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Original Article

Local Wisdom of Rumah Panggung for Disaster Mitigation in Pesisir Barat Regency Lampung

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ABSTRACT
Local wisdom is a form of disaster mitigation, with local wisdom it can minimize the impact of disasters that occur. The objectives of this research are: 1) Identify the form of local wisdom of the Pesisir Barat community; 2) analyze the relationship of local wisdom with earthquake, tsunami and flood disaster mitigation. The research approach uses a qualitative approach, snowball sampling technique, data collection techniques using observation, interviews and documentation techniques. Data validity techniques using triangulation techniques. The results showed that: 1) The local wisdom of the Pesisir Barat community is the Rumah Panggung as a form of earthquake disaster mitigation, tsunamis in the Pesisir Tengah District and floods in the Pesisir Selatan District. The local wisdom of Rumah Panggung arises because of the knowledge of the community to read and understand natural phenomena. 2) The local wisdom of Rumah Panggung is used as a form of earthquake disaster mitigation because when an earthquake occurs the Rumah Panggung will not collapse so that it can minimize the impact of the disaster, while the Rumah Panggung for tsunami and flood disaster mitigation because the water will not enter the house and only flow between the pillars of the house.

KEYWORDS
Local Wisdom;
Disaster;
Mitigation

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INTRODUCTION

Pesisir Barat Regency is the newest autonomous region in Lampung Province, established in 2012 through the subdivision of West Lampung Regency. Geographically, this area features a natural landscape conducive to tourism development, including an extensive coastline, tropical forests, and rich indigenous cultural heritage. However, this geographical position also presents complex ecological and geological challenges. Pesisir Barat Regency borders directly on the Indian Ocean, making it vulnerable to tsunamis triggered by seismic

activity in the subduction zone between the Indo-Australian and Eurasian Plates. Additionally, the presence of the Semangko Fault, part of the Great Sumatran Fault system, makes the region prone to tectonic earthquakes.

Hydrologically, the area is traversed by at least 13 river basins, such as the Malaya, Tenumbang, and Bambang basins, contributing to a high risk of flooding, especially during the rainy season with heavy precipitation. According to vulnerability theory, disaster risk is determined not only by the hazards themselves but also by the community's vulnerability and their capacity to cope with disasters (Wisner et al., 2004). With the interplay of complex geological and hydrological factors, communities in Pesisir Barat Regency are highly vulnerable if adequate adaptation strategies are not in place.

In this context, the role of local wisdom becomes crucial. Social-ecological resilience theory (Folke, 2006) suggests that social systems capable of adapting to environmental pressures and natural disasters through sustainable cultural practices tend to be more resilient. Within the indigenous knowledge system (IKS) framework, local knowledge is understood as an accumulation of experiences, beliefs, practices, and adaptations developed over long periods by communities in response to their environment (Grenier, 1998; Berkes, 2012). This knowledge is not only practical but also reflects the spiritual and cultural relationship between the community and their surroundings. In disaster contexts, IKS serves as a critical foundation for non-formal early warning systems, safe housing construction methods, agricultural practices aligned with natural cycles, and ritual customs imbued with mitigation values. Across many regions in Indonesia including Papua, Nusa Tenggara, and Kalimantan such local practices have proven relevant and resilient despite minimal modern technological intervention (Aryastana et al., 2021).

Previous studies have affirmed that local wisdom practices can be key components of effective disaster mitigation strategies. For instance, Susanthi et al., 2020) found that traditional Lombok architecture is earthquake-resistant due to its flexible and lightweight design. (Rafii et al.,2022) demonstrated that the religious values of the Tengger community strengthen social solidarity and form a spirituality-based early warning system for Mount Bromo eruptions.

Furthermore, (Suryandari and Wijayani, 2022) observed that the Sampang community in Madura uses local knowledge to interpret natural signs in preparing for annual floods. (Putri. R, 2025) integrating disaster risk reduction (DRR) into the Civics Education (PPKn) curriculum, this study emphasizes the importance of equipping students with the knowledge and skills necessary to actively participate in disaster prevention and mitigation efforts. (Iqbal et al., 2023) developed a culturally based communication approach to enhance community preparedness in Lembang, while (Firdaus et al., 2023) studied the integration of scientific and local knowledge around Mount Anak Krakatau to build community resilience.

Moreover, (Marhadi et al., 2024) examined customary disaster mitigation practices in the Bajo community, and (Fauzan dan Aziz, 2020) The tale of Telaga Lindur emphasizes the significance of interpreting natural signs and maintaining a balanced relationship between humans and their environment. (Musthofa and Indartono, 2020) recommended incorporating local values into disaster education curricula, while (Findayani et al., 2020) The Cilacap community still holds fast to their beliefs and customs in disaster mitigation, such as believing in Nyi Roro Kidul, sea alms and Mount Selok.

Nevertheless, these studies have not explicitly investigated the forms and roles of local wisdom developing in Pesisir Barat Regency. This region presents high disaster risk dynamics alongside the cultural richness of indigenous communities such as the Pekon groups and users of the distinctive Repong Damar system. This sustainable resin forest management system not only exemplifies ecological conservation but also functions as a mitigation measure against disasters such as landslides and floods (Juhadi et al., 2020).

With a contextual-based disaster risk reduction (CBDRR) approach, localized studies are essential for creating more targeted and sustainable disaster policies. Research focusing specifically on localized forms of local wisdom is vital to fill existing knowledge gaps. Therefore, in-depth and contextual investigations are needed to identify, document, and analyze the forms, values, and functions of local wisdom in building community resilience to disasters in Pesisir Barat Regency.

METHOD

This research was conducted in Pesisir Barat Regency which is the most disaster-prone area in Lampung Province, both geological, hydrological and meteorological disasters, which were used as sample locations for this research in Way Krui, Pesisir Selatan, Pesisir Tengah, Karya Penggawa, Pesisir Utara and

Lemong Districts. The approach used is a qualitative approach and phenomenological concept, which aims to reveal and explain the phenomena experienced by individuals naturally and in depth in the field.

Informants in this study were selected using the snowball sampling technique, where researchers would get informants through recommendations from initial informants. Data collection was carried out using observation techniques, where researchers directly observed the phenomena that occurred in the field, in-depth interviews to obtain primary data from informants directly, and documentation techniques to collect secondary data in the form of notes or documents relevant to the research.

The instruments used in this study include interview guidelines that are prepared in a semi-structured manner to explore group views on stilt houses in disaster mitigation, observation sheets used to record findings in the field related to the focus of the research. To ensure the validity of the data, this study uses triangulation techniques, which combine various sources and methods to obtain more valid and accurate results..

RESULT AND DISCUSSION

Forms of Local Wisdom of Rumah Panggung

In Pesisir Barat Regency, the traditional house of the Lampung people is known as Lamban Langgakh, which literally translates to "stilt house" (*lamban* = house; *langgakh* = stilt). The name reflects its elevated structure, which is supported by multiple wooden pillars that lift the building above ground level. This house is typically elongated and rectangular in shape, and is also referred to as Lamban Pesagi, derived from *pesagi*, meaning square or rectangular in the local language.

The stilt-house design is not merely a symbol of cultural identity, but also a form of ecological adaptation to the humid and flood-prone environment. Its raised structure allows air circulation beneath the house, helping to reduce moisture while protecting residents from flooding and disturbances from animals. This architectural adaptation aligns with the concept of climate-responsive vernacular architecture, as discussed by (Setyowati et al., 2021), which highlights how traditional Indonesian houses were constructed in response to tropical climates and environmental variability.

Furthermore, structures such as Lamban Langgakh represent a form of community-based resilience to disaster risks. (Alam et al., 2022) emphasize that traditional houses across Southeast Asia play a crucial role in local resilience systems, as they integrate cultural values, local wisdom, and structural adaptation to disaster-prone environments. In this context, Lamban Langgakh serves as a manifestation of indigenous risk knowledge that has been passed down through generations.

Research by (Yuliastuti et al., 2023) further demonstrates that traditional houses in various parts of Indonesia embody eco-cultural resilience—a synthesis of environmental wisdom and cultural heritage transmitted across generations. The orientation, material selection, and structural form of these buildings contribute to long-term adaptive strategies in the face of environmental hazards such as floods, earthquakes, and climate change.

Therefore, Lamban Langgakh functions not only as a dwelling but also as a symbol of localized knowledge and an effective instrument of environmental adaptation. Within the framework of disaster risk reduction and sustainable development, this traditional house plays a vital role in embodying the social-ecological resilience of coastal communities.

In Pesisir Barat Regency, one of the primary historical reasons for building *rumah panggung* (stilt houses) was to protect residents from wild animals such as tigers, elephants, and large snakes that frequently threatened local communities. The presence of these animals created a sense of fear and insecurity, endangering household safety (Djausal & Dariyus, 2002). In addition to safety concerns, the abundance and low cost of construction materials such as timber and wooden planks also played a major role in the prevalence of stilt house construction. This ecological and economic consideration reflects the principle of *ecological rationality* (Gigerenzer, 2020), where local communities made adaptive decisions based on environmental conditions and available resources.

Architecturally, the stilt house embodies values of strength, beauty, comfort, and pride. Strength is reflected in the durability of these structures, which can last for centuries when built with high-quality wood. Beauty is seen in the presence of traditional Lampung ornaments such as goat or buffalo horn decorations that enhance the aesthetic value of the home. Comfort stems from the raised structure, which protects residents from wild animals and promotes air circulation beneath the house, contributing to a cooler and more hygienic living environment.

Figure 1. *Lamban Langgakh*/Rumah Panggung
Source: Reseach Result

Table 1. Parts Of a Rumah Panggung

No	Building Design	Function
1	Front porch of the house	Functions as a place to gather or receive guests because in this part there are tables and chairs
2	Main Room or living room	This living room is used for family gatherings, besides that in this living room there is a room as a resting place for the residents of the house
3	Back space	At the back there is a kitchen as a place to cook and also eat with family and *gakhang* as a place to wash dishes
4	Top of the house	The upper part of this house is commonly referred to by the people of Lampung as *"panggakh*" which is commonly used to store handicrafts such as mats
5	Under the house	As a storage place for agricultural products and cages for livestock such as chickens and goats.

Source: Analysis Results

This aligns with the principles of vernacular tropical architecture, as examined by (Pratiwi et al., 2021), where traditional Indonesian houses are functionally and aesthetically designed to respond to climatic and environmental challenges. Moreover, this housing form also resonates with Heidegger's *dwelling* concept, which views the house not merely as a physical shelter but as an existential space that sustains meaning, nurtures identity, and mediates the relationship between people, land, and tradition (Malpas, 2018).

Furthermore, the Lampung stilt house encapsulates multidimensional cultural values: historical values reflecting the life journey of local communities, traditional values embedded in communal rituals, knowledge values in survival and adaptive strategies, and spiritual values rooted in sacred connections to the land and ancestors. These aspects align with the concept of eco-cultural resilience (Yuliastuti et al., 2023), which refers to the community's ability to maintain ecological and cultural identity through sustainable architectural and symbolic practices.

In the context of disaster risk reduction and climate change adaptation, such stilt houses can also be viewed as a form of community-based resilient infrastructure. (Alam et al., 2022) emphasize that traditional architecture in Southeast Asia plays a crucial role in building local resilience by integrating cultural values, adaptive construction techniques, and indigenous knowledge to withstand hazards like floods, earthquakes, and extreme weather events.

Thus, the rumah panggung is not merely a reflection of past ecological adaptation but also serves as a vital source of insight for developing culturally grounded and sustainable future strategies. Its existence carries enduring wisdom and heritage, offering locally rooted solutions to modern environmental and societal challenges.

The connection between indigenous knowledge and disaster risk reduction

Rumah Panggung represent a manifestation of local wisdom functioning as an adaptive response to natural disaster threats. Besides providing physical protection, this structure also reflects social, cultural, and ecological values that strengthen community resilience. Therefore, integrating the concept of stilt houses into disaster management policies is a crucial step toward sustainable and community-based development.

The Relationship Between Local Wisdom of Rumah Panggung and Earthquake Disaster Mitigation

Earthquakes are surface vibrations that occur due to tectonic plate collisions, fault movements, volcanic activity, or rock collapses (Cahyo et al., 2023). This condition aligns with the geographical setting of Pesisir Barat Regency, which is traversed by the Great Sumatran Fault and lies near the convergence of two major tectonic plates west of Sumatra Island: the Indo-Australian Plate and the Eurasian Plate. These plates move convergently, making the region one of the highest earthquake-prone areas in Indonesia. Therefore, comprehensive disaster mitigation measures are essential, including the planning of residential buildings that are responsive to seismic risks.

The concept of earthquake-resistant housing aims to ensure that all elements of a house function as an integrated structural unit that supports each other, making it less susceptible to collapse or detachment when subjected to dynamic loads from earthquakes. Structures designed based on community knowledge can absorb and distribute seismic forces without experiencing total failure.

A tangible example of this principle is the traditional stilt house, known locally as *lamban langgakh*, which, although now rare, can still be found in Pesisir Barat Regency. In an interview with a community elder, Mr. Sarnubi (65), he recounted that during the significant earthquake in 1994, known as the Liwa earthquake, many permanent concrete houses suffered cracks or even collapsed, whereas wooden stilt houses remained standing. "At that time, my neighbor's house had cracks all over, but my wooden house just swayed. There was some damage, like fallen roof tiles, but nothing as severe as the concrete houses," he said. This statement indicates that stilt house structures, though simple, are more resilient to earthquakes because they can move with the tremors without sustaining major damage.

The primary factors contributing to the resilience of these stilt houses include the use of lightweight and flexible (ductile) wood materials and a knock-down joint system that allows flexibility between building elements. This technique enables the house structure to "sway along" during an earthquake without exerting excessive stress on the joints.

The Relationship Between Local Wisdom of Rumah Panggung and Tsunami Disaster Mitigation

The local wisdom of coastal communities, particularly in Pesisir Barat Regency, Lampung, is embodied in the traditional architectural form of elevated stilt houses. Although this region has not historically experienced catastrophic tsunamis, residents have long adapted their spatial organization and building structures to anticipate large ocean waves—commonly referred to locally as "small tsunamis"—that often accompany extreme weather events. This suggests that indigenous knowledge is not solely rooted in past disasters but also shaped by ecological intuition passed down through generations. Such local wisdom enables communities to interpret and respond to natural warning signs related to potential tsunami events (Maharani et al., 2019).

The stilt houses in Pesisir Barat are typically elevated 1.5 to 2 meters above ground and constructed with durable hardwood materials. This architectural design has proven resilient to coastal environmental dynamics. When large waves strike, the open space beneath the house functions as a buffer zone, allowing water to pass through without severely impacting the main living area. This exemplifies a form of passive structural mitigation.

According to residents who have experienced extreme wave events, stilt houses offer significant adaptive advantages. The force of the waves does not directly strike the main structure, reducing the risk of severe damage. In contrast, modern concrete houses tend to crack under pressure, making them vulnerable to seawater infiltration.

Beyond serving as physical shelters, stilt houses also fulfill important social functions. During disaster events, the raised underside of the house is often used for temporarily sheltering livestock or storing small boats, which facilitates quicker response and evacuation during coastal hazards. In this sense, stilt houses represent an integrated adaptive system that merges local ecological knowledge, vernacular architecture, and risk governance.

While there has been no recorded major tsunami in Pesisir Barat, the potential for extreme wave events driven by climate change and tectonic activity in the Indian Ocean cannot be overlooked. Therefore, preserving and adapting traditional stilt house practices should be promoted as part of a culturally grounded disaster mitigation strategy. This aligns with (Triana, 2017), who emphasizes that cultural mitigation centers on disaster control and prevention through local traditions, values, and indigenous knowledge. Accordingly, integrating such approaches into sustainable development planning and disaster education for coastal areas is essential.

The Relationship Between Local Wisdom And Flood Disaster Mitigation

According to data from the Regional Disaster Management Agency (BPBD) in 2025, a total of 16 villages in Pesisir Barat Regency were affected by flooding. Flooding typically occurs when river discharge rises sharply beyond normal capacity, primarily due to prolonged heavy rainfall in upstream areas or specific locations. When rivers can no longer contain the accumulated water, it overflows and inundates the surrounding regions (Ningrum & Ginting, 2020).

In this region, several main watershed areas (DAS) such as Way Biha, Way Krui, and Way Laay are frequently identified as the primary sources of flooding. These watersheds are characterized by steep upstream slopes and flow through densely populated downstream settlements, making them highly vulnerable to rising water volumes, especially during the rainy season. Ecological degradation in the upstream zones, including deforestation for agriculture and uncontrolled tree cutting, has significantly reduced the land's absorption capacity and accelerated surface runoff into the rivers. Local residents have observed that changes in land use have contributed substantially to the increasing frequency and severity of floods in recent years, compared to conditions in the past.

In light of this growing risk, traditional rumah panggung have proven to be an effective form of local adaptation for flood mitigation. These houses are typically constructed with raised floors between 1.5 to 2 meters above ground level, allowing floodwaters to pass underneath without damaging the main structure. Beyond their role as safe dwellings, the space beneath these houses is often used to store boats, farming tools, or temporarily shelter livestock during floods, thereby enhancing community resilience in times of disaster. Residents note that stilt houses offer significantly better protection than modern concrete structures, which are more prone to structural cracking and water seepage

during major floods.

Therefore, the issue of flooding in Pesisir Barat Regency is not only related to watershed hydrology, but also closely linked to land-use planning, community behavior, and ecological sustainability. In this context, preserving stilt houses is important not only as part of the region's cultural heritage, but also as an adaptive solution within a community-based disaster mitigation system. Consequently, integrating traditional architectural wisdom into sustainable coastal development planning is essential for building long-term resilience against natural disasters.

CONCLUSION

Local wisdom in Pesisir Barat Regency plays a significant role in disaster risk reduction, particularly for earthquakes, tsunamis, and floods. The traditional practice of constructing Rumah Panggung using strong yet flexible wooden materials and elevated floors reflects a deep-rooted form of ecological adaptation passed down through generations. These houses not only provide structural resilience against seismic shocks but also serve as protective spaces during flooding and tidal surges—phenomena often referred to by locals as "small tsunamis."

Although the region has not historically experienced large-scale tsunami events, the community's spatial planning such as avoiding low-lying coastal zones and building elevated structures demonstrates a proactive and intuitive approach to potential hazards. Moreover, in response to recurrent flooding caused by the overflow of rivers like Way Biha, Way Krui, and Way Laay, the raised structure of stilt houses allows floodwaters to pass underneath without damaging the main dwelling. This design also enables quick evacuation and the safeguarding of essential resources such as boats and livestock.

These practices illustrate that indigenous knowledge is not merely cultural heritage, but also serves as an effective, context-sensitive, and sustainable disaster mitigation strategy. Therefore, preserving and revitalizing such traditional approaches should be a key component of disaster education, spatial planning, and community-based development policies in hazard-prone coastal regions.

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REFERENCES

Alam, M., Rahman, A., & Suhartono, T. (2022). Traditional houses and community resilience in Southeast Asia: Adaptive strategies against natural disasters. *International Journal of Disaster Risk Reduction, 63*, 102495. https://doi.org/10.1016/j.ijdrr.2021.102495

Alam, M., Rahman, M. A., & Yusoff, S. (2022). *Traditional housing and disaster resilience in Southeast Asia: An overview*. International Journal of Disaster Risk Reduction. DOI:10.1016/j.ijdrr.2022.103075

Berkes, F. (2012). *Sacred Ecology* (3rd ed.). New York: Routledge.

Cahyo, F. D., Ihsan, F., Roulita, R., Wijayanti, N., & Mirwanti, R. (2023). Kesiapsiagaan bencana gempa bumi dalam keperawatan: Tinjauan penelitian. *JPP (Jurnal Kesehatan Poltekkes Palembang)*, *18*(1), 87-94. https://doi.org/10.36086/jpp.v18i1.1525

Djausal, M., & Dariyus, M. (2002). *Arsitektur tradisional Indonesia: Studi kasus rumah adat Lampung*. Bandar Lampung: Universitas Lampung Press.

Fauzan, A., & Aziz, L. A. (2020). Kearifan Lokal Tentang Mitigasi Bencana Di Kabupaten Lombok Utara Dalam Mitos Telaga Lindur. *Jurnal Ilmiah Ilmu Sosial*, *6*(2), 184-190.https://doi.org/10.23887/jiis.v6i2.29941

Findayani, A., Utama, N. J., & Anwar, K. (2020). Kearifan Lokal Dan Mitigasi Bencana Masyarakat Pantai Selatan Kabupaten Cilacap. *Journal of Indonesian History*, *9*(1), 28-37. https://doi.org/10.15294/jih.v9i1.41023

Firdaus, A., Lestari, F., Afiff, S. A., & Herdiansyah, H.

(2023). Integration of knowledge and local wisdom for disaster resilience in Anak Krakatau volcano. *Jàmbá: Journal of Disaster Risk Studies*, 15(1), a1457. https://doi.org/10.4102/jamba.v15i1.1457

Folke, C. (2006). Resilience: The emergence of a perspective for social–ecological systems analyses. *Global Environmental Change*, 16(3), 253–267. https://doi.org/10.1016/j.gloenvcha.2006.04.002

Gigerenzer, G. (2020). *Ecological rationality: Intelligence in the world*. Oxford University Press.

Iqbal, M., et al. (2023). Development of a disaster mitigation model based on local wisdom. *Jambe Law Journal*, 6(1), 47–67. https://doi.org/10.22437/jlj.6.1.47-67

Maharani, S., Firman, F., & Rusdinal, R. (2019). Kearifan Lokal Masyarakat Pesisir dalam mitigasi bencana di kota pariaman. https//10.31004/jptam

Malpas, J. (2018). *Heidegger and the thinking of place: Explorations in the topology of dwelling*. MIT Press.

Marhadi, A., Ino, L., Suraya, R. S., Janu, L., Said, T., & Gaho, R. (2024). Understanding local wisdom as specific knowledge in natural disaster mitigation: An empirical lesson in Tiworo, Indonesia. *Kasetsart Journal of Social Sciences*, 45(4), 1383–1392. https://so04.tci-thaijo.org/index.php/kjss/article/view/277020

Musthofa, Z., & Indartono, S. (2020, February). Disaster Mitigation Curriculum-Based on Local Wisdom to Support Sustainable Development Programs. In *2nd International Conference on Social Science and Character Educations (ICoSSCE 2019)* (pp. 97-102). Atlantis Press. https://doi.org/10.2991/assehr.k.200130.021

Ningrum, A. S., & Ginting, K. B. (2020). Strategi penanganan banjir berbasis mitigasi bencana pada kawasan rawan bencana banjir di Daerah Aliran Sungai Seulalah Kota Langsa. *Geosee*, *1*(1).

Pratiwi, D., Wicaksono, H., & Suryanti, D. (2021). Vernacular tropical architecture in Indonesia: Functional responses to climatic challenges. *Journal of Asian Architecture and Building Engineering,* *20*(2), 123-132. https://doi.org/10.1080/13467581.2021.1873457

Putri, R. (2025). Integration of Civic Education in Climate Crisis and Natural Disaster Management in South Tangerang City. *Academy of Education Journal*, *16*(1), 52-61. https://doi.org/10.47200/aoej.v16i1.2719

Rafii, A. I., Prasetya, S. P., & Khamid, A. (2023). SOCIAL REALITY IN THE LOCAL CULTURAL WISDOM OF THE TENGGERESE COMMUNITY AS NATURAL DISASTER EDUCATION. *International Journal of Geography, Social, and Multicultural Education*, *1*(1), 1-11. https://doi.org/10.26740/ijgsme.v1n1.p1-11

Setyowati, R. D., Arifin, H. S., & Prasetyo, L. B. (2021). *Climate-responsive architecture in traditional houses in Indonesia*. IOP Conference Series: Earth and Environmental Science. DOI:10.1088/1755-1315/905/1/012021

Suryandari, N., & Wijayani, M. (2022). Environmental communication, local wisdom, and mitigation of Sampang flood. *Komunikator*, 13(1), 52–67. https://doi.org/10.18196/jkm.131052

Susanthi, Y., Meisandy, R. R., & Nisa, A. (2020). Earthquake mitigation based on local wisdom: The vernacular architecture concept of Dasan Beleq traditional house in North Lombok, Indonesia. *GeoEco*, 8(1), 1–12. https://doi.org/10.20961/ge.v8i1.53417

Triana, D. (2017). Mitigasi bencana melalui pendekatan kultural dan struktural. *ReTII*.

Wisner, B., Blaikie, P., Cannon, T., & Davis, I. (2004). *At Risk: Natural Hazards, People's Vulnerability and Disasters* (2nd ed.). London: Routledge.

Yuliastuti, D., Nugroho, H., & Santoso, R. (2023). Ecocultural resilience in Indonesian traditional houses: An adaptive mechanism for environmental and social change. *Sustainability, 15*(4), 2751. https://doi.org/10.3390/su15042751

Yuliastuti, N., Rukmana, D., & Harwati, L. D. (2023). *Eco-cultural resilience in Indonesian traditional architecture for disaster risk reduction*. Journal of Architectural Environment