

1 Understanding Local Wisdom as Basic Knowledge in Natural Disaster Mitigation: An 2 Empirical Lessons in Tiworo, Indonesia

3

4 Abstract

5

6 Disaster mitigation is a crucial action considering the many natural disaster incidents
7 affecting the lives of local communities. This research examines the Bajo community's local
8 wisdom in their efforts toward natural disaster mitigation in West Muna Regency. This study
9 employs a qualitative research method. The research findings indicate that the local wisdom
10 employed by the Bajo community for natural disaster mitigation reflects the relationship
11 between the Bajo Tiworo people and the marine environment. The Bajo community interacts
12 with the marine environment through actions and a consciousness of environmental
13 conservation. Local wisdom-based disaster mitigation has existed since ancient times and is
14 a guiding principle for the Bajo community's interaction with the marine environment. The
15 Bajo people's ideas and behaviors adapted to the marine environment are reflected in taboos,
16 rituals, myths, and oral traditions passed down from generation to generation. However,
17 there is currently a shift in local wisdom related to natural disaster mitigation influenced by
18 various factors, including the influence of Islamic religious beliefs, social actor and agent
19 structures, discrimination against non-Bajo (*orang Bagai*) individuals, and government
20 policies. Through this research, one form of disaster risk management can be achieved by
21 empowering local knowledge.

22

23 *Keywords:* Disaster mitigation, disaster resilience rituals, local wisdom, *pamali*, Bajo
24 community

25

26 Introduction

27

28 Disaster is a natural phenomenon that occurs beyond human control (Ardalan &
29 Affun-Adegbulu, 2024). Although experts can predict it using detection tools, natural
30 disasters can happen anywhere and anytime (Bündnis Entwicklung Hilft, 2022). Therefore,
31 we must be prepared, even when no disasters occur (Pearce et al., 2020). Natural disasters
32 are not only threats that harm the economy, education, and the environment but also larger
33 losses such as death and damage to all aspects of human life (see Canlas, 2023; Fakhriati et

1 al., 2023; Hemingway & Gunawan, 2018; Kamata et al., 2022; Marzuki & Gayo, 2022;
2 Syamsidik et al., 2021).

3 Related to disasters, several countries around the world have experienced them, such
4 as Japan (see Cartwright & Nakamura, 2008; Rubin et al., 2017; Yadav et al., 2013), Hawaii
5 (see Lynham et al., 2017), Thailand (see Prendergast et al., 2012), Turkey (see Jiang et al.,
6 2023; Ni et al., 2023; Qu et al., 2023; Xu et al., 2023), and even some categorized as
7 disaster-prone countries like the Philippines, India, Colombia, and (not exempted) Indonesia
8 (see Bündnis Entwicklung Hilft, 2022; The World Bank, 2019).

9 Indonesia is one of the disaster-prone countries in the world (The World Bank, 2019:
10 4). According to the WorldRiskIndex 2020, Indonesia ranks third as a country with high
11 potential disaster risk with an exposure of 41.46 (Bündnis Entwicklung Hilft, 2022). It is
12 also supported by data released by the National Agency for Disaster Countermeasures of
13 Indonesia, which reported that throughout the year 2022, 3.544 disasters occurred. The
14 dominant types of disasters were floods (1.531), extreme weather (1.068), and landslides
15 (634) (BNPB Indonesia, 2022).

16 This data urges Indonesian society to understand disaster management and reduction
17 early. In this regard, the movement of *lebih baik mencegah daripada mengobati* [prevention
18 is better than cure] should be further emphasized to achieve a better environmental situation
19 (see Poratelli et al., 2020). Additionally, disaster research and education also need to be
20 enhanced (see Williams, 2024). If necessary, specialized disaster handling technologies can
21 be maximally utilized (see Zuccaro et al., 2020; Conant & Brewer, 2022; Pearce et al.,
22 2020). All of these efforts aim to reduce environmental risks and ensure human life's
23 sustainability.

24 One of the solutions for dealing with natural disasters that people can adopt
25 worldwide is empowering local wisdom (Suarmika et al., 2022). Local wisdom can be
26 defined as specific knowledge that is spatial or culturally context-specific, collective,
27 holistic, and adaptive (Mistry, 2009; Mondal et al., 2022; Topkok et al., 2023). In this sense,
28 local communities are more familiar with their environment and even contribute to
29 biodiversity conservation (Sahoo et al., 2022; Imoro et al., 2022). Indigenous communities
30 have proven to have a strong and intergenerational bond with their land. Thus, they can
31 naturally identify natural disasters and develop various disaster management strategies (see
32 Mistry et al., 2020; Jain, 2014; Altieri, 2001; Flores et al., 2015; Mondal et al., 2022). In
33 conclusion, disaster risk management based on local wisdom is the main foundation (see
34 Russell et al., 2023).

1 In this research, a local community has proven to utilize local wisdom as a form of
2 natural disaster mitigation. They are the Bajo Tiworo community in Santiri Village, North
3 Tiworo Subdistrict, Southeast Sulawesi, who inhabit coastal areas and small islands (Central
4 Statistics Agency Muna, 2021).



5
6 **Figure 1.** Map of North Tiworo Subdistrict

7

8 The location of this community, situated along the coastal areas (see Fig. 1), often
9 faces natural disaster phenomena such as strong winds and large waves that threaten their
10 lives. To address these issues, they employ various forms of locally-based natural disaster
11 mitigation strategies. The Bajo Tiworo community utilizes self-adjustment strategies to
12 respond to changes in the environment, social factors, and weather conditions (Marfai, 2012:
13 53). This adaptability signifies a mutually dependent relationship. In this case, the local
14 wisdom of the Bajo Tiworo community plays a vital role in natural disaster mitigation
15 efforts. They possess myths, *pamali* (prohibited actions), and rituals closely related to the
16 natural environment (Subyantoro, 2010).

17 Furthermore, the Bajo Tiworo indigenous community also implements a cultural
18 ecological approach. The intended principle of this cultural, ecological approach is
19 understanding the environment along with all its consequences and adapting to it.

20 Consequently, they can establish disaster resilience. Secondly, they prioritize the
21 adaptation process to identify the emergence of disaster signs and culturally-based
22 maintenance (Kaplan & Manners, 2002: 102). In this context, the Bajo Tiworo indigenous

1 community studies the interconnectedness between organisms and the environment,
2 including the physical environment and other organisms (see Poerwanto, 2000: 67).

3 The Bajo Tiworo community, as a rural community, is certain to be more familiar
4 with their environment. Therefore, they develop local-based disaster prevention education
5 for generations. This aligns with Howard (2023), who states that local people know about
6 interacting and building a balance with nature. Local people have beliefs and cultures about
7 the environment (see Suarmika & Utama, 2017). In this case, the Bajo Tiworo people have
8 rules or norms regarding prohibited things, especially related to the environment; for
9 example, they may not mention *Mbo* (supernatural creatures that guard the sea). The Bajo
10 people realize that there is a role for magical and sacred values in their environment (see
11 Ardalan & Affun-Adegbulu, 2024; Osawa, 2022; Suarmika et al., 2022; Williams, 2024).
12 Thus, natural disaster mitigation based on local wisdom is very important.

13 Based on the above explanation, this present research aims to analyze the form of
14 local wisdom of the Bajo people in natural disaster mitigation and what factors cause a shift
15 in the local wisdom of the Bajo people in efforts to mitigate natural disasters in Santiri
16 Village, North Tiworo Subdistrict, West Muna Regency.

17

18 **Methodology**

19

20 This study employs a qualitative research approach, which is used to generate
21 descriptive data in the form of written or spoken words from individuals and observed
22 behaviors. This research aims to explore phenomena experienced by research subjects, such
23 as behaviors, perceptions, motivations, actions, and life perspectives, in a holistic manner
24 (Babbie, 2016; Creswell & Creswell, 2018). Data collection is conducted through
25 observation and interviews.

26 Data sources regarding disaster mitigation based on local wisdom are obtained from
27 the Bajo community located in Santiri Village, North Tiworo Subdistrict, West Muna
28 Regency, Southeast Sulawesi, Indonesia. The Bajo Tiworo community consists of fishermen
29 who utilize coastal marine resources. In this study, the focal aspect of research is the socio-
30 cultural aspect, particularly related to the relationship between the Bajo community's efforts
31 in disaster mitigation and examining the factors causing the shift in local wisdom among the
32 Bajo community in disaster mitigation efforts in Santiri Village, North Tiworo Subdistrict,
33 West Muna Regency.

34

1 **Results and Discussion**

2

3 *Local Wisdom of the Bajo Community in Natural Disaster Mitigation in Santiri* 4 *Village, North Tiworo District, West Muna Regency*

5 Local wisdom-based natural disaster mitigation focuses on long-term actions to
6 reduce the risk of natural disasters (see Asmal et al., 2023; Damayani et al., 2022). In this
7 case, the local wisdom developed within the Bajo Tiworo community in Santiri Village is a
8 result of extracting experiences from the past that the Bajo ancestors have passed down
9 through generations. As a traditional community, their belief system and forms of adaptation
10 to nature and their environment manifest in their beliefs about the existence of nature and
11 humans, the existence of spirits and supernatural powers, the existence of souls, and the
12 supernatural powers of flora, fauna, sites, and heirlooms (Endraswara, 2016: 27).
13 Furthermore, the local wisdom of the Bajo community in natural disaster mitigation in
14 Santiri Village, North Tiworo District, West Muna Regency, is explained as follows.

15

16 *Pamali* (Prohibition)

17 *Pamali* is something that the community must not violate. *Pamali* is the belief of the
18 Bajo Tiworo community about something that should not be violated. They strongly believe
19 that the marine environment is not only inhabited by various forms of life but also by
20 supernatural beings that guard the seas, known as “mbo.” *Mbo* is a supernatural creature
21 resembling a feared marine animal (cf. Andayani & Jupriono, 2019). If the Bajo community
22 uses harsh language, behaves arrogantly, or engages in inappropriate actions in the marine
23 environment, it will trigger the anger of *mbo*, the guardian of the seas. As a result, *mbo* can
24 bring natural disasters upon the Bajo community, such as strong winds, large waves,
25 diseases, and even harm to the Bajo people while they are engaged in activities at sea.
26 Therefore, *pamali* (prohibited actions) represents the local wisdom of the Bajo community
27 in enhancing resilience and avoiding disasters (see Asmal et al., 2023; Damayani et al.,
28 2022).

29 *Pamali*, as local wisdom, serves as a means of adaptation between the Bajo
30 community and the natural environment. In other words, *pamali* is a part of the norms that
31 regulate the behavior of the Bajo community. Essentially, *pamali* as local knowledge
32 embodies ethical, aesthetic, moral, and ethical values that are highly effective for instilling
33 values and sustaining the ecological function of the sea (Taufiq, 2019: 52). The Bajo
34 community perceives themselves as “sea gypsies” and conducts all their activities within the

1 marine environment, including building homes, playing, learning, and earning a livelihood.
2 Hence, they have traditional ways of interacting with the marine ecosystem. *Pamali* is
3 applied through attitudes and actions that preserve the marine environment. When utilizing
4 the sea, the Bajo community always strives to maintain the environmental balance and
5 cultural values.

6 The Bajo Tiworo community believes that the sea is everything. They also believe in
7 the existence of a sea deity, a cultural hero known as the culture hero (see Orme, 2013).
8 Essentially, the sea deity is benevolent and serves as a helper to humans, but can become
9 angry due to the actions of people who pollute the sea. Therefore, the safety of humans
10 depends on the attitudes and words displayed while engaging in activities at sea. Thus, the
11 sea deity remains friendly and not angered by them. In this context, the Bajo community
12 firmly upholds the values of local wisdom, particularly *pamali*, when engaging in activities
13 at sea. Failure to do so might anger the sea guardian (mbo) and jeopardize their survival at
14 sea (Basri, 2018: 142-143). The mentioned *pamali* refers to maintaining a positive attitude
15 and using kind words in the marine environment to avoid disaster. Thus, *pamali* becomes a
16 form of social control in how they behave and treat the marine environment. This practice is
17 necessary to prevent the wrath of the unseen inhabitants of the sea. The Bajo community
18 believes that the anger of these supernatural beings can lead to natural disasters in their
19 settlements.

20 From an ecological perspective, *pamali* serves as local wisdom for sustainable
21 environmental conservation (see Forester, 2019; Kongprasertamon, 2007). The Bajo Tiworo
22 community regards the sea as an educational environment and a source of livelihood (their
23 world). As a result, they take responsibility for caring for the sea, keeping the marine
24 environment clean, and avoiding harming it (Basri, 2018: 136). Hence, *pamali* becomes a
25 conduit for interacting with the Bajo community and the marine environment. It represents
26 the local wisdom of the Bajo people, possessing anticipatory value and function in the face
27 of natural disasters. These anticipatory approaches are rooted in the ideas and actions of the
28 Bajo Tiworo community, passed down through generations and integrated with the
29 environment (Sibarani, 2012: 265). In other words, *pamali* as local wisdom enables
30 understanding the natural environment's dynamics and guides the adaptation process,
31 allowing the Bajo community to live in harmony and achieve prosperity. The empirical
32 knowledge gained from their surroundings is then passed down to future generations to
33 sustain their way of life.

1 *Maduai Ada* (Ritual)

2 *Maduai ada* is one of the forms of local wisdom in the form of a ritual for disaster
3 mitigation. Etymologically, “*maduai ada*” originates from the local language, where
4 “*maduai*” means ‘to descend’ and “*ada*” means ‘custom.’ In simple terms, “*maduai ada*” can
5 be interpreted as the ritual of descending customs into the sea to ensure the safety of the
6 village and the Bajo community, particularly protecting them from natural disasters. This
7 ritual is a ceremony, magic, or religious procedure with specific (mysterious) words (Al
8 Barry, 2001: 284). The strong belief of the local community in supernatural powers is one of
9 the factors that has sustained the existence of these religious rituals to the present day (cf.
10 Ogilvie et al., 2018; Xygalatas et al., 2022). Therefore, the ritual is a manifestation of the
11 local community holding steadfast to their traditions from the past.

12 As a rural community living in the coastal area, the Bajo community can be
13 categorized as a society that believes in animism. In this case, the Bajo Tiworo people
14 believe in spirits in the universe and spirits that inhabit every place, such as seas, rivers,
15 mountains, rocks, and trees. The existence of these spirits must be respected and must not be
16 disturbed by humans. With this, the Bajo people believe in the unseen world and
17 supernatural powers such as *mbo* (Ocean guardians) and other supernatural creatures living
18 in certain places that are considered sacred. The Bajo community considers supernatural
19 beings to have powers that can bring disaster and goodness because some of these spirits are
20 incarnations of their ancestors. Therefore, the Bajo community always maintains good
21 relations with supernatural beings through offerings and prohibits people from defecating
22 under trees so that the spirits have a good relationship with them (Bahtiar, 2011: 159-160).

23 The *maduai ada* ritual is a media or bridge between the High World (God) and the
24 Underworld (humans). Through this ritual, the Bajo Tiworo people can ask for protection
25 and safety from humans. In this context, *the maduai ada* ritual is performed to ask for
26 forgiveness for mistakes made by the Bajo people. The Bajo people believe that sea guards
27 (*mbo*) will bring natural disasters such as bad weather, which hampers activities, reduces
28 catches at sea, and constantly causes strong winds and heavy waves to hit settlements. In
29 other words, the life of the Bajo people will be threatened. Therefore, to ward off the anger
30 of the sea guard (*mbo*), the *maduai ada* ritual is performed. It is proved by the appearance of
31 natural signs in their settlements, which signal a warning to the Bajo people. Belief in the
32 form of a hunch or natural signs is a belief that contains natural cues for humans about the
33 existence of something that needs to be known or watched out for (Sukatman, 2009: 53).

1 This is an effort to overcome natural disasters based on cultural beliefs that have been
2 existed for a long time.

3 The *maduai ada* ritual is a manifestation of the culture of the Bajo people, which was
4 born from their life experiences on an ongoing basis (see Poespowardojo, 1993: 110). It
5 means that the *maduai ada* ritual is one of the local wisdom-based natural disaster
6 mitigations through a cultural approach. The Bajo people still adhere to their noble cultural
7 values and consider the *madua ada* ritual a disaster resilience system. In this case, local
8 wisdom as a result of interaction between society and the environment shows a complex
9 collaboration due to various events experienced by humans in their environment, both
10 individually and experienced by society as a whole (see Zulkarnain & Febriamansyah,
11 2008).

12

13 *Pakayuang Bangkau Karama* (Sanctity)

14 *Pakayuang bangkau karama* is a sacred mangrove forest area revered by the Bajo
15 Tiworo community in Santiri Village. This mangrove forest serves as one of the sources of
16 livelihood for the Bajo community, particularly for constructing houses,
17 bridges, *bagang* (fish traps), and meeting household needs such as firewood and so on.
18 When the Bajo community intends to take mangrove wood, they first seek permission from
19 the inhabitants of the mangrove forest. It is done to prevent the anger of the mangrove
20 forest's inhabitants. The Bajo community believes that a fierce creature, a giant snake,
21 inhabits the mangrove forest in Santiri Village. They hold this belief due to the sightings of
22 the snake's tracks around the Bajo Tiworo community settlement.

23 The belief in the myth of the giant snake guarding the mangrove forest serves as a
24 local knowledge system to preserve the mangrove forest. The revered mangrove forest
25 controls the attitudes and speech of the Bajo community when engaged in activities. It
26 manifests human knowledge as social beings in understanding and interpreting the natural
27 environment (Sudikan, 2016: 167). In this context, human knowledge of the environment
28 follows their cultural ways. These cultural ways contain philosophical perspectives of belief
29 values and firmly held norms for the community's interests, which are applied in the
30 sustainable management of natural resources and ecological conservation purposes.

31 The belief in the giant snake is one form of disaster mitigation based on local wisdom.
32 It is evident from the actions of the Bajo community, who do not indiscriminately cut down
33 mangrove trees. They only take mangrove trees as needed. Based on the Bajo community's
34 belief principle, they avoid greedily harvesting mangrove trees because it could anger the

1 fierce creature, the guardian of the mangrove forest. Therefore, the Bajo community must
2 maintain the balance of the ecosystem. Geertz (1997: 8) stated that the existence of mystical
3 beliefs, as seen here in the Bajo community's belief in the guardian of the mangrove forest,
4 provides empirical evidence closely linked to the process of sustainable environmental
5 conservation.

6 The Bajo community believes that supernatural beings inhabit specific spaces in the
7 universe, such as within the mangrove forest. This belief regulates the actions of the Bajo
8 community, particularly in utilizing the resources of the mangrove forest to prevent
9 excessive exploitation. It is intended to maintain the balance of the ecosystem in the marine
10 environment. Based on this perception, often unnoticed by the Bajo community, they
11 maintain their behavior when engaging in activities in the sacred mangrove forest. It
12 represents local wisdom aimed at conserving the mangrove forest. Local wisdom must be
13 viewed as a strategy that requires management and direction, a design for living within the
14 physical environment while managing production systems and utilizing technology.

15 The preservation of the mangrove forest will positively impact the Bajo community,
16 acting as a protector against natural disaster threats, thus creating ecosystem balance. The
17 mangrove trees growing along the coast or near their homes serve as a shield against strong
18 winds and powerful waves. Mangrove trees are not only a natural resource utilized by the
19 Bajo community but are also treated with care. This phenomenon aligns with the traditional
20 ecological perspective, intended as part of sustainable conservation to address various
21 environmental issues, such as the natural challenges faced by local communities. For the
22 Bajo community, besides serving their daily needs, mangrove trees also protect their
23 settlements against natural disaster threats like erosion and the impact of strong ocean waves
24 during adverse weather conditions.

25

26 *Factors Causing a Shift in Local Wisdom of the Bajo Community in Natural Disaster* 27 *Mitigation*

28 Every society will experience changes in its social and cultural life. These changes
29 can be caused by various factors such as the economy, education, external cultural
30 influences, technology, and the perspectives of the community. The dynamics of these
31 changes lead to shifts in the values and norms within the local wisdom system that have
32 been passed down from the past. Society has become open to new experiences and has
33 altered behavior patterns. This condition also occurs in the local wisdom system of the Bajo
34 community. Essentially, the Bajo community is a maritime society that engages with the

1 world of the sea. This is their identity for treating the marine environment well and
2 sustainably.

3 The changes occurring in the Bajo community are influencing their way of life.
4 Advances in knowledge and technology also impact the attitudes of the Bajo community.
5 The acceptance of new technology and knowledge also displaces local wisdom, causing the
6 Bajo community to no longer believe in superstition. According to Sanderson (2000: 77),
7 there are three components in cultural change: infrastructure, structure, and superstructure.
8 Infrastructure is the determining principle of all materialist evolutionary strategies. Suppose
9 the infrastructure changes, such as technology, economy, ecology, and demography. In that
10 case, structural components like social stratification, ethnicity, politics, division of labor,
11 family and kinship, and education also experience changes. Similarly, superstructure
12 components like general ideology, religion, science, arts, and literature will change. The
13 following are some factors influencing the shift in *pamali* knowledge among the Bajo
14 community in marine ecology.

15

16 *The Influence of Islamic Beliefs*

17

18 The phenomenon of society's way of life, seen from the perspective of religion and
19 culture, is interconnected. Islam, a substantial religion, provides many norms and rules about
20 life. The significant traditions of Islam have become original doctrines deeply ingrained in
21 its followers. In the context of global life, Islamic teachings have a fundamental role in faith
22 ideology and Sharia, as well as Islamic laws that serve as guidance for the actions and
23 activities of the Islamic community.

24 The acceptance of Islamic beliefs results in a change in the mindset of the society and
25 displaces local community beliefs. It leads to the perception that local traditions differ from
26 Islamic views and traditions. This phenomenon also occurs in the life of the Bajo
27 community, causing local wisdom to contradict Islamic teachings. Beliefs in myths, rituals,
28 and superstitions become essential issues from the perspective of Islamic teachings. When
29 the Bajo community has performed Hajj and Umrah and with the influence of various
30 Islamic sects that label local beliefs as shirk (associating partners with God), significant
31 changes occur in local wisdom. According to Geertz (1992; 107), religion as a cultural
32 system doesn't play an integrative role and doesn't create social harmony in society but
33 rather contributes to division. These differing views become one of the factors causing

1 tensions within the local community. The current emergence of shirk-related stigmas among
2 certain groups is tangible evidence of the marginalization of local wisdom.

3 The influence of Islamic ideological beliefs has caused the local wisdom system of
4 the Bajo community, such as *pamali* practices, rituals, and myths, to begin losing their roles
5 in the interaction process between the Bajo society and marine ecology. The impact of this
6 phenomenon will potentially divide the Bajo community, which has diverse belief
7 backgrounds. Beliefs in sea deities or guardians of the sea as traditional Bajo beliefs have
8 faded away because they do not align with the teachings of Islam.

9

10 *The Influence of Social Structure, Actors, and Agents*

11

12 The advancement of technology and the increasingly modern world have led the Bajo
13 community to undergo changes in knowledge regarding the use of modern technological
14 tools. In this context, the Bajo community experiences shifts in knowledge when managing
15 marine resources. The local community has started adopting modern technology to enhance
16 their economy by producing marine products. The creation of modern technology for
17 managing marine resources is motivated by specific actors, particularly those with capital
18 ownership. These actors provide facilities in modern fishing equipment to fishermen,
19 allowing them to increase their income. This structure establishes a collaborative pattern
20 between capital owners and fishermen (agents) by providing facilities for creating and using
21 modern technology in producing marine resources. Within this framework, there is a
22 noticeable shift in the community's character, especially with the weakening of traditional
23 bonds. Simultaneously, individuals have greater autonomy. In such a world, individual
24 interests are gaining a broader space for expression and decision-making processes. Capital
25 owners (actors) play a highly significant role in organizing individuals (agents) within a
26 system.

27 The roles of capital owners (actors) and fishermen (agents) in managing marine
28 resources are integral parts of the social structure within the Bajo community. This event is a
29 component of the social structure within the Bajo community environment. Giddens (1976:
30 161) explains that the formation of social structure isn't solely understood as a constraint
31 and regulator for actors but also serves as a medium for actors to interact. Social structure is
32 built through actors' actions, while simultaneously, actions are realized within the structure.
33 Additionally, structure should not be equated with constraint and enablement. The structure
34 serves as a means and results from repeated organized agent actions.

1 The established social structure between capital owners (actors) and fishermen
2 (agents) should be understood as a social production within the Bajo community
3 environment, aiming to utilize technology to produce natural marine resources. This
4 condition reflects the dominance of capitalism. It's no surprise that capitalism has become
5 the most significant force today, shaping the global order and transforming societal
6 structures into systems centered around differences that lead to the formation of statuses and
7 classes with specific orientations. Every social practice becomes part of identity politics,
8 positioning individuals within a value framework with new principles that lead to concepts
9 of greater value or differentiation (Abdullah, 2006: 169-170).

10 Furthermore, the process of human interaction mediated by technology can connect
11 layers of society from various parts of the world, making it more open (Nasrullah, 2014: 26).
12 As a result, the local wisdom of the Bajo community in natural disaster mitigation has
13 undergone shifts influenced by the social structure. Structured or not, changes in mindset
14 have shifted the role of local wisdom towards modern technology, impacting the degradation
15 of the marine environment.

16 17 *The Influence of Discrimination from orang Bagai (non-Bajo)* 18

19 The lives of the Bajo community residing in coastal areas and small islands constitute
20 their identity. Initially, they lived as nomads on boats (bido), which became a symbol and an
21 identity inherited from their ancestors of the past. They settled in specific regions as time
22 passed, and some even inhabited the mainland. The shift towards a settled lifestyle in a
23 particular area naturally led to social interactions with other communities, such as the Muna
24 and Bugis societies. These interactions have various impacts that can trigger conflicts of
25 interest in managing marine resources. One fundamental aspect is the occurrence of changes,
26 including shifts in knowledge, behavior, language, technology utilization, and the
27 management of natural resources. Such knowledge is considered a cultural practice. Thus,
28 the presence of cultural practices among the Muna and Bugis people, which differ from
29 those of the Bajo community, significantly influences the process of marine resource
30 management.

31 The settled lifestyle and interactions with *orang bagai* (non-Bajo) lead to changes in
32 knowledge and shifts in cultural and social values within the Bajo community. The presence
33 of outsiders around their settlements compels the Bajo community to exploit marine
34 resources. Consequently, the values of local wisdom regarding natural disaster mitigation

1 lose their significance. In this context, the Muna and Bugis communities exploit natural
2 resource management, leading to competition with the Bajo community. The Bajo
3 community struggles to uphold its local wisdom values in this position.

4 The presence of cultural practices among outsiders (Muna and Bugis communities),
5 which differ from the Bajo community, has an impact on changing the attitudes of the Bajo
6 community towards their natural environment. The management of natural resources
7 conducted by the Bajo community differs from that of the outsiders, who tend to exploit
8 resources. In this case, the Bajo community is compelled to manage natural resources
9 informally. If they don't, the outsiders might take over these resources. As a result, local
10 wisdom related to environmental preservation no longer functions as it should. Activities
11 such as sand mining, coral extraction, and mangrove deforestation, carried out by the Muna
12 and Bugis people, have eradicated the role of local wisdom in nurturing the interaction
13 between the Bajo community and their surrounding environment.

14 The shift in local wisdom within the Bajo community is a result of the Bajo people's
15 adaptation to the practices of the Muna and Bugis communities, who follow their social
16 plans in the same environment. According to Bennet (in Abdoellah, 1990), the aspect of
17 adaptation doesn't just involve tools and technologies that ensure human survival against
18 natural pressures, but also social plans aimed at exploiting habitats. Forms of competition to
19 exploit natural resources like beach sand, coral, mangroves, and other marine resources are
20 pressures faced by each group. If the Bajo community adheres to their local wisdom system
21 in the face of different environmental conditions, their way of life would be at risk.
22 Therefore, the Bajo community competes in exploiting marine resources to resist the
23 hegemony of external communities to ensure their survival.

24

25 *The Influence of Government Policies*

26

27 Infrastructure development in the Bajo community's environment has led to an
28 unsustainable decline in environmental quality. Infrastructure development, such as
29 permanent houses and bridges from cement material, utilizes materials like coral and sea
30 sand found in their surroundings. Indirectly, this infrastructure development has shifted the
31 Bajo community's mindset and displaced the values of local wisdom in environmental
32 practices. Consequently, the demands of development programmed by the government have
33 compelled the Bajo community to adapt to these developmental needs (cf. Kondoh &
34 Miyazaki, 2022; Osawa, 2022). Indirectly, the role of local wisdom, such as myths, taboos,

1 and rituals, has eroded, particularly concerning maintaining environmental stability to
2 prevent disasters. However, the protection and management of the environment are
3 enshrined in Law No. 32 of 2009, where Article 1, Point 30 states that local wisdom refers to
4 noble values applied in the community's way of life, including environmental protection and
5 sustainable management.

6 Using sand and coral as construction materials for infrastructure have displaced local
7 wisdom values like *pamali*, *maduai ada*, and *pakayuang bangkau kaarama*. The demands of
8 development, as programmed by the government, have forced the Bajo community to adapt
9 to the subsequent physical development. Houses initially built using mangrove wood are
10 now torn down and replaced with permanent structures. Furthermore, gathering these
11 materials has led to environmental damage in the marine ecosystem. Consequently, the local
12 wisdom of the Bajo community in natural disaster mitigation is slowly losing its role in
13 maintaining the stability of the marine environment. Ideally, their local wisdom regarding
14 managing the marine environment should be protected and preserved.

15 Cultural changes driven by government policies compel the Bajo community to adapt
16 to the marine ecology. This situation is based on the assumption that material resources are
17 determinants in human life and consistently positions culture as an adaptive system to the
18 physical environment (see Osawa, 2022; Trejo-Rangel et al., 2023).

19 This adaptation process is evident in settlement development programs funded
20 through the Village Fund Allocation from the government, which expects the local
21 community to adhere to these policies. Therefore, it's certain that the negative impact will
22 involve the loss of the role of local wisdom, particularly in addressing environmental issues
23 and disaster prevention (see Sahoo et al., 2022). This is a consequence of the environmental
24 changes they must undertake to align themselves with national development directions and
25 progress.

26

27 **Conclusion**

28

29 In conclusion, disaster education should be enhanced through socialization and the
30 implementation of specialized disaster mitigation learning within various formal education
31 settings such as schools and universities (see Suarmika et al., 2022). Additionally,
32 communities are expected to have a heightened awareness of disasters through tracking
33 news and literature about disasters (see Xue et al., 2023). One form of disaster risk
34 management in this research involves empowering local wisdom (Asmal et al., 2023).

1 Naturally, every community possesses local wisdom as an adaptation effort to their natural
2 surroundings. With this local wisdom, communities can lead their lives well and withstand
3 natural upheavals like disasters when they strike their settlements. Local wisdom becomes a
4 local community strategy for peaceful and harmonious coexistence with the natural
5 environment (see Trogrlić et al., 2022). This is an integral part of the environmental
6 adaptation process between humans and their surroundings.

7 In this study, the local wisdom within the Bajo community takes the form of natural
8 disaster mitigation based on the local Bajo Tiworo community, specifically the concept of
9 “pamali.” *Pamali* refers to prohibitions aimed at protecting the Bajo community from
10 disaster risks. Secondly, there’s the “maduai ada ritual,” which involves ceremonies
11 performed to ask for forgiveness from ancestors for violating *pamali* or rules within the
12 Santiri village. The Bajo community can avoid natural disasters such as lightning, strong
13 winds, and other adverse weather conditions through this ritual. Thirdly, there’s the
14 “Pakayuang Bangkau Karama (Sanctity)”. Essentially, this sacred mangrove forest serves as
15 a source for daily needs such as firewood, building materials, and constructing fish traps
16 (bagang). However, the sacred nature of the mangrove forest has made the local community
17 wise in managing it. As a result, the mangrove forest protects the community settlements,
18 guarding them against erosion, strong waves, and harsh winds. The Bajo community
19 employs various methods, such as mangrove tree planting and selective tree cutting, to meet
20 their needs. Furthermore, the researcher recommends further studies into disaster center
21 development strategies in various regions.

22

23 **Conflict of Interest**

24

25 The conflict of interest will occur when the author actions may be influenced from
26 organization or personal relationship such as financial gain, personal interest or any
27 successful outcomes.

28 Please provide a conflict of interest statement. If there is no conflict of interest, state
29 that “The author(s) declare(s) that there is no conflict of interest.”

30

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