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Olebla and Sustainable Development in Makaling Village, Merauke, South Papua

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Abstract

Makaling is inhabited by the Malind Anim tribe and immigrants called pu anim. This affects new hamlet and the olebla or the livelihood of the population. Economic aspects as new culture community survival in Makaling, Okaba District, Merauke, South Papua. They have a local wisdom in maintaining harmony between new influences and ancient knowledge. Therefore, this study aims to describe what the olebla used in space by the Makaling community is like in the midst of modernization. The way to carry out this research is using a qualitative descriptive phenomenological method, specifically transcendental phenomenology stage 1, namely the formulation of the olebla theme as the outermost layer. Data collection techniques include comprehensive observation, deep interviews, snowball sampling, and unstructured interviews. This research resulted in a description of: the arrangement of olebsai points (trading places), pamali rules in trading, merchandise and their relationship to other things (plantation system, hunting system, fishing system, and road construction) in the new hamlet settlement space in Makaling Village. Furthermore, this research is useful for policy makers, designers and researchers in terms of spatial planning which is based on the local life of the Papuan for the future development.

1. INTRODUCTION

Olebla is the local language of the residents of Makaling Village used to refer to the livelihood system in their daily spaces. *Olebla* activities take place in micro to meso-scale spaces within Makaling Village. Makaling Village is located on the coastal route in the southern part of Papua Island, in the South Papua Province, Merauke Regency area, so these livelihood activities are also influenced by the cultural systems of the Papuan coastal communities. The Malind Anim tribe is the inhabitant of this village, especially regarding the subdivision into sub-tribes, namely Malind Pantai / Malind Duh. Djubiantono et al., (2005) explains that there are two settlement areas for the Malind Anim tribe: some live along the Merauke coastal area, and others live inland. The Malind Anim people living along the coast of the Digul River estuary are called Coastal Malind or *Malind Durv*, as is the case with the community of Makaling Village (Dumatubun et al., 2012).

1.1 *Olebla* (economic pillar) in sustainable development and research objectives

The *olebla* system in Makaling Village encompasses economic aspects but is also related to social, cultural, and environmental aspects as well as sustainable development theory. The three pillars of sustainable development are known as ecology, social, and economy (Ghimire, 2023), but Purvis et al. (2019) shows that these three concepts as the foundation and pillars are still continuously evolving in the development of sustainable development science. An additional pillar, the cultural pillar, has become a new complement in sustainable development (Bervar, 2019; Parameswara, 2020; Soini & Dessein, 2016). Bervar (2019) explains that the fourth pillar, culture, serves the following functions: culture as a driver of intercultural dialogue and the importance of culture for social cohesion. Soini & Dessein (2016) explains that there are three conceptual

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arrangements of the cultural pillar within sustainable development. These arrangements include: culture in sustainability, culture for sustainability, and culture as sustainability.

Thus, the contribution of novelty to the field of sustainable development through the description of *olebla* in Makaling Village lies in the cultural aspect, representing an extension of the previously established three pillars of sustainable development (economic, social, and environmental). Furthermore, the description of *olebla* (in terms of economic, social, cultural, and ecological/environmental aspects) in sustainable development and modernization in Makaling Village is the main objective of this study. Achieving the main objective of the research is carried out through several research targets, namely the description of the configuration of *olebsai* layout (trading spaces), *pamali* rules (related to culture) in trade and handicrafts, gardening and fishing systems in relation to the environment and social life in the Makaling settlement.

1.2 Local wisdom, challenges, and opportunities for further research

Belief in the fundamental values of environmental conservation, adaptation, energy resilience, and cultural resilience is an important challenge in sustainable architecture. Therefore, local wisdom aligns with environmental sustainability, and if local values and local knowledge are lost, they can be replaced with new values in line with modernization, one of which is the economic demand for consideration of short-term needs (Nugroho, 2018).

The research target above consists of an explanation of research themes in phenomenological research as the outermost layer (phenomenological reduction) of Husserl's phenomenological stages. Husserl (1970) in (Sudaryono, 2012) stated that the process of transcendental phenomenology is carried out by scientists through eidetic reduction work, which moves systematically through the stages of: phenomenological reduction, followed by the stage of intentional consciousness, and ultimately discovering transcendental meaning. The stage of phenomenological reduction is the outermost layer, which is methodologically used as the analysis for this research. (Siregar, 2005) explains the rigorous thinking process undertaken in architectural phenomenology research because it requires the researcher to think deeply, critically dissecting layer by layer of the visible phenomenon (i.e., this research) within a consciousness and experience to obtain the essence through the principles of reduction and intentionality.

(Nuryanto, 2021) explains that the transmission of local wisdom to the younger generation can be interrupted, one of the factors being the unstoppable progress of the times, causing the younger generation to start abandoning and forgetting their local wisdom. This aligns with the view of (Oliver, 2006), which explains that the conservation of buildings is most important when it originates from the community internally or according to the wishes of the local people, which continues to require considering the sustainability of social life and the community contained within it. If it merely focuses on the sustainability of the physical phenomenon, then vernacular buildings said to be conserved continuously need to be enriched and encompassed with their socio-cultural aspects.

It can be concluded that the understanding of local knowledge possessed needs to be comprehensive, not only covering the outer layer but also extending to social and cultural aspects (intangible) or the transcendental and primary layers within human activity spaces. Thus, this study serves as a starting point (since it is the outer layer) necessary for subsequent research stages that can lead to potential further studies in the form of intensional reduction or reduction of transcendental meaning as the main focus. Concentration on future development goals is not merely about preserving physical aspects but also requires consideration of social life and communities to ensure sustainability can be said to be conserved (Oliver, 2006). Furthermore, sustainable living activities are also related to ecology, namely human life that wisely manages nature and the environment for the continuation and preservation of humans and other living beings in the future (Budimansyah, 2021).

1.3 *Olebla* and its potential for the development of Papua

The concept of *'olebla'* in the settlement of Makaling, as described in this research, provides research information that encompasses the local wisdom of the southern coast of Papua, to be used for appropriate and relevant development in Papua in the future. Its coexistence between locality and external influences, without eliminating the local traditions of the community, is referred to as mutual coexistence. (Nuryanto, 2019) explains that acculturation can occur as a process of learning foreign cultural elements by local residents, where foreign elements are gradually accepted as part of the community without losing the identity of their original culture. In Makaling, *olebla*, which consists of: gardening (*poyah sasarghi*), hunting (*ohan*), fishing (*imbalak awe*), processing sago (*asob da*), processing copra (*mess sasarghi*), and trading (*oleb*), has local aspects as well as acculturation aspects from foreign cultures. Thus, through understanding the phenomenon of *olebla* in residential areas (*oleb sai*), learning for the planning and design of sustainable spaces can be obtained because it aligns with phenomena that have already occurred in the Makaling community.

A constant aspect in understanding forms in houses and settlements is related to: territorial instinct, the need for identity, and the constant need for place, while forms occur in various manifestations due to differences in regions and environments (Rapoport, 1960). (Waterson, 1990) elaborates on what can and cannot change depending on each ethnic group in Indonesia (including the Makaling Village community). According to (Rapoport, 1960), there are things that are constant and things that change in the built environment. The core and periphery theory is also present in (Rapoport, 1983), which states that in ongoing development, culture undergoes changes as a combination of old and new elements, consisting of two things: the cultural core and the second being the built environment elements associated with the core cultural elements (periphery).

This study serves as an initial effort in the development of the rural area of Okaba Merauke, which in the future could evolve into a more heterogeneous and modern settlement, similar to the urban areas of Merauke in the years to come. Therefore, in the embryonic stage of the town, starting from the village, Makaling needs to be continuously explored in terms of its cultural core and peripheral aspects for future development. As done in previous research in urban Palopo, (Marzaman et al., 2021) produced a planning concept for Palopo City that is rich in heritage, religious, and cultural values, so that it can be preserved in future urban development. Thoughts on future city development, which over time also require attention regarding waste, can even be transformed into economic value through processes adapted from the community participation program of Makassar City itself (Abdi et al., 2025). The system in the *olebla* concept also leads to the economic aspect, where the use of natural materials is efficient and generates minimal waste, but what sets it apart is that it is not merely about community participation; it also involves the customs and culture of the indigenous people, which needs to be studied further.

2. METHODS

This research uses a qualitative inductive paradigm with unstructured in-depth interview techniques applied to both individuals and groups, as well as direct field observation. Husserl's transcendental phenomenological inductive approach is used in this study at the first stage of the phenomenological eidetic reduction process. This research is part of the author's dissertation study, which undertakes three stages in full; this article focuses on the first stage, which is the phenomenological reduction stage.

2.1 Location and time

This research involved one grand tour and three mini-tours in the field in Makaling Village, Okaba District, Merauke Regency, South Papua Province, as well as one session of activities to confirm the research results conducted in Merauke and via telecommunications. The grand tour was carried out from June 3-6, 2022, mini-tours 1-3 took place from July to November 2023, and the activity to confirm the research results was conducted from May 2024 to March 2025. The analysis and article writing phase was conducted in Merauke and Yogyakarta in 2025.

2.2 Information Gathering

Informants were selected using the snowball technique, starting from the village head and customary leader, and then following the suggestions from the Makaling Village community until the data obtained reached saturation. The principle in data collection is non-interventionism, meaning the researcher does not stimulate the research subjects, does not alter conditions in the observation area, or create new provocations. The bracketing technique was applied, which involves temporarily delaying the findings, so that all data are collected during the minitour until the reduction (analysis) stage is carried out. The main criteria are following the suggestions of key informants regarding the appropriateness of informants, having knowledge of the village, and being mature / able to account for the information provided.

2.3 Research Analysis Techniques

Reduction analysis is used in processing information from field data collection through observation units and information units into research themes. This reduction is called Husserl's phenomenological eidetic reduction (1970) in (Sudaryono, 2012), which progresses sequentially from point (a) to point (c), but this study only goes through stage (a). Stage (a) is called phenomenological reduction, which involves uncovering what appears or what is experienced and presented in textual description. Stages (b) and (c), which are not carried out in this research, are the stage of intentional consciousness (uncovering structural descriptions as a basis/noema for what appears/phenomena) and the stage of transcendental meaning (the highest meaning, nature, essence, ideal, the ultimate, transcendental, or epoche of the knowledge being developed).

3. RESULT AND DISCUSSION

The theme of *olebla* (livelihoods) as one of the research findings in Makaling Village is constructed from several observation units, including: roads, *millah* (village hamlets), *makand ehon* (land boundaries), *makand* (land), *bawand* (clan), *poyah sasarghi* (gardening), *asob da* (processing sago), *mes sasarghi* (copra work), *adaka* (water), *imbalak awe* (fishing), *deg yah* (forest), *mamui* (savanna), *ohan* (hunting), *namakid* (domestic animals), *untayas* (coconut gardens), *isala* (wood installation), *ebta ka* (house roof), *yales ka* (house walls), *pu anim itawan* (arrival of newcomers), *da yah* (sago forest), *oleb sai* (marketplace), and *kimbakai* (house terrace). The observation units above undergo a phenomenological reduction process as the initial stage in the process of transcendental phenomenological reduction.

Most of the livelihoods of the people in Makaling consist of more than one source of income (*olebla*) every household. So, *olebla* activities include several types and are carried out simultaneously by men and women. Gardening and farming are called *poyah sasarghi*, and there is also sago processing called *asob da*, which serves as one of the staple foods and raw materials for traditional food known as *sagu sep*. The abundant raw materials as natural resources there include coconut trees, which produce coconut meat that is processed into copra, known as *mes sasarghi*. Fishing activities are carried out in *etob adaka* (saltwater) as well as *alalun adaka* (freshwater) in activities called *imbalak awe*. The catch is referred to as *ohan* and *poyah sasarghi*, and *imbalak awe* is used for daily food needs, dried as salted fish, or sold to increase their economic income. If sold, it becomes *oleb* merchandise, which is sold in a special location called *oleb sai*.



Figure 1. The *poyah sasarghi* activity (gardening) of the residents of Makaling Village.
Source: researcher documentation (2023)

3.1 Layout Configuration of *Olebla* by Considering External Adaptation Factors

After being able to meet daily needs through hunting, gardening, and fishing from nature (forests, ponds, the sea, and land), surplus acquisition is then sold at trading spots called *oleb sai*. *Oleb sai* consists of huts, hanging poles, or simple wooden tables located along the roads around the houses of the Makaling Village community (Figure 2). Therefore, trading activities are a secondary activity, usually carried out in the afternoon after primary activities have been fulfilled (internal consumption met) earlier in the morning and noon.

Oleb sai is located only in the new hamlet (namely *pale millah*), which aligns with its nature as a new activity brought by immigrants. The *oleb sai* huts are built at certain intervals (about 400 meters) along the road in *pale millah* (the new hamlet) within Makaling Village (Figure 2). What is seen in the picture (Figure 2) is in the old hamlet, which is located in the Duh Millah area, where there is no *oleb sai* point there. *Oleb sai* comes in forms: a. Using huts made with government assistance, b. Huts made by the community themselves, and c. Poles for hanging goods for sale. All of these *oleb sai* are located along the main road of Pale Millah, even though they are far from residents' homes; when there are buyers, the villagers run to the *oleb sai* points to serve them. Another method is that the community also stays or waits for their goods at the *oleb sai* huts.

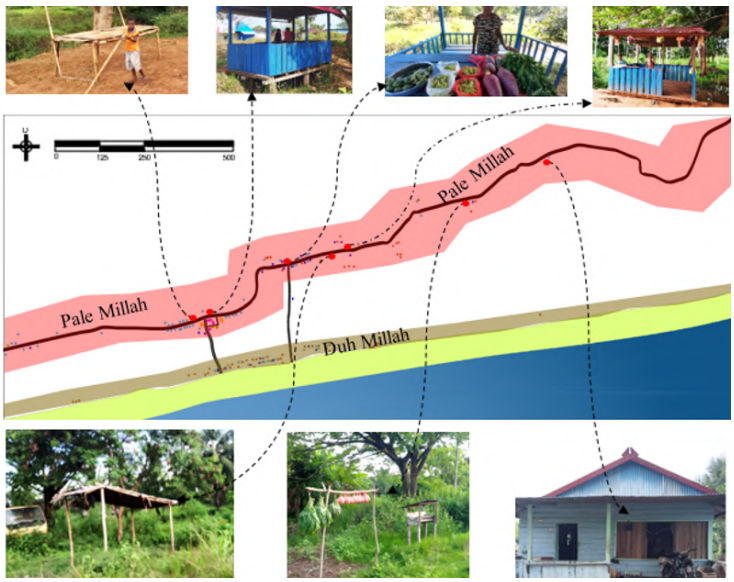


Figure 2. *Oleb sai* layout in *pale millah* hamlet in Makaling Village.
Source: analysis of minitour data (2023)

Trading activities began with the influence of *pu anim* (immigrants) who introduced economic transactions and the use of currency, as well as the need to save and invest money. Therefore, the concept of sustainable development in terms of trade, which is the economic pillar in the theory (Ghimire, 2023), reflects influences brought from outside Makaling. Nevertheless, the other dimensions, namely ecology and community social aspects, are indigenous to Makaling itself (in subsection 3.2.). This is related to Amos Rapoport's core and periphery theory (Rapoport, 1983), in which *oleb sai* (trading place) is seen as something new or undergoing change and incorporates the values of adaptation and innovation by the community in responding to novelties entering the Village. On the other hand, there is the core that is maintained by the community (3.2 subsection description).

It is known that there are external and internal factors explained in (Hematang et al., 2025a), namely that Makaling Village is composed of *ahhidih* and *mbya no idihe* elements. The *mbya no idihe* element is composed of two attributes: internal influence aspects called *seplik* and external influence aspects called *baklek*. The understanding of *oleb sai*, as something brought into the village by immigrants, positions *oleb sai* as one of the *baklek* (external influence), such as the arrival of immigrants in Makaling. *Baklek* in the theory of spatial elements of Makaling Village residential areas. Figure 3 explains the layout of the metaphysical layers of *oleb sai* whose configuration arranges three things during the process of observing its space. Something that can be observed by the eyes is called *ahhidih* but also has a metaphysical layer that is intangible within it.

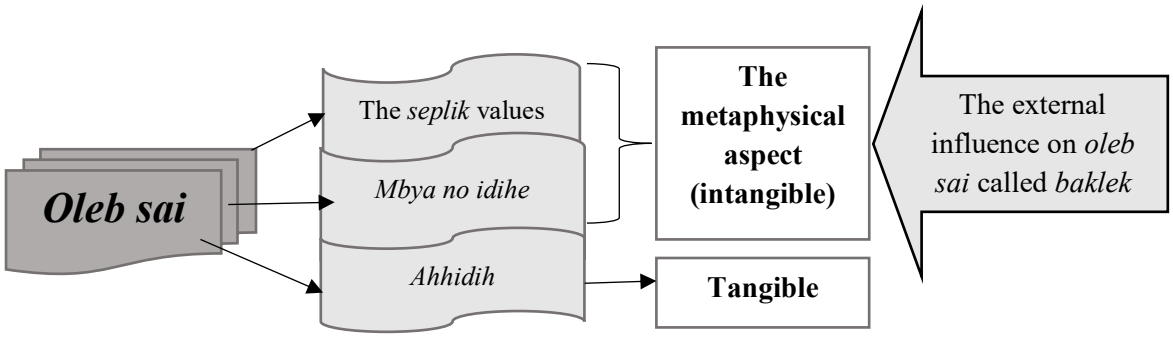


Figure 3. *Oleb sai* along with its metaphysical layers in Makaling Village.
Source: analysis of minitour data (2023)

The layout of *oleb sai* is on the outermost layer, similar to the position of Rumah Malind Aha in the (Hematang et al., 2025b) study, which is also on the outermost layer, namely as an *ahhidih* element. The activity of *oleb sai* can be observed and felt in its existence using human senses, thus it is said to be *ahhidih*. Within it, there is a part called the metaphysical aspect (the middle layer and deepest layer), which are *mbya no idihe* and *seplik* values. This metaphysical aspect layer is what makes *olebla* also contain factors to maintain locality if it continues to be preserved. The forms of metaphysical aspects, such as: the sasi system, the pamali system, and the amai-bawand system, namely *mbya no idihe*, aim to maintain locality amid the modernity changes that occur in the *ahhidih* layer of *oleb sai*. Figure 4 shows the position of *seplik* as the core guardian of the resilience of the economic spatial locality (*olebla*) in Makaling Village amid the possible presence of changes as a peripheral aspect in the olebla space.

3.2 *Olebla:* Maintaining Locality

Internal matters are referred to as *seplik* (Hematang et al., 2025a, 2025b) and they also occur in *olebla* (the livelihood system) of the people of Makaling besides *oleb sai*. *Deg yah* (forest) and *mamui* (savanna) are locations for *ohan* (group hunting) to obtain game, which is then consumed, sold, or used as piglets as pets for cultural and traditional activities, such as the *buka sasi* festival, which represents *seplik* or indigenous intelligence in the settled life of the Makaling community. Thus, these internal matters serve as the core in theory (Rapoport, 1983) and in cultural and social dimensions (Bervar, 2019; Parameswara, 2020; Soini & Dessein, 2016), which support sustainable development in Makaling.

Another form of practice that affects the community's ability to meet daily living needs is compliance with rules that are forbidden, known as *pamali* (Hematang et al., 2025b), and the system of restricting the use of natural resources called *sasi*. Coconut gardens meant to provide for *mess sasarghi* (copra work), where the coconut garden areas are traditionally prohibited for a period of *sasi* until they can be reopened for use when the *sasi* period ends. This rule impacts the maintenance of coconut garden spaces (and can also apply to other areas under *sasi*), ultimately preserving the coconut commodity itself. In addition, there is the *amai-bawand* rule (regulatory system within the clan) responsible for maintaining the continuity of coconuts, namely the Gebse clan in Makaling Village. Customary rules such as *sasi, pamali*, and *amai-bawand* have become an empirical embodiment (*mbya no idihe*) of the **core** in Amos Rapoport's theory that remains preserved (continuous aspect), which is metapisical aspect. Also the deepest, internal and transcendental, referred to by the Makaling community as *seplik*. Conversely, the **peripheral** thing, which is the layer that can change in Makaling, is influenced by external factors or called *baklek.*

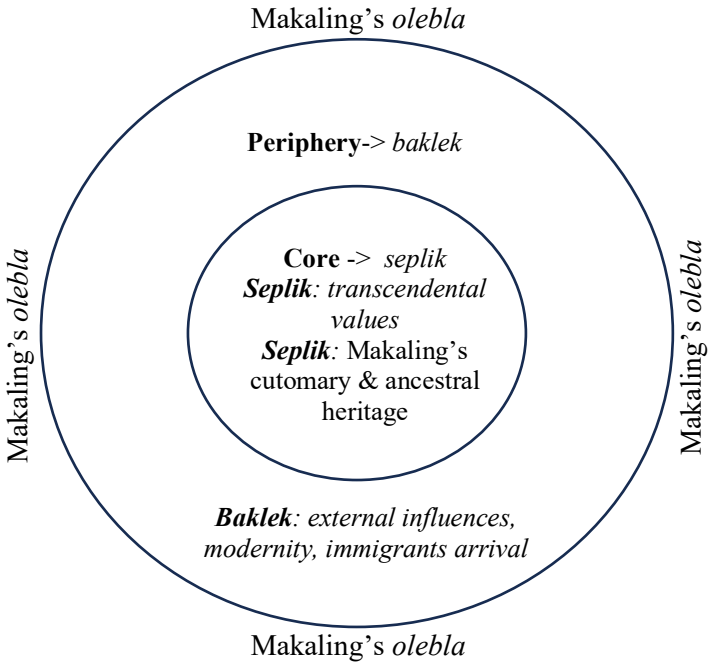


Figure 4. *Seplik* and *baklek* in Makaling's *olebla* and the position in the core and periphery of Amos Rapoport's theory
Source: Authors (2025)

The three pillars of sustainable development are popularly known as: ecological, social and economic, in which these pillars are interconnected, mutually reinforcing, and essential for achieving sustainable development (Ghimire, 2023). The interconnection between these pillars, according to the study (Purvis et al.,

2019), can be connected in three schemes, namely: a. Intersectional Circle, b. Lateral Pillars, and c. A Concentric Circles Approach. The connection of schemes (a) and (b) is that they have an equal ratio of importance for the three pillars in sustainable development, whereas scheme (c) is concentric where the economy is central, and the other parts are in the outer layers, namely society, and the largest surrounding pillar is the environment.

In Makaling Village, the three popular pillars of sustainable development, namely economy, social, and environment, are interconnected through an additional pillar that is urgent and always needed for the sustainability of Makaling Village. This pillar is the cultural pillar, called *seplik*. Relational development further progresses based on scheme number a, namely the Intersectional Circle, but in Makaling the cultural pillars are known as the fillers of that Intersectional Circle. *Seplik* maintains sustainability and development that preserves the village in Makaling. This phenomenon can be observed in Figure 5, showing that the unifier or connection of the three pillars is cultural, as a local element that sustains the space sustainably there. The phenomenon in spatial activities empirically in Makaling Village can be found in the explanation of subsection 3.3, which is described at two spatial scales, namely micro and meso.

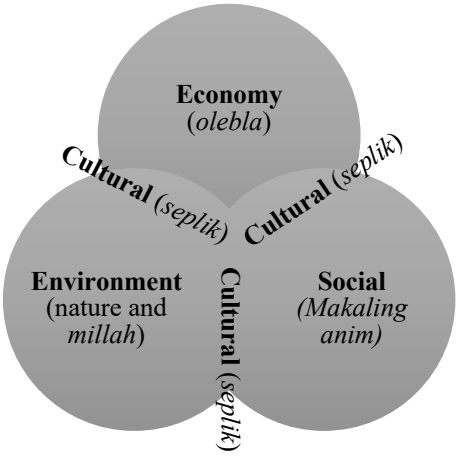


Figure 5. The scheme of cultural pillars as an interconnection of the other three pillars in Makaling Village
Source: Authors (2025)

3.3 *Olebla* in the Micro-Meso Spatial Scale

Olebla is more related to the meso-spatial scale, although minimally it is also present at the micro-spatial scale. Each sub-section is associated with the meso-spatial scale. However, specific sections such as *namakid* (keeping pets), *ohan* (hunting), and *mes sasarghi* (processing copra) use the micro-spatial scale, particularly regarding the architectural elements of the *aha* (the residential house). *Namakid* is carried out in *rorok* and *kamboti* (Figure 6) which are materials on the house walls (*yales ka*) in the form of bamboo installations for keeping chickens (Hematang et al., 2025b). Copra processing activities are also conducted on special community-made installations called *para-para isala*, as well as on mat surfaces called *omos* on the ground (Figure 7), and on the roofs of *aha* houses, which are at the micro-spatial scale. The arrangement of copra *isala* behind the residential house (*soso aha*).

The materials used to make *kamboti, rorok,* and copra *isala* (the installation for drying copra) related to the livelihoods of the people all require bamboo and coconut trees to support the realization of these installations. Therefore, sustainable bamboo forests and coconut groves (**environmental** sustainability) are interconnected with the sustainability of the **economic pillar** in Makaling. The process of making *kamboti, rorok,* and copra is carried out communally by the **society**, and realizing it requires **cultural** aspects of traditional customs that cannot be done individually but must be done socially and communally. Cultural aspects, as shown in Figure 5, act as a unifier and connection for the other three pillars, which are needed and complement the success of

sustainable development in Makaling Village. Without the cultural pillar, which is a local specialty in Makaling, the development that occurs is not yet complete.



Figure 6. *Rorok* (left) and *kamboti* (right) located on the wall of an *aha* house (traditional house of the Makaling Village community).
Source: researcher documentation (2023).

The residential area of Kampung Makaling is used to accommodate economic aspects as well as cultural functions that exist in the development of sustainable development theory with the addition of a cultural dimension. However, among several types of livelihoods, the function of fulfilling economic-related life needs did not originally serve as the primary function but rather as a new function, because the primary function of *'olebla'* was to carry out cultural practices accompanied by customs. For example, in managing garden plots, the *'makand ehon'* rules (family territory boundaries) apply both in relation to the micro scale (residential area boundaries) and the meso scale, which is the *'makand ehon'* boundaries within each hamlet. The boundaries of a *makand ehon* are not only spatial limits for gardening, but also for utilizing sago products (sago beating activities) which must be carried out within the *makand ehon* area of each clan, as regulated and known collectively by the community. The form of the boundary of each *makand ehon* can be natural objects and does not have to be physical architectural structures, for example: tree lines, rivers/streams, footpaths, plants/flowers, or empty yard spaces.



Figure 7. Activity of drying copra on mats on the ground in front of houses in Makaling Village.
Source: researcher documentation (2023).

3.4 Sustainability in settlement policies around Okaba

Thoughts on the economic aspects of the development of housing and settlement areas are urgent for the Merauke region because they also serve as a fulfillment of various government policies and regulations. Although some of these policies are still mainly covered for urban areas, while the focus of this research is in rural areas, the policies are not yet fully binding. However, these rural areas could gradually have the potential to develop into urban areas considering that several regions in Papua are beginning to continue developing into

administrative government regions that are being expanded or referred to as new autonomous regions (DOB). The regulations that address the economic aspects of development pertain to their capacity as support for the facilities of residential and housing environments, for example in the National Standardization SNI 03-1733-2004 (Tata Cara Perencanaan Lingkungan Perumahan Di Perkotaan, 2004). In the regulations of other countries, namely the Law of the Republic of Indonesia Number 1 of 2011 (Undang - Undang Republik Indonesia Nomor 1 Tahun 2011 Tentang Perumahan Dan Kawasan Permukiman, 2011), it has regulated the improvement of the integration of infrastructure, facilities, and public utilities in the implementation of rural residential environment development.

Housing and settlement planning in Papua essentially needs to apply aspects of sustainability and continuity in the future in accordance with fulfillment in various government policies. These policies are as outlined in: Law of the Republic of Indonesia Number 1 of 2011, Government Regulation of the Republic of Indonesia Number 21 of 2021 (Peraturan Pemerintah Nomor 21 Tahun 2021 Tentang Penyelenggaraan Penataan Ruang, 2021), Merauke Regional Regulation Number 10 of 2016 (Peraturan Daerah Kabupaten Merauke Nomor 10 Tahun 2016 Tentang RTRW Dan Peraturan Zonasi BWK Merauke Tahun 2017-2037, 2016), and SNI 03-1733-2004. The findings of this research, particularly on the concept of sustainability for settlements from observation units, can be used by designers to apply appropriate sustainability concepts for the Makaling community and its surroundings. That if designing in the area around Makaling, the three popular pillars are not enough to achieve the full meaning of sustainability without the cultural pillar (in Figure 5).

4. CONCLUSIONS

The study of *olebla* as a livelihood space for the people of Makaling Village produced a correlation between the types of *olebla* in Makaling and the four dimensions/pillars of sustainable development, namely: economy, social, ecology/environment, and culture. The position of *olebla* as the outermost phenomenon in the stages of the transcendental phenomenology method has the potential to be continued to uncover the layers of phenomena into metaphysical and transcendental matters. This outermost phenomenon takes the form of *olebla* research themes in Kampung Makaling, such as gardening (*poyah sasarghi*), processing sago (*asob da*), group hunting (*ohan*), fishing *(imbalak awe*), livestock farming (*namakid*), processing copra (*mes sasarghi*), and trading areas (*oleb sai*).

Among these various types of *olebla* activities, some are original, stemming from the intelligence within the local community and containing traditional and cultural values, which are called *seplik*, while others come from outside, brought by newcomers and containing *baklek* elements. *Baklek* refers mainly to trading activities, characterized by *oleb sai* points (trading areas) that are only scattered in the new hamlets within Makaling Village, as new hamlets were established driven by modernity and the construction of new roads. *Seplik* is the one who then maintains the continuity and preservation of the presence of *olebla* as new influences activities in Makaling without damaging the sustainability of the Makaling settlement.

The new position of the sustainable development pillars in Makaling Village is the addition of a necessary pillar, namely the cultural pillar, in addition to the three other pillars that have become popular (social, economic, and environmental). The relationship among the four pillars is in the scheme of an Intersectional Circle, but it is the cultural pillar that functions as the connection among the three pillars, serving as the cultural pillar that fills its interconnection.

In terms of application, the findings of this research serve as the foundation and basis for the design and planning of inland coastal villages in the southern area of Papua, based on the perspective of the local community. In addition, it supports the government and local customary leaders in further trusting the teaching and preservation of ancestral wisdom for the younger generation, as well as in selecting programs/policies from external sources that are not in line with ancestral advice in Makaling Village. For the development of further research, specifically in the field of architectural design that studies spatial planning, there is potential relevance to the fields of economy, society, culture, and politics (related to planning and development policies

and strategies) in inland and coastal village areas of Papua, and it requires additional variations of cases in different locations and characteristics of other villages in the future. Furthermore, this study of rural South Papua provides support for urban development in South Papua as a new province based on local wisdom knowledge.

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6. REFERENCES

Abdi, A. P., Rasdiana, R., Radhinal, Y., Wahyuningsih, T., & Asman, A. I. (2025). Sustainability Strategy for Makassar City Central Waste Bank. *PENA TEKNIK: Jurnal Ilmiah Ilmu-Ilmu Teknik*, *10*(01), 46–56. https://doi.org/10.51557/pt_jiit.v10i1.3156

Bervar, M. (2019). Importance of Culture for Sustainable Development. *Managing Global Transitions*, *17*(3), 195–209. https://doi.org/10.26493/1854-6935.17.195-209

Budimansyah. (2021). Galuh: Tata Ruang Ibu Kota Kerajaan Galuh, 1371-1475 M. In *Arsitektur Tradisional Indonesia: Galuh, Sunda, Rejang*. Penerbit K-Media.

Djubiantono, T., Djami, E. N. I., Yondri, L., Sihaan, R. P., Rumbewas, H. M., Aronggear, R. M., & Aro, J. (2005). *Laporan Hasil Penelitian Arkeologi : Survei Kehidupan Sosial Budaya di Wilayah Kediaman Suku Marind-Anim di Kabupaten Merauke*.

Dumatubun, A. E., I, C. P., Dikmen, S. P., Sarini, & Damimetouw, L. (2012). *Inventarisasi Warisan Budaya Takbenda (WBTB) Tifa*. Penerbit Konsultan Media.

Ghimire, B. J. (2023). Three Pillars of Sustainable Development: Challenges versus Achievements. *Journey for Sustainable Development and Peace Journal*, *1*(02), 132–146. https://doi.org/10.3126/jsdpj.v1i02.58266

Hematang, Y. I. P., Sastrosasmito, S., & Kurniawan, H. (2025a). Konsep Epe Ndaet Millah: Unsur-Unsur Ruang Permukiman Kampung Makaling, Papua Selatan. *Nature: National Academic Journal of Architecture*, *12*(1), 1–18. https://doi.org/10.24252/nature.v12i1a1

Hematang, Y. I. P., Sastrosasmito, S., & Kurniawan, H. (2025b). The Transcendental Values of Melanesian Vernacular House Elements : Case Study Rumah Malind Aha in Makaling Village , South Papua. *Journal of Sustainable Architecture and Civil Engineering*, *1*(37), 62–75. https://doi.org/10.5755/j01.sace.37.1.38492

Marzaman, L. U., Hafid, Z., Fisu, A. A., & Nurhijrah, N. (2021). Planning Concept of Lalebbata: Combining Heritage, Policy and Participation. *PENA TEKNIK: Jurnal Ilmiah Ilmu-Ilmu Teknik*, *6*(1), 39–47. https://doi.org/10.51557/pt_jiit.v6i1.646

Nugroho, A. M. (2018). *Arsitektur Tropis Nusantara: Rumah Tropis Nusantara Kontemporer*. UB Press.

Nuryanto. (2019). *Arsitektur Nusantara: Pengantar Pemahaman Arsitektur Tradisional Indonesia*. PT Remaja Rosdakarya.

Nuryanto. (2021). Sunda: Nilai-nilai Arsitektur Tradisional Sunda sebagai Perekat Arsitektur Nusantara. In *Arsitektur Tradisional Indonesia: Galuh, Sunda, Rejang*. Penerbit K-Media.

Oliver, P. (2006). Built to Meet Needs Cultural Issues in Vernacular Architecture. In *Built to Meet Needs: Cultural Issues in Vernacular Architecture*. Elsevier Ltd. https://doi.org/10.4324/9780080476308-22

Parameswara, A. (2020). Exploring the Approaches of Culture on Sustainable Development. *South East Asia Journal of Contemporary Business, Economics and Law*, *21*(5), 177–185.

Peraturan Daerah Kabupaten Merauke Nomor 10 Tahun 2016 Tentang RTRW Dan Peraturan Zonasi

BWK Merauke Tahun 2017-2037, Pub. L. No. Nomor 10 Tahun 2016 (2016).

Peraturan Pemerintah Nomor 21 Tahun 2021 Tentang Penyelenggaraan Penataan Ruang, Pub. L. No. 21 Tahun 2021, Lembaran Negara RI Tahun 2021 Nomor 31 (2021). https://www.jogloabang.com/lingkungan/pp-21-2021-penyelenggaraan-penataan-ruang

Purvis, B., Mao, Y., & Robinson, D. (2019). Three pillars of sustainability: in search of conceptual origins. *Sustainability Science*, *14*(3), 681–695. https://doi.org/10.1007/s11625-018-0627-5

Rapoport, A. (1960). House Form and Culture. In *University of Wisconsin*.

Rapoport, A. (1983). Development, Culture Change and Supportive Design. *Habitat International*, *7*(5–6), 249–268. https://doi.org/10.1016/0197-3975(83)90076-0

Siregar, L. G. (2005). *Fenomenologi dalam Konteks Arsitektur*. Penerbit Universitas Indonesia (UI Press).

Soini, K., & Dessein, J. (2016). Culture-Sustainability Relation: Towards a Conceptual Framework. *Sustainability*, *8*(2). https://doi.org/10.3390/su8020167

Sudaryono. (2012). *Fenomenologi sebagai Epistemologi Baru dalam Perencanaan Kota dan Permukiman*.

Tata Cara Perencanaan Lingkungan Perumahan Di Perkotaan, Pub. L. No. SNI 03-1733-2004 (2004).

Undang - Undang Republik Indonesia Nomor 1 Tahun 2011 Tentang Perumahan Dan Kawasan Permukiman, Pub. L. No. UU Republik Indonesia No 1 Tahun 2011 (2011).

Waterson, R. (1990). *The Living House: an Anthropology of Architecture in South-East Asia*. Oxford University Press.