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Sustainable Livelihood Approach Farming Communities in Temoloyo River Basin, Kebumen Regency

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ABSTRACT
The Sustainable Livelihood Approach is a concept for measuring human or community efforts in existing livelihood assets and activities needed as a means of life to cope with and improve pressure, maintain, or increase assets and capabilities but not destroy existing natural resources. One of the sources of livelihood in pressuring the vulnerability is irrigated rice farmers, such as in the Telomoyo River Basin. Therefore, this study aims to look at the livelihood assets they have and the pressure that helps farmers in the Telomoyo River Basin and analyze the community livelihood strategies related to locations in the upstream, middle and downstream areas of the Telomoyo River Basin and livelihood assets ownership in order to meet their daily needs. The method used is a qualitative method with descriptive analysis, the data study was carried out by in-depth interviews with informant with snowball sampling technique that has been determined by the requirements (purposive sampling). The results show that the Telomoyo River Basin irrigation as a whole is dominated by social assets and physical assets, while the lowest asset ownership is financial assets. The area of households with the lowest asset ownership is in the upstream area of the Telomoyo River Basin. The pressures that support farmers in the Telomoyo River Basin include pressures for seasonal shifts, including drought, floods, and tides. Based on asset ownership and increasing pressure, several other forms of household livelihood strategies emerged in the Telomoyo River Basin related to agricultural intensification, diversification of sources from the non-agricultural stage, and originating from cities.

Keywords: *Sustainable Livelihood Approach, River Basin, Characteristic Area, Livelihood Assets, Vulnerability, Livelihood Strategy*

1. INTRODUCTION

A sustainable livelihood strategy explains how the community's efforts to manage existing assets are carrying out through activities carried out to overcome pressure, maintain or increase assets and abilities without destroying existing natural resources [1]. Supporting the theory, DFID in 1999 developed the concept of livelihood strategies into five asset groups modeled in the form of pentagon assets that consist of human assets, natural assets, financial assets, social assets, and physical assets [2]. This asset group is used as a parameter to measure the community's ability to make a living, especially their efforts to overcome poverty.

The concept of sustainable livelihood strategy is based on ownership of livelihood assets and impacts determined by location characteristics according to the basic outline of the discipline of geography. Geography looks at the aspect of location (location matters) in understanding various processes and phenomena. Geography focuses on the relationships and dependencies between phenomena and processes that give characters to each location or place [3]. Based on an understanding of the concept of a sustainable livelihood strategy based on the discipline of geography, researchers are interested in researching the concept.

The Telomoyo River Basin has an area of 56,250 ha. The water flowing in the Telomoyo River Basin comes from the priority River basin of Serayu Bogowonto, the water flowing from the upstream of the river is accommodated in an artificial reservoir, namely the Sempor Reservoir which is one of the air suppliers for PDAM Kebumen Regency. Telomoyo River Basin is a River basin that covers almost all of Kebumen Regency, Central Java. Communities living in the upstream to downstream areas of the river often face air-related disasters such as hydrometeorological disasters in the form of droughts to floods. Communities in the Telomoyo River Basin For example, according to research in 2019, the upstream area of the Telomoyo River Basin, precisely in the administrative area of Sempor District, is facing drought problems [4]. Water needs are only met by groundwater sources and river water, in the dry season the river water discharge decreases and water sources dry so that air needs are not met. On the other hand, the downstream part of the river, especially in Puring District, in October 2020 experienced a flood disaster caused by the bursting of the embankment and the overflowing of the river due to very heavy rain [5].

The existence of differences in hydrometeorological disasters faced by the Telomoyo River Basin community makes this interesting to attract attention, especially about the different regional characteristics between the upstream, middle and downstream areas. Regional differences can affect the availability and ownership of livelihood assets, as well as the pressures they receive. Ownership of livelihood assets and the pressures received by the community, especially the community, will determine the choice of livelihood strategies that are following their circumstances. One of the livelihood strategies is in the water management system for irrigating agricultural land, whose water source can come from groundwater, surface water, or both depending on the characteristics of the area.

In addition to facing natural problems, the population of Kebumen Regency is currently facing high poverty problems, even the highest in Central Java with a percentage of 16.82%, far above the average poverty rate of Central Java Province which is only 10.8%. The pressure of natural conditions and social conditions has forced people to decide on various livelihood strategies to continue to survive, maintain, and improve their standard of living. The form of livelihood strategies can be involved as agricultural intensification, diversification of income sources, and migration.

2. RESEARCH METHODS

The research was conducted in the Telomoyo River Basin area. Telomoyo River Basin is located in Kebumen Regency, Central Java, precisely at 7°30'05" - 4°47'07" latitude and 109°23'29" - 109°35'29" east longitude. Geographically, the Telomoyo River Basin is to the south of the Serayu River basin, to the east of the Ijo River basin, to the west of the Luk Ulo River basin, and to the north of the Indonesian Ocean. With an area of 56,250 hectares, the water flowing in the Temoloyo River basin comes from the priority River basin of Serayu Bogowonto.

The method used is a qualitative method with spatial and descriptive analysis, data collection is carried out by in-depth interviews using a snowball sampling technique with informants whose requirements have been determined (purposive sampling). To determine the informant's point, three transect lines were made following the river flow from upstream to downstream, on the transect route, informant points were determined whose locations could represent the upstream, middle, and downstream parts of the transect line. The following are informants points based on the variables of the research area:

Data processing in this study was carried out by analyzing differences in livelihood assets in three different locations (upstream, middle, downstream). The results of the interview are in the form of sound which is then translated into written form. For the livelihood asset variable, scoring is based on weight in percent units. The following is the required data and data sources:

Table 1. Variables dan Reqiured Data

Variable	Indicator	Parameter	Measured Data	Data Collection Method
Source of Livelihood	Livelihood Assets	Human Assets	Health (physical condition, history of illness, age), Education and experience, Dependents of life	In-depth interviews, field observations
		Social Asset	The role of local government, The role of social organizations, The role of the environment	In-depth interviews
		natural assets	Access to clean water, Land use, Plant varieties	In-depth interviews, field observations
		Physical Aspect	State of the house, Accessibility, Transportation, Distance from economic center	In-depth interviews, field observations, secondary data
		Financial Asset	Income, Savings, Debt, Shipments	Deep interview
	Pressure	*Shocks*	Natural disasters or social disasters in the last 5 years	Deep interview
		Seasonal shifts	The incidence of crop failure in the last 5 years	
		Trends	Trends in looking for non-farm jobs	
Livelihood Strategy	Intensification	Use of agricultural land, use of agricultural technology	-	In-depth interviews, field observations
	Diversification	Income outside of irrigated rice farming	-	Deep interview
	Migration	Circular or permanent migration	-	Deep interview
Regional Characteristics	Slope	-	Unit percent (%)	DEMNAS BIG
	Rock Type	-	Distribution of rock formations	Geological Map BIG 1:250.000
	Geological Structure	-	Type (breaks, folds, etc.)	
	Height	-	mdpl unit	DEMNAS BIG
	Land Use	-	-	Map of RBI BIG Kebumen Regency 1:25.000
	Water Resources Management	-	-	Study literature

3. RESULTS AND DISCUSSION

3.1. Characteristics of the Telomoyo River Basin Physical Area that Affect Farmers' Household Sources and Livelihood Strategies

This study explains how the substitution relationship between assets (there is a more prominent one) in this case natural assets can affect the ownership of other assets. The natural assets in question are the characteristics of the River basin area such as elevation, slope, geological structure, land use, and management of water resources. The following is a cross-section of elevation, River basin classification, and rock types in the Telomoyo River Basin:

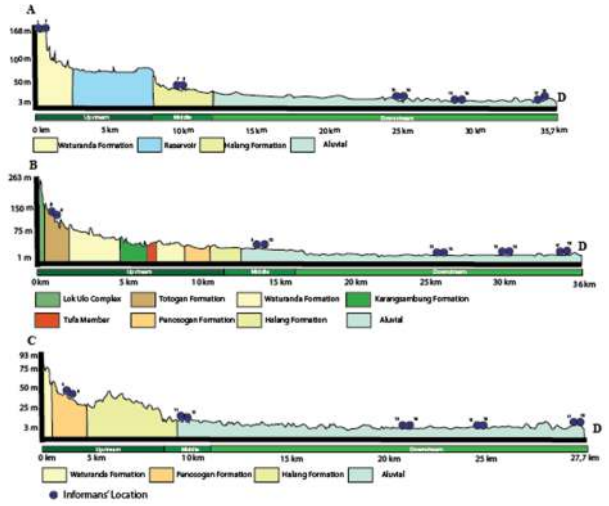

Figure SEQ Figure * ARABIC 1. Cross Section of Altitude, River basin Ecosystem Area, and Telomoyo River Basin Geology

Source: Data Processing, 2021

The Telomoyo River Basin is divided into three classifications based on its ecosystem, namely upstream, middle, and downstream. The upstream area of the Telomoyo River Basin, which has an altitude variation of 57-126 mdpl with a slope of >15%, makes the upstream area of the Telomoyo River Basin less suitable for rice fields, therefore rice fields are rarely found in this area. The upstream area of the Telomoyo River Basin with rice fields is dominated by the rock types of the Waturanda Formation, Totogan Formation, and Penosogan Formation.

The central area of the Telomoyo River Basin has vegetation in the form of forest stands or community plantations, then in the southern part is a plain area where the vegetation is wet rice farming. The downstream area of the Telomoyo River Basin has an altitude ranging from 4-11 meters above sea level with a slope below 8%, this indicates that the topography is plain so it is suitable for agricultural land. The geology of the southern central river basin and the downstream river basin is dominated by alluvial rock (Figure 1) which has a large enough groundwater potential [6] in addition to that because it is formed from the deposition or accumulation of eroded materials, alluvial deposits. can have many nutrients that are useful for plants such as mineral composition and other chemical properties [7].

3.2. Livelihood Assets of Irrigated Farmers' Household in the Telomoyo River Basin

A sustainable livelihoods framework consisting of several key assets can help to organize the factors that can hinder or enhance livelihood opportunities, and can show how these factors influence each other. Different households have different access to livelihood assets [8]. The purpose of identifying livelihood assets owned by households of irrigated rice farmers in the Telomoyo River Basin is to gain an understanding of the pattern of ownership of livelihood assets for each river basin ecosystem in the Telomoyo River Basin and then to find out how the farming community processes the various assets they have so that they can come up with ways of adaptation. to face the vulnerabilities that exist for their survival. The following is a cross-section of the level of ownership of livelihood assets of farmer households in the Telomoyo River Basin:

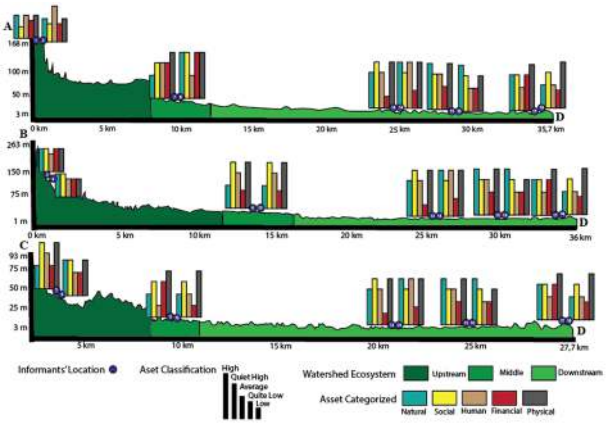

Figure SEQ Figure * ARABIC 2. Cross Section of Livelihood Asset Ownership

Source: Source: Data Processing, 2021

Natural assets are the assets that most influence the lives of farmer households in river basins, especially farmer households in the Telomoyo River Basin. The most striking difference in natural assets can be seen from differences in cropping patterns in the upstream, middle and downstream parts. Upstream, the rice fields are only harvested one to two times, and even then only one type of plant is planted, namely rice, while further downstream, it is seen that there are many variations in cropping patterns. In the middle part, there are three planting seasons, which in planting season 3 are planted

with secondary crops, especially green beans, not much different from the downstream part which in planting season 3 is planting crops planted the difference is that in the downstream part you can plant chilies and even plant rice. For more details, it can be seen below the differences in cropping patterns of agricultural land in the upstream, middle, and downstream areas:

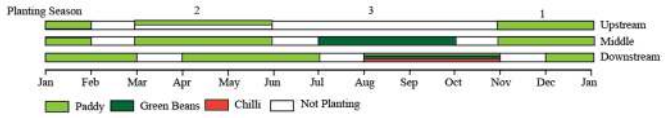

Figure SEQ Figure * ARABIC 3. Agricultural Land Cropping Patterns in the Telomoyo River Basin

Source: Data Processing, 2021

Agricultural production in Indonesia is strongly influenced by variations in the rain [9] so that generally the start of the planting season (MT) is determined based on the start of the rainy season and dry season set by the BMKG [10]. The factor that causes differences in cropping patterns in the Telomoyo River Basin is the availability of water, usually in the upstream (recharge area) it has deep groundwater, so it costs more if you want to build wells for agricultural irrigation.

It can be seen above the level of social asset ownership of farmer households in the Telomoyo River Basin, the upstream areas on the AD and BD transects (Figure 2) the farmer groups are not active because of the lack of land that can be used as rice fields so that people who work as rice farmers are few. In contrast to farmers in the middle and downstream areas, the average ownership of social assets is rather high and high, because the slope conditions which include sloping to flat with slope values ranging from less than 15% make a lot of lands used as paddy fields so that farmers are more active. in social activities related to agriculture. Although there are no farmer groups in the upstream area of the AD and BD transects (Figure 2), there are other social institutions that also participate in helping to build the village, such as the role of youth organizations in Somagede Village in building village facilities such as providing lighting on local roads, repairing roads, then forming disaster response youth.

It can be seen in the cross-section above (Figure 2), the middle to downstream areas tend to have a moderate to a high level of ownership of human assets, in contrast to farming households in the upstream part of the river whose work is mostly only farming, this is because they do not have the skills to do other jobs. Based on the human assets they have, such as knowledge and experience, many of the farmers' homes in the Telomoyo River Basin apply agroforestry systems.

The agroforestry system is a land management system that has productive and protective functions, so it is often used as an example of a sustainable land management system [11]. One of the trees is planted intercropping with one or more types of annual crops. Types of commodities that are often planted include cassava, corn, pepper, aromatic ginger, and so on. As science develops, agroforestry systems are not only limited to a combination of plants but also combined with livestock [12].

One of the efforts to improve the welfare of farmer households is to improve the quality of infrastructure facilities to make it easier for farmers to obtain raw materials or sell their agricultural products. The quality of the access road infrastructure in the ownership of physical assets of farmer households, other parameters used to measure the level of physical asset ownership of farmer households in the Telomoyo River Basin include the condition and ownership of houses, ownership of transportation, ownership of paddy fields, ownership of gardens/fields, and distance from the economic center. Farming households that have the largest physical assets (91%) are in the middle of the River basin. One of the influential aspects is the distance from the economic center, on average to the nearest center of economic activity such as markets, banks, etc. only cover a distance of 1-4 km and even then it is supported by all roads that have been evenly cast asphalt. In contrast to the central River basin area, the upstream area of the Telomoyo River Basin has the lowest total physical asset value (73%), this is because the asphalt paved road is not evenly distributed so it is still rather difficult in terms of accessibility, especially the distance from the center of economic activity (usually located in the middle of the River basin) is quite far between 5-12 km.

After getting the total asset value of each informant, it is made in the form of an asset pentagon. The asset pentagon can be useful to inform owners of assets in a visual form and can see the relationship between one asset and another [13]. The following is a visualization of the asset pentagon based on the asset ownership of each farmer household divided into the upstream, middle, and downstream areas of the Telomoyo River Basin:

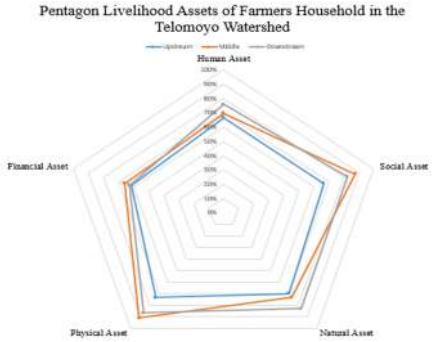

Figure SEQ Figure * ARABIC 4. Pentagon Livelihood Assets of Farmers Household in the Telomoyo River Basin

Source: Data Processing, 2021

The ownership asset pentagon represents the level of dominant assets owned and accessed by farm households in each area of the River basin ecosystem. Livelihood assets in the middle and downstream can be said to be balanced because they do not show a striking difference, the difference is seen in the pentagon of farm household assets in the upstream river basin area. Farm households in the upstream area of the Telomoyo River Basin have lower asset ownership compared to other areas. Overall, the most dominant assets owned by farming households in the Telomoyo River Basin are social assets and physical assets, while the lowest asset ownership is financial assets. Social assets as the important asset is inline with Imam's (2019) finding in Sukabumi. Tea smallhoder rely on their membership in the farmer group institution [14].

3.3. Pressure Received by Farmers in the Telomoyo River Basin

Pressures or vulnerabilities are divided into three categories, namely shocks (sudden occurrence), trends (based on trends), and seasonal shifts (seasonal). There are two informants in the downstream area of the River basin who have experienced shocks, the incident in question was the collapse of the river embankment, causing several villages in Puring District to be flooded suddenly, this is because the embankment was unable to withstand the water discharge in the Telomoyo River. The pressure caused by the trend experienced by farming households in the Telomoyo River Basin as a whole is the trend of working in the non-agricultural sector. The cause of the decline in the interest of young workers in the agricultural sector is due to the image of the agricultural sector which is less prestigious and less able to provide adequate rewards [15]. Vulnerabilities that fall into the seasonal shifts experienced by agriculture are related to climate. The existence of a hydrometeorological disaster is one of them, a hydrometeorological disaster is a disaster-related to climate which can be in the form of floods, landslides, cyclones, tidal waves, and droughts. The following is the pattern of vulnerability experienced by irrigated rice farmers in the Telomoyo River Basin:

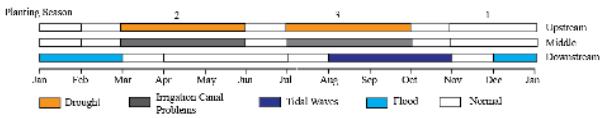

Figure 5. Pattern of Vulnerability Experienced

Source: Data Processing, 2021

Every year the upstream area of the Telomoyo River Basin experiences drought, therefore the rice fields only have two planting periods. The worst drought experienced by farmers over the past few years occurred in 2016 and 2020. From mid-2015 to early 2016 Indonesia experienced a strong El Nino phenomenon which affected the decrease in rainfall, plus in mid to late 2016 Indonesia experienced the phenomenon of Weak La Nina [16].

Tides are fluctuations in sea level due to the attraction of celestial bodies, especially the sun and moon, to the water masses on earth [17]. The tidal phenomenon at the mouth of the Telomoyo River Basin makes the main river downstream of the river basin unable to be used for agriculture because it has been contaminated with saltwater from the sea. The problems often experienced by farmers in other downstream areas are flooding caused by rainfall and the volume of water from upstream to downstream of the river which usually results in a delay in planting time.

Another problem related to water is the non-optimal use of irrigation channels in the rice fields in the middle of the Telomoyo River Basin. Many irrigation canals are old so that their use is not optimal because there are many leaks and blockages due to a large amount of sediment on many sides of the irrigation canal. These things cause farmers in the local area to experience a shortage of water for their fields.

3.4. Livelihood Strategy of Irrigation Farmers in Telomoyo River Basin

There are three important things related to livelihood strategies, namely the availability of opportunities, the existence of abilities, and the diversity of choices. Opportunities are related to both internal and external situations that make it possible to process resources optimally. Ability relates to a person's knowledge, skills, and experience in processing resources and taking advantage of opportunities. The following are the livelihood strategies found in the households of irrigated rice farmers in the Telomoyo River Basin:

3.4.1. Agricultural Intensification

According to Fagi AM Dan I. Manwan [18], there are three classifications of rice planting land-based on topography, water sources, and opportunities for modification of the water system. Namely the pluvial position, the phreatic position, and the fluxial position. Based on existing understanding, the following forms of agricultural intensification are based on the classification of cropping land found in the Telomoyo River Basin:

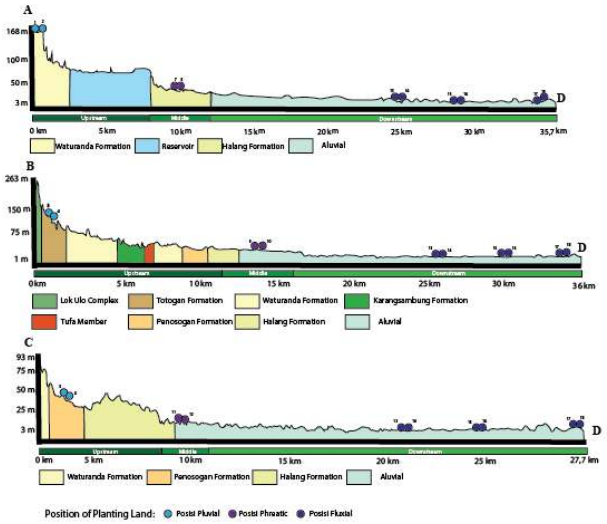

Figure 6. Classification of Cropping Land in the Telomoyo River Basin

Source: Data Processing, 2021

Rice farming land in a pluvial position is usually located at the top or upstream with a gentle to the steep slope. The water for the rice plants comes from rainfall or surface runoff due to the deep groundwater. The difficulty of irrigation in the upstream river basin area makes farmers innovate to create new irrigation techniques based on personal initiatives. Farmers who have rice fields close to spring rivers use the river to irrigate their fields.

Rice farming land in the phreatic position is usually located on land with a slope at the bottom (foot slope), the water source comes from rainfall and groundwater is relatively shallow, especially during the rainy season. Farmers whose rice fields are located in the middle area between upstream and downstream in the Telomoyo River Basin have modified their water management system by using a government-made technical irrigation system fed by water from the Sempor Reservoir.

Agricultural land in a fluxial position is at the lowest part in the toposequen such as valleys and basins. The source of water comes from rainfall, runoff, and rivers. Generally, the percolation is slow and the drainage is not good so the land is always flooded during the rainy season. The Telomoyo River Basin downstream in the rainy season often experiences flooding and the pressure experienced by farmers during the dry season is the intrusion of seawater into the main river, so that river water cannot be used for agriculture. To overcome this problem, farmers make wells around the rice fields. If they want to use water from a well, farmers use a water pump to suck up the water.

3.4.2. Non-Farm Diversification

Diversification in this study is in the form of a variety of businesses or jobs to earn income or income. Business diversity is greater when household income is higher, this shows that diversification is carried out by households not only to maintain income levels but also to optimize resource utilization to obtain greater added value [19]. To increase their income to meet household needs, some informants also take up additional work in the form of off-farm and non-farm strategies. Four farmer informants diversify which is included in the off-farm strategy, namely Mr. Tumiosan Rohmat (selling vegetables), Mr. Sanrohmat (selling flowers), Mr. Suratmin (selling chickens in the market), and Mr. Ahmad Rusalim (rice traders). The types of non-farm diversification work carried out by some farmers in the Telomoyo River Basin include building construction, opening a food stall, being a gas agent, mining sand, etc.

3.4.3. Migration

There is one household whose head of household undertakes seasonal migration. Migration is an option that can be considered in livelihood strategies, especially in rural areas where livelihoods are highly dependent on the climate [20]. The heads of households migrate out of the city at the end of the planting season and then return just before the harvest season. Mr. Ahmad Nurudin, who is the husband of Mrs. Jasmini, migrated to Jakarta to work as a construction worker.

3.5. The Position Between Sources of Livelihood and Livelihood Strategies of Farmers' Households in the Telomoyo River Basin and Sustainability of Livelihoods

The characteristics of the upstream area of the Telomoyo River Basin have a geological structure in the form of folds and inactive faults. The condition of the slope is steep with a value of > 15%, altitude variations between 53-690 masl, and varied rock types such as the Waturanda Formation, Totogan Formation, and Penosogan Formation. Based on the characteristics of the area, the upstream Telomoyo River Basin has a lot of lands that cannot be utilized optimally so that it affects the lives of the people in it. Overall, farming households with the smallest percentage of asset ownership are in the upstream area of the Telomoyo River Basin. Farmers in the upstream river basin area often experience drought due to the dry season, therefore most of the irrigated rice fields in the upstream area only have two growing seasons. Livelihood strategies carried out by farmer households in the Telomoyo River Basin include agricultural intensification in the form of damming small rivers to flow into rice fields, on-farm diversification utilizing plantation and livestock products, and seasonal migration out of town.

Farm households in the central area of the Telomoyo River Basin excel in the ownership of social assets, physical assets, and financial assets. One of the causes of

high social assets in the central river basin area is because both individual farmers and farmer groups are active. After all, the slope conditions which include sloping to flat with slope values ranging from less than 15% make a lot of lands used as paddy fields so that farmers are more active in social activities related to agriculture. In addition, irrigated rice fields in the central area of the Telomoyo River Basin use a technical irrigation system to irrigate their fields, this makes farmers required to continue to communicate with each other. For physical assets, in the central area of the Telomoyo River Basin, the distance from the economic center such as markets, banks, etc. is only a distance of 1-4 km and is supported by all roads that have been evenly asphalted. The pressure experienced by farmers in the central region is that the technical irrigation facilities are old so that their use is not optimal. Livelihood strategies undertaken include agricultural intensification (using technical irrigation facilities), off-farm diversification such as selling vegetables in the market, and non-farm diversification such as becoming a pedicab driver.

The downstream area of the Telomoyo River Basin has regional characteristics where the rock type is alluvial with coastal deposits to the south, elevation variations <47 masl, and slopes <8%. The downstream area of the Telomoyo River Basin excels in its human and natural assets. Farmers in the downstream area of the Telomoyo River Basin excel in working experience and experience wandering, for natural assets in the downstream part of the Telomoyo River Basin superior because of the easy access to water so that they can plant up to three times with many varieties of plants that can be planted such as rice, green beans, and chilies. Farmers in the downstream river basin often experience problems with flooding and seawater intrusion into the river (tidal), especially during the dry season so that river water cannot be utilized, flooding in the rainy season, and shocks, namely the collapse of the river embankment in Sidobunder Village. Livelihood strategies carried out by farmer households in the Lower Telomoyo River Basin include agricultural intensification by using pump wells, on-farm diversification that combines plantations and animal husbandry, off-farm diversification such as rice swordsmanship, and non-farm diversification.

4. CONCLUSION

The dominant level of ownership of livelihood assets owned by farming households in the upstream to downstream areas of the Telomoyo River Basin is social assets and physical assets, while the lowest is financial assets. The relationship between assets is a substitution relationship, natural assets affect the ownership of other assets. Its natural assets are in the form of the condition of the ecosystem area of the river basin. The similarity of the characteristics of the upstream area of the Telomoyo River Basin is that it has a geological structure in the form of folds and inactive faults with a slope of >15%. Differences in physical conditions include variations in altitude between 53-208 masl and varied rock types such as the Waturanda Formation, Totogan Formation, and Penosogan Formation. The central area of the Telomoyo River Basin tends to have many similarities, namely it is a transitional area between upstream and downstream, The upstream part has the Halang Formation rock type and the downstream part is Alluvial rock type with a height variation of about 30-25 meters above sea level with a slope of 8-15%. The downstream part of the Telomoyo River Basin also has the same characteristics, namely it has alluvial rock types with coastal deposits to the south, with variations in height of 5-7 meters above sea level and slopes of <8%. The physical condition of the river basin area also affects the availability of water to cope with the pressures of seasonal shifts experienced by farmers.

Based on the physical characteristics of the area, it is known that the further downstream, the greater the ownership of natural assets because the land is more suitable to be used as agricultural land. The pressures experienced by farmers in the Telomoyo River Basin include the shocks of the Telomoyo River embankment breaking and the absence of agricultural successors, but the pressure that most often occurs in seasonal shifts related to the availability of water for irrigation. The upstream river basin experiences drought during the dry season because it is difficult to access groundwater, the middle river basin has problems with leaking or clogged irrigation channels, and the downstream river basin area is flooded from upstream areas during the rainy season and seawater intrusion into rivers during the dry season.

Therefore, there are several agricultural intensification strategies to overcome this problem, namely damming small rivers in the upstream river basin area (utilizing surface water), the middle river basin relying on government irrigation channels, and also in the downstream river basin area making pump wells for irrigating their paddy fields (utilizing groundwater) in case of seawater intrusion into rivers. Another form of livelihood strategy for Telomoyo River Basin farmers is non-agricultural diversification, seasonal out-of-town migration between planting and harvesting seasons.

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