

Empowerment Strategy Of Traditional Fishermen Community Towards Improving Household Economic Welfare In Nagari Painan Selatan, Iv Jurai District, Pesisir Selatan Regency

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ABSTRACT

Study This aim for analyze existing programs implemented by the government village and government area through service maritime and fisheries that have not been capable increase welfare economy House ladder fisherman traditional in Nagari Painan Selatan, IV Jurai District, Jurai Regency South Coast, and analyze form of empowerment strategy public fisherman traditional For improvement to welfare economy House stairs in Nagari Painan Selatan, IV Jurai District, Jurai Regency South Coast. This study uses the theory of community empowerment strategy proposed by Mardikanto and Subianto (2019), the theory evaluation empowerment society proposed by Daniel Stufflebeam (2007), and the theory of welfare economics proposed by Amartya Kumar Sen. Research uses a post-positivistic paradigm with a mixed-method approach. Withdrawal informant conducted with purposive sampling of qualitative and technical election respondents used Arikunto 2010. Unit of analysis study: This is on the stairs of individuals and homes. Initial data collection techniques included study documents, distribution questionnaires, in-depth interviews, observation participants, and FGD. Procedure data processing qualitative uses thinking Milles Huberman and quantitative uses AHP and SWOT. Research results This shows that the program implemented by the government has not yet increased welfare economy house ladder due to capacity source Powerman Not yet own skills, access to capital and markets is still limited, program implementation in post-program mentoring and monitoring is not optimal, and program implementation is not yet fulfilling the need for fishermen. The empowerment strategy community is carried out by strengthening the capacity and skills of fishermen, giving access capitalization to fishermen, strengthening institutional fishermen and groups fishermen, and strengthening the development of business productive fishermen.

Keywords: Community Empowerment Strategy, Fishermen Traditional, Economic Welfare, Household

I. INTRODUCTION

Indonesia is the worlds largest maritime country. The number of islands in Indonesia has reached 17,504 islands and a coastline of 95,181 km. The large coastline has abundant marine resources, with a sea area reaching 5.8 million km² which includes 3.1 million km² of territorial area and 2.7 million km² of exclusive economic zones (EEZ). In addition, Indonesia has marine economic potential estimated to reach US\$ 1.2 trillion per year. Indonesia's marine biodiversity includes 8,500 species of fish, 555 species of seaweed, and various coastal ecosystems such as coral reefs, mangroves, and seagrass beds. This wealth reflects Indonesia's position as one of the world's centers of marine biodiversity. Furthermore, Indonesians utilize the sea as a source of household income [1].

Indonesia, a region where livelihoods are based in the sea, has an impact on the local economy. This indicated a high level of dependence on the sea, particularly in coastal areas. This is evident in the following figure.

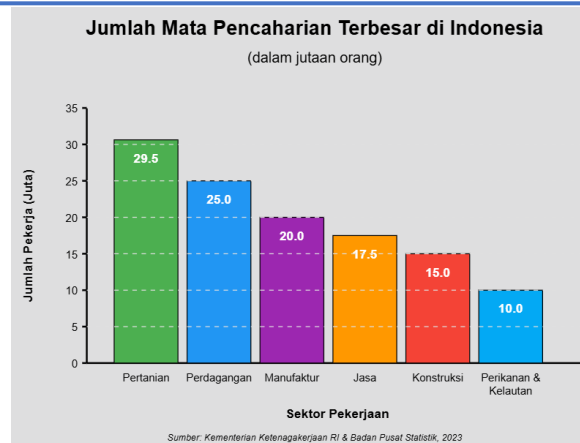


Figure 1. Number of Largest Livelihoods in Indonesia (Ministry of Manpower of the Republic of Indonesia & Central Statistics Agency, 2023)

Figure 1 shows that Indonesian society's dependence on the sea ranks sixth among the six largest livelihoods in Indonesia. Furthermore, of Indonesia's 38 provinces, one of the professions whose livelihoods depend on the sea is West Sumatra [2]. The following data show the number of Fishermen in West Sumatra Province by City/ Regency [3].

Table 1. Amount Fishermen in West Sumatra Province Based on Regency and City

No.	City/ Regency	Amount (person)	Fisherman	Percentage (%)
1	South Coast	12,468		27.8
2	Padang	7,853		17.5
3	Pariaman	5,634		12.6
4	West Pasaman	4,987		11.1
5	Religion	3,842		8.6
6	Padang Pariaman	3,726		8.3
7	Mentawai Islands	3,215		7.2
8	Padang Panjang	987		2.2
9	South Solok	756		1.7
10	Dharmasraya	345		0.8
11	Bukittinggi	124		0.3
	Total	44,793		100.0

Source: BPS West Sumatra Province, 2023

Table 1 shows that of the 18 regencies/cities in West Sumatra, 11 provinces and regencies/cities depend on the sea for their livelihood. These data also show that the five regencies/cities are not dependent on the sea [4]. Table 1.1 shows that the highest number of fishermen is in the Pesisir Selatan Regency [5]. The Pesisir Selatan Regency has 15 sub-districts, and the sub-district with the highest number of fishermen is Koto XI Tarusan. Of the 15 sub-districts in the Pesisir Selatan Regency, nine depend on the sea for their economic resources. The results are presented in the following table:

Table 2. Amount Fisherman Based on District and Type of Fishermen

No	Subdistrict	Number Fishermen (people)	of (%)	Number Modern Fishermen (people)	of (%)	Number Traditional Fishermen (people)	of (%)
1	Koto XI Tarusan	2,875	23.1	437	28.6	2,438	22.3
2	Shadow	1,965	15.8	250	16.2	1715	15.6
3	IV Jurai	1,753	14.1	247	16.0	1506	13.9
4	Cotton Stem	1,562	12.5	195	12.6	1370	12.5
5	Silk	1,348	10.8	159	10.3	1189	11.0
6	Lengayang	1,127	9.0	107	6.9	1020	9.3
7	Coastal Area	894	7.2	73	4.7	821	7.5
8	Linggo Sari Baganti	578	4.6	50	3.2	525	4.8
9	Behead the Question	366	2.9	24	1.5	342	3.1
	Total	12,468	100	1,542	100	10,926	100

Source: Department of Maritime Affairs and Fisheries, Pesisir Selatan Regency, 2023

Table 2 shows that fishermen in the nine sub-districts are divided into two categories: traditional fishermen and modern fishermen. The percentage of traditional fishermen is high [6]. The percentage of fishermen in

Jurai sub-district IV was 87.64%, compared to 12.36% for modern fishermen. This indicates that Jurai sub-district IV is an area that relies on natural resources for its economy, ranking third in the data above. Jurai sub-district IV has 20 villages, three of which are dependent on marine resources [7]. The results are shown in the following table:

Table 3. Percentage Dependence to Marine Resources Based on Village Level

No	Village Name	Percentage Dependence (%)
1	South Painan	78.5
2	Sago Salido	10.3
3	Balance	11.2
Amount		100

Source: Painan Selatan Village Head's Office, 2025

Table 3 shows that 78.5% of South Painan is dependent on marine resources. However, this area is also recorded as having a low level of fisherman welfare, falling below the poverty line compared with other areas. This is evident in the average income data for the fishing community in South Painan [8].

Table 4. Quantity Data Fisherman Traditional, Modern and Average Income Fishing Community Traditional Based on Nagari in IV Jurai District

No	Village	Amount Fisherman	Amount Fisherman Traditional	Amount Modern Fisherman	Percentage Amount Fisherman Traditional	Average Fisherman Traditional	Income
1	Balance	218	138	80	9.17	2,000,000 – 3,000,000	
2	Sago Salido	168	101	67	6.70	2,000,000 – 4,000,000	
3	South Painan	1,367	1,267	100	84.13	1,200,000 – 2,000,000	
Amount		1,753	1,506	247	100		

Table 4 shows that the three largest villages with the lowest income are Salido, Sago Salido, and Painan Selatan. This also shows that Painan Selatan has the lowest income compared to other villages, namely Rp. 1,200,000.00 to Rp. 2,000,000.00 [9]. This indicates that Painan Selatan is a village with an average poor community, so the welfare of local fishermen is relatively low [10]. In addition, various efforts have been made by the village government and local governments to address the problem of poverty and improve the welfare of fishermen in Painan Selatan Village. This can be seen in Table 1.5 types of programs that have been implemented by the village government from 2019 to 2024 [11]:

Table 5. Government Programs of South Painan Village from 2019 to 2024

Year	Activities / Assistance	Amount Recipient
2019	Socialization Use Net Green Thread	The entire fishing community of South Painan Village
	Help Net Green Thread	10
	Help Seeds Duck Grouper	-
	Help Boat Jukung	6
	Help 15 HP Outboard Engine	4
2020	Help Net	10
	Socialization Fishing in a Traditional	The entire fishing community of South Painan Village
	Fishing Equipment Assistance	40
2021	Help Fish Cooler	40
	Socialization Development Fisherman For	The entire fishing community of South Painan Village
	Economic Support	2
2022	Help Dongfeng Machinery	The entire fishing community of South Painan Village
	Socialization Gemarikan (Community Movement to Eat Fish)	5
	Help 15 HP Outboard Engine	5
	Help 40 HP Outboard Engine	5
2023	Socialization Development Technology to	The entire fishing community of South Painan Village
	Fisherman Traditional	10
	Help 15 HP Outboard Engine	2
	Help 40 HP Outboard Engine	20
2024	Cool Box Assistance	The entire fishing community of South Painan Village
	Socialization Fish Processing to Fishermen Group	

program in South Painan Village, which runs from 2019 to 2024 with a different focus each year, including the socialization of fishing techniques, fish processing, and the use of fishing equipment. Overall, this program reflects commitment to empowering fishermen and improving the public economy through planned assistance as well as directed, with objective support and advance sector fishery local as well as preserve source existing power [12],[13].

However, based on the evaluation, these programs have not been able to significantly improve the welfare of the fishing community in Nagari Painan Selatan[14]. Furthermore, traditional fishing gear still dominates fishing activities among fishermen, indicating low adoption of modern technology in local fishing activities. Furthermore, fishermen in Nagari Painan Selatan, IV Jurai District, have the highest poverty rate compared to Nagari Salido and Sago Salido [15]. This is presented in table [16].

Table 6. Comparison of Poverty Rates Based on Nagari in IV Jurai District

No	Village	Poverty Rate Percentage
1	Balance	5.7
2	Sago Salido	5.0
3	South Painan	89.3
Amount		100

Source: Painan Selatan Village Head's Office, 2025

table 6 shows that Painan Selatan Village has the highest poverty rate, even though community empowerment programs have been carried out by the local government through the village government and maritime and fisheries services. This shows that there is a significant gap between the empowerment programs that have been implemented and the results achieved in the context of improving the welfare of fishermen in Painan Selatan Village [17]. Therefore, this study is interested in improving the empowerment strategy of traditional fishing communities to improve the economic welfare of households in Painan Selatan Village, IV Jurai District, and Pesisir Selatan Regency [18]. This study aims to analyze the programs that have been implemented by the village government and the local government through the maritime and fisheries service that have not been able to improve the economic welfare of traditional fishing households in Painan Selatan Village, IV Jurai District, Pesisir Selatan Regency, and analyze the form of empowerment strategies for traditional fishing communities to improve the economic welfare of households in Painan Selatan Village, IV Jurai District, Pesisir Selatan Regency. This study used the theory of community empowerment strategies proposed by Mardikanto and Subianto (2019), the theory of community empowerment evaluation proposed by Daniel Stufflebeam (2007), and the theory of economic welfare proposed by Amartya Kumar Sen [19].

II. METHODS

This study uses a mixed-method approach with-post-positivistic paradigm that combines qualitative and quantitative methods to comprehensively understand phenomenon empowerment in fishermen [20]. The research location was Nagari Painan Selatan, IV Jurai District, Regency South Coast, West Sumatra, which was chosen because its own level dependence was highest for source power sea (78.5%), but level poverty was also the highest (89.3%) in the sub-district population. study included 1,267 fishermen traditionally combined in 317 head families [21]. The quantitative sample used the proportional random sampling technique of 126 respondents (10% of the population), while informant qualitative was chosen purposively with the following criteria: household ladder fishermen below the poverty line with income below UMR, still use tool catch traditional, participate in empowerment programs government, and understand objective study [22].

Qualitative data were collected through in-depth interviews with fishermen and stakeholders (guardians village, service fisheries, sub-district head), observation participants to catch fishing and processing results, Focus Group Discussion (FGD) with group fishermen, and studies documenting empowerment programs. Quantitative data were collected through a questionnaire structured with a Likert scale (1-5) which included 13 indicators from three variables: evaluation empowerment community (four CIPP indicators), empowerment strategy society (five indicators), and welfare economics (four Capability Approach indicators). Qualitative data analysis uses the Miles and Huberman (1992) technique via stage data collection, data reduction, data presentation, and data extraction conclusions [23]. Quantitative data analysis uses three methods [24]: (1) descriptive analysis for count average score and percentage success for every dimension, (2)

SWOT analysis to identify internal factors (Strengths-Weaknesses) and external factors (Opportunities-Threats) as well as formulate strategies through the IFAS-EFAS matrix, and (3) Analytical Hierarchy Process (AHP) for prioritizing strategy through matrix comparison in pairs with Saaty scale (1-9), calculation weight priority using geometric mean, and consistency test with Consistency Ratio ($CR \leq 0.10$). Data validity is maintained through triangulation sources (data from fishermen, government, and documents), triangulation methods (interviews, observations, FGD, questionnaires), and member checking to confirm the interpretation results to informants [25].

III. RESULTS AND DISCUSSION

1. Programs implemented Government For Increase Household Economic Welfare in South Painan Village

Fishermen households in Nagari Painan Selatan engage in fishing activities to meet their household needs. Government-led programs aim to improve household economic development and community empowerment in the fishery sector. These programs provide opportunities for fishermen to improve their economic well-being. Government programs include outreach, capacity building, social assistance, skills training, small business assistance, and infrastructure assistance [26]. The field findings indicate that despite government programs, they have not yet significantly improved the economic well-being of fishing households. An interview with Marfil Candra explained that [27].:

"In my opinion, the programs being implemented don't meet the community's needs. What I mean is that the government may have good intentions in providing assistance or programs, but what they provide does not align with what we need on the ground. Therefore, the results are less than optimal." [28].

A government program implemented to improve the skills and economic well-being of fishermen in meeting household needs failed to address the specific needs of the fishing community in the village. Research has revealed the following reasons why the government program failed to improve household well-being in South Painan Village [29]:

a) Human Resources Capacity Does Not Yet Have Skills

The education level of the population in Nagari Painan Selatan is still very low, which has a significant impact on the ability of fishermen to adopt technology, manage business, and access market information [30].

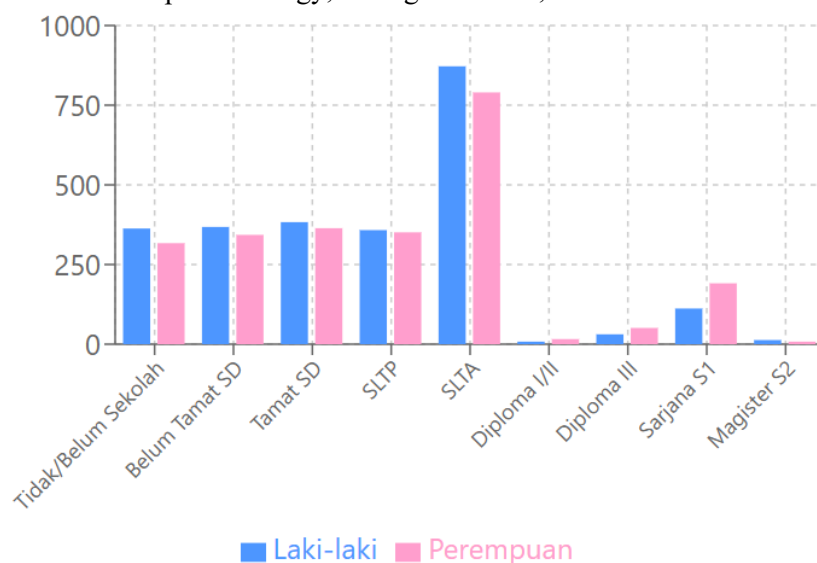


Figure 2. Education Level of the South Painan Village Community

Based on the image data, community education in South Painan Village is still classified as low and average high school graduates. This is show that the South Painan Nagari Community has amount resident Of the total 4,939 residents, 680 people (13.76%) did not or Not yet Once enjoy formal education, 711 people (14.40%) have not graduated from elementary school, and 747 people (15.12%) only graduated from elementary school. This means that almost 43% of the total population has very low education, or even no education. Those who graduated from junior high school were 709 people (14.35%) and those who graduated from high school were 1,662 people (33.64%), while those who graduated from very few were 106 people with diplomas (2.15%), 303 people with bachelor 's degrees (6.13%), and only 21 people with a master's degree (0.43%)[31].

b) Access to Capital and Markets Remains Limited

Based on interviews with fishermen in Nagari Painan Selatan, access to formal capital is very difficult because banks do not have collateral or structured financial reports [32].

"We've tried to borrow from the bank several times, but we've always been rejected because we don't have a land certificate or other collateral. The process is also complicated and takes a long time." (Jamalus, August 4, 2025).

Based on the interview results above, it is explained that when they urgently need capital to repair their boats or buy fuel, fishermen are forced to borrow from loan sharks at very high interest rates, reaching 10-20% per month.

This situation is exacerbated by the dominance of middlemen, who control the fish supply chain from fishermen to the market. Fishermen are often in debt to middlemen, forcing them to sell their catch to them at prices far below market value [33].

"The middlemen determine the price, and we can't bargain because we're already in debt. Sometimes, we only get Rp30,000 for fish that should be sold for Rp50,000 per kilo." (Jamalus, August 4, 2025).

This supply chain disruption deprives fishermen of the opportunity to earn fair profits, while middlemen reap substantial profits as intermediaries who control market access. The following table shows the average scores for the empowerment evaluation dimension through programs implemented by the South Painan Nagari government.

Table 7. Average Score Per Dimension

Dimensions	Average Score	Category	Percentage Success
EMPOWERMENT EVALUATION			
Context	3.44	Tall	68.8%
Input	3.56	Tall	69.3%
Process	2.61	Currently	52.2%
Product	2.28	Low	45.6%
Average Evaluation Empowerment	2.97	Currently	58.9%
ECONOMIC WELFARE			
Opportunities	2.15	Low	43.0%
Capabilities	2.39	Low	47.8%
Participation	2.68	Currently	53.6%
Freedoms	2.94	Currently	58.8%
Average Economic Well-being	2.54	Currently	50.8%
IMPACT ON HOUSEHOLDS	2.27	Low	45.4%
OVERALL SCORE	2.38	Low	47.6%

Based on table 7, it can be shown that the cause of failure in the program that has been implemented is that it is not based on the real needs of the fishing community without involving fishermen in the planning. Furthermore, there is no consideration of local social culture or time implementation clash with activity going to the sea. Minimal involvement figure community and senior fishermen so that the impact is not relevant to need every day. Thus, low-participation fisherman program material was not applicable.

Furthermore, program funds are very limited and not sufficient; the facilities provided no adequate facilities infrastructure, no availability, competence companion low, and not understanding condition field and institutions group fisherman not yet strong. Thus, the impact is an unsustainable program, fishermen no benefit real, and the technology introduced no access. Furthermore, the product does not produce concrete outputs, skills fisherman no increase, diversification business no implemented, system very weak information, access technology, and the market do not open. As there has been No There significant economic change, fishermen still rely on old patterns, and programs do not give mark plus [34].

c) Program Implementation is Not Optimal in Post-Program Assistance and Monitoring

The government assistance provided to fishermen in South Painan Village is still very limited and tends to be ceremonial. The assistance provided typically consists of an initial outreach during the distribution of aid and brief training on how to use the equipment. Once the program is underway, there is no ongoing support to ensure that fishermen truly utilize the facilities optimally. According to Maradis, in an interview, he said.

"The problem there is a lack of mentoring and evaluation from service related. The program there is, but after given No is there anyone monitoring, no someone accompanied us in using it with the right. Finally, the objectives of the program were not achieved. The evaluation is also not there is, so no know what the program succeeds." (Dedi Suadi, August 11, 2025).

In terms of monitoring, the government rarely audits the availability and condition of the facilities provided. Many damaged boats and engines go undetected, forcing fishermen to repair them at their own expense or to leave them unused. The lack of a structured monitoring system leads to very low program sustainability, with many aid facilities ultimately becoming non-functional after several months or years. This situation suggests that the empowerment program focuses solely on disbursing funds and delivering aid without considering the long-term impact on fishermen's welfare [35].

d) Program Implementation Has Not Met Fishermen's Needs

Based on interviews with several fishermen in South Painan Village, the government has provided assistance in the form of fiber boats, fishing nets, small-capacity outboard motors, and coolboxes for storing their catch. However, this assistance often does not meet the needs of fishermen in the field. Fishermen require boats with larger engines to reach more distant waters, modern fishing gear such as GPS and fish finders to increase efficiency, and large-capacity cold storage on land to maintain the quality of their fish before they are sold. Furthermore, fishermen need access to stable subsidized fuel, safety insurance at sea, and technical training in the use of fishing technology [36]. This gap between the assistance provided and the actual needs has resulted in empowerment programs not having a significant impact on improving fishermen's welfare. According to Marfil Candra, in his interview he explained that [37]:

"What we need most is increased capacity in developing fisheries businesses. We need training and guidance on how to better develop this business, from fishing techniques to processing the catch to marketing it." (Marfil Candra, August 4, 2025)

This explains why the fishing community in the South Painan area needs an increased capacity to develop fisheries businesses, and there needs to be consistent training in terms of fishing and processing to marketing, but in reality, the government program is still not optimal in its implementation.

2. Forms of Empowerment Strategy for Fishermen Community Traditional For Improvement Economic Welfare of Households in South Painan Village

Traditional fishing households in the South Painan Village play a crucial role in improving the local coastal economy. However, the conditions faced by traditional fishermen are considered vulnerable because of their dependence on nature, limited access to technology and capital, and low levels of knowledge in accessing markets as a community empowerment strategy. Fishermen traditional in South Painan Village towards nature is very high and makes them prone to the economy. They can only go to sea moment weather support, so that when season wind tight or storm arrived, activity going to sea stopped and income families directly disconnected. In addition, the results are highly dependent on the cycle of natural fish that cannot be controlled, causing fluctuations in very low income between season peak and season famine [38].

With boats and equipment simple traditional, reach going to sea they limited only to waters near competitive beaches height and yield the catch more little. Limitations skills and capital to make they No Can source income alternative moment no can going to sea. As a result, when natural, unfriendly, family fishermen face difficulty in the economy Because no there income can be reliable This makes the house ladder fisherman very vulnerable and requires empowerment strategies to reduce their total dependence on the nature of the condition. The empowerment strategy for fishing communities in South Painan is as follows:

a) Strengthening Fishermen's Capacity and Skills

The strengthening capacity and skills of fishermen are a form of empowerment strategy that focuses on improving quality source power through systematic and structured training and mentoring. Based on field data from the Nagari community, South Painan has low human resource capacity because the average society goes to school up to high school/equivalent; thus, information on the use of modern tools and technology is still very difficult for the local community and still uses traditional methods. This strategy was designed to increase the knowledge and skills of fishermen in various aspects, starting from management finance house stairs that include bookkeeping simple, planning expenditure, and management savings, up to mastery of modern technology in fishing, such as the use of GPS, fish finders, and tools catch more efficiently. Based on interviews with one of them, fishermen in the village of South Painan said that [39]:

" We provided training for the use of modern capture tools, but we do not understand its use. Even if we did, we do not accompanied by an expert; if you want ask to friend other fishermen, we are the same Confused For use '. (Darmayanto, August 2025)

In addition, this program also provides an understanding of diversification efforts so that fishermen not only depend on the results catch only, but can also develop business-side jobs, such as processing results or cultivation sea. With improvement comprehensive human resource capacity, fishermen expected capable manage his business in a way more professional, adopt innovation technology, and take decision more business Good For increase productivity and well-being economy family [40].

Following is results processing researchers in determine priority strategies in pairs with use AHP analysis (Analytical Hierarchy Process):

Table 8. Matrix Comparison Paired Every Strategy Strengthening Fishermen's Capacity and Skills

Strengthening Fishermen's Capacity and Skills	Opportunity	Ability	Participation	Freedom
Opportunity	1	2	0.3333	4
Ability	0.5	1	0.25	3
Participation	3	4	1	7
Freedom	0.25	0.3333	0.1429	1
Amount	4.75	7.3333	1.7262	15

Based on the table on show, participation is on the score highest, indicating that the training program has a level of involvement active very good fishermen. Next, the criteria opportunities for skilled fishermen will provide opportunities for a broad economy. As for the programs that can be recommended in the form of training techniques, modern and environmentally friendly fishing environments, training processing and preservation results in sea, training management business fisheries, training safety work at sea, and mentoring sustainable by energy experts. [41]

b) Providing Access to Capital to Fisherman

Giving access capitalization to fisherman is form a purposeful strategy for facilitate fisherman in get source easy, cheap and sustainable financing for development business fishery they. This strategy become key important Because limited capital is one of the obstacle main obstacle fisherman for modernize tool catch, increase scale production, and development business productive others. Through this strategy, fishermen can access various sources of capital, such as credit people's businesses (KUR), revolving funds from government areas, loans from cooperative fishermen, or scheme Sharia financing with low interest and easy requirements. Based on the results, the interview explained the that [42]

"usually we already have can results catch There is middlemen who sell with price low so that we too become difficult in marketing, if you want borrowing is also difficult because we don't There is collateral for guaranteed to the bank" (Marfil, August 4, 2025)

Capital can be used to buy more motor boats, complete modern equipment capture such as net gills or purse seines, build cold storage to keep results catch, develop business fish processing, or even open business cultivation sea. With adequate access to capital, fishermen are No Again longer entangled in green system or debt to middlemen with high interest rates. This exploits and impoverishes them, so that they can reach an independent economy and improve welfare families in a way significant. AHP results for the strategy to be implemented.

Table 9. Providing Capital Access to Fisherman

Providing Access to Capital To Fisherman	Opportunity	Ability	Participation	Freedom
Opportunity	1	2	0.5	3
Ability	0.5	1	3	4
Participation	2	0.3333	1	5
Freedom	0.3333	0.25	0.2	1
Amount	3.8333	3.5833	4.7	13

Based on the table on access capitalization becoming key for increasing scale business, modernization tool capture and development of business productivity, where there is sufficient capital, will allow fishermen to become independent in a way economy. In the data above, capital becomes a key opportunity business new, and the existence of capital can also increase operational business ability, as access to capital will push participation in the activity economy so that the capital provided will reach financial freedom. The recommended strategy is to provide credit to special fishermen with low interest, revolving capital assistance programs through group fishermen, facility access to institutional finance micro and cooperatives, assistance grants for poor fishermen, and existence mentoring management finance and bookkeeping business fishermen.

c) Strengthening Institutional Fishermen and Fishermen Groups

Strengthening institutional fishermen and groups fishermen is a designed strategy for building an organization of solid, legal fishermen with good governance as receptacle collectives in managing source power, access opportunities, and facing challenges together [43]. This strategy is important because fishermen working

individually have very weak bargaining with middlemen and markets; however, they organize in a way collective they can have a better bargaining position strong in determining price sell, buy material burner, and tools catch in a way wholesale with price more cheap, and marketing results catch in a way together for get higher price fair. Based on the results, the interview explained:

“Results the catch we got we usually sell straight away, but we were disturbed with existence middlemen around the beach because they sell higher prices cheap. We do not have any either institutional or highly structured organization So Confused for manage results existing catch.” (Maradis, August 4, 2025)

Strong institutions also function as bridges to build networking and partnerships with various parties, such as government regions, service maritime and fisheries, institutions finance, college high, company private sector, and non-governmental organizations that can open access to empowerment programs, training, capital assistance, technology, and more market opportunities. In addition, the institutional provides a receptacle for fishermen, for deliberating, conveying aspirations, and in a democratic direction development community they, so that sustainability of empowerment programs can awake in the long term even after the intervention government ended. Based on the results of the AHP data that were obtained as follows [44]:

Table 10. Strengthening Institutional Fishermen and Fishermen Groups

Strengthening Institutional Fishermen and Fishermen Groups	Opportunity	Ability	Participation	Freedom
Opportunity	1	5	4	6
Ability	0.2	1	2	4
Participation	0.25	0.5	1	5
Freedom	0.1667	0.25	0.2	1
Amount	1.6167	6.75	7.2	16

Based on the table, the above data show that the highest score is at the institutional level so that fishermen are capable of increasing the capability of collective fishermen. Participation also becomes the second highest in receptacle participatory active in decision-making. Thus, open-access opportunities through network institutions provide freedom in organizations. The recommended strategies are formation and strengthening group fishermen (Pokmasnelayan), training management organization and leadership, facilitation legality institutions (AD/ART, structure organization), formation of cooperative fishermen, building network with institution government and private sector, mentoring administration, and finance group.

d) Strengthening Productive Fishermen's Business Development and Access to Information to fisherman

Development of business-productive fishermen is a diversification strategy economy that aims to increase mark-plus product fisheries and create source income alternatives outside activity fishing, which is highly dependent on weather, seasons, and sea conditions. This strategy push fisherman for process results, catch become various products worth plus tall, such as salted fish, smoked fish, pindang fish, shrimp paste, fish crackers, fish floss, fish meatballs, or product innovative others who have power save longer, price sell more high, and profit margins larger than selling fish in fresh form. Based on the interviews conducted [45].

" If we usually catch dried in the sun, then processed fish become salted fish, then separated based on types and categories; neither do we lot process results catch besides sold and made into salted fish, so only that our existing income, if weather not good, salted fish or even dried fish takes a long time for us to process it " (Jamalus, August 4, 2025).

Diversification businesses also include the development of cultivation sea like fish cages net floating for grouper fish or snapper, cultivation grass sea, cultivation shell pearls, or even development tour marine and homestays that utilize potential coast and beauty sea. With their own diverse business productivity, fishermen can reduce the risk economy when the results catch decrease, which results in bad weather or season famine, absorb power work member families, especially wives and children, to increase income, house stairs, and build a better resilience economy tough in face various shocks and uncertainties. The following are the results of the AHP processing [46]:

Table 11. Strengthening Productive Fishermen's Business Development

Strengthening Productive Fishermen's Business Development	Opportunity	Ability	Participation	Freedom
Opportunity	1	3	4	5

Strengthening Productive Fishermen's Business Development	Opportunity	Ability	Participation	Freedom
Ability	0.3333	1	3	4
Participation	0.25	0.3333	1	3
Freedom	0.2	0.25	0.3333	1
Amount	1.7833	4.5833	8.3333	13

Based on the table, diversification and development businesses are important for increasing mark-add and subtracting risk dependence on one type of business. This strategy is effective after the capacity, institutions, and available capital. The recommended strategies are as follows: development business processing results sea (salted fish, smoked fish, shrimp paste, etc.), development business cultivation sea (grass) sea, shellfish, etc.), development tour maritime and seafood cuisine, development of cold storage and places fish auction (TPI), facilitation of partnership with industry processing, training entrepreneurship, and innovation products. As for the results, AHP processing is explained in accordance with the table below [47].

Table 12. Strengthening Access to Information and Markets Fisherman

Strengthening Access to Information and Markets Fisherman	Opportunity	Ability	Participation	Freedom
Opportunity	1	0.25	3	4
Ability	4	1	5	6
Participation	0.3333	0.2	1	3
Freedom	0.25	0.1667	0.3333	1
Amount	5.5833	1.6167	9.3333	14

Based on table data on show that access to information and markets is important For efficiency and effectiveness marketing. Although it is the least weighted, this strategy is still essential as a support for previous strategies. The recommended strategies are provision system information real-time fish prices, supply information weather and forecast wave sea, training utilization technology information (smartphone, Internet), development of e-commerce platforms for product fisheries, facilitation partnership with retailers and supermarkets, and promotion of local fishery products through social media [48].

e) Formulation of Priority Empowerment Strategy

Based on the SWOT relationship analysis, five empowerment programs were formulated with weights based on priority level and expected impact.

Table 13. Fishermen Empowerment Strategy and Its Weight

Ranking	Empowerment Strategy	Weight	Justification
1	Fishermen's Capacity and Skills	45%	Addressing the top 4 critical weaknesses (W1,W4,W6,W8); Capitalizing on the biggest opportunities (O1); Direct impact on strategy
2	Providing Access to Capital to Fishermen	22%	Overcoming capital and equipment limitations (W2,W3); Financial resources for implementation
3	Strengthening Fishermen's Institutions and Groups	20%	Strengthening bargaining position; Long -term sustainability
4	Fishermen's Business Development	8.5%	Diversification of risks and income sources
5	Strengthening Access to Information and Markets	4.5%	Reducing dependence on middlemen
TOTAL		100%	

Based on the data above, it can be shown that:

- Relevance to critical weaknesses: The higher the scores of weaknesses that can be addressed, the higher is the weight.
- Alignment with the highest odds: Strategies that exploit the highest scoring odds receive a greater weight.
- Direct impact on economic well-being: Strategies that provide immediate and long-term impacts receive higher priority [49].
- Multiplier effect: strategies that provide cascading benefits to other aspects receive higher weighting.

Strategy 1: Strengthening Fishermen's Capacity and Skills (45%) received the highest weight with very strong justification:

1. Addressing the four weaknesses simultaneously: weak financial management (W6), insufficient access to technology (W4), low education (W1), and limited diversification (W8). This is the highest-scoring weakness (4.4-4.7) [50].
2. Taking advantage of the biggest opportunities [51]: Government training programs (O1, score 4.6), local government support (O6, score 4.4), and mentoring programs (O10, score 4.2) [52].
3. High multiplier effect: Improving human resource capacity impacts all aspects of fishermen's lives. Trained fishermen have easier access to capital (program 2), manage institutions (program 3), develop productive businesses (program 4), and utilize market information (program 5) [53].
4. Long-term investment: Building human resource capacity is a sustainable investment. Once fishermen acquire knowledge and skills, the benefits will last throughout their lives and can be passed on to the next generation.
5. Alignment with Turn-Around Strategy: WO strategies require a focus on improving internal weaknesses. Capacity-building programs are the most effective way to transform weaknesses into strengths [54].

Strategy 2: Providing Access to Capital (22%) is given second priority because:

1. Capital is an enabler for the implementation of training outcomes [55].
2. Addressing two key weaknesses: limited capital (W3, score 4.3) and traditional equipment (W2, score 4.1), leveraging the availability of capital assistance programmes (O2).

Strategy 3: Institutional Strengthening (20%) is important to: Ensure program sustainability

1. Strengthening the bargaining position of fishermen Reducing dependence on middlemen (W7)

Strategies 4 and 5 received lower weights (8.5% and 4.5%) because they are supporting strategies, whose effectiveness depends on the success of the three main programs [56]. Business and marketing diversification will be more effective if fishermen have adequate capacity and access to capital.

IV. CONCLUSIONS

The programs implemented by the government have not been able to sustainably improve fishermen's economic welfare. Because First capacity source Power man not yet own skills where level education the community in South Painan Village is still very low, which impacts the ability of fishermen to use technology, manage business, and access market information. Second, access to capital and markets is still limited because public No has collateral received by the bank and does not own report structured finance. Third program implementation is not optimal in post- program mentoring and monitoring, things This happen Where form mentoring only in the form of formality beginning moment handover help as well as training short about the tools provided, even after the program runs No There is mentoring sustainable. The fourth program implementation has not yet fulfilled fishermen, facilities, and infrastructure provided by government No in accordance with the needs of real fishermen in the field. Fishermen Actually more need boat with more machines big so you can reach deeper waters far, tool modern fishing equipment such as GPS and fish finders for increase efficiency, as well as cold storage with a capacity big on land For guard quality of fish before sold. In a way, the overall form of the program that has been implemented by the government Good in the form of providing facilities and infrastructure as well as training no walk with good so that not yet capable increases welfare economy public fisherman village South Painan.

To increase the welfare economy of fishermen, an effective and comprehensive strategy is needed. As for the form of strategy that can be implemented based on AHP and SWOT analysis are first strengthening capacity and skills fishermen, due to low human resources based on level average education up to high school so that the low-capacity fisherman community in the village of South Painan can carry out skills fishermen with good. Second, giving access capitalization to fishermen, because no special capital obtained public fisherman so that no one can rotate nor does it return the initial capital obtained own collateral that can be submitted to the bank. Third, strengthening institutional fishermen and groups of fishermen, namely the strategy that will be done in building organization fishermen who are solid, legal, and have good governance in managing source power and accessing existing opportunities. Fourth, strengthening the development of business productive fishermen, namely the diversification strategy economy that aims to increase mark-plus product fisheries and create source income alternatives outside activity fishing, which is highly dependent on weather, seasons, and sea conditions. Fifth access information and markets to fisherman done with objective provision information weather and forecasts wave sea as well as development of e-commerce platforms in increase welfare The economy of the fishing community in South Painan Village.

REFERENCES

- [1] F. Wan Tan, L. Nesti, E. Y. Yonnedi, En E. R. Ridwan, "Strategy To Improve Economic Condition Of Fishermen Living In The Coastal Area In Kabupaten Pesisir Selatan", *J. Bus. Socio-Economic Dev.*, Vol 3, No 1, Bll 69–85, Jan 2023, Doi: 10.1108/Jbsed-02-2021-0019.
- [2] Nguyen & Smith, "Digital Upskilling For Sdgs: A Case Study Of Fishermen Communities In Southeast Asia", *Int. J. Hum. Resour. Manag.*, 2023, Doi: 10.1080/09585192.2023.123456.
- [3] R. Mitra En I. Putra, "Comparing The Socio-Economic Lives Of Fishermen And Onion Farmers In West Sumatra", *J. Ilm. Membangun Desa Dan Pertan.*, Vol 9, No 1, Bll 71–79, Feb 2024, Doi: 10.37149/Jimdp.V9i1.970.
- [4] E. S. I. Irwan, "Oktarin, 'Rural Community Income From Rubber Farmers To Gold Miners In,'" *J. Pendidik. Sociol. Dan Hum.*, Vol 15, No 1, Bll 113–119, 2023.
- [5] R. Mitra En I. Putra, "Comparing The Socio-Economic Lives Of Fishermen And Onion Farmers In West Sumatra", *J. Ilm. Membangun Desa Dan Pertan.*, Vol 9, No 1, Bll 71–79, 2024.
- [6] D. I. W. Yanti, M. Masengi, En Y. Penina Palembang, "Analisis Hubungan Panjang Berat Pada Ikan Selar Kuning *Selaroides leptolepis* Di Pangkalan Pendaratan Ikan (Ppi), Kota Sorong", *Nekton*, Vol 3, No 2, Bll 122–132, Okt 2023, Doi: 10.47767/Nekton.V3i2.402.
- [7] A. Indarjo *Et Al.*, "Length-Weight Relationship, Sex Ratio, Mortality And Growth Condition Of Natural Stock Of *Macrobrachium rosenbergii* From The Estuarine Systems Of North Kalimantan, Indonesia", *Biodiversitas J. Biol. Divers.*, Vol 22, No 2, Bll 51–55, Jan 2021, Doi: 10.13057/Biodiv/D220239.
- [8] H. Yanfika, K. K. Rangga, B. Viantimala, I. Listiana, A. Mutolib, En A. Rahmat, "Evaluation Of The Success Of Programs And Strategy For Sustainable Coastal Community Development In Tanggamus Regency", *J. Phys. Conf. Ser.*, Vol 1467, No 1, Bl 012026, Feb 2020, Doi: 10.1088/1742-6596/1467/1/012026.
- [9] I. Irwan *Et Al.*, "Strategi Pengembangan Potensi Pariwisata Melalui Community Based Tourism (Cbt) Di Nagari Painan Selatan", *J. Pustaka Mitra (Pusat Akses Kaji. Mengabdi Terhadap Masyarakat)*, Vol 5, No 3, Bll 106–111, 2025.
- [10] H. Yanfika, K. K. Rangga, B. Viantimala, I. Listiana, A. Mutolib, En A. Rahmat, "Evaluation Of The Success Of Programs And Strategy For Sustainable Coastal Community Development In Tanggamus Regency", *J. Phys. Conf. Ser.*, Vol 1467, No 1, Bl 012026, Feb 2020, Doi: 10.1088/1742-6596/1467/1/012026.
- [11] K. Kartono, M. Siswoyo, En B. Bukhori, "Penerapan Teknologi Pengolahan Limbah Cangkang Kerang Hijau Sebagai Pakan Ternak Dan Ikan", *Ethos J. Penelit. Dan Pengabdi. Kpd. Masy.*, Vol 9, No 2, Bll 169–177, Jun 2021, Doi: 10.29313/Ethos.V9i2.6898.
- [12] A. Masykhur, "Ke Arah Pendidikan Di Wilayah Perbatasan : Studi Kasus Perbatasan Kalimantan Timur (Indonesia) - Malaysia", *Edukasi J. Penelit. Pendidik. Agama Dan Keagamaan*, Vol 8, No 1, Bll 3837–3855, Apr 2010, Doi: 10.32729/Edukasi.V8i1.112.
- [13] I. Irwan, Z. Zusmelia, E. G. Nurrahma, M. Rahmona, En N. Nefilinda, "Portrait Of Political Culture In A Multicultural Society In Padang City: A Case Study: Change Of 'Kampung Jao' To 'Kampung Jawa' In Padang Barat District, Padang City", *Int. J. Humanit. Educ. Soc. Sci.*, Vol 3, No 4, Feb 2024, Doi: 10.55227/Ijhess.V3i4.876.
- [14] M. A. Yousuf, M. M. Rahman, En M. S. Hossain, "Performance Analysis Of Modified Sine Wave Inverter For Household Applications", *Int. J. Renew. Energy Res.*, Vol 10, No 4, Bll 1824–1830, 2020.
- [15] F. N. A. Mahruf, K. M. Boer, J. A. W. Sucipta, En J. F. Agustian, "Representation Of Environmental Issues In Marjan's 'Baruna The Guardian Of The Ocean' Ad 2023 Episode 1 And 2 (Analysis Semiotika Charles Sanders Peirce)", *J. Indones. Sos. Sains*, Vol 5, No 04, Bll 667–686, 2024, Doi: 10.59141/Jiss.V5i04.1058.
- [16] R. N. Nugraha En N. Hidayah, "The Influence Ecotourism On The Economy Of Citizen Community In The Situ Tunggilis Bogor District", *J. Manaj. Pelayanan Hotel*, Vol 6, No 2, Bl 412, Des 2022, Doi: 10.37484/Jmph.060213.
- [17] I. Zainuddin Rela *Et Al.*, "Formation Of Farming Community Resilience Models For Sustainable Agricultural Development At The Mining Neighborhood In Southeast Sulawesi Indonesia", *Sustainability*, Vol 13, No 2, Bl 878, Jan 2021, Doi: 10.3390/Su13020878.
- [18] Ign. Supartha Djelantik, I Nyoman Putu Budiarta, En Hartini Saripan, "The Right On Land For Foreigner And Foreign Legal Entity Tourism Investasion Perspective, Participation And Nominee Practice Prevention", *J. Equity Law Gov.*, Vol 2, No 1, Bll 69–85, Mrt 2022, Doi: 10.55637/Elg.2.1.4693.69-85.

- [19] S. Samir, R. Utami, En M. M. Razak, “What Are The Economic Impacts Of Indonesia’s Export Ban? A Computable General Equilibrium Analysis”, *J. Ekon. Pembang. Kaji. Masal. Ekon. Dan Pembang.*, Vol 25, No 1, Bll 126–134, 2024, Doi: 10.23917/Jep.V25i1.23626.
- [20] A. Hermawati, D. Anggarani, S. Irawati, En S. Bahri, “Swot Analysis Utilization In Designing Performance Development Strategy For Micro, Small & Medium Enterprises In Malang Area Coordinator”, *Int. J. Psychosoc. Rehabil.*, Vol 24, No 4, Bll 5198–5206, 2020, Doi: 10.37200/Ijpr/V24i4/Pr201618.
- [21] C. N. P. Sari, A. Jumiati, En F. Muslihatinningsih, “Analisis Pengaruh Inflasi Dan Investasi Terhadap Pertumbuhan Ekonomi Dan Kesejahteraan Masyarakat Di Pulau Jawa Tahun 2006-2016”, *J. Ekon. Ekuilibrium*, Vol 3, No 1, Bll 45–60, 2019.
- [22] A. Nurasyiah, L. Sarwath, A. J. W. Mahri, R. Hermawan, En G. D. Karmanto, “Reducing Family Poverty Through An Islamic Women’s Empowerment Strategy In Indonesia: An Analytical Network Process Approach”, *Al-Uqud J. Islam. Econ.*, Vol 6, No 2 Se-Articles, Bll 206–219, Jul 2022, Doi: 10.26740/Aluqud.V6n2.P206-219.
- [23] D. Filmer En N. Schady, “School Enrollment, Household Characteristics, And Costs”, *World Bank Econ. Rev.*, Vol 22, No 3, Bll 465–480, 2018.
- [24] Y. A. Hajam, R. Kumar, En A. Kumar, “Environmental Waste Management Strategies And Vermi Transformation For Sustainable Development”, *Environ. Challenges*, Vol 13, No April, Bl 100747, 2023, Doi: 10.1016/J.Envc.2023.100747.
- [25] W. D. Utami, N. Hasriyanti, En C. T. Vanziru, “Eco-City-Based Sustainable Settlement Planning In Bengkayang New City Area”, *J. Syntax Transform.*, Vol 4, No 4, Bll 1–10, Apr 2023, Doi: 10.46799/Jst.V4i4.713.
- [26] A. Amin, “Attitude Towards Language In Sociolinguistics Settings: A Brief Overview”, *Reila J. Res. Innov. Lang.*, Vol 2, No 1, Bll 27–30, Apr 2020, Doi: 10.31849/Reila.V2i1.3758.
- [27] R. Musavengane En R. Kloppers, “Social Capital: An Investment Towards Community Resilience In The Collaborative Natural Resources Management Of Community-Based Tourism Schemes”, *Tour. Manag. Perspect.*, Vol 34, Bl 100654, Apr 2020, Doi: 10.1016/J.Tmp.2020.100654.
- [28] I. Owoputi *Et Al.*, “Does Crop Diversity Influence Household Food Security And Women’s Individual Dietary Diversity? A Cross-Sectional Study Of Malawian Farmers In A Participatory Agroecology And Nutrition Project”, *Food Nutr. Bull.*, Vol 43, No 4, Bll 395–411, Des 2022, Doi: 10.1177/03795721221126787.
- [29] S. Yahata, T. Takeshima, T. Kenzaka, En M. Okayama, “Fostering Student Motivation Towards Community Healthcare: A Qualitative Study”, *Bmj Open*, Vol 11, No 1, Bl E039344, Jan 2021, Doi: 10.1136/Bmjopen-2020-039344.
- [30] A. I. Ogunniyi, S. O. Omotoso, K. K. Salman, A. O. Omotayo, K. O. Olagunju, En A. O. Aremu, “Socio-Economic Drivers Of Food Security Among Rural Households In Nigeria: Evidence From Smallholder Maize Farmers”, *Soc. Indic. Res.*, Vol 155, No 2, Bll 583–599, Jun 2021, Doi: 10.1007/S11205-020-02590-7.
- [31] S. Syafri, B. Surya, R. Ridwan, S. Bahri, E. S. Rasyidi, En S. Sudarman, “Water Quality Pollution Control And Watershed Management Based On Community Participation In Maros City, South Sulawesi, Indonesia”, *Sustainability*, Vol 12, No 24, Bl 10260, Des 2020, Doi: 10.3390/Su122410260.
- [32] I. Irwan, Z. Zuzmelia, E. Elvawati, Y. Melia, L. I. Jannah, En G. C. Lubis, “Attachment Patterns Of Fish Traders In Traditional Markets Nangggalo District, Padang City”, *Int. J. Humanit. Educ. Soc. Sci.*, Vol 3, No 5, Apr 2024, Doi: 10.55227/Ijhess.V3i5.796.
- [33] Sanudin, R. U. D. Sianturi, En E. Fauziyah, “The Community’s Perception And Attitude Toward Malapari (Pongamia Pinnata) As A Biofuel: A Case Study In Patutrejo Village, Purworejo Regency”, *Iop Conf. Ser. Earth Environ. Sci.*, Vol 940, No 1, Bl 012086, Des 2021, Doi: 10.1088/1755-1315/940/1/012086.
- [34] S. Alvin, “The Evolution Of Political Party In Indonesia: Psi Towards A Digital Party”, *J. Komun.*, Vol 14, No 2, Bll 423–445, Des 2022, Doi: 10.24912/Jk.V14i2.18352.
- [35] Benny Ranti, K.P. Suharyono S. Hadiningrat, En Yosi Widhayanti, “Strengthening Digital Literacy Towards Indonesian Digital Sovereignty”, *Jipower J. Intellect. Power*, Vol 1, No 2 Se-Articles, Bll 76–83, Aug 2024.
- [36] A. Pankowiak *Et Al.*, “Psychological, Physical, And Sexual Violence Against Children In Australian Community Sport: Frequency, Perpetrator, And Victim Characteristics”, *J. Interpers. Violence*, Vol 38, No 3–4, Bll 4338–4365, Feb 2023, Doi: 10.1177/08862605221114155.

- [37] I. Irwan, Z. Zusmelia, A. Ansofino, En F. Siska, "Embeddedness Of Creative Economy Actors In Creative Economy Development In West Sumatra Tourism Destination Areas", *Jed (Jurnal Etika Demokrasi)*, Vol 8, No 3, Bll 351–360, 2023, Doi: <https://doi.org/10.26618/Jed.V8i3.11262>.
- [38] N. Akramila, F. A. Mappasere, En A. Mahsyar, "Towards A Circular Economy: Government Policy In Waste Management Based On The 3r Concept In Makassar City, Indonesia", *J. Gov. Public Policy*, Vol 12, No 1, Bll 1–17, 2025, Doi: 10.18196/Jgpp.V12i1.22492.
- [39] M. Sosa, S. Aulet, En L. Mundet, "Community-Based Tourism Through Food: A Proposal Of Sustainable Tourism Indicators For Isolated And Rural Destinations In Mexico", *Sustainability*, Vol 13, No 12, Bl 6693, 2021, Doi: 10.3390/Su13126693.
- [40] M. Marimuthu, R. Dewanti, En W. B. Tarunajaya, "Community-Based Tourism And Creative Economy", *Icccd*, Vol 3, No 1, Bll 48–51, Okt 2021, Doi: 10.33068/Icccd.Vol3.Iss1.298.
- [41] L. Salsabila, K. Teovani Lodan, En T. Dompok, "Analysis Of Clean Water Infrastructure Development Towards Fulfillment Of The Needs Of The Dumai City Community", In *Proceeding Of The International Conference On Social Sciences And Humanities Innovation*, 2024, Vol 1, No 2, Bll 139–148, Doi: <https://doi.org/10.70062/Icshsi.V1i2.37>.
- [42] M. S. Ahmad En N. B. Abu Talib, "Empowering Local Communities: Decentralization, Empowerment And Community Driven Development", *Qual. Quant.*, Vol 49, No 2, Bll 827–838, 2015, Doi: 10.1007/S11135-014-0025-8.
- [43] X. Shi En G. H. T. Ling, "Factors Influencing High-Rise Gated Community Collective Action Effectiveness: Conceptualization Of The Social-Ecological System (Ses) Framework", *Buildings*, Vol 12, No 3, Bl 307, Mrt 2022, Doi: 10.3390/Buildings12030307.
- [44] T. A. Kurniawan, M. H. Dzarfan Othman, G. H. Hwang, En P. Gikas, "Unlocking Digital Technologies For Waste Recycling In Industry 4.0 Era: A Transformation Towards A Digitalization-Based Circular Economy In Indonesia", *J. Clean. Prod.*, Vol 357, No April, Bl 131911, 2022, Doi: 10.1016/J.jclepro.2022.131911.
- [45] R. C. Reuben, M. M. A. Danladi, D. A. Saleh, En P. E. Ejembi, "Knowledge, Attitudes And Practices Towards Covid-19: An Epidemiological Survey In North-Central Nigeria", *J. Community Health*, Vol 46, Bll 457–470, 2021, Doi: <https://doi.org/10.1007/S10900-020-00881-1>.
- [46] A. Widiyanto En H. Widiyanti, "Implementasi Isak 35 Dalam Pelaporan Keuangan Masjid Al-Hajj", *Owner*, Vol 7, No 3, Bll 2380–2388, Jul 2023, Doi: 10.33395/Owner.V7i3.1468.
- [47] S. Noerhidajati, A. B. Purwoko, H. Werdaningtyas, A. I. Kamil, En T. Dartanto, "Household Financial Vulnerability In Indonesia: Measurement And Determinants", *Econ. Model.*, Vol 96, Bll 433–444, Mrt 2021, Doi: 10.1016/J.econmod.2020.03.028.
- [48] X. Wei, Y. Liu, En Y. Liu, "Study On The Impact Of Internet Usage, Aging On Farm Household Income", *Sustainability*, Vol 15, No 19, 2023, Doi: 10.3390/Su151914324.
- [49] O. A. Pitri, I. Irwan, En Y. Yuhelna, "Household Living Strategy As An Economic Contribution Of Women Vegetable Traders In Traditional Markets", *J. Pendidik. Sociol. Dan Hum.*, Vol 15, No 2, Bll 444–456, Okt 2024, Doi: 10.26418/J-Psh.V15i2.84065.
- [50] M. R. Satia, M. N. T. Putra, N. Riyanti, D. Selawaty, En N. Ainah, "Household Wasterwater Management Policy In Kereng Bangkirai Area Toward Sustainability Of River Water In Sebangau City, Palangka Raya", In *International Conference On Government Education Management And Tourism*, 2022, Vol 1, No 1.
- [51] E. Yulianda, I. Irwan, En E. Erningsih, "Livelihood Strategies Of Fishing Labor Households In Air Bangis Village, West Sumatra", *J. Pendidik. Sociol. Dan Hum.*, Vol 14, No 1, Bll 42–51, 2023, Doi: <https://doi.org/10.3390/Su15021114>.
- [52] N. Dunjana *Et Al.*, "Sorghum As A Household Food And Livelihood Security Crop Under Climate Change In South Africa: A Review", *S. Afr. J. Sci.*, Vol 118, No 9–10, 2022, Doi: 10.17159/Sajs.2022/13340.
- [53] D. Lawrence, G. Maniam, L. H. Chuah, En P. E. Poh, "Critical Review Of Household Water Treatment In Southeast Asian Countries", *Wires Water*, Bl E1640, Feb 2023, Doi: 10.1002/Wat2.1640.
- [54] I. Irwan, Z. Zusmelia, D. Virginia, A. Amelia, En K. W. A. Siahaan, "Resilience Of Rubber Farmers' Households Due To Aslide Disaster In The Danau Village, Nalo District, Tantan Merangin Jambi Province", *Int. J. Multidiscip. Appl. Bus. Educ. Res.*, Vol 3, No 12, Bll 2686–2691, 2022, Doi: 10.11594/Ijmaber.03.12.20.
- [55] A. . M. Lusardi O. S., "Financial Literacy And Financial Decision-Making In Households", *J. Econ. Perspect.*, Vol 34, No 3, Bll 1–27, 2020.

- [56] K. K. Lee *Et Al.*, “Adverse Health Effects Associated With Household Air Pollution: A Systematic Review, Meta-Analysis, And Burden Estimation Study”, *Lancet Glob. Heal.*, Vol 8, No 11, Bll E1427–E1434, Nov 2020, Doi: 10.1016/S2214-109x(20)30343-0.