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LIVELIHOOD ASSETS OF FISH FARMERS IN TIWINGAN LAMA VILLAGE

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ABSTRACT

During 2019 the Riam Kanan Reservoir had a decrease in water level due to drought. As a result, the income of fish farmers has decreased. This study aims to determine the livelihood assets of fish farmers as long as the pond does not provide maximum income. The research sample is of fish farmers with as many as 90 respondents. Livelihood Asset Questionnaire refers to DFID. The results showed that the livelihood assets of fish farmers had natural capital of 66, physical capital of 62, human capital of 42, financial capital of 14, and social capital of 11. Attention to financial and social capital needed to be increased to reduce social vulnerability in fish farming families.

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PRELIMINARY

Livelihood assets is a term used by Chambers and Conway in “Sustainable rural livelihoods: Practical concepts for the 21st Century” (Chambers & Conway, 1992). This means that the ability and way of life are measured from assets, both *tangible assets* in the form of resources owned and *intangible assets* in the form of claims and access. Another opinion states that livelihood assets are a development term that describes *capabilities*, ownership of resources (social and material), and activities that a person / community needs to live their life (Ramli, 2007). Livelihood aspects known as material and social resources; capital; and activities as components that make local communities able to survive and overcome difficulties caused by life shocks (Scoones 1998: 5; Chambers et al, 1992 in Mukbar: 2009).

FAO (Food Agricultural Organization) stated that there are at least 5 assets that affect the forms of community livelihoods. The five livelihood assets can be simplified as a pentagon shape (Stewart Carloni & Crowley, 2005). The five assets that affect livelihoods are human, social, physical, financial and natural capital. Livelihood assets determine the ability of people to implement livelihood strategies to meet their needs (Ellis, 2000). Environmental conditions have an important role in people's livelihoods. Research by Wijayanto, et al. (2019) shows that changes in the forest environment have an impact on the condition of community livelihood assets and lead to a variety of community livelihood strategies.

In 2019 there was a long drought which caused Riam Kanan reservoir to recede. The water level in the reservoir is 54.45 meters and it is in a critical status. The standard limit for normal reservoir water level is 58-60 meters. According to BMKG at that time the recession of the Riam Kanan reservoir was expected to continue until the end of October 2019 (Media Indonesia, 2019). Deputy Chairman of the Banjar Regency Fisheries Group Association, M. Ridwan, said that during the dry season in the cage area, the low tide can make the fish die slowly. Another threat is when the water rises during the rainy season, then there is no supply from the fast flowing from the reservoir, which can cause mass fish mortality. This of course will greatly affect the people who depend on the existence of the Riam Kanan Reservoir. As a result, people who depend on the reservoir and its surrounding resources find it increasingly difficult to get welfare or a better life due to the fluctuating environment of the reservoir during the dry season and the arrival of the rainy season. This situation causes fish farmers to decrease their income and create vulnerability, especially socio-economic. The population most threatened by the uncertainty of the current climate is a developing country, especially villagers who depend on natural resources (Yiridomoh et al., 2020)

Study of livelihood assets can be done in communities affected by big changes and are necessarily positioning society in vulnerable conditions. Thus, it is necessary to study the livelihood assets of the community affected by change to determine the capacity of the community to face change. Fish farm owners are surrounded by various risks both from social and economic sides, as well as the assets they own that are sourced from the conditions of the Riam Kanan Reservoir. They must be able to manage their income and resources assets by pursuing various livelihood strategies so that they are able to meet the needs of their household.

RESEARCH METHOD

This study aims to determine the livelihood assets of fish farmers in Tiwingan Lama Village, Aranio District, Banjar Regency, South Kalimantan Province. The research is descriptive quantitative with survey methods. Survey research is one of the most widely used social research methods. Apart from being able to be used to collect data from a relatively large number of respondents, survey research also allows making generalizations from the results of a sample study to a large population (Mantra, 2000). Considering that the population in this study was quite large, the sampling method was used for fish pond owners. To determine the size of the sample, the researcher used the formula from Slovin:

$$n = \frac{N}{1 + Ne^2}$$

Information:

n = Sample

N = Population

e = Error level or critical value

Sampling was carried out at a 95% confidence level or a critical value of 5%. Based on these calculations, the samples taken were rounded to as many as 90 people. Simple random sampling is used for the sampling technique. Simple random sampling is the taking of sample members from the population at random without paying attention to the strata in the population (Sugiyono, 2015). The questionnaire of livelihood assets adapted from DFID in Table 1.

Table 1. Variable Livelihood Asset

Variable	SubVariable	Indicator	Source
Asset Livelihoods (<i>Livelihood Asset</i>)	Human Capital	Skills	- Developmentquestion naire based on: {Citation} DFID (2001), Scoone (2001), (Ashley and Carney , 1999), Ellis (2000); (Baiquni, 2007); Rijanta (2006)
		Skills outside fish ponds	
		health	
	Natural capital	Utilization of reservoir resources	
		Production of fish and other crops	
	Social capital	Organizations followed by	
		participation	
		benefit	
	Financial capital	Practicing relationships	
		Wages / salaries, savings, credit / debt, inheritance, giving (BLT / BASIS / LSM)	
	Physical capital	Ownership of property: Houses (own), land / land, cars, motorbikes, and others	

Source: (Saleh, 2015)

RESEARCH RESULTS AND DISCUSSION

A. Human Capital

Human capital shows capability in gaining better access to their living conditions. Human capital shows the skills / abilities, health and experience of a person who synergizes to carry out livelihood strategies in order to achieve goals in life (DfID, 1999). Ability increases along with education and training, knowledge increases because they have access to information and the ability to work increases due to health, skills and motivation. Human capital produces returns (*returns*) and every expenditure made in order to develop quality and quantity. Investment theory states that physical health is one of the ways to improve a better life in the future. With a healthy physical condition, productivity will increase fulfillment of needs. The skills of farmers in Tiwingan Lama Village can be seen in Table 2.

Table 2. Skills Mastered by Respondents in Managing Businesses

Skills mastered in managing businesses	Respondents	Percentage (%)
Owned	48	53.54
No	42	46.46

Based on table 2, most of the fish farmers in Tiwingan Village (53.54%) felt that they had skills in managing their business, especially floating net cages. These skills were acquired from generation to generation from their ancestors. The condition of the Riam Kanan reservoir which is quite apprehensive, especially during the dry season, requires the community to have other livelihoods, not only depending on the produce from floating net cages. Household respondents in the research areas generally have side skills in the form of jobs as traders, tenants of klotok services, motorcycle taxis, construction workers, carpenters, etc. Skills / jobs other than related to fish ponds can be seen in table 3.

Table 3. Skills possessed outside fish pond skills

Skills mastered other than fish ponds	Respondents	Percentage (%)
Has	39	43
No	51	57

Table of constraints health/ illnesses suffered by respondents can be seen in table 4 below.

Table 4. Obstacles / Diseases Suffered by Respondents

Health constraints / illnesses suffered by	Respondents	Percentage (%)
No	85	93.94
Yes	5	6.06

Health is defined as a perfect condition both physically, socially, economically and other components that play a role in it (Law No. 23 of 1992). In other words, the healthy element includes at least 4 aspects, namely physically healthy, mentally healthy, spiritually healthy, and healthy in social welfare. There are no health problems experienced by many people living around the reservoir. It can be seen in table 4 that as many as 93.94% of respondents answered that they did not have problems / problems in their health.

B. Natural Capital

Humans have natural capital that can be used to gain access to a better livelihood. Natural capital comes from nature and is used to meet their needs (DfID, 1999). Natural capital is also considered important. Humans live from environmental services and food derived from nature (Carney, 1998). Natural capital comes from land, water, and other facilities that support

life households in survival. The relationship between natural capital owned and livelihood assets is directly proportional, meaning that the higher the ownership of natural capital, the more supportive for survival. Natural capital in terms of fish farmers in Riam Kanan reservoir can be seen in table 5.

Table 5. Riam Kanan reservoir provides benefits for community life

during the rainy season, Riam Kanan reservoir provides benefits during the rainy season	Respondents	Percentage (%)
Provides benefits	60	65.66
No provide benefits	40	34.34

Based on table 5, it can be seen that most of the respondents (65.66%) answered that the existence of the Riam Kanan reservoir, especially during the rainy season, brings many benefits. This is because of the physical condition of the respondents using a reservoir for freshwater fish culture through the method of floating net cages. The cultivation of floating nets is a fairly good effort for the survival of its inhabitants. Fish harvesting is carried out every four months, most of the fish products are sold to fish collectors or directly to the market.

Table 6. Riam Kanan Reservoir Provides Benefits for Community Life During the Dry Season the Riam Kanan

reservoir provides benefits during the dry season	Respondents	Percentage (%)
Provides benefits	36	40.4
Does not provide benefits	54	59.6

Based on table 6 most respondents (59.6%) answered that when the dry season arrives, the reservoir does not bring much results / benefits, especially for fish ponds using the floating net cage method. This happens because during the dry season the water discharge in the Riam Kanan reservoir has decreased, so this has an impact on the productivity of fish in the floating net cages.

C. Social Capital

Social capital is a description of the ease with which social networks households use both formal and informal, which become the foundation for their survival (DfID, 1999). Social capital shows the interaction owned by other people in a social environment. Social capital is considered capable of increasing *mutual trust* and reducing the cost of working together. Strong social networks are one of the characteristics of rural communities. The characteristics of rural communities include: between residents having a deep and close relationship when compared to communities outside their boundaries and the system of life is grouped on the basis of kinship (Gemeinschaft or Paguyuban).

Table 7. Community Organizations Participated in Increasing Business Capital

Community organizations followed by increasing business capital	Respondents	Percentage (%)
There were	15	17.17
not	75	82.83

Based on table 7 only 17,17% of respondents participated in community organizations. The organizations that are followed are POKDARWIS, PKK, PAMSIMAS, and IKAP.

Table 8. Participation in the organization

participation in the organization type:	Respondents	Percentage (%)
Participated	7	7.78
no participated	83	92.22

Table 9. organizational benefits

Benefits organization:	Respondents	Percentage (%)
Yes	10	11.11
No	80	88.89

Table 10. practice in organizational activities

practice in organizational activities	Respondents	Percentage (%)
There are	5	5.56
not	85	94.44

Based on the research results can be seen in table 8 as many as 92.22% answered that they did not join any organization to increase business capital. They do not want to take the risk of returning the venture capital if the business they are running experiences a loss.

D. Financial Capital

Financial capital is an economic asset which illustrates the household's control of the ease of financial fulfillment that comes from savings, wages, credit, and debt or goods of economic value (Scoones, 2009). Fish farmers' access to financial capital varies greatly depending on the type of need and the openness to opportunities to exploit it.

Table 11. Financial Sources Respondents

inherited, BLT / BASIS / NGO	Respondents	Percentage (%)
Yes	18	20
No	72	80

Table 12. Financial Assistance Respondents

financial assistance from the government in increasing business capital	Respondents	Percentage (%)
Yes	7	7.78
No	83	92.22

Based on table 12, most of the respondents (92.22%) answered that they did not have financial resources (financial) from debt, inheritance, or assistance from BLT, BASIS, and

NGOs. Most of the respondents only rely on their own business capital from the income they get.

E. Physical Capital

Mastery of physical resource assets is an illustration of easy access in the form of facilities and infrastructure that support households in their survival (Scoones, 2009). Physical capital shows the ownership of a person's physical assets in the household. Here are the results of research on physical capital owned by respondents

Table 13. Housing by Respondents

house (proprietary)	Respondents	Percentage (%)
Yes	83	92.22
No	7	7.78

Table 14. Tenure of land

Tenure of land:	Respondents	Percentage (%)
Yes	44	48.89
No	46	51.11

Table 15. Ownership of goods

Ownership of cars, motorbikes, cellphones	Respondents	Percentage (%)
Yes	60	66.67
No	30	33.33

Based on table 13, 92.22% of respondents answered that the house they currently live in is their own house. They prove this by having a certificate of ownership of the house and land they own. The physical condition of the respondent's house is mostly made of wood. The house building made of wood is a characteristic of the original Banjar tribe house. Based on table 14 as many as 50.5% of respondents answered that they did not own land. Ownership of goods such as vehicles and electronic other equipment, as much as 66.67% of respondents have a vehicle. Most of the respondents only have motorbikes. The natural conditions around the Riam Kanan reservoir are most easily accessible by motorbike. Furthermore, motorbikes are a cheap and fast mode of transportation for respondents. Ownership of mobile phones is quite large because this communication tool is no longer a luxury item so that respondents have a tool as a means of fast communication.

The livelihood assets of fish farmers' households depend on the value of each capital owned by the community, namely human capital, social capital, natural capital, physical capital and financial capital. The relationships and interrelationships that exist between the components of the livelihood resources are described in the pentagon asset. The shape of the

pentagon and line connecting each other with the center point in the middle of the pentagon plane illustrates the variation in the level of ownership and access of the community to resources (Dfid, 1999). The image of the asset pentagon can be seen in Figure 1.

Pentagon Livelihood Assets

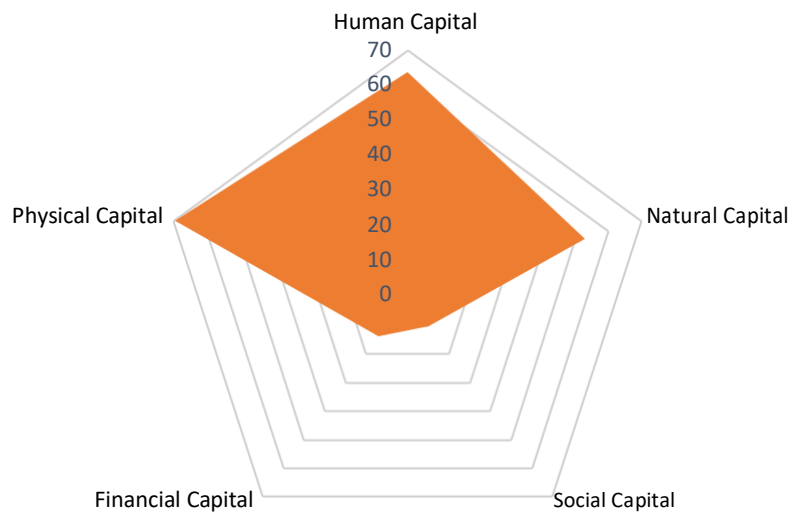


Figure 1. Pentagon Asset of Fish Farmers in Tiwingan Lama Village.

The results from figure 1 showed that the highest values were Physical Capital of 69.26 then Human Capital of 63.7, Natural Capital of 53, Financial Capital of 13.89, and Social Capital of 10.27. The value of Physical Capital which is in a good category. Aspects of physical capital such as two-wheeled vehicles are a tool used to support their livelihoods. Two-wheeled vehicles, which are the dominant ownership of fish farmers, are used to cross difficult areas or speed up access to the reservoir location. Ownership of four-wheeled vehicles is used to transport crops or fish feed. The highest indicators are own land and house ownership. An unstable condition has the potential to threaten physical capital. Dependence on work that has long been occupied causes fish farmers will return to work on fish ponds despite obstacles caused by nature. The work of fish farmers will become the main focus again when the reservoir water starts to normalize. Similar research which states the same thing is Alviawati et al., (2016), dairy farmers in Kepuharjo Village sought temporary livelihoods during the eruption and returned to raising dairy cows after the eruption was over. This reinforces if livelihood is the main choice in the village environment. Natural Capital has the good category, which means the environment is able to support livelihoods well. It is clear that fish farmers depend their livelihood on the Riam Kanan reservoir.

The high value of physical capital but not followed by financial and social assets will result in a high level of physical capital loss. This happens when the income of farmers is low,

the farmers will use their physical capital to survive. Rabbani and Rijanta (2020) in their research of salt middleman state that the most significant component of the livelihood assets is physical assets. The advantages of physical assets are also supported by good financial and social assets. Salt middle men are able to generate large amounts of income and then access financial institutions to ensure the security of its financial assets.

The value of financial capital and social capital which is in the unfavorable category indicates that there is no strong cooperation between fish farmers. Fukuyama (2001) defines social capital as an instant informal norm that encourages cooperation between two or more individuals. The norms that make up social capital can range from norms of *reciprocity* between two friends to a more complex one. Fish farmers only rotate financial capital from fish ponds. This makes financial capital have a low value. Research on farmer household systems shows that farmer households that depend fully on agriculture for their livelihoods have lower asset value than non-agricultural / semi-agricultural (Yang et al., 2018). This means that the dependence of livelihoods on many types of work will increase one of the capital in livelihood assets.

Continued, low financial and social capital will lead to high exposure. Adger (2006) defines exposure as the essence and extent to which assets are naturally exposed to conditions of socio-economic or environmental stress. Exposure refers to the pressure caused by changes in the frequency of the actual intensity, magnitude, frequency, duration of a hazard and the nature of both climatic and non-climatic change stresses. The decline in the ability to service resources is the main cause of exposure (Putra & Rudiarto, 2017). Increased exposure is itself an indicator of social vulnerability. The local government or stakeholders can assist farmers in increasing their financial and social assets in the form of eco-compensation. According to Liu et. al. (2021), the eco-compensation method in the form of cash compensation, material supply, or technology subsidies increases financial and social assets significantly. Ecological compensation transforms farmers' activities from traditional forms to diversify farmers' livelihoods.

CONCLUSION

The livelihood assets of fishpond farmers have the highest value is Physical Capital of 69.26, then Human capital of 63.7, Natural Capital of 53, Financial Capital of 13.89, and Social Capital of 10. Physical capital has a high value because the farmers are indigenous people who survive from the pond. Social capital has a low value because the organization of fish farmers is considered less profitable. The suggestion in this research is that the household classification

has not been divided based on the diversification of livelihoods. The division of the household classification of aquaculture farmers and semi-aquaculture farmers will affect the value of livelihood assets.

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