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Achieving Sustainable Fisheries : Empowering The Concept of "Ikan Larangan" in West Pasaman District, West Sumatra Province, Indonesia

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Abstract. This study aims to fill the gaps in previous research in the form of development studies about sustainable fishery with the empowerment "ikan larangan" as local fisheries wisdom. Sustainable fisheries as a system that is interrelated and influences each other, in the field of fisheries, it can be translated as the concept of sustainable fisheries as an effort that aims to synchronize, integrate, and give equal proportion to the main aspects of sustainability which include aquatic systems, human system, the institutional and policy system. Local wisdom that develops in the community can be used as a starting point for a sustainable fisheries management system. This study used a mixed-method model approach. The survey was conducted by distributing questionnaires to 200 aquaculture fishermen household respondents. The important findings of this study are the sustainability of the fisheries sector has a broader dimension, not just biological but also includes economic, social and cultural dimensions. Moreover, community participation is an important factor in the management of conservation areas and the sustainability of fish resources. Thus, our research can be used as a reference for the government of West Pasaman District, Indonesia to achieve sustainable fisheries by maintaining and empowering local wisdom "ikan larangan".

Keywords : Local Wisdom; Ikan Larangan; Sustainable Fisheries; Sustainable Fisheries Management System

1. Introduction

Fisheries are still considered one of the economic sectors that contribute to the welfare of a nation when calculated economically. Indonesia is one of the countries that has enormous potential both in terms of marine and fisheries as an archipelagic country that has enormous potential for fish resources and has high biodiversity. The development of science and the advancement of technology in the field of fishing has triggered world fisheries as a rapidly growing food industry sector. One of the dilemmas in the fisheries sector is the existence of externalities because fish resources in the environment are public goods so the costs of environmental damage are shared, even though the exploitation of these resources generates personal benefits and this also creates social problems.

Empirically, the results of previous research studies that have been carried out to assess the sustainability of fisheries have not examined all dimensions. The dimensions

studied were only on the sustainability of fisheries only on the ecological dimension. The results of research from the ecological dimension show that in developed countries, inland fisheries also not only provide food but also provide a place of recreation (Bower et al., 2020) (Tufts et al., 2015) and as a source of livelihood in developing countries (Brownscombe et al., 2014) (Cooke et al., 2016; Keen et al., 2018). Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. The implementation of the Millennium Development Goals (MDGs) sustainable development program shows that the indicators that have been set in the program have helped mobilize resources and political will in program implementation but are often less useful in showing what is being achieved (Dong et al., 2022) because the measurements used still adhere to traditional management principles, some indicators often reduce complex development issues with inaccurate measurements (Thompson et al., 2003), creating detrimental incentives and silo effects (Fukuda-Parr, 2016) (Fukuda-Parr et al., 2014) (Mahmud et al., 2012) (Muawanah et al., 2021).

Previous research has been carried out by (Żak, 2015)(Castañeda et al., 2018)(Pradhan et al., 2017)(Hourneaux et al., 2018) (Choudhary et al., 2021) describes that economic activity does not only focus on economic benefits, but the Triple Bottom Line theory also focuses on 3 (three) types of resources, namely economic, social and environmental. The sustainable economic paradigm is based on a balance between three dimensions, namely economics, ecology, and ethics, this theory helps organizations not only see the economic dimension or economic value but also pay attention to the environmental and social values of organizational activities. It is necessary to develop a multidisciplinary resource sustainability assessment model by looking at the relationship and interaction between indicators in each dimension as well as between dimensions and between indicators in sustainable development goals (SDGs).

The concept of sustainable development is a form of development that is oriented to the fulfillment of human needs now and does not interfere with the level of ability of the next generation to fulfill their life needs in the future, this is applied also to the fisheries sector. (Li et al., 2012) describe that fisheries management has been carried out for more than 4,600 years along with increasing public awareness of the poor environmental conditions and the importance of environmental protection, and environmental issues are increasingly gaining importance. Previous research by (Fulton et al., 2011) and (Stephenson et al., 2018) has shown that the history of fisheries management and analysis of management that only focuses on resource conditions are not sufficient to achieve sustainable fisheries. Research on fisheries sustainability is not only from a biological dimension but has four pillars, namely ecological, economic, social, and institutional or government.

Previous research on the fishery sector showed that the fisheries sector is the only concern in terms of ecology where the most concern in studies and research on the sustainability of the fisheries sector is the threshold or critical point of fisheries both in terms of fish population size or fish exploitation level (Kelly et al., 2015). Furthermore, subsequent research found that fisheries management requires tactical decision-making and cannot be taken only by considering ecological aspects but also by considering social aspects (Bennett et al., 2021) (Stephenson et al., 2019). Sustainable development is a system that is interrelated and influences each other. Studies on sustainable

development in Indonesia show that the increase in social and economic dimensions is not directly proportional to environmental conditions (Fauzi & Oxtavianus, 2014). The results of the study indicate that an analysis using a unit of analysis at the provincial and district/city levels in Indonesia needs to be carried out so that the results reflect conditions and situations that are following the conditions of the area (Pradhan et al., 2017). Previous research has shown that advances in information technology in the form of data management and data flow that are currently growing rapidly from various sub-disciplines as well as very open access are an advantage for scientists, but in the field of fisheries, there are still problems with the lack of required information related to sustainable fisheries management (Olascoaga & Haller, 2012).

The vital role of the fisheries sector in the economy poses threats from the internal sector, namely overfishing (Nilsson et al., 2019) (Andriamahefazafy et al., 2020). The exploitation of fishery resources in West Pasaman Regency is carried out by fishing households, individuals, and companies. Aquaculture, together with capture fisheries and fishery processing, are the backbone of the fisheries sector in providing food and protein sources for the community. The fishery sector is one of the backbones of the economy of West Pasaman Regency, West Sumatra Province especially in the coastal area, the fisheries sector actors in West Pasaman Regency, West Sumatra Province are dominated by individual businesses. Because the fishery sector is the main source of income for the community, the rate of fishing will increase due to the increasing demands for meeting human needs. The mortality rate of fish in the wild also increases in line with the worsening environmental quality including the destruction of the living habitat of fish in nature due to destructive fishing practices, such as the use of bombs and poisons. Meanwhile, the rate of reproduction and growth is not as fast as the rate of catching and death of fish in the wild is also caused by the deterioration of environmental quality, including the destruction of the living habitat of fish in nature due to these destructive fishing practices. Based on this, further research is needed on fisheries sustainability by balancing economic activities with the support of fishery environmental performance in the long term to harmonize economic activities with conservation and sustainability in the marine domain as well as social and environmental aspects in West Pasaman Regency, Sumatra Province, Indonesia.

West Pasaman Regency, West Sumatra Province has community and cultural conditions as well as the physical elements of each region that differ between sub-districts, causing fisheries management strategies to also vary according to local conditions. The values and norms adopted by a community which is community wisdom in the management of natural resources and the environment can be empowered for fisheries management. Local wisdom owned by the community in the fishery sector includes forbidden fishing or "ikan larangan". The existence of banned fish in West Sumatra is part of the blue economy which is now a program of the Ministry of Maritime Affairs and Fisheries, Indonesia. Previous research has shown the role of local wisdom that has a positive impact on the management of fish resources in the form of myths (Oktaviani et al., 2017) and in the form of regulations or customary law (Kurniasari et al., 2015)(Yuliaty et al., 2014).

There are various fishery local wisdom that has long been applied by the fishing community in West Pasaman Regency, West Sumatra Province with "ikan larangan" as the dominant local wisdom. Three components apply in the management of 'ikan larangan" such as myths, customary law provisions, and customary institutions. This

form of community-based management of fishery resources is carried out by closing seasons or areas within a certain time. The forbidden fishing or "ikan larangan" management system that has been implemented by the community is a participatory, adaptive, and sustainable community wisdom in the preservation of river fishery resources, especially local fish. This kind of management is very effective and efficient because the community autonomously maintains and manages it so that the community has more ownership and a sense of responsibility for the resources around them(Veraliza et al., 2014).

The existence of local fisheries wisdom shows that the active role of the community in fisheries management is an important part. Community participation can be approached by empowering the culture that develops in the community so that the application of culture in the form of local wisdom in fisheries management will provide added value from the point of view of green fisheries productivity with community-based monitoring and implementation of local system. Previous research has shown that sustainable development is a system that is interrelated and influences each other where the sustainability of the fisheries sector has a broader dimension, not only biological but also includes economic, social, cultural and institutional dimensions. Subsequent research found that fisheries cannot achieve sustainability through production alone but must integrate aquaculture with social humanities, environment, ecology, and resource management (Ting et al., 2015)(Le Blanc, 2015).

Based on the gap between the phenomenon and the gap from the previous research that has been described, a study is needed to assess the sustainability of fishery resources which is very multi-dimensional in which the multi-dimensional management of fisheries resources is also related to the institutional system of fishing communities, species, and culture in the form of local wisdom in exploiting fishery resources and in managing fishery resources, it is also necessary to pay attention to various formal and informal regulations and arrangements related to fisheries resource management and the role of environmental performance for fisheries sustainability. The description of one dimension alone is not sufficient to assess the sustainability of the development. For sustainable development in an area, this study assesses the sustainability of fisheries by linking the existence of local fisheries wisdom dimension in the scope of a specific area so that the sustainability of the fisheries sector can be formulated according to the characteristics of each region. Therefore, the authors are interested in conducting a research study on sustainable fisheries with a regional scope in West Pasaman Regency, West Sumatra Province, Indonesia.

3. Methods

3.1 Data and Variables

In this study, researchers collect and analyze data, integrate findings, and draw conclusions inferentially by using two approaches or quantitative research methods and qualitative research methods as a comprehensive analysis in order to answer research problems carried out in one research time, the authors use the concurrent embedded model, a strategy in which quantitative research methods are used to analyze the responses of 300 respondents or research informants to the variables of local wisdom “ikan larangan” in achieving sustainable fisheries in West Pasaman Regency, West Sumatra Province, Indonesia. After obtaining the quantitative data then a qualitative

research method is carried out to conduct a deeper exploration of the variables of local wisdom and the sustainability of the "ikan larangan" in achieving sustainable fisheries.

3.2 Analysis Model and Data Analysis Technique

Based on the research conceptual framework displayed in Figure 1, this study used a mixed method approach to answer the formulation of the problem in the study(Dewi et al., 2024). Combined research or mixed method is a research method by combining quantitative research methods with qualitative research methods to be used together in a research activity in order to obtain more valid, comprehensive, reliable and objective data (Creswell, 2015).

4. Results and Discussion

4.1 Ecological Aspect of Local Wisdom "Ikan Larangan"

"Ikan Larangan" has an impact not only on the surrounding community but also on nature, such as ecological, economic and socio-cultural impacts. Based on observations in West Pasaman Regency, there are three components that apply in the management of "ikan larangan", namely myths, customary law provisions and customary institutions in the form of community-based fisheries resource management carried out by closing seasons or areas within a certain time. so that harvesting or taking fish is carried out only 1 (one) time for each year which is adjusted to the Islamic religious holiday, namely Eid al-Fitr or "idul fitri". Forbidden fishing is a place where fish cannot be taken in any way, with the type of fish being kept is a type of fish that has economic value (Basyirah et al., 2023). The description of local freshwater fish species "ikan larangan" in West Pasaman Regency, West Sumatra Province is shown in table 1. Based on table 1, it can be seen that the types of local freshwater fish in West Pasaman Regency, West Sumatra Province, Indonesia that are cultivated in rivers are the type of cork/bajuk and baung which are local local fish that have economic value (Rosyadi et al., 2024). There are various types of local fish that are kept in every sub-district in West Pasaman Regency, West Sumatra Province, Indonesia and are types of fish that have economic value and if developed will have an impact not only on the community in terms of the surrounding economy but also on nature, such as ecological and socio-cultural impacts (Jamaludin et al., 2023).

Traditional communities usually have certain rules to prevent over-exploitation, such as for example the harvesting of a certain species is strictly controlled and a prohibition on hunting or harvesting is imposed in certain areas, if violated it will be subject to sanctions in the form of customary sanctions. In fishery activities that apply cultural principles and local wisdom "ikan larangan" the use of equipment (ethnotechnology) used is environmentally sound, namely in the form of equipment that does not damage nature so that fish are harvested according to the size requested. market with high economic value while maintaining the sustainability of fish seeds for the sustainability of the next harvest (Hidayat & Widianita, 2022).

The equipment (ethnotechnology) used in carrying out the harvest is equipment that is environmentally sound, namely in the form of equipment that does not damage nature, the equipment used is intended not to damage or kill all existing fish. The tools used are generally in the form of simple equipment and can be made by the local community such as nets, wounds, fish arrows by diving and it is not allowed to catch fish using stun equipment, explosives, especially by poisoning or tuba.

When viewed from an ecological perspective, measured fishing also allows fish to grow and reproduce well, fish can be harvested after reaching a certain size so that they are protected from extinction. Management system of "ikan larangan" that has been implemented by the community is a participatory, adaptive and sustainable community wisdom in preserving fishery resources, especially local fish. This kind of management is very effective and efficient because the community autonomously maintains and manages it so that the community has more ownership and a sense of responsibility for the resources around them and is in accordance with the concept of a people's economy.

The increase in cultivation production is influenced by three factors, namely the condition of the media (water), seed quality and feed quality. Feed is a factor of production which become the largest cost component in a fish farming business. Cultivation waters enrich the environment with metabolized feed waste and inedible. To a certain extent the waste of the metabolized feed beneficial because it increases fish production, if it exceeds this amount, it eventually becomes a pollutant.

4.2 Economical Aspect of Local Widom "Ikan Larangan"

One of the districts with considerable fishery potential in Indonesia is West Pasaman Regency, which is located in West Sumatra Province, Indonesia. The fisheries sector is the backbone of the fisheries sector in providing food and protein sources for the community. The role and growth rate of each economic sector in Indonesia, especially in the Regency and City areas is calculated through the contribution of these sectors to the Gross Regional Domestic Product (GRDP) which is grouped into the agriculture, forestry and fishery sectors. An overview of the role and growth rate of the agricultural, forestry and fisheries sectors and the Gross Regional Domestic Product (GRDP) of West Pasaman Regency for the period 2017-2021 is shown in table 2. Based on table 2, it can be seen that the role of the agricultural, forestry and fisheries sectors in West Pasaman Regency, West Sumatra Province is very dominant with the role of these sectors in the economy of more than 39 percent of the Gross Regional Domestic Product (GRDP) but the growth rate of these sectors is still very low, y between 3 percent to 5 percent and even minus in 2020 by -1.29 percent, this indicates that West Pasaman Regency, West Sumatra Province relies on the agriculture, forestry and fisheries sectors as the driving force of the community's economy but the growth rate of these sectors is still very slow every year and indicates that the existing potential has not been fully utilized so that it needs to be increased in order to be able to contribute and improve economic welfare for the community.

As one of the districts with quite large fishery potential in West Sumatra and the fishery sector is the backbone of the economy. An overview of the Gross Regional Domestic Product (GRDP) per capita of the people in West Pasaman Regency, West Pasaman Regency is shown in table 3. Based on table 3, it can be seen that the level of welfare of the people of West Pasaman Regency, West Sumatra Province, Indonesia with the very dominant role of the agricultural, forestry and fisheries sectors as described in table 1.2 is still very low, ranging from Rp. 24.302.000,- up to Rp. 26,774,000, - per year or an average of Rp. 2.000.000,- per month. It can be seen that the level of Gross Regional Domestic Product (GRDP) per Capita of society in West Pasaman Regency, West Pasaman Regency is still not able to create community welfare. Another strategic issue is fishery business actors, most of whom have not have sufficient knowledge about sustainable fisheries business and also do not have a proper business scale (economy of scale). As a result, no few fishery business actors, both capture fisheries and

aquaculture, who engage in unsustainable fishing practices, even some still use fishing gear or materials that hazardous to fish, environment and human resources. Even more coupled with the scale of their economic business which is not yet feasible, so that the These fishery business actors are more likely to pursue production quantity solely, without paying attention to the carrying capacity of the ecosystem.

If it is considered in the aquaculture sector, the welfare of aquaculture actors can be measured by the Fish Cultivator Exchange Rate. Fish Cultivator Exchange Rate is a measuring instrument used to determine the exchangeability of cultivated fish for goods or services needed for production and household consumption needs. Fish Cultivator Exchange Rate is the ratio between the price index received by fish cultivators and the price index paid by fish cultivators which is expressed as a percentage. An overview of the Exchange Rates of Fishermen and Cultivators of Fish in West Pasaman Regency, West Sumatra Province is shown in table 4. Based on table 4, it can be seen that the results of fish farming in West Pasaman Regency, West Sumatra Province, Indonesia are still not sufficient to meet the daily needs of cultivators, the Fish Cultivator Exchange Rate is only slightly above the value of 100 so it can be concluded that the exchange rate is only around 100 means that the fishery community is breaking even and is not yet prosperous, the increase or decrease in the production price of fish cultivators in West Pasaman Regency, West Sumatra Province, Indonesia is the same as the percentage increase or decrease in the price of consumption goods and the income of the aquaculture community is the same as the expenditure. Therefore, another approach is needed to improve the welfare of the aquaculture community, one of which is something that has been owned but has never been empowered before, namely local wisdom “ikan larangan”, especially in the aquaculture sector.

Values and norms in the form of local wisdom adopted by a community which is community wisdom in the management of natural resources and the environment can be empowered where fishery activities with empowerment based on people's economy are very important and strategic for economic progress in the form of fisheries management. cultivation in improving the welfare of the community. Aquaculture activities in West Pasaman Regency, West Sumatra Province, Indonesia receive support from the government to be developed widely, but sustainable growth of this sector has not yet been achieved. The growth of the aquaculture sector is needed in order to meet food and nutrition security in the future but is also a challenge in terms of managing its impact on the environment. An illustration of the number of aquaculture households spread across 11 (eleven) sub-districts in West Pasaman Regency, West Sumatra Province, Indonesia based on data from the Central Bureau of Statistics of West Pasaman Regency, West Sumatra Province, Indonesia in 2021 as shown in table 5. Based on table 5, it can be seen that the number of aquaculture households in West Pasaman Regency, West Sumatra Province, Indonesia in this study is 1,303 fishery households. From an economic perspective, this will have an impact on improving the welfare of the community where culture in the form of local wisdom values that is participatory, adaptive and sustainable is something that has potential to improve the community's economy. An illustration of the amount of “ikan larangan” production in rivers in West Pasaman Regency, West Sumatra Province, Indonesia in 2021 is shown in table 6. based on table 6, it can be seen that the production of “ikan larangan” in the river has the potential to be developed in various sub-districts in West Pasaman Regency, West Sumatra Province, Indonesia with an average production of between 11

tons and 13 tons per harvest or annually. For the production of "ikan larangan" there has never been an official data collection and the economic value has never been calculated by the local fisheries service and Central Bureau of Statistics West Pasaman Regency, West Sumatra Province, Indonesia so that the production value is still not properly recorded. When calculated by the average price of freshwater fish of Rp. 25.000,- (twenty five thousand rupiah) per kilogram, the economic value of "ikan larangan" production is between Rp. 275,000,000,- (two hundred and seventy five million rupiah) up to Rp. 325,000,000,- (three hundred and twenty five million rupiah) at each harvest or annually.

4.3 Sosio Cultural Aspect of Local Widom "Ikan Larangan"

Based on observations, the economic results of "ikan Larangan" as local wisdom in West Pasaman Regency, West Sumatra Province, Indonesia are the result of the efforts of the community who apply Minangkabau culture that is wise to the environment and is not in vain with what has been given by God Allah. People can always take advantage of what is already available. This can be seen in one of the Minangkabau proverbs, "Gadanglah aia banda baru, nampak nan dari mandi angin. Elok nan usang dipabaru, pado mancari ka nan lain"with the meaning that rather than looking for something new, it is better to maintain and improve what is already there". The Minangkabau people have been taught by their ancestors to maintain and maintain existing resources given by God Allah rather than looking for something new.

The results of observations in West Pasaman Regency, West Sumatra Province also show that due to the current developments, the local wisdom of fisheries is no longer being taught to the next generation from generation to generation so that the values in local wisdom of fisheries as a It is feared that cultural heritage will decrease and even disappear. In addition, development progress can also eliminate the values of local wisdom, even though the value of local wisdom is one of the assets to achieve sustainable fisheries that already exist in the local community.

Based on observations, the West Pasaman community of West Sumatra Province applies local wisdom to aquaculture activities, namely "ikan larangan" which is cultivated in local rivers as an agreement to maintain the existence of fish that have been in the river since before. Local wisdom "ikan larangan" in the management of fishery resources in West Pasaman Regency, West Sumatra Province, Indonesia appears in the form of taboos or prohibitions. Both have different philosophical foundations. Abstinence has a religious-magical style, while prohibitions are related to customary law rules, although they have different foundations, both of them are in favor of the balance of nature and the guarantee of life for members of the community. Activities in the fishery sector also involve and cannot be separated from the role of institutions where the fishery sector cannot achieve sustainability without fishery institutions. Institutional is the boundary of a social system which is covered by formal and non-formal rules as a controller and director of interaction between humans in accessing resources.

The main object of prohibition in the model local wisdom "ikan larangan" is catching fish outside the stipulated time. That is, the main asset of "ikan larangan" that is kept in the river, and controlled collectively is the various types of fish that live in it. Before the implementation of the management model of "ikan larangan", the community conceptualized river flow as a shared resource that was freely accessible. At that time,

anyone could catch fish anytime and anywhere as long as it was not using illegal techniques such as “manuba” or poisoning and even electrocuting.

West Pasaman Regency, West Sumatra Province, Indonesia has community and cultural conditions as well as the physical elements of each region that differ between sub-districts, causing fisheries management strategies to also vary according to local conditions. The values and norms adopted by a community which is community wisdom in the management of natural resources and the environment can be empowered for fisheries management. Local wisdom owned by the community in the fishery sector includes "ikan larangan". The existence of “ikan larangan” in West Sumatra is part of the blue economy which is now a program of the Ministry of Maritime Affairs and Fisheries (KKP). The description of local fisheries wisdom in West Pasaman District, West Sumatra Province is shown in table 7. Based on table 7, it can be seen that various fishery local wisdoms have long been applied by the fishing community in West Pasaman Regency, West Sumatra Province with “ikan larangan” as the dominant local wisdom. Based on previous observations and research in West Pasaman Regency, West Sumatra Province, it appears that local communities participate in controlling the use of resources through forbidden fishing activities because they are the ones who have an interest in these natural resources due to the economic results of fish activities. Forbidden fishing will be used for village or village development. Fishery local wisdom in the form ‘ikan larangan” is carried out in the form of a tradition that is beneficial for the village or village economy economically for the development of the local village or village. The economic results of the “ikan larangan” are dominantly used for community activities such as filling village or village treasury funds, funds to build worship facilities, funding sources for village or village activities as well as from a social perspective to improve the relationship of the village or village community.

4. 4 Management of Local Widom “Ikan Larangan”

The management of fishery resources so far that is centralized (Centralized Government Management) has a big role in the failure of management. Fishery community development will be successful only if the main stakeholders are involved in every decision or policy making. Previous research has also shown that the government's ability to manage fish resources in inland public waters is very limited, so a management effort that involves local communities is needed as a form of community-based management. Local communities have their own systems for managing natural resources around their homes. Exploration of the value of local wisdom that exists or has existed in the lives of local communities related to the management and conservation of fish resources is absolutely necessary for the effectiveness and efficiency of community-based management (Empangau et al., n.d.). The existence of local fisheries wisdom shows that the active role of the community in fisheries management is an important part. Community participation can be approached by empowering the culture that develops in the community so that the application of a culture in the form of local wisdom in fisheries management will provide added value from the point of view of green fisheries productivity with a community-based monitoring and implementation local system.

In accordance with observations, it can be seen that the management system of “ikan larangan” that has been implemented by the community is participatory, adaptive and sustainable in the preservation of fishery resources. This kind of management is very effective and efficient because the community autonomously maintains and

manages it so that the community has more ownership and a sense of responsibility for the resources around them. The majority of people obey the prevailing norms, customs have a very important role in regulating social life. Adat is an identity or one that must remain at all times, customs that are firmly held by the community include various taboos and prohibitions related to river management, the proverb "Dimano Bumi Dipijak Disitu Langit di Junjung" describes this.

There three components apply in the management of “ikan larangan”: myths, customary law provisions, and customary institutions. This form of community-based management of fishery resources is carried out by closing seasons or areas within a certain time. The “ikan larangan” management system that has been implemented by the community is a participatory, adaptive, and sustainable community wisdom in the preservation of river fishery resources, especially local fish. This kind of management is very effective and efficient because the community autonomously maintains and manages it so that the community has more ownership and a sense of responsibility for the resources around them. West Pasaman Regency which has different conditions of society and culture as well as the physical elements of each region causes fisheries management strategies to also vary according to local conditions. The values and norms adopted by a community which is community wisdom in the management of natural resources and the environment can be empowered for fisheries management. Local wisdom that develops in the community can be used as a starting point for a management system. Subsequent research shows that local communities as users who are directly related to fish resources when working with local governments are generally more effective in achieving the expected results, so community participation is an important factor in the management of conservation areas and the sustainability of fish resources. Local communities will benefit if they participate and carry out their role in resource management through their traditional knowledge to formulate sustainable management strategies.

4. Conclusions

Development process it turns out that development is also a cultural process because the economy itself is part of cultural reality that can form economic sense. Economic progress shows the economic productivity of a region and cultural development as the identity of a region, both of which must complement each other in order to achieve economic prosperity through the empowerment of cultural assets through local wisdom, including one in the fisheries sector. Thus, This condition should motivate all parties to arrange concrete steps as soon as possible to effectively manage and empower the fisheries sector, especially aquaculture in order to obtain optimal results in achieving sustainable fisheries.

There are several policies that can be taken by the government in supporting the use of “ikan Larangan” as local wisdom to achieve sustainable fisheries. First, “ikan larangan” as local wisdom must be developed properly through a mutually supportive policy framework, so that this condition will encourage increase people's income, reduce environmental degradation, maintain ecology, and also maintaining the sustainability of “ikan larangan”in achieving sustainable fisheries. Second, local communities will benefit if they participate and carry out their role in resource management through their traditional knowledge to formulate sustainable management strategies.

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Table

Table 1 Types of Local Fresh Water Fish "ikan larangan" in West Pasaman Regency, West Sumatra Province, Indonesia by District

No.	District	Common Name/Local Name
1.	Sungai Beremas	Gabus/Bajuk, Barau,Tilan
2.	Ranah Batahan	Juaro, Saluang, Gabus/Bajuk
3.	Koto Balingka	Kapiat, Tilan, Gabus/Bajuk, Lampam, Semah
4.	Sungai Aua	Gabus/Bajuk, Barau
5.	Lembah Malintang	Kapiat/Kapiek, Gabus/Bajuk, Baung
6.	Gunung Tuleh	Gabus/Bajuk, Baung
7.	Talamau	Juaro, Gabus/Bajuk
8.	Pasaman	Gabus/Bajuk, Baung
9.	Luhak Nan Duo	Lampam, Gabus/Bajuk, Juaro
10.	Sasak R. Pasisie	Gabus/Bajuk, Barau
11.	Kinali	Gabus/Bajuk, Tilan, Baung

Source: District Fisheries Service, West Pasaman Regency, 2022

Table 2 Overview of the Contribution and Growth Rate of the Agriculture, Forestry and Fisheries Sector on Gross Regional Domestic Product (GRDP) West Pasaman Regency, West Sumatra Province On the basis of 2010 Constant Price (Billion Rupiah) Period 2017-2021

No.	Tahun	GRDP	GRDP of Agricultue, Forestry, Fisheries Sectors	Contribution (%)	Growth Rate (%)
1.	2017	10,384.3	4,491.56	43.33	3.58

		9			
2.	2018	10,925.63	4,721.30	42.80	5.12
3.	2019	11,411.83	4,891.53	41.01	3.61
4.	2020*	11,259.45	4,828.67	39.87	-1.29
5.	2021**	11,682.23	5,018.28	39.75	3.93

*temporary figure
**very temporary figures
Source: Central Bureau of Statistics West Pasaman District, 2022

Table 3 Gross Regional Domestic Product (GRDP) per Capita West Pasaman Regency, West Sumatra Province Based on 2010 Constant Prices for the Year 2017-2021 (Thousand Rupiah)

No.	Tahun	GRDP	Total Population	GRDP Per Capita
1.	2017	10,384.39	427.295	24,302
2.	2018	10,925.63	435.612	25,082
3.	2019	11,411.83	448.819	25,425
4.	2020*	11,259.45	430.138	26,175
5.	2021**	11,682.23	436.313	26,774

*temporary figure
**very temporary figures
Source: Central Bureau of Statistics West Pasaman District, 2022

Table 4 Fisherman and Fish Cultivator Exchange Rate (NTPi) West Pasaman Regency, West Sumatra Province on 2020

No.	Year	Exchange Rate
1.	2015	108.22
2.	2016	106.77
3.	2017	109.16
4.	2018	107.54

5.	2019	104.14

Source: Base Year 2019
Central Bureau of Statistics West Pasaman District, 2022

Table 5 Aquaculture Households in West Pasaman District, West Sumatra Province, Indonesia by District in 2021

No.	District	Number of House Hold
1.	Sungai Beremas	41
2.	Ranah Batahan	142
3.	Koto Balingka	94
4.	Sungai Aua	71
5.	Lembah Malintang	82
6.	Gunung Tuleh	54
7.	Talamau	98
8.	Pasaman	170
9.	Luhak Nan Duo	185
10.	Sasak R. Pasisie	172
11.	Kinali	194
	Total	**1,303**

Source: District Fisheries Service, West Pasaman Regency, 2022

Table 6 Total Production of Forbidden Fish in the River in West Pasaman Regency, West Sumatra Province, Indonesia Year 2021(Tons)

No.	Subdistrict	Production Quantity
1.	Sungai Beremas	12.58
2.	Ranah Batahan	13.47
3.	Koto Balingka	13.56
4.	Sungai Aua	11.18
5.	Lembah Malintang	11.09

6.	Gunung Tuleh	13.01
7.	Talamau	13.88
8.	Pasaman	18.4
9.	Luhak Nan Duo	16.1
10.	Sasak R. Pasisie	12.82
11.	Kinali	4.066
	Total	**140.156**

Source: Department of Marine Affairs and Fisheries, West Pasaman District, 2022

Table 7 Overview of Fisheries Local Wisdom in West Pasaman Regency, West Sumatra Province, Indonesia by District

No.	District	Kind of Local Wisdom	Benefit
1.	Sungai Beremas	Lom Bada Tradition in Jorong Pulau Panjang, Nagari Air Bangis and "ikan larangan"	Improving the community's economy, strengthening brotherhood, tourism objects
2.	Ranah Batahan	"Ikan Larangan"	Improving the community's economy, funds for village treasury
3.	Koto Balingka	"Ikan Larangan"	Improving the community's economy, funds for social activities
4.	Sungai Aua	"Ikan Larangan"	Community economic improvement
5.	Lembah Malintang	"Ikan Larangan"	Improving the community's economy, tourist attraction
6.	Gunung Tuleh	"Ikan Larangan"	Improving the community's economy,

			funds for social
7.	Talamau	"Ikan Larangan"	Funds for the village/village treasury
8.	Pasaman	"Ikan Larangan"	Funds for the village/village treasury
9.	Luhak Nan Duo	"Ikan Larangan"	Funds for village treasury
10.	Sasak R. Pasisie	"Ikan Larangan"	Funds for village treasury
11.	Kinali	"Ikan Larangan"	Funds for village treasury, tourist attraction

Source: District Fisheries Service, West Pasaman Regency, 2021

Figure

Figure 1: Research conceptual framework