

Social and Institutional Analysis of the Sustainability of Fish Fishing Practices in the Tempe Flood (Case Study on *Palawang* Practices)

Hasbi

Hasanuddin University, Makassar, Indonesia

Abstract

One form of fishing practice in Tempe Lake that still takes place today is *palawang*, which is a particular place on the edge of the lake whose boundaries have been determined to be controlled by using a splint, which is a fishing tool made of woven bamboo which is installed around it according to predetermined limits. This study aims to determine the potential sustainability of the *palawang* practice in terms of its social and institutional dimensions. The qualitative method used in this research uses the primary data collection instrument, namely interview guidelines. The results showed that the sustainability of *palawang* practices in Tempe Lake depends on the bonds of fishing traditions institutionalized through the *Maccera Tappareng* tradition as well as compliance with the rules set in the *palawang* practice from the time of the auction to the time of work starting with the installation of fishing aids until the completion of the fishing period in the *palawang* land area.

Keywords: Sustainability, *Palawang*, Social, Institutional, Indonesia.

I. INTRODUCTION

Tempe Lake in South Sulawesi is known as one of the production centres for various types of freshwater fisheries in Indonesia. From 1948 to 1969, the fish production of the largest lake in South Sulawesi reached 37,000 - 40,000 tons per year. In 1957-1959, it reached a production of 50,000 tons/year, and at that time, the lake was dubbed the Indonesian fishbowl, but in its development, the production has decreased even up to 400%. The decline in fish catch production over time aligns with the reduction in the place and time of fishing. In the dry season, the area of Tempe Lake is only 10,000 ha with a water depth between 0.50 - 2.0, and in the rainy season, the area can reach 28,000 - 43,000 ha with an average water level in the range of 6.0-9.0 m above sea level (BLHD, South Sulawesi Province, 2012). In 1981, the area was 28213.44 Ha; in 1989, the area was 17611.87 Ha; in 2000, the area was 15945.13 Ha; and in 2015, the area was 8240.76 Ha. The area converted and turned into agricultural land was 63.2 km² from 2000 to 2015. In the dry season, the lake area only reaches 1,000 ha, while the lake area in normal conditions ranges from 15,000-20,000 ha; due to the rate of shrinkage of the area reaching 1.48 km² per year, it is estimated that in the dry season of 2093, Tempe Lake has the potential to disappear.

Optimization of fishing is done in various ways, either by moving from one place to another or by settling in a place in the Tempe Lake area. In the Bugis language, fishermen who fish on the move are called "package Lalla," and fishermen who fish by settling are called "package *tette*." Mobile fishermen (*Pakkaja Lalla*) use net equipment or all types of fishing gear that use threads, ties, or the like, such as nets, *lanra*, buns, and

others, and are carried out during the day or night using boats individually or in groups (Latief et al., 2021; Rachman et al., 2020). Fishing by moving alone is usually close to the settlement, but when done in groups, the fishing location is far from the settlement, even in the middle of the lake (Sahabuddin et al., 2019a; Umar et al., 2019).

In its development, along with the dynamics of changes in the physical environment of the lake, there was a way of fishing that settled in one place called *pakkaja tette* (settled fishermen). They catch fish in a predetermined location, such as in the *palawang* area using *belle*/plate fishing gear, a fishing aid made of woven bamboo slats, and then installed as a fence (Hasbi et al., 2020). In the Wajo Regency Regional Regulation No. 4 of 2012 concerning Fisheries Resource Management, it is explained that *palawang* is a particular place on the edge of the lake whose boundaries have been determined to be controlled by using a splint, which is a tool made of woven bamboo which is installed around it according to predetermined limits (Hasbi et al., 2019a).

Passive fishing has been going on for a long time, and even since the royal era, such practices have been carried out. It was revealed from several research results (Sahabuddin et al., 2019b), that when Wajo was still a sovereign kingdom, the people had the freedom to utilize the lake, which at that time was controlled by the kingdom (*hak ulayat*) and in its development emerged *hak ongko*, namely the right to monopolize fishing in certain parts of the lake which is currently called *palawang*. Previous research conducted (Hasbi et al., 2019b) also revealed that in Tempe Lake, several fishing grounds could be controlled by someone called *palawang*. The

control is obtained by someone who wins the auction, and fishing activities are carried out for six months in the current year. Furthermore, it is mentioned that *palawang* is a local institution supported by a set of rules or practices for managing lake waters with all the resources in it.

Management of *palawang* areas is obtained through an auction system that is conducted regularly and openly. This method was established by the local government to avoid management conflicts in some fishing areas. The regulation of fishing practices in the *palawang* area aims to benefit regional income and the economic needs of the community as well as to maintain the sustainability of fisheries resources and the environment. *palawang* is considered a form of local wisdom in fishing in the Lake. However, the regulatory challenge is dynamic because it involves the interconnectedness of various actors, networks, structures and knowledge systems at different levels of governance (Yusuf et al., 2020). Other challenges relate to environmental changes, policies, internal capacity including networks, organizations and fishers, and adaptability (Hasbi, Pulubuhu, et al., 2019). Changes in the lake environment that are quite dynamic require every fisherman or institutional organization to be able to adapt. For this reason, the role of actor capacity in dealing with various internal and external dynamics is also very influential, even no less important is the issue of the importance of trust between the parties involved (Hasbi et al., 2022).

The results of socio-economic and environmental mapping conducted (Masrullah et al., 2021) that the income of *palawang* fishers in Tempe Lake is between IDR 25,000,000-IDR 1000,000,000/year. However, in addition to the potential profit from the catch, the existence of *palawang* also has implications for the decreasing fishing area which causes a decrease in catches that have an impact on the economic downturn of other fishermen, especially small fishermen who catch by moving to different places (Masturi et al., 2021). Even ownership and management of *palawang* has become a symbol or sign of inequality of power or asymmetrical relationships between actors through imbalances in ownership of collective assets such as knowledge, wealth, and social networks between actors in the management of natural resources in Tempe Lake South Sulawesi (Smith et al., 2000).

In this context, an effort is needed to optimize the functionality of various aspects directly related to fishing practices, especially *palawang* practices. It is very important to know the influential factors that require a study of the potential sustainability of the fishing practices in question. For the study of its sustainability potential, this research will examine the social and institutional aspects that include compliance and adherence to the structure of the *palawang* practice in Tempe Lake.

II. LITERATURE REVIEW

The concept of sustainability has been widely associated with social, economic, cultural, and environmental aspects of humans. In relation to sustainable development, it is defined as development that can meet the needs of the present generation without sacrificing future generations to meet their needs (World Commission on Environment and Development (Debray et al., 2019). Define sustainable livelihoods as: "a livelihood that includes the capabilities or skills, assets (savings, resources, claims and access) and activities needed for the means to live: a livelihood is sustainable if it can cope with and recover from stresses and disasters, maintain or improve skills and assets, and provide sustainable livelihoods for the next generation; and that contributes to other livelihoods at the local and global levels in the short and long term (Debray et al., 2019).

DFID argues that the objectives of sustainable livelihoods are to increase access to high-quality education, information technology and training, and good nutrition and health; a supportive and cohesive social environment; secure access to, and better management of, natural resources; better access to basic facilities and infrastructure; and more secure access to financial resources. The principles of sustainable livelihoods developed by UNDP are: people as the focus of development (people-centered), understanding livelihood as a whole (holistic), responding to the dynamics of community livelihood (dynamic), optimizing community potential (building on strengths), aligning macro and micro policies (macro-micro links), realizing livelihood sustainability.

Sustainability includes several aspects, two of which are 1) Social sustainability, is a condition in which discrimination, neglect, violence, and injustice can be minimized, while equity, equality and justice are prioritized and supported. The level of education, the number of poor people, community empowerment are among the indicators that affect social sustainability (Janssen et al., 2006); 2) Institutional sustainability is the condition where important institutions and processes in society can perform their functions in the long term. The existence of social institutions, the existence of microfinance institutions, and the availability of environmental regulations have an influence on sustainable livelihoods (Wittman et al., 2017).

The concept of sustainable fisheries management emphasizes the sustainability of stocks or biomass so that it does not exceed its carrying capacity and capacity building and ecosystems are the main concerns (Schlueter et al., 2012). The principle is that the utilization of capture fisheries resources should not threaten the sustainability of ecological functions that support the sustainability of the productivity of economically valuable fisheries activities.

The sustainability of fisheries resource management has been widely studied with various perspectives and dimensions

examined. One of the results of research conducted (Jackson, 2006) shows that the ecological, economic, social, technological, and institutional dimensions affect the sustainability of resource utilization in the Madura Strait. However, the sustainability scores for the ecological, economic, and technological dimensions are in the range of keys that have leverage to improve the status of dimensions with less sustainable status, including the use of fishing gear that is not environmentally friendly, the condition of the coastal ecosystem, the comparison of fishermen's income with the minimum wage and the use of information technology for determining fishing grounds. (Jackson, 2006) through their SWOT analysis conducted in the coastal area of Kubu Raya Regency that the sustainability strategy of fisheries management in the region is the priority, namely improving facilities and infrastructure, then the second priority is improving technology, and the third priority is human resource and institutional development. Then (Barcinski et al., 2017) in their research which relates to the management rights given to coastal communities. Fisheries Management Rights (HPP) have the potential to be applied as a fisheries management tool to overcome the problem of open access fisheries.

The fulfillment of inter- and inter-generational needs is an important point in the principle of sustainability practices, so that humans become the subject and object of its implementation. Humans with all their social and institutional aspects are independent variables of other variables (environment, economy, and technology), because humans have dynamic elements and mobility. Several previous studies have all placed the environment, economy and technology as variables that have great leverage on the unsustainability of fishing practices. These variables tend to be static in nature, so behind the leverage are human variables that are highly dependent on the social and institutional dimensions that control them.

METHOD

This research is an explanatory case study (Akiror, 2011) which is descriptive qualitative research that describes fully and deeply about the sustainability of Tempe Lake management from its social and institutional dimensions. Data were collected by means of in-depth interviews with the principle that informants speak as much as possible, and researchers speak less but understand more. Data analysis began by examining and reading the whole while paying attention to the categorization of the meaning and meaning of data that have relevance to research problems. Then synthesize all the meanings and meanings of the data and formulate them in one statement that is in accordance with the expression and experience of the informants.

III. RESULT AND DISCUSSIONS

Institutionalization of *Meccera' Tappareng* Tradition in Tempe Lake

Tempe Lake is a coastal area inhabited by a majority population of Bugis ethnicity and Muslim religion. The social and cultural life in Tempe Lake is influenced by the social and cultural system of Bugis ethnicity and Islam. Bugis ethnicity has a belief system in interacting with God, humans, and nature. Ethnic Bugis who work as fishermen in the waters and crop farmers on the outskirts of Tempe Lake believe in the existence of supernatural forces from God and the universe that determine safety and luck in finding and catching fish. The beliefs of fishermen and farmers were found in all villages observed in Wajo, Soppeng and Sidenreng Rappang Regency.

Fishermen in the waters of Tempe Lake have taboos (*pamali*) and believe in the existence of a sacred place (*makkerre'*) as a supernatural aspect in their fishing activities. The taboos that are still believed from generation to generation until now are the prohibition of fishing on Friday night until after Friday prayer, the prohibition of bringing 2 fishing gears at once to the Lake (for example bringing nets and spears at the same time), the prohibition of singing on the boat, the prohibition of disagreeing (arguing) with fellow fishermen, the prohibition of dirty talk (*moni'sala*) and the prohibition of bringing women to go fishing. Meanwhile, sacred places that must be avoided and not allowed to fish in the vicinity are usually characterized by the presence of bushes and large wooden trees (*aju colo'* and *kawerang*). According to an interview with HSU that:

in each village before the beginning and end of the fishing season in an annual cycle, a customary ritual is held called maccera' tappareng or maddupa' wai (welcoming the tide) to honor the ruler of the water or the guardian of the lake (ya makuasae). The maccera tappareng event is led by the lake's traditional elders called Macoa Tappareng (generally male) (interview, April 2020)

Macoa Tappareng is agreed upon by the people in each village or community. *Macoa Tappareng* is not just anyone. An important criterion for a *Macoa Tappareng* is to have qualified knowledge in the procession of traditional rituals at Lake Tempe and generally come from one family clump for generations. The function of *Macoa Tappareng*, apart from being the leader of the *Maccera Tappareng* traditional ritual ceremony, is also to "judge" or "court" fishermen who violate the taboo (*pamali*) and enter the sacred area (*makkerre'*) as discussed earlier. For fishermen who violate will be fined or i sin. The fines imposed are 8 liters of glutinous rice (*berre pulu'*) (*aruwa gantang*), 8 banana combs, 8 chicken eggs, his name announced in the mosque and his boat confiscated if he has not paid the fine. Currently the fine system can be replaced (nominalized) with a sum of IDR 750,000, later *Macoa*

Tappareng will arrange the required fine while taking care of the ceremony procession.

However, these rules and procedures have shifted. Some fishermen, especially those affiliated with the Muhammadiyah Islamic group, began to disobey this customary rule and some even tended to oppose it because they were considered polytheists. In addition, fishermen began to also rationalize that the customary rules, especially the prohibition of going to the lake on Friday night until after the Friday prayer, only applied in the past, namely when fishermen still used oars because it was feared that they could not perform Friday prayers. But now, when fishermen are all using outboard motorized *catinting* engines that only take about 15 minutes from the lake to the village. Such rules by some fishermen are considered irrational so that now almost every day fishermen make fishing even though it is night or Friday. As revealed by an informant ARF that.

Nowadays, there are many fishermen who do not follow the rules, there is no longer a term Friday, every day we go to the lake unless we are unwell or the boat is damaged, especially now that the fish are getting less and less, going to the lake is not necessarily getting maximum results, let alone having to rest for 1 day and 1 night...but there are still many who follow the customary rules (interview, April 2020).

The level of obedience and compliance with the implementation of the *maccera tappareng* tradition varies. On the one hand, it can be seen from the level of trust and assimilation of knowledge (or citizen rationality) and culture (religious expression is one of them). On the other hand, it can also be portrayed because of the social classifications that emerge in the Tempe Lake area. One of them is the classification of indigenous people and newcomers. The natives in question are residents who have been born and live in an area of Tempe Lake. Meanwhile, migrants are residents who come from outside the Tempe Lake area and generally refer to the name of the village, sub-district, or regency/city. For example, residents in Kaca Village, Soppeng Regency, refer to residents from Wajo Regency who come to marry and settle in the Tempe Lake area in Kaca Village as migrants. Similarly, the natives of Tempe sub-district, Wajo district, refer to Belawa people who come to work, marry, or settle in Tempe sub-district as migrants. Although Tempe and Belawa sub-districts are both part of Wajo Regency. Conversely, Tempe people are considered migrants in Belawa when Tempe people come to live in Belawa sub-district.

Maccera' tappareng is a combination of two Bugis words, namely *maccera'* and *tappareng maccera'* is a verb derived from the root *cera'*, meaning blood. When the prefix "ma" is added to the word *cera'*, the word *maccera'* is formed, meaning to offer (present) blood. The word *tappareng* in Bugis means

lake. When this word is added to the word *maccera'*, a word or term is formed, namely *maccera' tappareng*, which means offering blood to the lake, in this case the lake in question is Tempe Lake. There is no source that can explain exactly when the *maccera' tappareng* tradition began to be carried out by the community around Tempe Lake, but that this tradition existed and developed long before Islam entered and developed throughout the South Sulawesi peninsula. Even after Islam took root during the community, the *maccera' tappareng* tradition is still carried out every year as a form of gratitude for the abundance of sustenance in the form of fish and is also believed to be a bad luck repelling ceremony for the local community. The *maccera' tappareng* tradition in ancient times was intended as a form of worship of the water god.

Etymologically, the *maccera' tappareng* ceremony is a combination of two Bugis words, namely *maccera'* and *tappareng*. *maccera'* is a verb, derived from the root word *cera'*, meaning blood. When the prefix "ma" is added to the word *cera'*, the word *maccera'* is formed, meaning to offer (present) blood. The word *tappareng* in Bugis means lake. When this word is added to the word *maccera'*, a word or term is formed, namely *maccera' tappareng*, which means offering blood to the lake, in this case the lake in question is Tempe Lake. (Salam, Research Report on History and Traditional Values of South Sulawesi *Maccera Tappareng* Ceremony of Bugis Community in Wajo Regency).

There is no source that can explain exactly when the *maccera' tappareng* tradition began to be carried out by the people around Tempe Lake, especially the people of Marioriaawa Subdistrict, but this tradition existed and developed long before Islam entered and developed throughout the South Sulawesi peninsula. Even after Islam took root among the people of Marioriaawa Subdistrict, the *maccera' tappareng* tradition was still intensely carried out every year as a form of gratitude for the abundance of sustenance in the form of fish and was also believed to be a bad luck repelling ceremony for the local community.

Palawang Institution at Tempe Lake

In the Regional Regulation of Wajo Regency No. 4 of 2012 concerning Fisheries Resource Management, it is explained that; *Palawang* is a certain place on the edge of the lake whose boundaries have been determined to be controlled by using a splint, a tool made of woven bamboo which is installed around it according to predetermined limits. Some provisions in the management of *palawang* include: 1) *Palawang* management time is May 1 to December 31 of the current year. Prior to the validity of *palawang* rights, the water in the place of installation of the splint size 125 cm then the manager ex. Ornament can install splints that function as *cappiang*, with the following explanation: At the time of installing the *cappiang* splint, *pakkaja lalla* (mobile fishermen) still have the right to catch fish, except for *pakkaja* (fishermen) who use *pakkakasa*

mabbenni (fishing gear installed for some time); 2) Places for installing *palawang* are given a clear and permanent sign at each corner by the appointed officer, where the place to pass the *paletenna*; 3) If the lake water during the period mentioned above in article 11 paragraph 1 still exceeds the height 30 cm or more (*pallanra* boat is free to walk on it) then *pakkaja lalla* (ordinary / general fishermen) can still conduct fishing freely except *pakkaja tette*; 4) The installation of the splint is done after the water level is 125 cm at the places / roads through which the installation of the *palawang* splint; 5) The *palawang* is installed with a splint around it then if the water rises again beyond the water level of 30 cm above the end of the splint, the fishing boat can pass over it and has the right to fish in the *palawang* area; 6) At the time of the first installation, the *palawang* splint must first obtain permission and be witnessed by an official appointed by the Regent of Wajo; 7) *Palawang* that are integrated with rivers (One Area with a river, or both are in an ex-ornament area), then the first to be entitled to the installation of equipment in that place is in the river area, then only entitled to *palawang* after the water level is 125 cm on the *paletanna / krei palawang*; 8) It is forbidden for fishermen to use tools that can damage the grass in the *palawang* area; 9) The time limit for the validity of the *palawang* can be extended if it turns out that the fish in the *palawang* are already in a condition of gathering in places where the water is already splashing (up to the ankle limit).

In addition to several provisions stipulated in the regional regulation, there are also several prohibitions that must be obeyed by *palawang* managers as revealed by BHD, one of the informants of *palawang* workers at Tempe Lake that there are several that must be obeyed by *palawang* workers such as.

The palawang manager may not place his splints more than twice a year in a stacked manner except in designated areas. When the water passes the upper end of the splint (125 cm), it must not be violated again (setting the splint again in a lower place to exercise the rights of the palawang). Palawang managers who take fish in and out (bale lesu) by deliberately opening their creeks with the intention of allowing fish to enter the Palawang area, are declared dead and the public has the right to it. Palawang must not install bubu facing out of its own palawang. Palawang must not create tongues that attract fish from outside the palawang area. Palawang managers may not prohibit pakkaja lalla from fishing in the Palawang area (outside it) at not less than 30 meters from the creek (interview December 2020).

In terms of formal legality, the local government is the right holder of *palawang*. However, the local government does not hold the monopoly right to manage the *palawang* itself, despite

stocking thousands of fish seeds in the lake every year. The government only regulates administrative matters and leaves the management to the community or the transfer of rights for the sake of equalization (transferability), which is the transfer of rights into one unit of right holders (Faridav et al., 2021). Community interest in owning rights to *palawang* is highly dependent on the condition of the lake's fisheries resources. Throughout history, winners of auctions for *palawang* tenure rights have generally been entrepreneurs or traders and fishermen in joint ventures (Thorbecke, 2013; World Bank Dc, 2001). This is because the price of a *palawang* is relatively high, as is the cost required to make a *belle*, which amounts to thousands of *tibba* (stretches) (Yusriadi et al., 2020).

The right to control and manage *palawang* is obtained through auctions conducted by the government every year. In Regional Regulation No. 33.1 of 2019 concerning Guidelines for the Auction of Ex Ornaments that the winner of the auction is determined by the auctioneer with the highest bid, if the highest bid is the same, then a re-auction is held which is only followed by the highest bidder. For the winner of the auction, the security deposit has become part of the payment while the bidders who do not win the security deposit is returned to the person concerned. The winner of the auction is determined based on the decision of the auction committee (Addae-Korankye, 2019; Sameti et al., 2012).

The auction system is a convention to avoid conflict for fishermen in lake resource management. Through this auction, one or several people will be found as the holder of the power of attorney over a *palawang*, thus avoiding the occurrence of a struggle for a place or fishing ground. Although the auction is open to the public, the reality is that participants are very limited to certain people, especially businessmen. In addition to being well-off in terms of money, they usually have knowledge and experience of the potential biota resources of Tempe Lake, as well as the ability to organize fishermen in fishing in the *palawang* area. Therefore, not many people want to become bidders, especially if it is known that the minimum ceiling price offered by the government is relatively high. The risk is quite high, and there will be a big loss if it is not managed well in the future.

In regulation No. 33.1 of 2019 concerning the implementation of intermediate auctions, it is stated as follows; 1) The Ex-Ornament auction committee is formed based on a Regent Decree; 2) Announcement and auction schedule are determined by the Auction Committee; 3) The location of the auction is in the Regency area; 4) The Auction Committee determines the location of the Ex-Ornament to be auctioned; 5) Bidders are people who have received recommendations from the Sub-District Head in accordance with the location of the Ex-Ornament; 6) Each bidder or auction enthusiast is required to deposit a security deposit to be bid at least IDR 100,000.00 (One Hundred Thousand Rupiah) above the base price; 7) Ex-

Ornament to be auctioned based on the base price that has been set; 8) Auction system with closed bidding; 9) The winner of the auction is determined by the auctioneer with the highest bid; 10) If the highest bid is the same, then a re-auction is held which is only followed by the highest bidder; 11) For the winner of the auction, the security deposit has become part of the payment while the bidders who do not win the security deposit is returned to the person concerned; 12) For auction winners who have not paid off the 2017-2019 auction price, they are not allowed to participate in the next Ex-Ornament auction; 13) Ex-Ornament that has not been auctioned and not paid off for a maximum of six working days after the auction, it is the right of the auction committee to hold a re-auction.

Institutional Sustainability of Palawang Practice in Tempe Lake

The sustainability of *palawang* practices depends not only on the physical environmental conditions of the Lake but also on the capabilities and capacities of individual and collective *palawang* workers. The development of the ability and capacity of *palawang* workers refers to efforts to optimize catches and achieve sustainability in Lake resource management. Potential development of *palawang* workers covers several aspects such as providing fishing knowledge and skills, the use of environmentally friendly fishing gear and even the management of catch management (Dhanani & Islam, 2002). Assisting in the strengthening of fisher organizations, such as cooperatives or joint business groups so that with strong institutions, they can more effectively collaborate, share knowledge, and address common problems. Facilitate them in gaining access to necessary resources, such as fishing gear, financing to improve their businesses, or access to better markets. Teach sustainable and environmentally responsible fishing practices to maintain the Lake ecosystem and protect fish resources. Improve the ability of *palawang* workers to market their catch effectively and add value to their products to get better prices.

Even according to NPS (Head of the Wajo District Fisheries Office) that it is not only that but encouraging them to switch or diversify their work, for example by developing coastal tourism or other businesses that can reduce fishing pressure on fish resources. Developing the potential of *palawang* workers is not just about providing financial or technical assistance, but also about empowering them with the knowledge, skills, and abilities to better manage their own resources and enterprises (Erenstein, 2011; Sharma et al., 2016). Through this collaborative effort, they can improve their quality of life and become more empowered in the face of social, economic, and environmental changes. Teaching sustainable and environmentally responsible fishing practices to maintain the ecosystem and protect fish resources. Networking with government agencies, NGOs, educational institutions, and

other organizations that can support the empowerment of *palawang* workers. These partnerships can provide access to additional resources and open new opportunities for them.

IV. CONCLUSION

The sustainability of the Palawang practice will be seen in the fulfillment of the basic needs of both fishermen who work or are employed in Palawang and free fishermen. The existence of the *Palawang* practice is expected to be a sufficient source of income for its managers, as well as its existence does not disturb and does not hinder the access of freelance fishermen to freely catch fish including in the Palawang area. The fulfillment of fishermen's current and future needs will depend on the level of education they have and their knowledge of matters related to the concept of sustainability including fishing practices such as "*Palawang*". Although not a guarantee, education and knowledge will influence fishing practices. At a practical level, there will be differences between fishermen who have education and knowledge compared to those who do not. Behind the potential as a source of income for fishermen, the existence of fishing practices with the "*Palawang*" system also has the potential for threats to occupational risks such as accidents (drowning) and physical health conditions. Occupational risks tend not to be a concern for fishermen, so it is often found that fishermen do not have insurance or social security directly related to their work. Dependence on the season makes the work of fishermen, especially traditional fishermen, tend to be full of uncertainty, so insurance or social security will be very functional when fishermen experience these conditions.

The sustainability of *Palawang* practice as a source of livelihood for fishermen does not only depend on the potential and ability of the fishermen, but social environmental factors, especially social conflict, are also influential, with the assumption that the more stable the social environment, the safer and calmer the population will be in carrying out their activities. The utilization of lake resources is still a source of conflict, so latent conflicts still surround the issue of fishermen's accessibility, since the implementation of the fishing ground system such as *palawang*. Whatever happens to the practice of *palawang* as a source of livelihood for fishermen tends to depend on the functions of existing institutions. In general, the institutions surrounding the practice of Palawang include rules and regulations set by the government through regulations or statutory provisions and rules or regulations that have been agreed upon by the community through customary rules or traditions that have long been carried out. The existence of these two institutional aspects is expected to further strengthen the protection of the lake's natural resources, and between one rule and another does not overlap so that it does not have the potential to cause different understandings, especially among fishermen. Institutional conflicts that cause

differences in understanding will manifest in compliance or defiance of the rules, so that directly or indirectly will affect the sustainability of palawang practices and the sustainability of meeting the needs of current and future generations.

REFERENCES

- [1] Addae-Korankye, A. (2019). Theories of poverty: A critical review. *Journal of Poverty, Investment and Development*, 48(1), 55–62.
- [2] Akiror, M. (2011). The impact of imprisonment on the health rights of female inmates, a comparative study: a case study of Soroti Prison-Uganda.
- [3] Barcinski, M., Cúnico, S. D., & Brasil, M. V. (2017). The meanings of re-socialization to correctional officers in a women's prison: between care and control. *Trends in Psychology*, 25, 1257–1269.
- [4] Debray, V., Wezel, A., Lambert-Derkimba, A., Roesch, K., Lieblein, G., & Francis, C. A. (2019). Agroecological practices for climate change adaptation in semiarid and subhumid Africa. *Agroecology and Sustainable Food Systems*, 43(4), 429–456. <https://doi.org/10.1080/21683565.2018.1509166>
- [5] Dhanani, S., & Islam, I. (2002). Poverty, Vulnerability and Social Protection in a Period of Crisis: The Case of Indonesia. *World Development*, 30(7), 1211–1231. [https://doi.org/https://doi.org/10.1016/S0305-750X\(02\)00028-1](https://doi.org/https://doi.org/10.1016/S0305-750X(02)00028-1)
- [6] Erenstein, O. (2011). Livelihood Assets as a Multidimensional Inverse Proxy for Poverty: A District-level Analysis of the Indian Indo-Gangetic Plains. *Journal of Human Development and Capabilities*, 12(2), 283–302. <https://doi.org/10.1080/19452829.2011.571094>
- [7] Faridav, U., Yusriadi, Y., & Saniv, A. (2021). The Family Hope Program (PKH) Collective Partnership among Beneficiary Families (KPM) For Healthy Living through the Clean Friday Campaign. *Indian Journal of Forensic Medicine & Toxicology*, 15(2).
- [8] Hasbi, Armin, Sakaria, Sabiq, M., Murni, A., Yusuf, M., & Malik. (2022). Determinants of 'punggawa-sawi' power relations and capital on the socio-economic household of the fishing community in Paotere Port of Makassar City. *AACL Bioflux*, 15(1), 164–173. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85127347653&partnerID=40&md5=fc0943f1b813c1e225348d5942c61170>
- [9] Hasbi, Haris, A., Pulubuhu, D. A. T., & Radjab, M. (2020). Change in health behavior of adolescents drugs addicts in Makassar. *Enfermeria Clinica*, 30, 382–385. <https://doi.org/10.1016/j.enfcli.2019.07.123>
- [10] Hasbi, Pulubuhu, D. A. T., Radjab, M., Rahman, A. H. A., & Haris, A. (2019). The social meaning of Rambu Solo ceremony in Toraja (The perspective of symbolic interactionism theory). *Journal of Social Sciences Research*, 5(3), 778–781. <https://doi.org/10.32861/jssr.53.778.781>
- [11] Hasbi, Sukimi, M. F., Latief, M. I., & Yusriadi, Y. (2019a). Compromise in traditional ceremonies: A case study of the Rambu solo' ceremony in Toraja regency. *Humanities and Social Sciences Reviews*, 7(6), 286–291. <https://doi.org/10.18510/hssr.2019.7651>
- [12] Hasbi, Sukimi, M. F., Latief, M. I., & Yusriadi, Y. (2019b). Compromise in traditional ceremonies: A case study of the Rambu solo' ceremony in Toraja regency. *Humanities and Social Sciences Reviews*, 7(6), 286–291. <https://doi.org/10.18510/hssr.2019.7651>
- [13] Jackson, J. (2006). Developing regional tourism in China: The potential for activating business clusters in a socialist market economy. *Tourism Management*, 27(4), 695–706. <https://doi.org/https://doi.org/10.1016/j.tourman.2005.02.007>
- [14] Janssen, M. A., Bodin, Ö., Anderies, J. M., Elmqvist, T., Ernstson, H., McAllister, R. R. J., Olsson, P., & Ryan, P. (2006). Toward a Network Perspective of the Study of Resilience in Social-Ecological Systems. *Ecology and Society*, 11(1). <http://www.jstor.org/stable/26267803>
- [15] Latief, M. I., Hasbi, & Amandaria, R. (2021). Collaboration in handling COVID-19 toward people in poverty line: study case in Makassar. *Gaceta Sanitaria*, 35, S30–S32. <https://doi.org/10.1016/j.gaceta.2020.12.009>
- [16] Masrullah, Romadhoni, B., Hasbi, Yusriadi, Y., Misnawati, Febryani, A., & Jabbar, A. (2021). The influences of teacher professional competencies and infrastructure on teacher performance through teaching devices of technical implementation. *Proceedings of the International Conference on Industrial Engineering and Operations Management*, 3035–3042. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85121114172&partnerID=40&md5=cf9d2956f2dc3d5abca9418e45aad5bd>
- [17] Masturi, Sriana, D., Yusuf, M., Hasbi, Toleng, A. L., Sahiruddin, & Jamily, M. A. (2021). The quality of frozen semen of Etawah crossbreed buck after washing by centrifugation. *IOP Conference Series: Earth and Environmental Science*, 788(1). <https://doi.org/10.1088/1755-1315/788/1/012145>
- [18] Rachman, A., Bulkis, S., & Hasbi. (2020). Youth participation in the creative economy and community empowerment. *IOP Conference Series: Earth and Environmental Science*, 473(1). <https://doi.org/10.1088/1755-1315/473/1/012077>
- [19] Sahabuddin, C., Muliati, M., Farida, U., Hasbi, & Yusriadi, Y. (2019a). Administration of post-reformation decentralization government. *International Journal of Recent Technology and Engineering*, 8(3), 7631–7634. <https://doi.org/10.35940/ijrte.C6182.098319>
- [20] Sahabuddin, C., Muliati, M., Farida, U., Hasbi, & Yusriadi, Y. (2019b). Administration of post-reformation decentralization government. *International Journal of Recent Technology and Engineering*, 8(3), 7631–7634. <https://doi.org/10.35940/ijrte.C6182.098319>
- [21] Sameti, M., Esfahani, R. D., & Haghighi, H. K. (2012). Theories of poverty: A comparative analysis. *Kuwait Chapter of Arabian Journal of Business and Management Review*, 1(6), 45–56.
- [22] Schlueter, M., Mcallister, R. R. J., Arlinghaus, R., Bunnefeld, N., Eisenack, K., Hoelker, F., MILNER-GULLAND, E. J., Müller, B., Nicholson, E., & Quaas, M. (2012). New horizons for managing the environment: A review of coupled social-ecological systems modeling. *Natural Resource Modeling*, 25(1), 219–272. <https://doi.org/10.1111/j.1939-7445.2011.00108.x>

- [23] Sharma, P., Dwivedi, S., & Singh, D. (2016). Global Poverty, Hunger, and Malnutrition: A Situational Analysis BT - Biofortification of Food Crops (U. Singh, C. S. Praharaj, S. S. Singh, & N. P. Singh, Eds.; pp. 19–30). Springer India. https://doi.org/10.1007/978-81-322-2716-8_2
- [24] Smith, L. C., El Obeid, A. E., & Jensen, H. H. (2000). The geography and causes of food insecurity in developing countries. *Agricultural Economics*, 22(2), 199–215. <https://doi.org/https://doi.org/10.1111/j.1574-0862.2000.tb00018.x>
- [25] Thorbecke, E. (2013). Multidimensional Poverty: Conceptual and Measurement Issues BT - The Many Dimensions of Poverty (N. Kakwani & J. Silber, Eds.; pp. 3–19). Palgrave Macmillan UK. https://doi.org/10.1057/9780230592407_1
- [26] Umar, A., Hasbi, Farida, U., & Yusriadi, Y. (2019). Leadership role in improving responsibility of employee's work in scope of general bureau of government of bulukumba regency. *International Journal of Scientific and Technology Research*, 8(10), 2019–2021. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85074347606&partnerID=40&md5=fdb8e540adb78ed45157881e7251eda6>
- [27] Wittman, H., Chappell, M. J., Abson, D. J., Kerr, R. B., Blesh, J., Hanspach, J., Perfecto, I., & Fischer, J. (2017). A social-ecological perspective on harmonizing food security and biodiversity conservation. *Regional Environmental Change*, 17(5), 1291–1301. <https://doi.org/10.1007/s10113-016-1045-9>
- [28] World Bank Dc, W. (2001). *Attacking Poverty*. World Development Report, 2000/2001. World Bank.
- [29] Yusriadi, Y., Anwar, A., & Enni, E. (2020). Political Reform in the General Election. *JPPUMA: Jurnal Ilmu Pemerintahan Dan Sosial Politik UMA (Journal of Governance and Political Social UMA)*, 8(1), 68–73.
- [30] Yusuf, M., Hasbi, Toleng, A. L., Sonjaya, H., & Sahiruddin. (2020). Response of Bali cows on superovulation for in-vivo embryo production. *IOP Conference Series: Earth and Environmental Science*, 465(1). <https://doi.org/10.1088/1755-1315/465/1/012046>

