Livelihood Assets of Small-Scale Fisherman in Tanah Merah District, Indragiri Hilir Regency, Riau Province, Indonesia

L Bathara¹, F Nugroho¹, C Yolandika¹, G Hamzah¹

¹Department of Socio-Economic, Faculty of Marine and Fisheries, Riau University, Indonesia

*lamun.batara@lecturer.unri.ac.id

Abstract. People in Tanah Merah Village, Tanah Merah Subdistrict, Indragiri Hilir Regency generally have a livelihood as fishermen. Fishermen can be said to be prosperous if they have good control over their livelihood assets. Livelihood assets consist of human, natural, social, financial and physical resource assets. This study aims to: (1) find out the meaning of the sustainable livelihood approach, (2) find out the livelihood assets of small-scale fishermen and (3) determine the condition of the livelihood assets of small-scale fishermen. The research was conducted in Tanah Merah District, Indragiri Hilir Regency, Riau Province. Respondents from this study were 45 people. The method used in this research was survey method. The data analysis used was descriptive analysis. Descriptive analysis was used to generate an overview of the data that has been collected based on the respondents’ answers through the distribution of items from each variable. The presentation of the data was done by cross tabulating according to the parameters of several aspects of the assets that support fishermen's livelihoods. The result showed that the livelihood assets of small-scale fishermen namely natural assets, human resources, social, financial and physical are in the medium category. The acquisition of this value can indicate that the control of the livelihood assets of small-scale fishermen in Tanah Merah Village is not sustainable.

1. Introduction
Indragiri Hilir Regency is located in the southern part of Riau Province with the capital city Tembilahan. The total area of Indragiri Hilir Regency is 18,812.97 km², consisting of a land area of 11,605.97 km², an area of sea waters of 6,318 km and a public waters area of 888.97 km and has a coastline of 339.5 km. A total of 93.31% of Indragiri Hilir Regency is a lowland area, namely river sediment areas, swamp areas with peat soil, brackish forest areas (mangroves), and consists of large and small islands with an area of approximately 1,082.953.06 Ha [1].

Tanah Merah Subdistrict is one of the largest fisheries centers in Indragiri Hilir Regency with capture fisheries production of 12,738.21-tons in 2015 [1]. Communities in Tanah Merah Village, Tanah Merah Subdistrict, Indragiri Hilir Regency generally have a livelihood as fishermen who are supported because of the natural topographical conditions close to the coast. Livelihoods as fishermen in general are livelihoods that only depend on nature so that it is still lacking to meet the needs of life.
Fishermen can be said to be prosperous if they have good control over their livelihood assets. Livelihood assets consist of human, natural, social, financial and physical resource assets. These five assets support their lives. The majority of small-scale fishermen have not been able to maximize their livelihoods from poor to good. The five fishermen's livelihood assets are related to one another. But this is not the main part that they should pay attention to.

Good livelihoods look not only at asset ownership and structural boundaries in society, but especially at the ways in which people manage their excess access, and the ways in which they deal with themselves in order to survive. Such a livelihood includes assets, individual characteristics, and the activities they carry out in utilizing existing resources.

The use of a sustainable livelihood approach is to measure and find out the assets that have been used by small-scale fishermen and which are obstacles in meeting their needs. The aim of the sustainable livelihoods approach as an approach is as a combination of a SL framework and principles to guide development so that there is an improvement in the quality of livelihoods [2]. The purposes of this study are (1) to determine the meaning of the sustainable livelihood approach, (2) to determine the livelihood assets of small-scale fishermen in Tanah Merah Village.

2. Methods

The method used in this study is a survey method, namely reviewing, observing and taking data and information directly into the field and collecting data related to this research and using a questionnaire as a guide to obtain data which is carried out by conducting interviews with respondents and local government officials. by using a questionnaire as a means of collecting primary and secondary data [3].

This research was conducted in April – May 2021 in Tanah Merah District, Indragiri Hilir Regency. The selection of the area/location of this research was done deliberately with the consideration that the majority of fishermen in Tanah Merah Subdistrict, Indragiri Hilir Regency are fishermen who have a fleet of < 5 GT so that it is appropriate to assess the level of welfare, especially small-scale fishermen (< 5 GT) with a sustainable livelihood approach.

The total number of fishermen who own a fleet of < 5 GT in Tanah Merah Village is 45 people, consisting of three hamlets, namely Kampung Laut with 7 respondents who own fishing fleets, Gang Seni there are 10 respondents and Sungai Menit there are 28 respondents. So, the total respondents from this study were 45 people.

The data collected consists of primary data and secondary data. Primary data is data obtained directly from the original source (not using intermediaries), primary data is specifically collected by researchers to answer researchers' questions [4]. The primary data in this study were obtained directly from interviews, observations, and documentation. Observation is direct observation of the phenomenon to be studied. Primary data collected includes ownership of pentagon assets from small-scale fishing households, namely Natural assets, financial assets, Human Resources assets, physical assets and social assets, while secondary data collected is obtained from BPS, and other relevant agencies. Secondary data includes geographical conditions, population by age group and sex, marine fishery production data, fishery potential at the research location, educational facilities and general condition of Tanah Merah Village, Tanah Merah District, Indragiri Hilir Regency, Riau Province, which were obtained from the Tanah Merah Village Office and Indragiri Hilir District Fisheries Office.

The data analysis used is descriptive analysis. Descriptive analysis is used to generate an overview of the data that has been collected based on the respondents' answers through the distribution of items from each variable. The presentation of the data is done by cross tabulating according to the parameters of several aspects of the assets that support fishermen's livelihoods.

To answer the first objective, a three-strata Likert scale is used, which is obtained from each respondent's answer item, to determine the status of livelihood assets and calculate the fishermen's livelihood index. According to the Likert scale, it is used to measure attitudes, opinions, and
perceptions of a person or group of people about social phenomena. In this study, social phenomena have been specifically defined by researchers, hereinafter referred to as research variables.

By using a Likert Scale, the variables to be measured are translated into dimensions, dimensions are translated into sub-variables and then sub-variables are translated into indicators. [5]. To calculate the fisherman's livelihood index, there are 5 assets that are indicators of sustainable livelihoods which consist of: human capital, natural capital, financial capital, social capital, and physical capital.

To calculate the value of each asset in which the total of the five assets will be obtained the fisherman’s livelihood index value, the data that has been obtained from the respondents is then analyzed. Furthermore, weighting is given to the results of the criteria and indicators that have been selected in this study. The type of data being measured is reduced to 10 questions for each asset. So a total of 50 questions with 5 alternative choices. The alternative choices are arranged in ranking on the basis of the level of value (score) of the level of conformity. Each asset has 3 categories with the determination of the category using class intervals as follows:

\[
\text{Int} = \frac{X_n - X_i}{K}
\]

Notes:
\( \text{Int} = \) Interval
\( X_n = \) Maximum score
\( X_i = \) Minimum score
\( K = \) Total of category

Using the above formula, the categories for each asset are:

- Total is 10 question (total score 50)
- Maximal score is 50 (5x10)
- Minimum score is 10 (1x10),
- \( \text{Int} = \frac{50-10}{3} = \frac{40}{3} = 13.3 \)

| No | Asset-asset Penghidupan | Total Score | Low  | Medium | High  | Cut Off 70% | Welfare |
|----|-------------------------|-------------|------|--------|-------|-------------|---------|
| 1. | Natural                 | 50          | 10-22,3 | 23,3-35,6 | 36,6-50 | 35          |         |
| 2. | Human                   | 50          | 10-22,3 | 23,3-35,6 | 36,6-50 | 35          |         |
| 3. | Financial               | 50          | 10-22,3 | 23,3-35,6 | 36,6-50 | 35          |         |
| 4. | Social                  | 50          | 10-22,3 | 23,3-35,6 | 36,6-50 | 35          |         |
| 5. | Physical                | 50          | 10-22,3 | 23,3-35,6 | 36,6-50 | >35         |         |
|    | Total                   | 250         |       |        |        | 175         |         |

Source: [6]

The fisherman's livelihood index value is obtained from the total value of the five assets. Previously, the value of each asset that has been obtained will be determined in what category according to the category value in the table above.

To answer the second objective, the analysis was carried out with a qualitative descriptive analysis to see the level of fishermen's welfare from the results of the fisherman's livelihood index that had been obtained previously. To see the level of welfare, the researchers used Cut off. In this study it was determined that welfare was seen in 70% of the total score of each asset. as was done in research by [6] which in this study the cut off is expressed in decimal form that is 0.7. This means that if the total score for each asset is 50, then 70% of the value for the calculated assets can be said to be prosperous. For example, on Natural assets. Small-scale fishermen are said to be prosperous in natural assets if the value of natural assets reaches 70% of the total score, which is known for the total score for natural assets is 50. This means that small-scale fishermen have prospered in natural assets if the value obtained is 35. Likewise for the calculation method for assets. Physical, Financial Assets, Human
Resource Assets and Social Assets. After the above values are obtained, a pentagon asset graph is made which will explain how the level of fishermen's welfare in each livelihood asset corresponds to the value obtained as shown in the following figure 1.

From the image of the pentagon of livelihood assets above, it can be seen the value of each asset owned by small-scale fishermen in Tanah Merah Village and further conclusions are drawn at what level of welfare for each asset owned by the fishermen. This technique explains and describes in sentences and then analyzed using assumptions. Descriptive data analysis is an analysis used to analyze data by describing the data that has been collected or the results of observations that have been made by selecting the data, grouping the data, tabulating the data, explaining the data according to the research objectives.

![Livelihood Asset Pentagon](image)

**Figure 1. Livelihood Asset Pentagon**

3. Result
   The following is the value obtained for each asset as shown in the figure below.

   **Table 2. Classification of Fishermen's Livelihood Assets in Tanah Merah Village, Tanah Merah District, Indragiri Hilir Regency**

| Number | Asset Name | Score | Asset Classification |
|--------|------------|-------|----------------------|
| 1      | Human      | 34.0  | Middle               |
| 2      | Natural    | 30.4  | Middle               |
| 3      | Social     | 24.1  | Middle               |
| 4      | Financial  | 26.2  | Middle               |
| 5      | Physical   | 34.8  | Middle               |

*Source: Primer Data, 2021*
3.1 Human Asset
Human resource assets indicate a person's ability to gain better access to their living conditions. Assessment of human capital includes skills possessed by respondents, labor/occupation, and health can be seen in table 2. Based on the research, the results for the human capital assets of Tanah Merah Village are 34. This value indicates that the human resources in Tanah Merah Village are in the medium category.

Geographical conditions require the community, especially the respondents in this study, to have a livelihood only to go to sea. Meanwhile, there are no side jobs other than fishing. As found during the research, people generally work to catch fish. The majority of the population in Tanah Merah Village who live on the coast of the village such as in the Gang Seni, Kampung Laut and Sungai Menit areas are small-scale fishermen. In addition to their husbands who work as fishermen, there are several wives who have side jobs such as trading, either selling rice or making processed fish products such as shrimp crackers. However, about 90% of the wives of small-scale fishermen who are respondents are housewives.

3.2 Natural Asset
Natural assets are natural supplies that have value and benefits for livelihoods including the use of coastal resources and the fishing process carried out by fishermen. Based on the research results, the value for natural assets is 30.4. The value obtained indicates that the Natural Resources in Tanah Merah Village are in the medium category.

The availability of natural resources is very important to support meeting the needs of human life. One of the ecosystems found in the waters of Tanah Merah Village is the mangrove ecosystem. From observations during the research, the condition of this ecosystem itself has been well utilized. Which in addition to fishing in an environmentally friendly way, fishermen also pay attention to the condition of aquatic ecosystems such as mangroves.

3.3 Social Asset
Social assets are social relations and forms of social interaction between respondents and other residents around them and can also be collected in an institution or organization. Based on the research results, the value for social assets is 24.1. The values obtained indicate that the social relations of small-scale fishermen in Tanah Merah Village are in the medium category.

Social activities are minimally carried out by fishing groups such as gotong royong. It's just that this activity is carried out when there are important state events such as welcoming the Indonesian Independence Day or other events. Apart from that, no gotong royong activities are carried out, especially for small-scale fishermen.

Social organization can be said to be very minimal in Tanah Merah Village. This is due to the lack of understanding of the importance of organization by fishermen. Several non-formal organizations are religious organizations such as the Taklim Council and the Recitation. Meanwhile, for other non-formal organizations such as the Community Association (Java, Minang and Banjar), the PKK Women's Group. From the results of the research, it shows that not all but only a few respondents who follow the organization above. Another formal organization that has a major role for fishermen is the existence of fishermen's groups.

3.4 Financial Asset
Financial assets are related to financial resources that can be used and utilized by the community in achieving the livelihood goals of fishermen. Reduced income will increase the vulnerability of life by reducing consumption of both food and non-food. Financial assets are the most flexible resources, can be exchanged with various conveniences according to the applicable system, can also be used directly to meet livelihood needs. In addition, financial capital is versatile, but cannot solve the problem of poverty automatically. Based on the research results, the value for financial assets is 26.2. The value
obtained shows that the ownership of small-scale fishermen in Tanah Merah Village in terms of finance is in the medium category.

The components of financial assets in this study include savings/savings, credit/debt, inheritance, assistance (BLT, BASIS, NGO) and wages/salaries. Most of the small-scale fishermen in this village still have credit/debt, namely mainly to toke but some also do not depend on toke. On average, small-scale fishermen in Tanah Merah Village have received assistance/gifts from the government, namely BLT, social assistance and even an increase in the number of motor boats and fishing gear.

3.5 Physical Asset

Physical assets are facilities or facilities owned by respondents to live life and are also a picture that shows the ease of access to facilities and infrastructure to survive. Physical capital consists of basic infrastructure and ownership of equipment that can produce goods/services so as to encourage the growth of livelihoods. The infrastructure in question includes transportation, buildings, clean water and sanitation, energy and communication access. Several studies have stated that a person's low access to basic infrastructure causes them to be closer to poverty in addition to being influenced by consumptive behavior patterns. Based on the research results, the value for physical assets is 34.8. The value obtained shows that the ownership of small-scale fishermen in Tanah Merah Village in physical assets/infrastructure is in the medium category.

The fishing gear owned by small-scale fishermen (<5 GT) consists of nets, togok, gumbang, belat, senohong. Meanwhile, the fishing fleets in this study are fishermen who have fishing fleets of 1, 2, 3, and 4 GT sizes. The catches of fishermen vary which consists of Lomek, Tawal, Sembilang, Bakut, Belanak, Happy, Shrimp and Duri fish.

Figure 2. Livelihood Asset Pentagon of Tanah Merah Village
From Figure 2 above, it can be seen that the value closest to the midpoint is social assets of 16% and is the smallest value of the five existing livelihood assets owned. This shows that the control of small-scale fishermen on social assets is still low. Social organization is enough to make the relationship between each other closely intertwined, but the absence of formal institutions, especially in the field of fisheries, makes access for fishermen a little difficult. Financial assets are in the second position closest to the midpoint after social assets with a value of 17.3% and this means that control/access to financial assets is still low. Likewise, natural assets and human resource assets are still quite close to the midpoint with values of 20.1% and 22.5% and the control of small-scale fishermen on these assets is still relatively low. The low education of fishermen has an impact on mastering the use of technology which is still not well known by fishermen. Although physical assets are assets that are quite far from the midpoint, the value obtained from small-scale fishermen on the ownership of these assets is moderate. Not only in terms of infrastructure ownership but also the results they get are still small due to the limited capacity of their fishing fleet and fishing gear.

4. Conclusion and Suggestion

4.1 Conclusion
Livelihood assets of small-scale fishermen namely natural assets, human resources, social, financial and physical are in the medium category. The acquisition of this value can indicate that the control of the livelihood assets of small-scale fishermen in Tanah Merah Village is not sustainable.

4.2 Suggestion
The livelihoods of small-scale fishermen in Tanah Merah Village must be improved by taking into account all supporting aspects. Therefore, the government must pay attention to how people live in various ways, one of which is providing social and other economic assistance so that people's livelihoods can be better than before.

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