

The Values of Local Wisdom in the Spatial Settlement Patterns of the Community Ngadisari Village, Sukapura District, Probolinggo Regency

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Abstract

Keywords:

*Local wisdom;
Settlement patterns;
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Ngadisari Village, located in the mountainous region of Mount Bromo, has characteristics of local wisdom in organizing its settlements. The uniqueness lies in the religious context related to ancestral regulations and policies. The Tengger settlements have distinct spatial patterns, especially regarding placing sacred sites (punden/pedanyangan) linked to their belief system. This research aims to identify the local wisdom of the settlements and the spatial patterns of settlements in Ngadisari Village. The data collection methods used in this research were literature studies, observation, and interviews, with a descriptive qualitative approach. The research results showed that the Tengger Tribe predominantly inhabits Ngadisari Village, and the community's behavior is still governed by the customs and laws of the Tengger Tribe. The Tengger people believe that Mount Bromo is the center of orientation and the axis of spiritual activities for the entire Tengger community. Ngadisari Village has a customary spatial formation that starts from the village cemetery, Pura Tunggal Jati, and Pura Brahmana. The institutional structure of Ngadisari Village is divided into roles and functions between the administrative and customary areas. In Ngadisari Village, there are two territorial divisions: the administrative area, led by the village head, and the customary area, led by the customary chief. The settlement patterns in Ngadisari Village are linear, scattered, and clustered. Trading areas dominate linear settlement patterns, while scattered settlement patterns represent traditional communities in the hillside areas. Meanwhile, clustered settlement patterns are seen among communities living around temples or sacred places of worship.

1. Introduction

Every community that settles in a residential area for an extended period always has specific rules and characteristics that distinguish it from other community groups. The most evident differences are in customs, habits, and traditions passed down from generation to generation and are still preserved. The customs and traditions that develop within a particular community are based on cultural values that become local wisdom (Widyastuty, 2021). Local wisdom is the result of a collective agreement on values deemed good and accurate, which are maintained by their descendants, allowing them to endure for a long time and even become institutionalized (Batara et al., 2018; Widyastuty, 2018)(Widyastuty, 2018). Local customary wisdom is understood as something based on knowledge recognized by the community group, and considered good by religious norms (Batara et al., 2018).

Local wisdom is affected by the location or region and the beliefs or faiths of the community group residing in a particular environment. In some areas, customs and culture have become ingrained within the community, forming habits and behaviors reflected in their traditions and social interactions with others (Ihalauw et al., 2016). The local wisdom of a particular community, especially in areas that uphold traditional and cultural values, can serve as the identity of a region. Ngadisari Village is part of a National Strategic Tourism Area (KSPN). Thus, it is essential to consider the local wisdom in Ngadisari Village to preserve and ensure its sustainability.

Ngadisari Village, located in the mountainous region of Mount Bromo, has local wisdom in organizing settlements and maintaining its people's traditional customs and behavior. This uniqueness is related to regulations and policies inherited from ancestral spirits. Specifically, the settlement of the Tengger people has a distinct spatial arrangement, involving the placement of *punden* (sacred sites) and temples, which are linked to their belief system and faith.

Traditional settlements are based on two core concepts that are inseparable and interrelated: sacred areas and profane areas. The settlement patterns of the Tengger people are divided into four main categories based on land use and function: (1) sacred areas, which are considered holy and revered, (2) *punden* areas, which are sacred places marking the origins of the Ngadisari community, (3) *pedanyangan* areas (sacred structures located in the yard of each house of Hindu families), and (4) *setra* areas (cemeteries/graves).

Based on this phenomenon, the issue of how local wisdom and spatial settlement patterns in Ngadisari Village, Sukapura District, and Probolinggo Regency are organized can be formulated.

2. Literature Review

Local Wisdom

According to Regional Regulation No. 44 of 2022 by the Regent of Probolinggo Regency concerning the Smart City Master Plan of Probolinggo Regency for 2022-2031, Ngadisari Village in Sukapura District is part of the tourism development area supporting Bromo-Tengger Semeru. The local wisdom governing the way of living in the Ngadisari Village settlement plays a significant role in preserving and maintaining the identity of Ngadisari Village and serving as a link between generations (Batara et al., 2018). The customs and culture understood by the people of Ngadisari Village are based on conceptual ideas derived from knowledge, recognized by reason, and considered good according to

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religious norms, values, and beliefs. Local wisdom, in the form of customs and culture, acts as a tradition that serves as a guideline or regulation governing community life through a repetitive process that is internalized and interpreted (Ihalauw et al., 2016; Nuurlaily et al., 2020).

Traditional Local Wisdom in Spatial Utilization

Spatial utilization is the effort to realize spatial structures and patterns according to spatial planning through the development and implementation of programs and their financing (Ihalauw et al., 2016). This spatial utilization program and its financing are part of the key program details outlined in the regional spatial planning (Batara et al., 2018). Elements in settlements based on local wisdom consist of the community's spiritual beliefs, settlement orientation, regional values, and sensitive area regulations (Fauzah, 2019; Sarwaningsih et al., 2019). The community's spiritual beliefs represent a cultural heritage that acknowledges the existence of God Almighty, while the orientation of the settlement determines the direction of the settlement's alignment on a plot of land (Qodariah & Armiyati, 2018). Residential areas with unique orientation characteristics can also be found in Bali, where the settlement design is oriented towards religious sites (Widyastuty & Dwiarta, 2021). The unique characteristics of these buildings reflect a distinct cultural identity. In society, cultural values are seen as essential guidelines for beliefs that influence all attitudes and behaviors, serving as a defense against the influence of globalization (Hindaryatiningsih, 2016). Value systems are the guiding principles and behaviors passed down from generation to generation within a region, and the regulations regarding sensitive areas serve to prevent the misuse of space that could destroy the cultural customs of a particular area (Ayuninggar et al., 2011). These customary rules include institutions and social sanctions, provisions for spatial utilization and seasonal farming predictions, preservation and protection of sensitive areas, as well as forms of adaptation and mitigation in housing (Raumin et al., 2018). Institutions and social sanctions play an important role in regulating community behavior, while provisions for spatial use and farming seasons help in the effective use of traditional space (Kartika et al., 2017). Protecting sensitive areas, such as water sources, is a key aspect of environmental conservation. Adaptation and housing mitigation, such as home architecture designed to withstand tropical climates and natural disasters, are also part of this local wisdom.

Settlement

Settlement is the arrangement and distribution of buildings in houses, offices, schools, and markets. A residential area is part of the living environment outside of protected areas that function as a residential environment or dwelling and a place for activities that support life and livelihood, whether in urban or rural areas. The main elements that make up a residential area are groups of people, social groups, the environment (nature), facilities, and connecting networks (Widyarthara & Afdholy, 2022).

A settlement is a unified dwelling place consisting of single-family houses whose primary function is as a residence, along with its supporting facilities and infrastructure. The spatial planning of colonies is formed by designing houses according to their constituent elements. The development of living space is related to the residential environment, the form of houses and buildings, and is affected by social development factors. Space does not only refer to physical space, but also to collective activities (Prihanto et al., 2021).

The Characteristics of Settlement Elements

Settlements have five basic elements: nature, humans, society, buildings, and networks. Natural elements include climate, natural resources, water availability, etc. Human elements need water, temperature, space, etc. The societal element relates to population, education, health, culture, economy, law, etc. Building elements consist of houses, public facilities, offices, etc. Infrastructure elements include electricity networks, wastewater networks, clean water networks, road networks, healthcare facilities, places of worship, and educational facilities (Sasongko et al., 2022).

Based on Batara et al., (2018) A settlement's elements consist of three main elements: area and location, population, and social structure. The area and location element includes land, size, location, and geographical boundaries. The population element includes population size, age structure, occupational structure, and population growth. The social structure element encompasses the patterns of social interaction and the bonds among village residents. Rural settlements have unique characteristics influenced by cultural factors still practiced by the community, with customary systems that regulate and control the formation of these settlements.

Spatial Patterns of Settlements

A spatial pattern can be defined as a spatial form, especially the physical form of a specific area or region, in the context of an urban or rural settlement (Swanendri, 2017). The settlement pattern is a spatial arrangement of the activities of people living within a region. These activities can modify space according to their purposes, including enclosed open spaces, building facades, pathways, atmosphere, and the overall form of the settlement (Kustiaaningrum et al., 2015).

The pattern of settlement distribution is affected by variations in land use, topographic conditions, altitude, accessibility factors, socio-economic conditions of the population, and socio-economic facilities, which in their development will significantly affect the pattern and distribution of settlements in an area (Pelambi et al., 2016). According to Sasongko et al., (2022), this settlement pattern is characterized by three structural patterns: linear, radial, and centralized.

Based on Silaban et al., (2021), the form of a settlement can be determined based on the nature of its community. A linear form shows the placement of settlement units sequentially, simply, and straightforwardly. A clustered form develops according to the demand for land, while a combination form involves a gradation of land intensity and a general hierarchy of micro spaces in pattern formation.

3. Methods

Research Design

The research design for the "Spatial Local Wisdom Value of Settlements of the Community in Ngadisari Village, Sukapura District, Probolinggo Regency" study is qualitative descriptive research. The qualitative descriptive research in this research will describe the selected case study with specific social phenomena based on the results obtained from field studies, which are then compared with supporting theories (Ihalauw et al., 2016).

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Data Collection Methods

The data collection techniques in this research consisted of literature review, observation, interviews, and documentation. The literature review involved searching for and reviewing relevant literature, including similar research findings and other literature related to the social and cultural systems of Ngadisari Village. Observation was conducted in two stages: an initial observation to obtain a general overview, and a non-participatory observation to collect physical data. Interviews were planned yet unstructured with key informants such as the village head, customary leaders, and village elders. Documentation was used to take photographs and obtain visual data about the local wisdom of the Ngadisari Village settlements.

Data Analysis Method

The data analysis methods in this research involved identifying the local wisdom of settlements in Ngadisari Village using qualitative descriptive methods with data triangulation techniques. Data triangulation was employed to verify the validity of the data by cross-checking with other sources. This analysis involved several aspects, such as the community's spiritual beliefs, settlement orientation, regional value systems, sensitive area regulations, forms of adaptation and mitigation in housing, institutions, and social sanctions (Mursalim, 2017). Moreover, the research identified the spatial settlement patterns using a qualitative descriptive analysis method with the solid-void spatial analysis technique (Anisa et al., 2020). "Solid" refers to areas consisting of building blocks, while "void" includes open spaces such as roads, rivers, fields, and other open areas. This analysis was conducted using ArcMap 10.8 software to identify the types of settlement patterns.

4. Results

Local Wisdom in Ngadisari Village Settlements

The local wisdom in Ngadisari Village that was analyzed and discussed consisted of spiritual beliefs, settlement orientation, regional value systems, sensitive area regulations, forms of adaptation and mitigation in housing, institutions, and social sanctions. The following are the results of data collection conducted in Ngadisari Village.

1. Spiritual Beliefs of the Community

Most of the population in Ngadisari Village comprises the Tengger Tribe, which holds beliefs related to the will of gods, spirits, and ancestral spirits that dwell in the surrounding area. The Tengger region was recognized as tanah hila-hila (sacred land) during the Hindu kingdom. The inhabitants of the Tengger area were considered Hulun Spiritual Sang Hyang Widhi Wasa, loyal followers of God Almighty. In the life of the Tengger Tribe community, a fundamental concept shapes their way of life, known as the *anteng-seger* (Tengger) concept, which means peace and prosperity. Additionally, another concept forms the foundation for their three-way relationships. This concept includes the relationship between humans and God, the relationship between humans and other humans, and the relationship between humans and the natural environment.

- a. *Tri Sandya* concept, *Karma Phala*, and *Reincarnation Law* govern the relationship between humans and God. The *Tri Sandya* concept involves praying three times daily (morning, afternoon, and evening). The *Karma Phala* concept means that a person's life or destiny depends on good deeds, while the *Reincarnation Law* is a law of life that must be obeyed. This law states: "*Sapa nandur kebecikan bakal ngundhuh kabecikan. Sapa nandur barang ora becik bakal ngundhuh kacilaka.*"

- b. The principles of life, such as *Sesanti Panca Setia*, *Guyub Rukun*, *Sanjan-sinajan* (mutual visits), and *Sayan* (cooperation and helping one another), are based on the motto "*Sepi ing pamrih, rame ing gawe*," which means helping each other with sincerity without expecting rewards or personal gain. In addition, *Genten kuat* emphasizes that mutual assistance is the foundation that regulates human-to-human relationships.
- c. The attitude towards life that views the natural environment (water, land, forests, fields) as a source of life governs the relationship between humans and nature. Additionally, there is still a belief that land or homesteads are sacred. As a result, certain taboos exist, such as the prohibition against cutting down trees recklessly. Tree cutting is only allowed if the tree is disturbing the surrounding environment. The relationship between humans and nature is embodied in the slogan "*Tebang satu, tanam dua*," meaning that if one tree is cut down, two or more trees of the same kind must be planted.

Spiritual beliefs are manifested in the customary ceremonies/rituals of the Tengger Tribe, such as:

- a. *Kasada Ceremony*, commemorates the sacrifice of Raden Kusuma, the son of Jaka Seger and Lara Anteng. In addition, this ceremony is carried out by the Tengger community to ask for safety and blessings. The ceremony is held from the 14th to the 16th day of the *Kasada* month, or when the full moon is visible in the sky once a year. The purpose of the *Kasada* ceremony is for the Tengger community to receive blessings and safety from the Almighty.
 - b. *The Unan-Unan Ceremony* is often referred to as the village cleansing ritual. The *Unan-Unan* ceremony aims to offer thanks to nature and all its contents, which is interpreted as freeing the village from disturbances by spirits or *bhutakala*. It is a form of prayer to avoid illness and suffering in life.
 - c. *Hari Karo* is the biggest holiday, coinciding with the *Nyepi* festival. On this day, the community participates in a parade while carrying agricultural products.
 - d. *Pujan Mubeng Ceremony* involves the village walking around the village with the local shaman (*dukun*) while beating a ceremonial drum (*ketipung*). The purpose of the *Pujan Mubeng* ceremony is to cleanse the village from disasters and disturbances. The procession ends with a communal meal at the shaman's house.
 - e. The *Mecaru Ceremony* occurs in each village in the morning and continues at Mount Bromo in the afternoon. The *Mecaru* ceremony is performed as a self-reflection toward Sang Hyang Widi.
2. Settlement Orientation

The Tengger Tribe believes that Mount Bromo is the center of orientation and the axis of spiritual activities for all the Tengger people. At the village boundaries, there are physical markers in places or buildings for rituals, such as temples (*pura*), shrines (*pandhayangan*), and cemeteries facing directly towards Mount Bromo. This serves as the center of ritual activity (*pancer*). The concept of the traditional boundaries of the Tengger Tribe can be seen in Figure 1.

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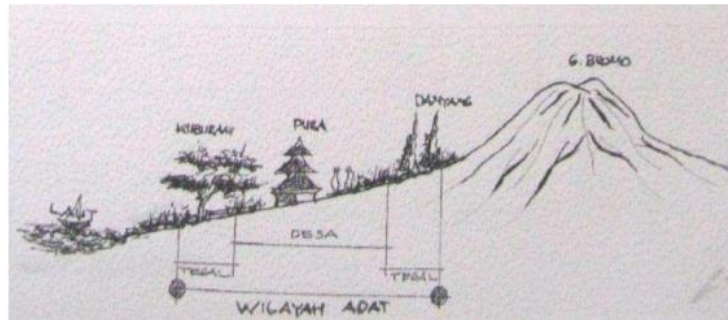


Figure 1. Concept of the Tengger Tribe's Traditional Boundaries
Source: (Ayuninggar et al., 2011)

The traditional boundary markers of Ngadisari Village are as follows.

- a. Ngadisari Village Cemetery is located in the northern part of the village, behind the Ngadisari Village Office. In the cosmological layout, the cemetery marks the entrance to the village and serves as a physical boundary indicator.
- b. Tunggal Jati Temple is in Wonosari Hamlet. This temple complex is the second physical boundary toward Mount Bromo, reflecting the village's spiritual connection to the mountain.
- c. Brahmana Temple is located at the junction leading to Cemorolawang Hamlet, it marks the third physical boundary. This temple is located on higher ground, reinforcing its significance in the village's cosmology.
- d. Mount Bromo is located south of Ngadisari Village, where Mount Bromo is regarded as the spiritual axis ("*pancer*") of the Tengger people's religious activities. A sacred line is believed to point directly towards Mount Bromo in the southern region.

The Tengger Tribe has a unique custom in building a house. They do not forget to do a "Good Day" before building a house. For the Tengger Tribe, doing a good day count is believed to bring physical and spiritual security, smooth fortune, good luck, and avoid disasters or calamities. The local traditional shaman usually conducts the good day count.

3. Regional Values

Customary provisions govern the behavior of the Tengger people. These provisions consist of customary rules and customary laws. These rules regulate social life within the community, such as prohibitions against harming or killing animals (except for sacrifices and food), stealing, committing evil acts, lying, and consuming intoxicating drinks.

The customary law of the Tengger people, which functions as a system of social control within the community, instills confidence in the members regarding the goodness of Tengger customs, provides consequences for those who commit crimes, and fosters a sense of shame.

Instilling fear in those who intend to violate customary provisions

In the life of the Tengger community, everything that is conducted must be based on mutual respect. This is practiced because of the belief in the law of karma. With this belief, people are encouraged to avoid evil actions, such as not harming one another and always striving to resolve issues through deliberation, based on the principle of "*welas asih pepitu*" (seven kinds of compassion). The following are the principles of "*welas asih pepitu*".

- a. *Welas asih marang bapa Kuasa (God)*
- b. *Welas asih marang ibu pertiwi (the country and homeland)*

- c. *Welas asih marang bapa biyung (parents)*
- d. *Welas asih marang rasa jiwa (the soul)*
- e. *Welas asih marang sepadhane urip (living)*
- f. *Welas asih marang sate kewan (animals)*
- g. *Welas asih marang tandur tetuwuh (plants)*

The Ngadisari Village Government issued a regulation that land transactions are only permitted among native residents of Ngadisari Village. This regulation aims to preserve the land of Ngadisari Village. Outsiders or investors are only allowed to lease land, not to own it.

4. Sensitive Area Provisions

The Tengger community strongly believes that all places in their area are sacred because the spirits of their ancestors reside there. The sensitive areas include places considered holy or sacred, such as temples, sacred burial grounds, and lands where construction is prohibited (figures 2 and 3).



Figure 2. Tunggal Jati Temple and an illustration of the Temple's position
Source: Personal documentation (Prasetya, 2024)



Figure 3. Sensitive Land in Ngadisari Village
Source: Personal documentation (Prasetya, 2024)

5. Forms of Adaptation and Mitigation for Housing

The Tengger people have specific rules regarding the construction of their homes. These rules cover the construction of foundations, walls, and even fences. Several safety rituals are also performed to protect the home's inhabitants. The design of Tengger houses is adapted to the natural surroundings, aiming to make the house a comfortable dwelling. The house's location is also determined by wind direction, intended to prevent disturbances caused by the wind. The native homes of the Tengger people can be seen in Figure 4.

- a. The roof of the house is a pyramid shape with a slope of about $\pm 45^\circ$, which serves to warm the house's interior, especially at night.

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- b. The walls of the building are made of teak wood or pine wood, which helps maintain warmth inside the house.
- c. The traditional houses of the Tengger people are divided into three parts: *omah ngarep* (front house), *omah tengah* (middle house), and *pawon* (kitchen).



Figure 4. Traditional House of the Tengger Tribe
Source: Personal documentation (Prasetya, 2024)

In Ngadisari Village, there is a division of duties and functions between the administrative and customary areas. The customary area of the Tengger tribe is divided into two regions: Sabrang Kulon and Sabrang Wetan. The Sabrang Kulon region includes Tosari Village, while the Sabrang Wetan region includes Ngadisari Village, Wanatara Village, and Jetak Village. In the administrative area, leadership is held by the village head, while the customary chief leads the customary institution.

6. Institutions and Social Sanctions

In Ngadisari Village, there is a division of tasks and functions between the administrative and customary areas. The customary area of the Tengger tribe is divided into two regions: Sabrang Kulon and Sabrang Wetan. In the Sabrang Kulon region, there is Tosari Village, while the Sabrang Wetan region includes Ngadisari Village, Wanatara Village, and Jetak Village. In the administrative area, leadership is held by the village head, while the customary chief leads the customary institution. Below is the structure of the religious leader and traditional healer institutions.

a. Government Institutions:

- 1) Village Head
- 2) Village Consultative Body (BPD)
- 3) Village Secretary
- 4) Heads of Departments (Finance, General Affairs, and Planning)
- 5) Section Heads (Government, Development, Social Affairs)
- 6) Hamlet Heads (Cemara Lawang Hamlet, Ngadisari Hamlet, Wonosari Hamlet)

b. Customary Institutions

The customary chief or *dukun* is the leader of the Tengger people who follow Hinduism. They are individuals who have the authority to lead religious and traditional ceremonies. The organizational structure of the customary healer institution is as follows.

- 1) *Dukun Adat*: The customary leader leading traditional ceremonies in Ngadisari Village.
- 2) *Wong Legen*: Responsible for preparing offerings and praying over them during traditional ceremonies.
- 3) *Wong Sepuh*: Responsible for creating Petra dolls, which serve as vessels for the spirits of ancestors invited to descend to earth during ceremonies such as *unan-*

unan, entas-entas, or karo, and for arranging the offerings during these ceremonies.

In Ngadisari Village, problem-solving for the Tengger community is done through deliberation or family discussions. The customary healer institution and the village government carry out this process. However, if an agreement cannot be reached, the issue is escalated to the Sukapura District Police for further action.

The local wisdom of the Tengger tribe in Ngadisari village faces several obstacles and threats in maintaining its local wisdom, both internally and externally. These obstacles include changes in the mindset of the younger generation, who are less interested in ancestral traditions, resulting in the gradual loss of local values. Although the Kasada ceremony is still practiced, the decline in spiritual and customary practices is not accompanied by a philosophical understanding of the tradition. Many local wisdom values are still passed down orally, resulting in minimal documentation and literacy materials. Mass tourism has led to development that ignores customary zoning and has degraded spatial planning and the spiritual value of sacred sites such as the Luhur Poten Temple. The commercialization of culture (ritual turned into spectacles) erodes spiritual meaning and makes culture merely an attraction. Economic demands have led many communities to sell their customary land to investors and a consumerist lifestyle dependent on the tourism industry.

1.1 Spatial Settlement Patterns in Ngadisari Village

Researchers conducted a study using a solid void spatial analysis to understand the characteristics of the settlement distribution in Ngadisari Village. Solid refers to areas consisting of building blocks, while void refers to open spaces such as roads, rivers, fields, and other open spaces (Anisa et al., 2020).

Figure-ground identification is used to understand building block masses in large and small dimensions. It also highlights private and public areas based on the identification of solid and void enclosures, such as core-shaped, pocket-shaped, or linear-shaped (corridor) forms (Adiyanto et al., 2018) The analysis of solids and voids was conducted using ArcMap 10.8 software. The settlement distribution patterns are divided into three types: linear, radial, and clustered. The settlement distribution pattern can be seen in Figure 5.

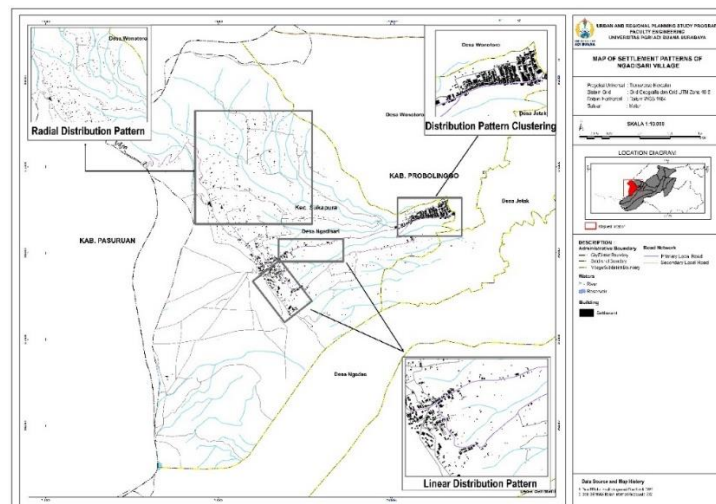


Figure 5. Settlement Distribution Pattern Map of Ngadisari Village
Source: Satellite Image Map (Google Earth, 2024)

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1. Linear Pattern

The linear pattern is a simple layout where residential units are continuously placed along the edges of rivers and roads. This pattern has high density and tends to expand, with diverse land uses (Sasongko et al., 2022). Based on the solid and void analysis conducted in Ngadisari Village, the linear settlement pattern along the road occurs due to the needs of the **Mount Bromo tourism sector. This has led to many shops and accommodations in the area. The existing condition of the linear settlement pattern can be seen in Figure 6.



Figure 6. Existing Condition of the Linear Pattern in Ngadisari Village
Source: Personal documentation (Prasetya, 2024)

2. Radial Pattern

The dispersed settlement pattern is irregular, consisting of hamlets or houses spread out at unpredictable distances (Utami et al., 2019). Based on the solid and void analysis conducted in Ngadisari Village, the dispersed settlement pattern occurs due to land use dominated by agriculture and plantations, with a high land slope in the dispersed pattern area. Farmers primarily inhabit this region. The existing condition of the dispersed settlement pattern can be seen in Figure 7.



Figure 7. Existing Condition of the Dispersed Pattern in Ngadisari Village
Source: Personal documentation (Prasetya, 2024), Citra Satellite Image map (Google Earth, 2024)

3. Clustered Pattern

Based on the solid and void analysis conducted in Ngadisari Village, the clustered settlement pattern occurs due to government facilities such as the Ngadisari Village Hall and Pendopo Agung Ngadisari. This pattern is affected by factors such as flat terrain, fertile land, relatively low rainfall, and the need for cooperation, as well as social, economic, and religious ties (Pelambi et al., 2016). The existing condition of the clustered settlement pattern and the village center of Ngadisari can be seen in Figure 8.



Figure 8. Existing Condition of the Clustered Pattern and Village Activity Center in Ngadisari Village

Source: Personal documentation (Prasetya, 2024), Citra Satellite Image map (Google Earth, 2024)

Based on the analysis, Ngadisari Village has three types of settlement patterns: linear, dispersed, and clustered. The linear settlement pattern is influenced by houses oriented toward the road. According to (Pelambi et al., 2016) The dispersed settlement pattern is typically influenced by rough topography, varied soil fertility, high rainfall, and abundant surface water. The clustered settlement pattern is affected by physical factors such as relief, water sources, drainage routes, land conditions, socio-economic factors, land use, crop rotation, transportation infrastructure, communication, and population density. The settlement pattern of the Ngadisari indigenous community has remained unchanged from the past to the present. This is due to the Village Regulations regarding building permits and land sale rules, which state that only native residents of Ngadisari Village can own land.

Each region has different beliefs regarding activity spaces and customs, which are certainly influenced by aspects of geographical conditions, beliefs, and social functions of the community. This is seen in the differences between the Ngadisari village community, commonly known as the Tengger tribe, and the Sade village community, the Sasak tribe in West Nusa Tenggara. The spatial settlement patterns of the two tribes are very different. The Tengger tribe has a dispersed pattern, spread across mountain slopes, with limited accessibility, with houses connected by footpaths following the contours of the slopes. So, the determining factors are topography (steep slopes), traditional beliefs, and myths that mountains are spiritual centres and symbols of God Brahma. Meanwhile, the Sade community in Lombok, West Nusa Tenggara, has a centralized settlement pattern (compact in lowland areas with flat topography), with easy accessibility, and the determining factors are traditions that are maintained from generation to generation, social defence, and spatial

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efficiency. The settlement pattern is centred on traditional houses (Bale) arranged according to traditional structures.

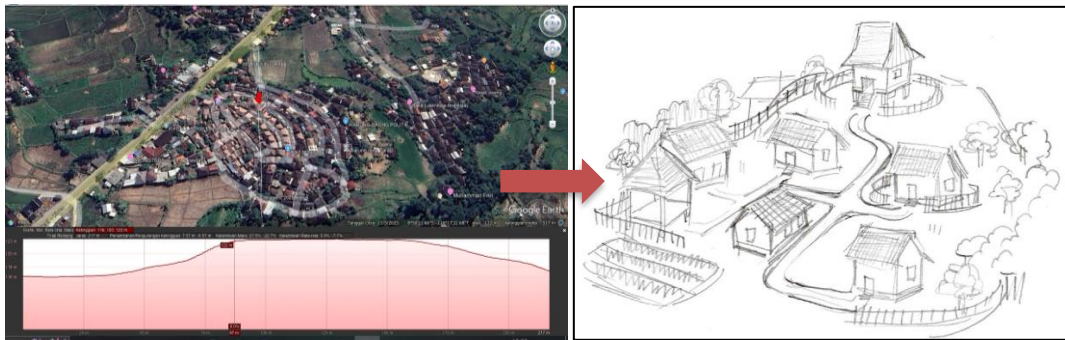


Figure 9. Sade Village settlement pattern and illustration of Sade Village Boundaries
Source: Personal documentation (Prasetya, 2024), Citra Satellite Image map (Google Earth, 2024)

5. Discussion

Local wisdom in settlements derives from the knowledge and application of traditional behaviours that communities use to design and manage their residential environments. It is hereditary, trusted, and deeply rooted in cultural, social, and environmental contexts, and plays an important role in shaping sustainable and resilient communities over time. Explorations of various forms of local wisdom, including spiritual beliefs, settlement orientation, territorial ordinances, sensitive area provisions, adaptation and mitigation strategies for shelter, and social institutional sanctions, have always received attention from cultural observers.

As with the Ngadisari villagers inhabited by the Tengger tribe, who have beliefs related to the will of the village, spirits, and ancestral spirits, the settlements formed by the Sade Lombok hamlet community also have a particular order character, as noble values are passed down to their descendants (Widisono, 2019). The difference between the beliefs of the Ngadisari villagers and the people of Sade Lombok is in the orientation of the settlement. The Tengger people believe that Mount Bromo is the centre of orientation and the axis of spiritual activity for the entire community. All places or buildings used for rituals, such as temples, pandhayangan, and tombs, face directly towards Mount Bromo. This applies in contrast to the people of Sade Lombok. Applying physical order on a macro scale does not face north to Mount Rinjani. Mount Rinjani is the abode of the God of Mount Rinjani. The community assumes that if any place or building faces directly or is oriented directly to Mount Rinjani, it is taboo and considered against the gods (Widisono, 2019). Although the beliefs of the Tengger community and the Sade hamlet community are both oriented towards the mountain, which is believed to be the dwelling place of God, they have different views and perceptions about the direction.

The determination of sensitive areas has various views. The sensitive areas referred to by the Tengger people living in Ngadisai Village are considered holy/sacred, such as temples, pundens, and land that should not be used for building activities. In certain countries and regions, the division of sensitive areas is part of traditional settlements with unique spatial arrangements that reflect cultural, social, and environmental influences. These settlements often feature sensitive areas that balance public and private spaces, contributing to the identity and functionality of the community. In addition, sensitive areas

are transitional spaces between zones and have a spatial hierarchy that integrates public, private, and intermediate spaces (Kalak & Karasozen, 2021)(Kaya, 2020).

Ngadisari Village has three settlement patterns: linear, dispersed, and clustered. Scattered settlement patterns are usually influenced by rough topography, land fertility diversity, abundant rainfall, and surface water, and clustered settlement patterns are influenced by the physical environment, such as relief, water sources, drainage paths, land conditions, as well as socio-economic conditions, land use, and crop rotation. Spatial patterns of human settlements are shaped by complex interactions of macroecological, geographical, cultural, and socioeconomic factors. These patterns manifest in various forms such as dispersion, clustering, and dispersal. Both natural and anthropogenic processes influence them. Macroeconomic factors significantly influence local-scale spatial patterns in human settlements. These patterns are shaped by factors such as potential evapotranspiration and topographic heterogeneity that affect area size and clustering (Tao et al., 2017). The agglomeration and dispersion dichotomy is a global phenomenon in which settlements are clustered denser than expected and more dispersed. Geographical, cultural, and historical processes influence this pattern (Strano et al., 2021).

6. Conclusion

Based on the analysis carried out in Ngadisari Village with the title " The Values of Local Wisdom in the Spatial Settlement Patterns of the Community in Ngadisari Village, Sukapura District, Probolinggo Regency," the following conclusions can be drawn.

a. Local Wisdom of Settlements in Ngadisari Village

Ngadisari Village is inhabited by the Tengger Tribe, which follows the Hindu religion. The Tengger community firmly believes that all places in their area are sacred because they are the resting places of their ancestors' spirits. Ngadisari Village is part of the National Tourism Strategic Area. To prevent environmental and cultural damage, the Ngadisari Village Government has issued regulations stating that the buying and selling of land can only be conducted by the indigenous residents of Ngadisari Village. Outsiders or investors can only lease, not own, the land.

The Ngadisari Village institution is divided into administrative and customary areas. The Village Head, the Village Apparatus, and Neighborhood Units (RT/RW) lead the administrative area. The traditional shaman leads the customary area of the Tengger Tribe. The Tengger community believes Mount Bromo is the center of orientation and the axis of spiritual activity for all Tengger people. In Ngadisari Village, customary boundary arrangements are formed, starting from the Village Cemetery, the Tunggal Jati Temple, and the Brahmana Temple.

The traditional houses of the Tengger Tribe community are constructed primarily of wood to adapt to the natural surroundings. Authentic Tengger houses are now difficult to find due to the high cost and lack of durability of wood, as well as a program aimed at improving house quality for use as lodgings. Ngadisari Village is located in KRB III (Disaster-Prone Area) of Mount Bromo. To mitigate disaster threats from Mount Bromo, the Ngadisari Village Government has formed a Disaster Preparedness Team (TSB) in collaboration with the Bromo Volcano Observatory (PGA) and the National Disaster Management Agency (BNPB).

b. Spatial Settlement Patterns in Ngadisari Village

Ngadisari Village has three types of settlement patterns. The linear settlement pattern is found at the entrance to the Mount Bromo tourist area and extends along the road due to the needs of the Mount Bromo tourism sector. The scattered settlement

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pattern occurs due to land use dominated by agriculture and plantations, affected by the land's slope. The clustered settlement pattern in Ngadisari Village exists because of central activity facilities such as the Ngadisari Village Hall and the Great Hall.

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