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## Livelihood strategy in fulfilling household needs of coastal communities

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**Abstract.** This study aims to map the livelihood strategies carried out by coastal communities based on two livelihood bases; the agricultural sector and the marine sector. The livelihood strategy, which is a combination of capital and human resources, was influenced by the popular community social system. This research also aimed to analyze social systems that affect coastal communities in combining their capital and human resources. The research area was determined purposively, namely in the Punaga Village, Mangarabombang District, Takalar Regency. Determining the location of this study was based on the consideration that Punaga Village has potential resources that enable the community to have two or more jobs in fulfilling household needs. The livelihood strategy that has been applied so far can be divided into economic strategies and social strategies. Economic strategies include the agricultural sector and the marine sector. In the agricultural sector, coastal communities tried to increase the amount of paddy field production even though the land area was > 0.5 acres. Meanwhile, the marine sector used the potential of seaweed so that it becomes a production center. The social strategy was used to owe, save, and get a job in helping to meet household needs.

### 3 Introduction

This study aims to map the livelihood strategies carried out by coastal community households based on two subsistence bases namely the agricultural sector and the marine sector. Generally, coastal communities are people who inhabit the offshore areas and have become part of a pluralistic society but still have a spirit of togetherness and family. It means that the average coastal community structure is a combination of characteristics of urban and rural communities. Communities in coastal areas face various poverty problems. Additionally, they depend on their livelihoods from the use of land, sea and beach resources, which require significant investments by capital owners. Most people work seasonally as rice farmers, small fishing workers, small-scale fish processors and small traders due to their limited investment and capital capabilities. These conditions occur continuously as well as fishing businesses that depend on nature. Once nature gets uncertain, it will create a poverty trap. However, what is important to consider is that coastal communities are highly dependent on various factors including social, resources and public policy [1]. Rice farming is a source of community livelihood. Unfortunately, it is only able to cover their daily needs and limited by one season while small fishers are only able to use resources with the catch as one of their livelihoods. Problems that often arise tend to decrease their catches due to outdated technology/fishing gear, competition and the



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decline in marine resources. The catch is also easily damaged and does weaken their bargaining position in sales transactions. These conditions occur continuously as well as fishing businesses that depend on nature and uncertainty that cause conditions that are still in the poverty trap [2].

For most people in the coastal areas, it is not easy to carry out the transformation of work that they have been involved in for so long, which then provides a lot of knowledge and expertise there. In the end, it must be slowly abandoned or concurrent with other sectors to sustain life increasingly squeezed. In practice, there are many different ways and strategies of coastal communities in sustaining their lives in the face of economic pressures. The livelihood strategy is then related to the status and condition of each household [3–5]

The concept of livelihood is fundamental understanding coping strategies because it is part of the same as livelihood strategies occasionally. A livelihood includes income (both cash and goods), social institutions, gender relations, ownership rights needed to support and guarantee life [6]. The double livelihood strategy is one of the mainstay strategies of modern fishing households to support the family financially. Diversification efforts that can be done by fishermen are dependent on opportunities that exist within the village either by utilizing existing natural resources or outside of the utilization of natural resources. A dual livelihood strategy is used to diversify income within the household to meet current needs. The following forms of diversification of work carried out by modern fishing households are working on rice fields, seaweed cultivation, and odd jobs [7]. Within the household livelihood system it is also known as the terminology of a double livelihood strategy. It is defined as "the processes in which households build a variety of social support activities and capabilities to survive and sustain life (survival strategies) and to improve their standard of living [8].

Mangarabombang District as a research location was located in the coastal area and directly borders with the Makassar Strait. This sub-district should be developed by the Regional Government of Takalar Regency itself due to its potency. In addition, the tourism sectors are famous as well as its seaweed cultivation centers. They are Punaga Resort, Puntondo Environmental Research Center (PPLH), Laikang Bay, and Topejawa Beach Tourism. Seaweed cultivation sector is great potential because a lot of people work in this field. There is also a seaweed management office by the Ministry of Maritime Affairs and Fisheries in the area. By considering potentiality, coastal communities in this area may have a variety of sources of livelihood like having one or more work done simultaneously because of the large number of resources that can be utilized. One of the villages in Mangarabombang Sub-district is Punaga village, which has a great resource potential such land and marine has not been maximized in its management. This village still has a huge area of land rice fields. The fields are sufficient to be used for coastal communities because every year when the rainy season arrives, coastal communities use the land to plant crops such as rice, chili, and corn even though it only uses rainwater as the only source of irrigation for their plants.

The main livelihoods of the central coastal communities in the village of Punaga vary significantly depending on the season. In the rainy season, most people do farming activities because they provide sufficient water sources. Most of them also do business in the field of fisheries and marine such as seaweed cultivation or become fishers and businesses in tourism. There are many heads of families in Punaga village and some of them have jobs such as farmers, fishers, seaweed businesses, fish farmers and tourism businesses. Some families undergo two or more jobs because they have these resources and cooperate to support their daily needs. A vast potential land area can be seen in table 1.

**Table 1.** Land Area in Punaga Village, Mangarabombang District

Village	Land area (Ha / Km)		Total
	Rice fields	Dry land / gardens	
Punaga	392.3	3496.6	3888.9
Malelaya	58.4	1571.1	1629.5
Barugaya	425.0	1316.1	1741.1
Tamalabba	504.0	1917.9	2421.9

Total	1379.7	8301.7	9681.4
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Based on table 1, the area of paddy fields in Punaga village is divided into four hamlets, namely Punaga hamlet with an area of 3888.9 ha / km<sup>2</sup> divided into 392.3 ha/km<sup>2</sup> of rice fields and 3496.6 ha of dry land/km<sup>2</sup>, Malelaya hamlet with an area of 1629,5 ha/m<sup>2</sup> divided into 58.4 ha/km<sup>2</sup> of rice fields and dry land 1571.1 ha/km<sup>2</sup>. Barugaya hamlet with a land area of 1741.1 ha/km<sup>2</sup> divided into paddy area 425 ha/km<sup>2</sup> and dry land 1316.1 ha/km<sup>2</sup>, and Tamalabba hamlet with a land area of 2421.9 ha/km<sup>2</sup> divided into 504 ha/km<sup>2</sup> wetland and 1917.9 ha/km<sup>2</sup> dry land. The area of paddy fields and dry land area (gardens) in Punaga Village is 1379.7 ha/km<sup>2</sup> and 8301.7 ha/km<sup>2</sup> respectively from the total area of Punaga Village which is 15.75 km<sup>2</sup>. The potential of this land is mostly utilized by the community of Punaga Village to carry out farming activities and as a source of livelihood. Based on this brief review, the authors were interested to know more about social relations and economic systems brought by coastal communities to obtain in meeting the needs of the household for the sake of continuity and sustainability of life.

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## 2. Methods

### 2.1. Location and time of research

This research was conducted in Punaga Village, Mangarabombang District, Takalar Regency. The time of the study began in April 2019.

### 2.2. Population and respondents

The population in this was rice farmers who do household income fulfillment activities. The number of farmers in Punaga Village is 115 farmers spread over four hamlets. The sample was gathered by taking 25% of the population. Finally, 30 respondents taken randomly became the sample of this research.

### 2.3. Data analysis method

According to Basrowi [8], descriptive analysis is a study used to determine the value of independent variables, either one or more variables (independent) without making comparisons or connecting with other variables such as describing the characteristics of the socio-economic conditions of the respondents consisting of the education of respondents, farming experience, age, area of livelihood strategies carried out by the household in meeting their daily needs.

## 3. Results and discussion

A livelihood strategy is a method used by a group of farmers to earn a living, in this case, the existence of a double subsistence pattern that will be created later. Researchers took the object of rice farmers in coastal areas to analyze their livelihood strategies. Farmers in the Punaga Village, Mangarabombang District, Takalar Regency, generally work as farmers. The area of land owned by farmers tends to be small because it is located in a coastal area, which is nearby the sea. Thus, it is tough to cultivate rice plants in coastal areas due to the limited facilities. Farmers in this area only produce once a year in the rainy and dry season. They have difficulty in farming because of insufficient water and no sewers or canal facilities. The productivity of the rice plant produced is already quite a lot but the yield from the rice harvest is inadequate to support family members and future survival. Considering these conditions, farmers implement a livelihood strategy to help the family's economy to escape poverty traps, let alone higher needs. Apart from yields from rice, most farmers whose land area is below <50 acres are only for family consumption or other urgent needs.

**Table 2.** Household income strategy in the Village of Punaga, Mangarabombang District

Occupation	Number of workers (people)	Number of respondents(person)	Percentage (%)
Rice Farmers	30	30	100.00
Seaweed	17	30	56.67
Non-rice	9	30	30.00
Employee	4	30	13.33
Government employees	2	30	6.67
Trader	10	30	33.33
Construction workers	4	30	13.33
Others	7	30	23.33

Based on table 2, the most work done by the community of Punaga Village requires 30 heads of households. They are 30 farmers with a percentage of 100% working in seaweed as many as 17 people with a percentage of 56.67%, working in the non-rice sector as many as 9 people with a percentage of 30%, working as employees as many as 4 people with a percentage of 13.33%, civil servants as many as 2 people with a percentage of 6.67%, trading as many as 10 people with a percentage of 33.33%, construction workers as many as 4 people with a percentage of 13.33% and other jobs are 7 people with a percentage of 23.33%. By looking at the table above, the majority of people work in the agricultural sector as farmers and also some people work in the marine sector.

Diverse income strategies are carried out by coastal communities only to meet their needs both primary and secondary needs. The adequacy of income in meeting needs depends on how smart the community is in managing the income they receive. Increasingly the needs are significantly increased, especially with a large number of household members. Generally, coastal communities are still dependent on agricultural and marine products because it is still difficult to change the mindset of the community in utilizing existing resources like producers. They are afraid that the results will be reduced or zero so that coastal communities are still running their businesses for years. With the current income by looking at the income strategy carried out, the community generally has two or more jobs done to meet their needs, especially with agricultural products only one harvest season in the rainy season and land area also dramatically affects the results obtained. The yield from agriculture is very insufficient for their needs.

The livelihood strategies applied by rice farmers' households are very diverse. In this study, the researchers get various kinds of information about their livelihood strategies. Based on the information, the researchers divide the strategies into two kinds; economic strategies and social strategies. Social strategies use social institutions and social networks such as kinship, neighborhood, and friendship. Meanwhile, economic strategies use multiple income patterns, roles of family members and migration. The social strategies undertaken by the farming community in meeting household needs are outlined in table 3 below.

**Table 3.** Household social strategy in Punaga Village, Mangarabombang District

Social strategy	Activity	The social function of households
Social network	Make use of relatives, neighbors, and friends	To get a job Assist in financial matters (borrowing and giving loans)

		Helps farming tools such as tractors, pumps and other farming equipment
Social institutions(farmers communication, Rice: Ejaya Flowers, Seaweed: Sipakatau)	providing production facilities, farming information	Farming information material (extension) Assisting production facilities such as rice seeds, subsidized fertilizers, grass seeds, sea, nets, and others

Based on the table above, the social strategies carried out by households in Punaga Village, Mangarabombang District, Takalar Regency were varied. The average community lives their lives depending on others by utilizing their social networks (friendship, family, and kinship) to obtain work and other information. The information about work is spread by word of mouth. Usually, job information becomes crucial during a lean season. The social network relationship is always formed due to the kinship that is so tight and unconsciously that they are in the same boat, let alone known the term in Bugis Makassar "Pacce". Jobs can be obtained through harmonious friendships and high trust and caring between people.

The utilization of social networks is also generally in the form of accounts receivable in financial terms to meet the needs when conducting farming activities. Farmers are often in debt to make ends meet, especially during the lean season. The choice of debt owes the most to relatives and close friends. The reason given was the ease of debt and repayment. In addition to being in debt, friendship also helps to meet the needs of stone tools such as tractors, water pumps, hoses, combine harvesters and others. Jobs that rely heavily on friendships are construction workers.

Social institutions (farmer groups) also play essential roles in assisting farming communities such as providing farming information, providing fertilizer subsidies from government assistance, superior seeds, nets, and others. Cultural institutions become a forum for farmers to increase knowledge through training from extension workers or students. However, the problem is when it comes to the information about the training, it is only distributed to the closest people. It means that the other farmers do not get the same opportunity either training in the agricultural sector, the marine sector or outside of the two sectors. Economic strategies can be shown in the following table.

**Table 4.** Household economic strategy in Punaga Village, Mangarabombang District

Economic Strategy	Activity	Economic Function of Households
Job diversification	Husband: Fisherman Building Workers Employee Selling meatballs Daily Worker Farmers Seaweed	Helping main work (farmers) in meeting their daily needs and increasing family income and savings  The main occupation, farm produce is sold or fulfills household consumption Work that is diligent and produces excellent results but minimal risk. The most significant contributor to household income Increase household income.
Role of family members	Wife: Trade Sewing Civil servants Child: Go to the sea,	

	Construction workers	
	Odd worker	
Migration	Child: Wandering to the city of Jayapura	Helping family income for families from poverty snares

Based on table 4, there are three economic fulfillment strategies by the farming community, namely job diversification. The pattern of double-income becomes one of the mainstay strategies of farm households to support the family financially. Diversification efforts that can be done by farmers are very dependent on the opportunities that exist within the village either by utilizing existing natural resources or outside the utilization of natural resources. The pattern of the double income is made to diversify income in the household to meet the current needs. The forms of work diversification conducted by Punaga Village farmers households are working on rice fields, selling meatballs, construction workers, and the marine sector. The researcher took the farmer respondents who were in the research location as their primary work in supporting their family. Most farmers are still subsistence farmers whose crops partly sold to meet their needs. Since this area only harvests once a year, they need to downsize or end up buying rice to cover the shortfall to meet the household consumption. Seaweed is also produced commercially by the community, although they also work as farmers to earn more.

Similar to seaweed, the work done by the head of the household in terms of job diversification is nothing but to meet the needs of the family. Every family member must have a concern for the economic condition of the family to survive. Therefore, the involvement of wife and children in helping the financial problem is a strategy carried out by various households as well. The role of family members is also essential such as trading and sewing. Trading is done by small-scale opening stalls to help family income and provide for other people's needs. Most of the trading is done by the wives who work at home even though they help the farming done by their husbands. The role of children is also beneficial. Well-educated children can break the chain of poverty. The parents claim that it is easier for children to get a job. Even so, only a large proportion can send their children up to the tertiary level. The facts on the ground reveal that many children dropped out of school due to cost or delinquency. They dropped out of school and went far to migrate to Jayapura City with the education diploma they had passed through family relations and friendships to find work. The involvement of family members in earning a living for their household is solely done as an effort to increase household income in order to meet all the needs for survival (survival strategy). There was no attempt to invest or accumulate income from these activities.

The economic hardship faced by farmers in Punaga village in their lives is one of the factors driving the number of fishing children who migrate to big cities to work or even to live in an overseas city. The majority of children who go abroad are the drop-out ones and those who have just graduated from high school and did not continue their education to the tertiary level. This is mostly done by boys and girls to help their mothers at home. Instead of staying at home, children prefer to work overseas and look for experience. This phenomenon of migrant children slightly reduces the expenditure of the household concerned and increases family income from overseas work.

**4. Conclusion**

In fulfilling household livelihood, the strategies applied by the people of Punaga Village are utilizing the agriculture and marine sectors as the primary source in earning a living. Additionally, the community also makes a living outside the sector such as trading, construction workers, and civil servants. Diversification of work is extremely needed by the community to help to fulfil the living needs of the family head or the role of household members. The more family members, the more strategies are carried out.

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