social, and environmental domains. Expectedly, the sister village collaboration model will serve as leverage for best practices experiences.

However, the creation of the sister village collaboration model also aims to encourage the Regency Government, in collaboration with the Ministry of Villages and the Ministry of Home Affairs, to be able to map out the groups of fostered villages in certain locations. It is anticipated that this cooperation model will be able to influence the welfare of the community inside the collaboration circle by establishing an inclusive and sustainable government environment. A sister village model that can be transformed into a government policy discourse is the research's applied outcome. Practically speaking, East Lombok Regency and Lebak Regency are anticipated to adopt the sister village collaboration model. It is anticipated that this research's findings will advance local

In short, this research seeks to develop a Sister Village Collaboration Model tailored to the specific needs of East Lombok and Lebak Regencies. Key objectives include:

- a. Conducting a comprehensive review of the existing literature on village development strategies, with a focus on collaborative approaches.
- b. Developing a conceptual framework for the Sister Village Collaboration Model.
- c. Identifying specific strategies for economic, social, and environmental development within the model.
- d. Assessing the potential impact of the model on poverty reduction, community empowerment, and sustainable development.

The expected outcomes of this research include:

- a. A practical guide for implementing the Sister Village Collaboration Model in East Lombok and Lebak Regencies.

- b. Contributions to the broader discourse on rural development, community empowerment, and sustainable development.
- c. A potential model for other regions in Indonesia facing similar challenges.

## 2. Theoretical Framework

This study is grounded in several key theoretical concepts related to rural development including:

### 2.1. Penta-helix Collaboration Model

The penta-helix model, as compared to the triple or quadruple helix models, presents a more intricate framework for understanding the interconnectedness of various actors in society and their collaborative efforts in driving development. Like the quadruple helix, the penta-helix depicts the collective interaction and exchange of information among four primary subsystems (Carayannis & Grigoroudis, 2016):

- a. Human capital encompasses academia, universities, higher education systems, and schools. It represents the intellectual capital and knowledge generation within a society.
- b. Economic capital refers to industry, firms, services, and banks. It represents the financial resources, market dynamics, and economic activities that drive development.
- c. Political capital represents the state/country's current and future direction, as well as its laws and regulations. It represents the governmental framework and policies that shape the development environment.

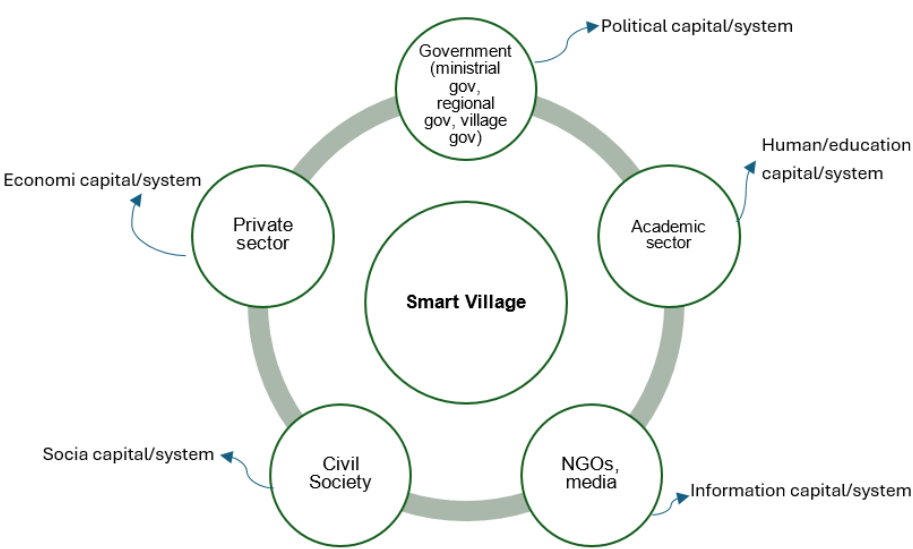
In addition to these three subsystems, the penta-helix model introduces a fifth subsystem:

- d. Civil society or Non-Governmental Organizations (NGOs) and media. These combine two types of capital: cultural capital (traditions, values, etc.) and informational capital (television, internet, newspapers). Civil society or Non-Governmental Organizations (NGOs) play a crucial role in shaping public opinion, advocating for social change, and contributing to the development process.

The penta-helix model, a framework for understanding the interconnectedness of various actors in society, offers a comprehensive approach to sustainable rural development in Indonesia. By fostering collaboration among universities, businesses, government agencies, civil society, and media, the model can promote economic growth, innovation, social inclusion, and environmental sustainability in rural areas.

The penta-helix model can facilitate the development of new economic activities in rural areas, reduce poverty and inequality, and improve the quality of life for rural communities. It can also create a supportive environment for innovation and entrepreneurship, address complex challenges such as climate change, and enhance education and training opportunities.

Moreover, the penta-helix model can empower communities and promote social inclusion by strengthening community-based organizations and facilitating community participation. By fostering collaboration among different stakeholders, the model can help to address the specific needs and challenges of marginalized groups in rural areas, promoting a more equitable and inclusive society.



**Figure 1:** The Penta-helix Model in Smart Village. *Source:* (Carayannis & Grigoroudis, 2016; Handayani et al., 2023b; Komorowski, 2022; Roidatua & Purbantara, 2022)

### 3. Method

This study takes a mixed-methods approach, integrating qualitative and quantitative methodologies to provide a thorough examination of the development plans in the selected villages. The study used a comparative case study approach, concentrating

on Grenengan Timur Village in East Lombok and Malabar Village in Lebak. This design allows for a thorough assessment of each village's specific surroundings and development trajectories.

### 3.1. Data Collection and Analysis

In-depth interviews were conducted with village officials, community leaders, and residents to gain a deeper understanding of their perspectives on village development, challenges faced, and strategies implemented. Focus group discussions were also held to facilitate open dialogue and elicit diverse viewpoints from community members. Direct observations were carried out to assess the physical conditions of the villages, observe daily activities, and identify potential areas for improvement.

Structured questionnaires were administered to a representative sample of village residents to collect quantitative data on various aspects of village life, such as demographic information, economic activities, social networks, and perceptions of development initiatives. Secondary data from government sources, including Village Development Index (IDM) scores, was analyzed to provide a broader context and benchmark for comparison.

### 3.2. Data Analysis

Qualitative data was analyzed using thematic analysis, a method that involves identifying and categorizing recurring themes or patterns within the data. This analysis helped to uncover key insights into development strategies, challenges, and opportunities. Quantitative data was processed using descriptive statistical analysis, such as calculating frequencies, means, and standard deviations, to provide numerical summaries of the data.

### 3.3. Triangulation and Validity

The mixed-method approach, combining both qualitative and quantitative data, allowed for triangulation of findings. This means that the results from different data sources were compared and cross-validated to enhance the validity and reliability of the research. Triangulation helps to ensure that the findings are not biased by a single data source or methodology.

4. Findings and Analysis

Comparative Analysis of Economic, Social, and Environmental Aspects in Grenengan Timur and Malabar Villages

4.1. Economic Sector

In Grenengan Timur village, East Lombok, the economic accessibility for residents is notably good. This is largely due to government support at various levels, from village to provincial, which has provided access to economic necessities such as markets, banks, shops, and trade centers. Residents can easily obtain information about business assistance funds accessible through KUR (People’s Business Credit) provided by banks.

However, despite the ease of access and adequate economic infrastructure, there is a lack of comprehensive empowerment of community-based village organizations like BUMDes (Village-Owned Enterprises). In East Lombok Regency, particularly in Grenengan Timur Village, information about BUMDes is not widely known among residents. The management of BUMDes has not been maximized by either village officials or residents, who are rarely involved in its management. The low level of resident participation in BUMDes management is attributed to a lack of desire to participate, as they are rarely included by village officials in discussions related to the development of this village organization.

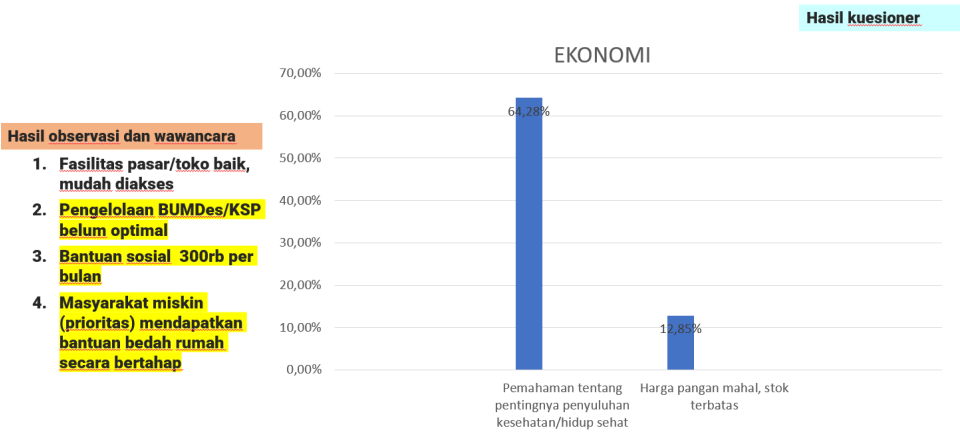
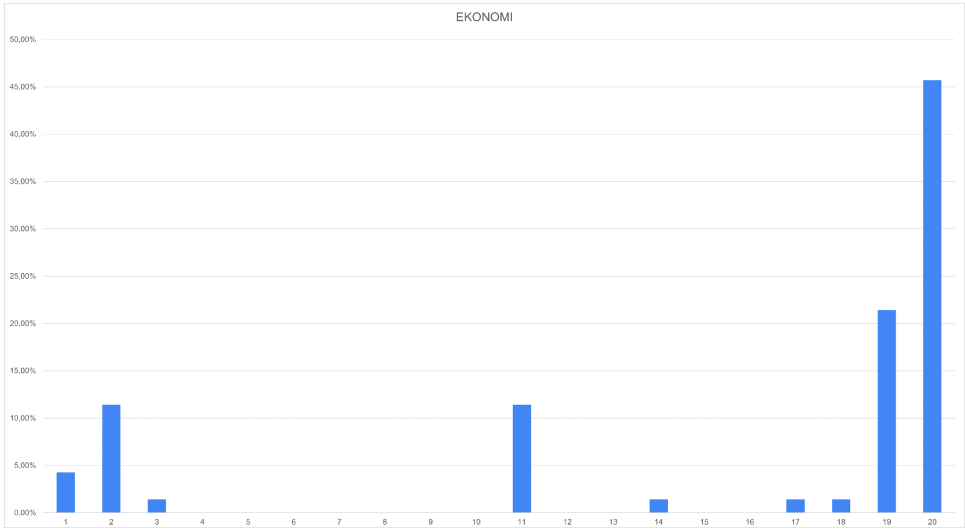


Figure 2: Economic Accessibility in Grenengan Timur. Source: Research data analysis from East Lombok, 2024.

The situation in Malabar Village, located in Cibadak District, Lebak Regency, Banten, stands in stark contrast to East Lombok. While the average income of Malabar

village residents is not significantly different from those in Grenengan Timur Village, the challenges faced in terms of accessibility severely hinder local economic development



**Figure 3:** Economic Challenges in Malabar Village. Source: Research data analysis from Lebak Regency, 2024.

Based on the questionnaire results conducted in Malabar Village, approximately 45.71% of village residents expressed difficulty in finding employment. Meanwhile, 21.34% of respondents complained about the limited stock of basic commodities in the market and high prices. These conditions are due to the long distance from the city center and inadequate transportation access. As a result, residents face difficulties in accessing their economic needs easily and quickly. While shops, banks, and trade centers can generally be found in the district area, these facilities are not available around Malabar village. The availability of facilities around Lebak Regency is inversely proportional to the access to transportation which is very difficult.

The key lesson from East Lombok that can be applied to Cibadak District is the importance of adequate infrastructure development. This infrastructure development should focus on facilitating the distribution and placement of economic necessities, such as markets, shops, and efficient transportation facilities. By doing so, it is hoped that Malabar Village can improve accessibility and, in turn, enhance the economy of its community.

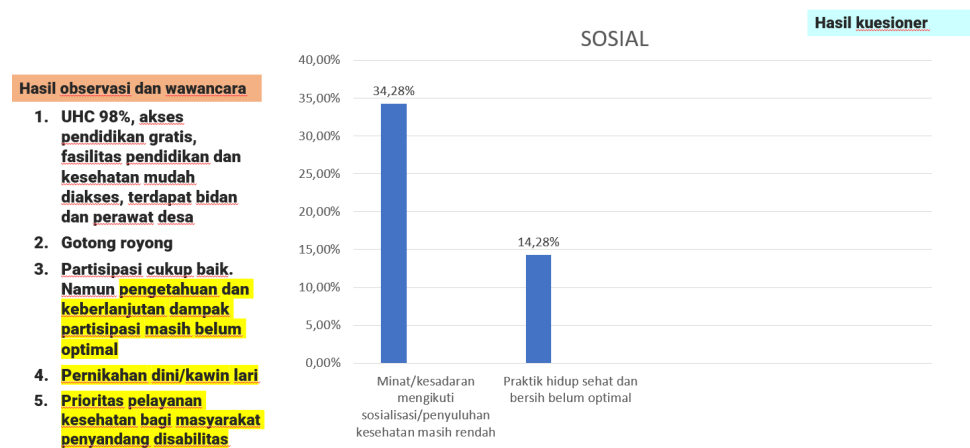
4.2. Social Sector

In the social sector, the community of Grenengan Timur, East Lombok, strongly emphasizes local wisdom, considering neighbors as close relatives who must be helped. This



mindset ensures that any underprivileged residents can still receive assistance for their livelihood, both in terms of basic needs and employment.

The Grenengan Timur village government, with support from the East Lombok Regency government, also prioritizes housing assistance for underprivileged groups, especially those with disabilities or elderly individuals living alone without family. Health access support also receives significant backing from the local government, with easy access to health services requiring only an ID card. Health services can also be provided via call or home service for those in the recovery/treatment phase, although participation rates in health socialization programs remain quite low.

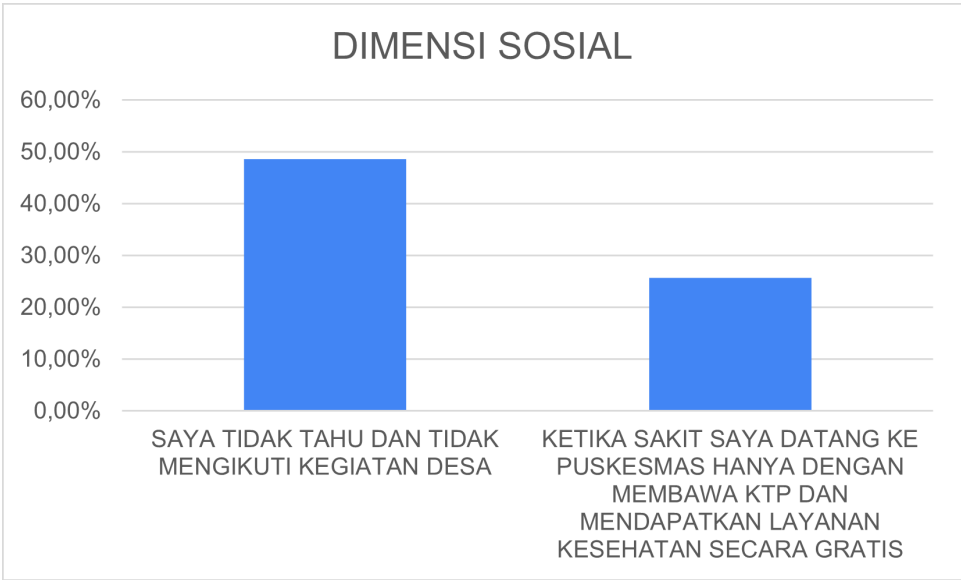


**Figure 4:** Health Service Participation in Grenengan Timur. Source: Research data analysis from East Lombok, 2024.

In terms of social assistance, the village government routinely provides aid to underprivileged residents (prioritizing those who are ill, elderly, and alone) in the form of financial assistance of Rp.300,000/month and support for advanced health services for those requiring special health access such as disability health services, surgical procedures, and psychological support.

The situation in Malabar Village presents a different picture, despite having similar economic conditions to Grenengan Timur Village. The challenges faced in Malabar Village can potentially hinder the welfare of its residents.

The questionnaire results show that 48.57% of Malabar Village residents are unaware of and do not participate in village programs. Meanwhile, 25.71% of respondents only bring their ID card to get free health services at the Community Health Center (Puskesmas). These findings indicate challenges in communication and participation in community development, as well as a low awareness of more complex health procedures and policies.



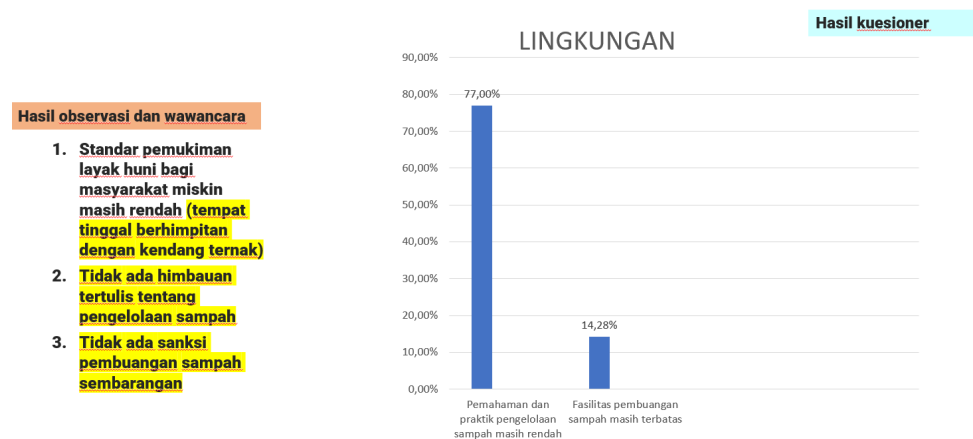
**Figure 5:** Social Program Awareness in Malabar Village. Source: Research data analysis from Lebak Regency, 2024.

The lesson learned from East Lombok that can be applied in Malabar Village, Cibadak District, Lebak Regency, is the need for the village government to strengthen communication and socialization regarding existing programs, as well as develop social networks that support resident independence. By doing so, it is hoped that residents can more actively participate in village programs and improve overall welfare.

4.3. Environmental Sector

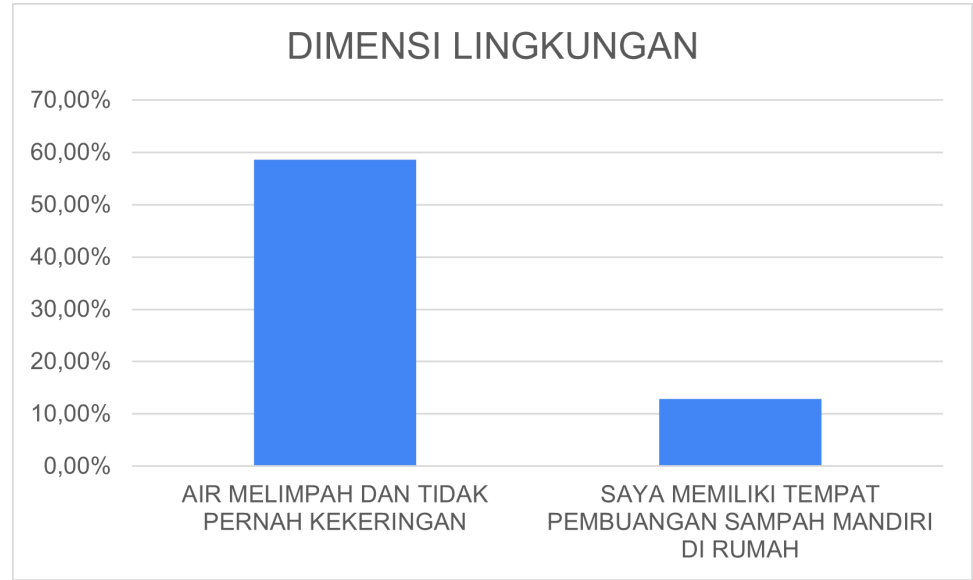
In the environmental sector, based on the analysis of data collected by researchers, it was found that awareness of the importance of environmental cleanliness is not well understood. This is evident from the lack of waste management guidelines, resulting in litter scattered along roads without proper management. Additionally, there are no specific sanctions imposed on residents who litter, although community participation in environmental cleaning is often carried out.

In terms of housing needs, the East Lombok District government has been very good in providing assistance to residents. However, the arrangement of settlements that meet health standards has not been fully implemented. This is evidenced by the large number of houses located close together or adjacent to animal pens (horses, goats, or chickens), far from the impression of being clean and healthy.



**Figure 6:** Environmental Awareness in Grenengan Timur. Source: Research data analysis from East Lombok.

Regarding the understanding of broader environmental concepts, the people of Grenengan Timur also lack sufficient knowledge. For example, understanding of disaster preparedness and socialization about natural disasters has never been organized by the local government, despite several surrounding regencies in Lombok having experienced significant earthquake shocks.



**Figure 7:** Environmental Dimensions in Malabar Village. Source: Research data analysis from Lebak Regency.

In Malabar Village, there are significant differences in two main aspects of the environmental dimension:

- a. Access to clean water: About 60% of the community in Malabar Village has abundant access to clean water and never experiences drought;

- b. Independent waste management: Only about 15% of residents have an independent waste disposal system at home.

The lessons that can be taken from East Lombok and applied in Malabar Village include:

- a. Strengthening communication and socialization from the village government regarding environmental programs.
- b. Developing social networks that support resident independence in actively participating in cleanliness and environmental programs.
- c. Adopting stricter policies in enforcing regulations related to cleanliness and waste management.
- d. Implementing incentive programs for communities that successfully manage waste independently.

The ultimate goal of these efforts is to create a cleaner, healthier, and more livable environment for all levels of society, as well as improve overall welfare through improved environmental quality.

## 5. Sister Village Model

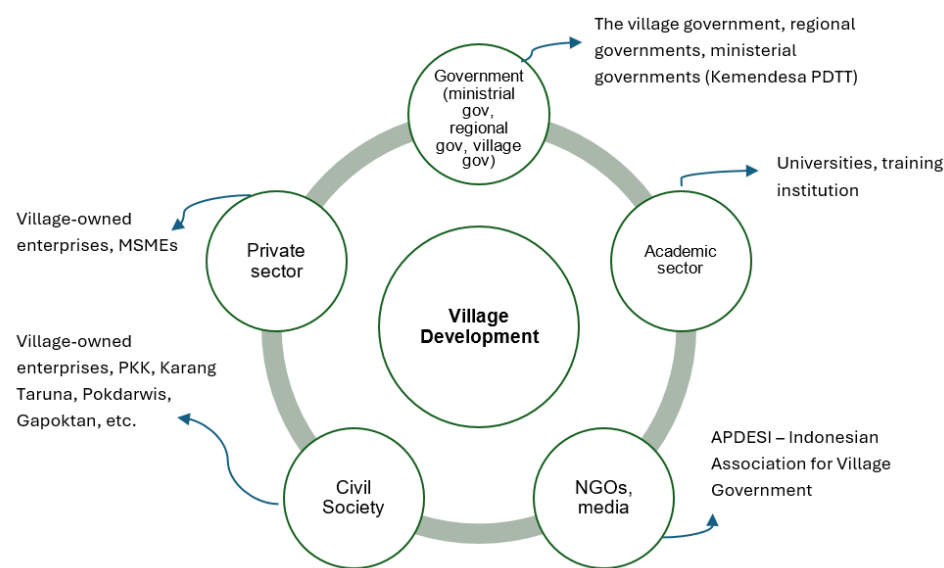
The Sister Village concept promotes the establishment of cooperative relationships between villages at different developmental stages. Developed or advanced villages collaborate with underdeveloped villages to create synergies that can accelerate the development of the latter. Through this partnership, developed villages can serve as guides for those lagging in economic, social, and infrastructure development.

A key component of the Sister Village concept is the formation of an empowerment group composed of representatives from both cooperating villages. This group identifies the needs of the underdeveloped village and explores potential areas for improvement through collaboration. Developed villages can share their best practices and experiences in addressing development challenges, such as community welfare, resource management, and poverty alleviation.

Central to the Sister Village concept is the transfer of knowledge and skills between developed and underdeveloped villages. Developed villages, with their greater experience in tackling development challenges, can offer valuable insights and strategies

to underdeveloped villages. This knowledge exchange can help underdeveloped vil-  
lages learn effective approaches to solving their problems and achieve sustainable  
development.

Elaborating the penta helix model to the context of the sister village, the helixes are  
described in the figure below.



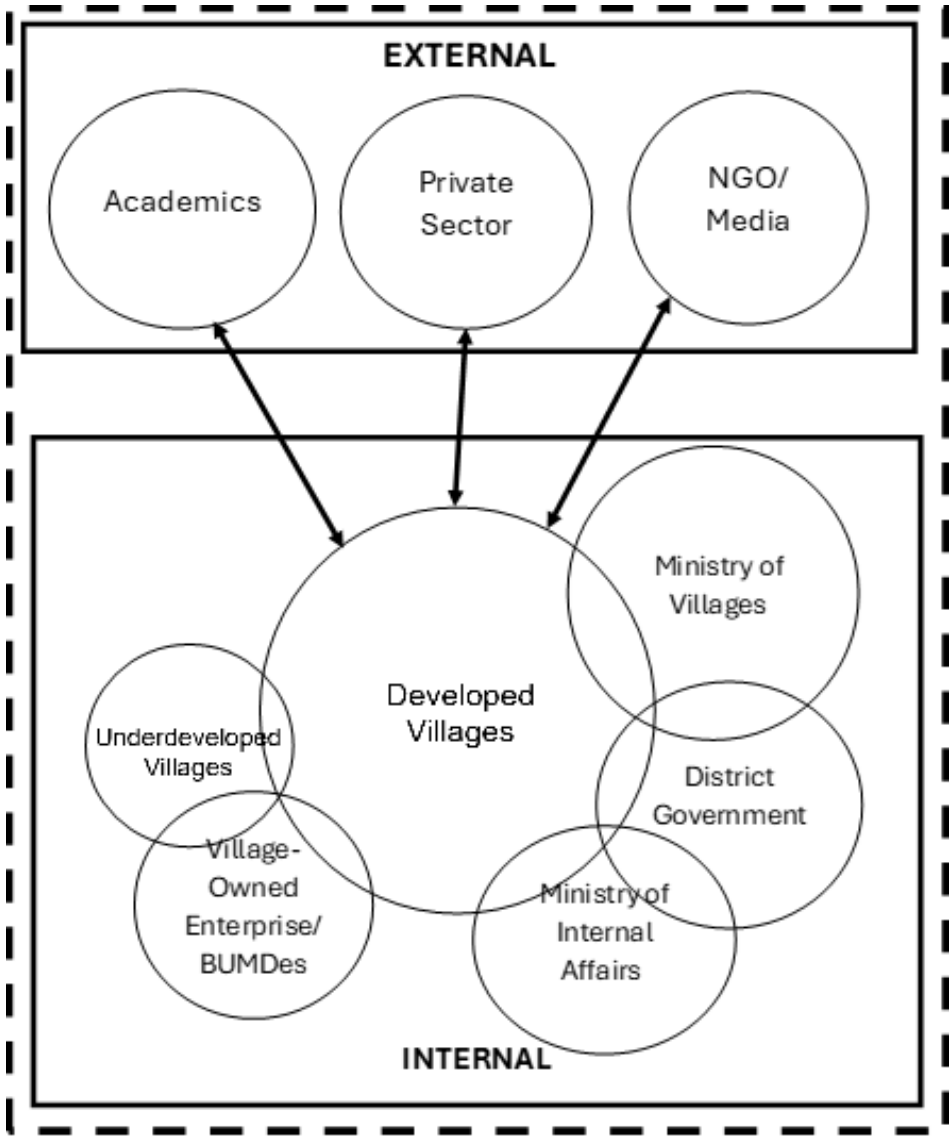
**Figure 8:** Penta Helix Model in Village Development Context. Source: modified from Carayannis & Grigoroudis, 2016; Handayani et al., 2023b; Komorowski, 2022; Roidatua & Purbantara, 2022.

Meanwhile, the model below represents the collaboration among villages determined as “sisters”.

## 6. Conclusion

This comparative study reveals that while both Grenengan Timur and Malabar vil-  
lages face development challenges, there are significant disparities in their access to  
resources, community participation levels, and environmental management practices.  
The proposed “Sister Village” collaboration model offers a potential solution to bridge  
these gaps by facilitating knowledge transfer and best practice sharing between devel-  
oped and underdeveloped villages. Key recommendations include:

- a. Strengthening economic capacity through skill development and improved access to financial services
- b. Enhancing social cohesion and community participation through better communi-  
cation and engagement strategies



**Figure 9:** Sister Village Model. Source: a model developed by authors, 2024.

- c. Improving environmental awareness and implementing sustainable waste management practices

The “Sister Village” model, by fostering collaboration between villages at different development stages, can potentially accelerate progress in underdeveloped areas. This approach aligns with the principles of sustainable rural development, community empowerment, and collaborative governance. Future research should focus on piloting and evaluating the effectiveness of the “Sister Village” model in various contexts across Indonesia. Additionally, longitudinal studies would be valuable in assessing the long-term impacts of such collaborative approaches on rural development outcomes.

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