

COMMUNITY LIVELIHOOD DIVERSIFICATION AS A RESULT OF MINING INDUSTRY ACTIVITIES: A CASE STUDY OF SOLIGI VILLAGE, SOUTH HALMAHERA

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Abstract

Indonesia is one of the world's largest archipelagic countries. Diversification is the process of increasing household economic income in various sectors to improve welfare and survival opportunities. This study demonstrates that the people of Obi Island's livelihoods are diversifying due to mining and pressure from the immigrant population. This study is necessary to determine how mining depletes natural resources affects the livelihood strategies of the Indonesian archipelagic community, particularly in Maluku. On the other hand, they must contend with dwindling natural resources. This study employed a semi-structured questionnaire to conduct a home survey with 153 respondents in Soligi Village. In-depth interviews were also conducted to delve deeper into the research findings. This study demonstrates that physical capital and natural capital are the essential livelihood assets for the inhabitants of Soligi Village, and mining has resulted in the diversification of people's occupations into non-permanent mining employees.

Keywords: Community Livelihoods; Archipelago; Obi Island; Job Diversification; Mining

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INTRODUCTION

Indonesia is an archipelago nation comprised of over 17,000 islands. Due to the archipelagic nature of this region, governance cannot be based solely on a land paradigm; rather, the connection plan between islands, particularly tiny islands, must constantly be considered. This is the context in which the archipelago paradigm emerged in Indonesia's development. One of the paradigm's highlights is that the direction of development in Indonesia is not only focused on the large islands, but also on the existence of small islands with connectivity to meet the basic needs of every citizen. So far, small islands are still

synonymous with lack of facilities, backwardness, and isolation. This terminology is then referred to as "underdeveloped areas". At the moment, the focus of dealing with the development of these small islands appears to have specific regional names.

People living on islands rely heavily on coastal regions for clean water and power (Cahyadi et al., 2017; Hernaningsih & Yudo, 2018), food needs (Suwarno et al., 2010; Ruauw, 2015; BD Pakasi et al., 2020) and income (Connell, 2013; Tamungku et al., 2019). However, the available options are restricted (McGillivray et al., 2010). With this status, the population (primarily

impoverished households) is highly susceptible to resource loss (Grossman & Krueger, 1995; Santoso et al., 2018). This sensitivity is reflected in the fragility of natural resources due to isolated island ecosystems (Kerr, 2005; Jędrusik, 2011; Chua et al., 2014).

Obi Island, located in South Halmahera Regency, North Maluku Province, is still categorized as isolated (Zam & Putrawan, 2020). On the other hand, it has an abundance of natural resources, one of which is shown in the number of mining operations. It is an island with a low population and density. Each town is packed and dispersed along Obi Island's shore.

The utilization of natural resources on the island is genuinely governed by customary institutions or some communities that manage natural resources responsibly, but they are impotent due to the mining industry's infiltration on Obi Island (Cinner et al., 2012; Persada et al., 2018). The immigrant population working as mine laborers is putting pressure on outdated resources (Reenberg et al., 2008; Nasdian et al., 2020) and swiftly apply technology to the gathering of natural goods (Foale et al., 2011; Sulu et al., 2015).

Mining activities on Obi Island are currently in the construction stage of processing and refining facilities (smelters) and preparation for further exploitation. The series of activities for mining activities on Obi Island requires a lot of manpower, which cannot be supplied by local workers. Moreover, the planned production activities for nickel mining activities on Obi Island will last for the next 30 years. Therefore, there will be a massive population migration to Obi Island, especially to meet the need for manpower for mining activities. As a logical consequence, with the increase in the number of workers who will come to Obi Island, the fulfillment of basic facilities for the needs of these workers will also increase. One of the most urgent needs to be

considered immediately is housing for mining workers with all the basic supporting facilities and infrastructure.

The current conditions in Soligi Village have undergone many changes since mining activities began on Obi Island (around 2006-2007). So, to adapt to this situation, the local community in Soligi Village needs to strengthen their livelihoods, which include capabilities, assets, and activities. Livelihoods can be characterized at several levels (e.g., person, household, community) with the most prevalent household (Frankenberger & McCaston, 1998; Chambers, 2011). Coastal communities in developing villages, including tiny islands, have similar livelihood features to fishermen, dryland agriculture, informal and temporary employees, and relatively few official occupations (Cinner et al., 2012). Changes in household and individual labour are hampered by variable seasons, external shocks, particularly the economy, and a scarcity of new chances. The structure, dynamics, and variety of community livelihoods are determinant elements in governance, stability, and the degree of benefits gained from natural resource management (Badjeck et al., 2010; Cinner et al., 2012). This study focuses on how the people of Soligi Village's livelihood assets, and how job diversification is related to mining.

METHODS

Soligi Village, Obi Island, Kab, South Halmahera conducted as the research site because of the mining activities carried out are relatively close to Soligi Village. Soligi Village becomes a ring 1 (around 10 km square) or some village area located within the company's operational area. This will, of course, have a huge impact on Soligi Village, both in the form of positive and negative impacts. Meanwhile, The majority of the residents were farmers or clove planters.

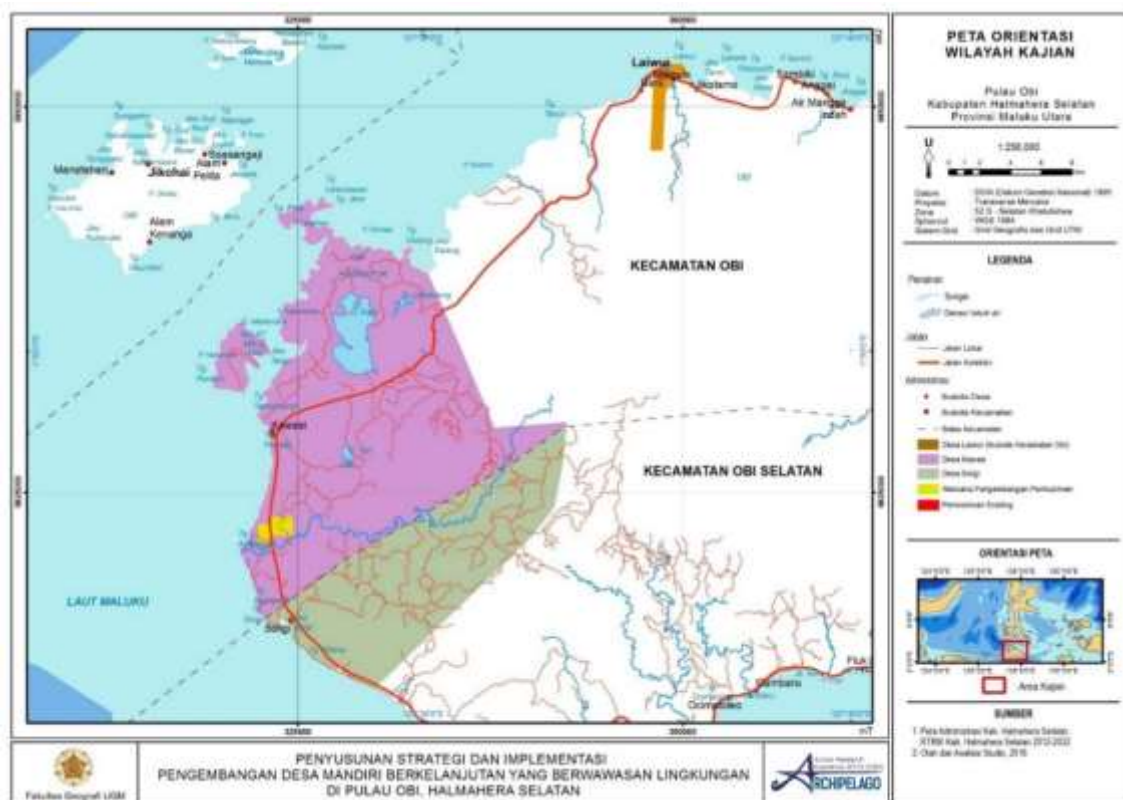


Figure 1. Research Location

Collecting Data

Survey methodologies using semi-structured questionnaires were used for data collecting (Pujihastuti, 2010; Morrisan, 2012; Nugroho, 2018). The research unit is the household of the family in Soligi Village.

Population and Sample Study

There were 153 households in Soligi Village as the population of the research. At the same time, the sample was all population. So, The sample size for this study was 153 people. Moreover, a stratified random sample was used as a sampling method (Cochran, 1946; Neyman, 1992).

Table 1. Soligi Village Households Sampel

Main Occupation	Number of Households
Farmers / Planters	120 samples
Trade and Services	3 samples
Fisherman / Fishery	8 samples
Civil Servants and Other Employees	13 samples
Have no job	9 samples
Respondents	153 samples

Source: Survey of UGM Geography Archipelago team, 2018

Analysis Data

Descriptive statistics were used as analysis for this study using Microsoft Excel. Furthermore, graphics and frequency tables are used to present the data from the field.

RESULTS AND DISCUSSION

Characteristics of Soligi Village Community

Soligi Village is one of the communities on Obi Island near Kawasi Village, around 12 kilometres south of Kawasi Village. The residents of Soligi Village are migrants who arrived in the village region some decades ago as extractive labourers, attempting to make a living as fish searchers (fishermen) and farmers (Dipatunggoro, 2011).

Soligi Village's land has enormous potential as a producer of clove commodities, as this is the population's primary source of income. Coconuts will subsequently yield copra, cocoa will yield the basic ingredient for chocolate. While walnuts and nutmeg are minor components of the plantation goods which sought by the village's residents.

The Buton tribe is home to the majority of the inhabitants of Soligi Village, with other immigration tribes hailing from the races of the nearby archipelago. As a result, people's lives are more harmonic and harmonious when there is no considerable horizontal conflict.

The basic meal of the population of Soligi Village, which Buton Tribal immigrants dominate, is made from tubers known as *Sankola* or *Suwami* (the Tobelo/Galela people's name). The primary side dishes are also made with marine items, which are prevalent in processed fish.

Community Livelihood Assets

One part of examining communal livelihoods is assets (Bond & Mukherjee, 2002). One part of the examination of communal livelihoods is assets. Community asset mapping is crucial in knowing the

various capitals possessed to serve as a starting point for further knowledge of lifestyle patterns. Human capital, natural capital, social capital, financial capital, and physical capital are the five types of livelihood assets (Rakodi, 2014).

The Soligi Village community's livelihood assets value is 57.95 percent physical capital, 46.45 percent natural capital, 32.95 percent social capital, 46.85 percent financial capital, and 41.37 percent human capital (*Figure 2*).

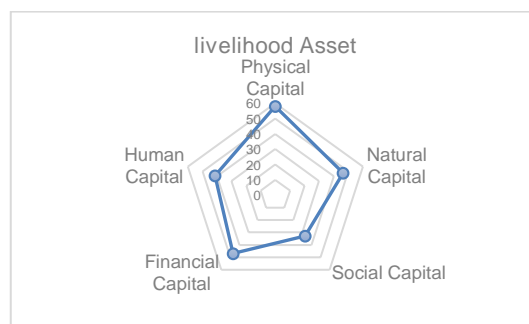


Figure 2. The Pentagram of Soligi Village Community Assets

Farmer/planter homes, fisherman/fishery households, commerce and service households, public servants and other employees are the four primary livelihood categories in Soligi Village. Each group has a certain number of households, as shown in Table 1.

Table 2 covers the asset use of each household group and identifies the pattern of capital utilization in greater detail.

Farmer/planter families have asset utilization characteristics that emphasize natural and physical capital (Figure 3). The proportion of natural capital use is 56.6 percent. It is suggested that this family is ideal in processing many sorts of natural resources, such as land for plantation operations. However, the figure is not as high since cultivated gardens are not as tightly controlled as paddy fields.

Table 2. Comparison of Asset Utilization Between Soligi Village Household Categories.

Type of Livelihood	Assets Utilization (%)				Average Human Capital	Average
	Physical Capital	Natural Capital	Social Capital	Financial Capital		
Fisherman / Fishery	64.4	48.0	25.0	48.0	53.1	47.7
Trade and Services	44.2	36.0	33.3	44.0	25.0	36.5
Farmers / Planters	62.2	56.6	32.0	49.6	50.1	50.1
Civil Servants and Other Employees	61.0	45.2	41.5	45.8	37.3	46.2

Source: Survey of UGM Geography Archipelago team, 2018

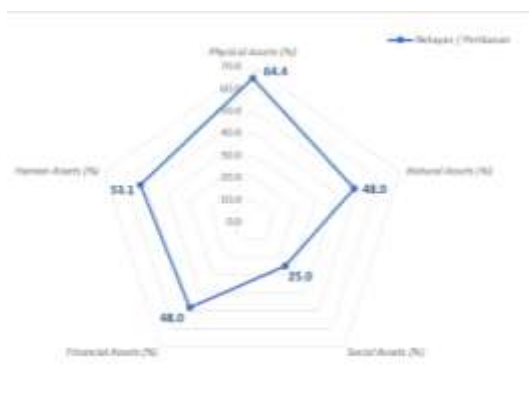


Figure 3. Fishermen/Fishery Household Assets Pentagon

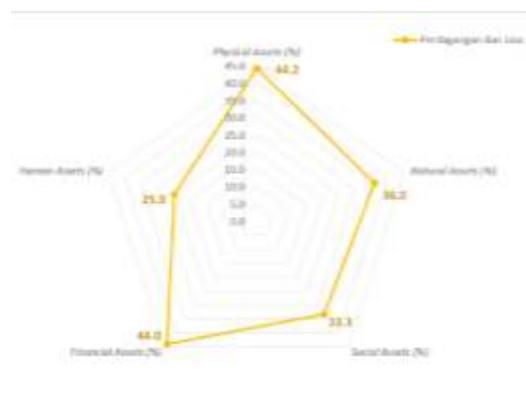


Figure 4. The Pentagon of Trade and Services Household Assets

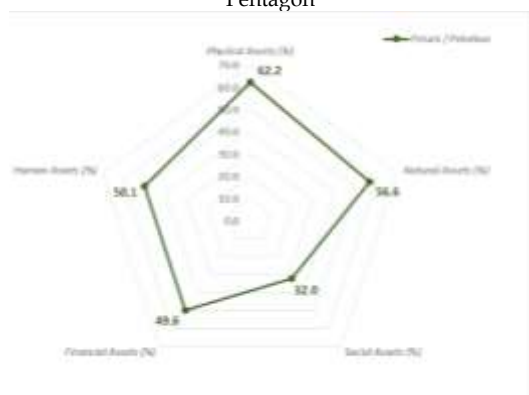


Figure 5. The Pentagon of Farmers / Planters Household Assets

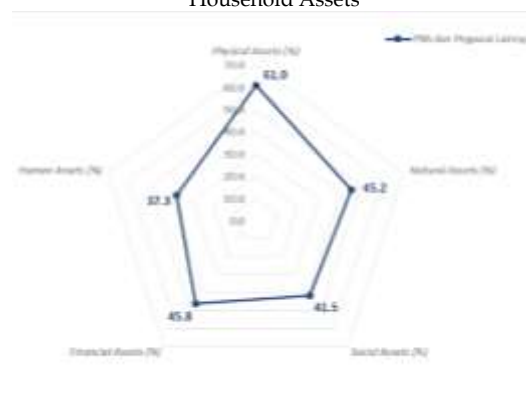


Figure 6. Pentagon Household Assets for Civil Servants and other employees

It is the same as research by Kumar & Luna (2018). It indicates that physical capital is the largest livelihood capital in the NijhumDwip archipelago of Bangladesh compared to other forms of capital. The

research by Kusumanti et al. (2021) indicates that physical capital is the largest livelihood capital in the NijhumDwip archipelago of Bangladesh compared to other forms of capital.

Households with the primary source of income are commerce and services (Figure 2). According to the field study findings, these families are more concerned with the management of financial and physical resources. The flow of financial capital is undoubtedly bigger since the established business enables money transactions to be carried out daily. As a result, this household type might save, offer receivables, or even owe to providers of items supplied.

It is consistent with the findings of Matsue et al. (2014), who conducted a study on female merchants on the Kenyan coast and discovered that traders' livelihood adaption techniques are dependent on the financial strength and the ease with which loans can be obtained.

The amount of financial capital managed by trading and service families is 44 percent, whereas physical capital is 44.2 percent. Despite the strong usage of the two capitals mentioned above, this

household has a general deficiency in terms of human capital. It is connected to work support skills or the health of each household member. According to Figure 2, the typical household's human capital utilization rate is barely 25%.

Fisherman/fishery households rely largely on the ownership of fishing equipment to sustain their primary occupation (Figure 1). As a result, this household's physical asset utilization rate is 64.4 percent. This amount is unquestionably enormous compared to the utilization of human capital by other family types. Because the prevailing population status is that of an immigrant community, this household's social capital ownership is just 25%. This conclusion differs from from Stanford et al. (2014) research on the enhancement of the wellbeing of fishermen in West Sumatra. They suggest not only using boats and machinery to increase the welfare of fishermen, but that it must be balanced with strengthening.

Table 3. Soligi Village Sample Households That Have Physical Assets

Type of Livelihood	Residential Owner Sample	Land Owner Sample	Other Asset Owner Sample
Fisherman / Fishery	6	3	5
Trade and Services	1	2	3
Farmers / Planters	106	76	96
Civil Servants and Other Employees	5	5	13

Source: Survey of UGM Geography Archipelago team, 2018

In general, the result does not appear to be a considerable variation in the valuation of physical assets amongst household types in Soligi Village. Figure 7 depicts the average physical capital held by each family depending on specific livelihood types.



Figure 7. Household Physical Asset Valuation Graph in Soligi Desa Village

Natural Capital

According to the household's use of natural capital, quite a few inhabitants use the area around the hamlet as farming space. In addition to farmer/planter households, many additional households work on land for planting and producing crops. The majority of farming activities are around the Aki Lamo River, four kilometers from the seashore. Some gardens may be located outside of the region. Although most households have used natural capital in the form of farming, the usage is still confined to planting annual crops such as coconut, nutmeg, and cloves.

Human Capital

The population of Soligi Village reveals that the majority of the population is between the ages of ten and fourteen, followed by those between the ages of five and nine and those between the ages of 65 and 69 (Figure 8). This proportion demonstrates that Soligi Village has a demographic advantage for both present and future generations. This type of momentum will undoubtedly benefit village development if the present people resources have a high degree of education.

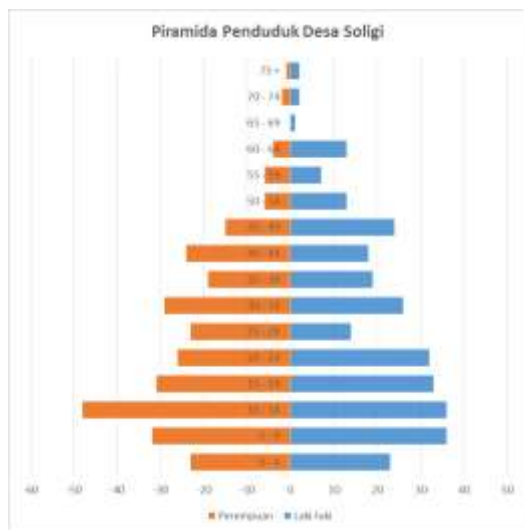


Figure 8. Pyramid of Soligi Desa Villagers

In terms of the education level of the inhabitants of Soligi Village, current conditions suggest that education is still dominated by residents who do not have a diploma record at a specific level of education. Although the number of children out of school is relatively high, it is hoped that this number will drop year by year. There are still many children aged 0 to 14 years old in this hamlet. With the expansion of educational infrastructure and the expansion of existing institutions, it is expected that the population of Soligi with no education level at all will decline dramatically. Figure 9 shows the Soligi Village com's educational level.

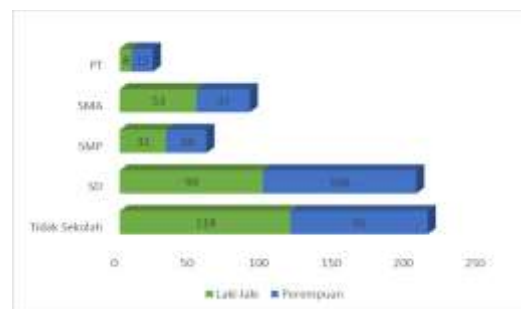


Figure 9. Graph of the Soligi Village Community's Education Level

Social Capital

Social capital is a term that refers to the practices, conventions, and values that exist inside a social network (or community) that can contribute to the group's collaboration, functioning, and collective action.

The majority of the Soligi Village community's main source of income are farmers with land ownership in the form of non-irrigated rice fields. Most individuals have full-time and part-time employment, usually as fishermen seeking fish in the water. These two occupations cannot be separated since they are linked to commodities produced in Soligi Village, namely garden items and fishing products.

The local ethnicity of Soligi Village is Buton. The family's leader, usually a garden farmer, and household members, including spouses and daughters, can all be gardeners. PKK activities in Soligi Village

are community groups that enable women to engage in community development. The PKK's activities include handicrafts, community activities, cookery activities, and others.

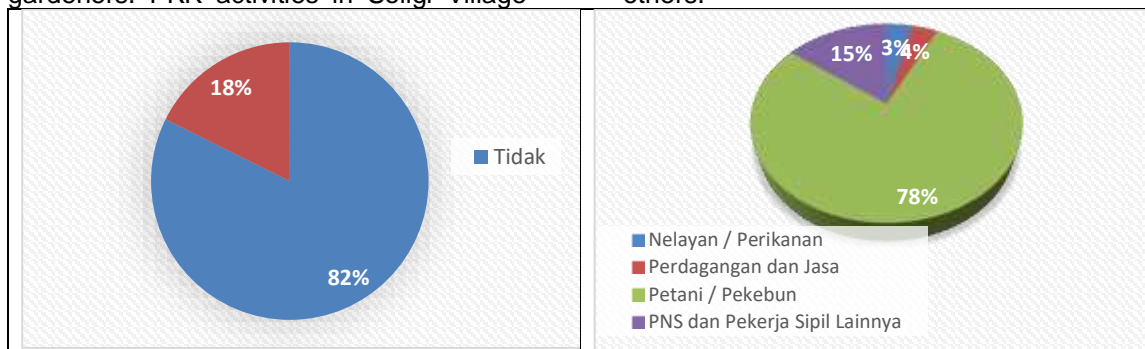


Figure 10. Participation in Community Organizations Diagram

One of the indicators related to social capital is *gotong-royong* (mutual cooperation). The Soligi Village Community's characteristics, which are autonomous and harmonious, continue to rely on mutual cooperative activities to solve various issues and collaboration in terms of growth.

According to the pie chart of community engagement in organizations (Figure 10), 82 percent of the inhabitants in Soligi Village did not participate in the organization. In comparison, 18% of the community participated in community organization activities. The 18% rate is influenced by community groups in Soligi Village, specifically *gotong-royong* (mutual cooperation) and PKK (Family Welfare Program) activities.

Families dominate the Soligi Village community's engagement in the organization. The head of the family works as a farmer, accounting for 78 percent of the total, followed by the head of the family working as a public servant, accounting for 15 percent.

Families with the head of the family earning a living as a fisherman make up the smallest percentage (3%) of all. Family heads who work as farmers may be

counted on to participate in community groups since they profit from it. Soligi Village's physical state is conducive to plantation development, as seen by the village's principal commodities, including cloves, coconut, nutmeg, copra, and others.

Each household has a large amount of land for gardening in diverse regions. It is an activity that makes the best use of natural resources as a means of survival and a primary source of income. The dominance of the main job as a garden farmer implies that mutually beneficial collaboration is required to acquire the intended outcomes and advantages from the plantation. The desire might be attributed to communities requiring a location to engage with one another.

The benefits that the community receives from participating in mutual cooperation activities include establishing good relations between the communities so that they can get comfort and create harmonious conditions. The majority of them receive guaranteed help from the community if they participate.

Job Diversification due to Mining Activities

Besides the findings of the preceding quantification of the Soligi population's number and degree of education, each household unit undoubtedly has various options for maximizing the potential of

human capital within its family scope. Based on Figures 11, 12, 13, and 14, it can be seen that each household type does a variety of tasks to sustain their livelihood patterns.



Figure 11. Percentage of Diversification Actors in Fisherman/Fishery Households

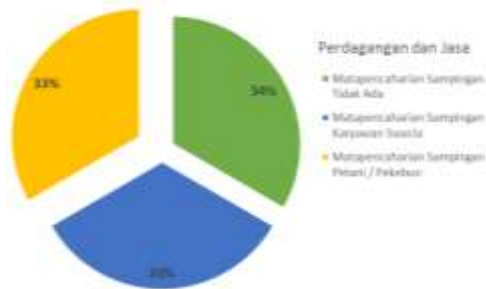


Figure 12. Percentage of Diversification Actors in Trade and Services Households

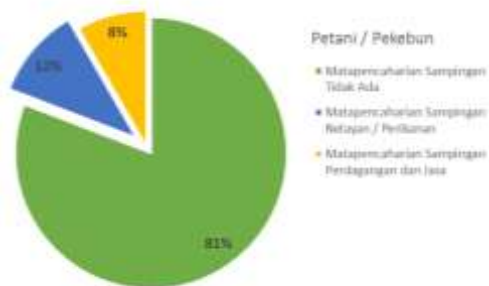


Figure 13. Percentage of Diversification Actors in Farmers / Planters Households

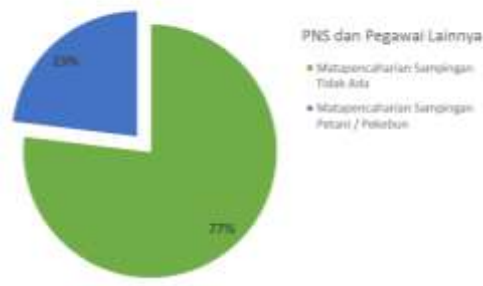


Figure 14. Percentage of Diversification Actors in Civil Servants and Other Employees Households

In addition to the categories of fishermen's households and merchant households, it is dominated by a variety of households in terms of livelihood. It was observed that 75% of fishing households also included agriculture as a source of income. It is because when the west monsoon blows, this household's activity space will be limited. It implies that at this time, fishing households employ gardening skills passed down from generation to generation to support their families' fundamental requirements. Figure 11

depicts the diversification of fisherman/fishery households in Soligi Village.

Trading and service operations can be carried out daily, but their buyer market is minimal, consisting solely of village residents. It drives 33% of these families to hire one of their family members as a private employee outside the village and another 33% to engage in horticultural activities such as farmer's cultivation.

Farmers' and planters' households and government servants' and other

employees' households exhibit various traits. According to statistical calculations, the two groups do not significantly vary their incomes. According to the calculations, just 8% of farmers and planters work in commerce and service. In comparison, another 11% spend their leisure time as fishers or rely on marine harvests as commodities that the household may have marketed or consumed. Public servant families and other employees exhibit comparable traits. Moreover, 77 percent of public servants and other employee households do not diversify. The remaining 23% take advantage of the surroundings.

CONCLUSIONS AND RECOMMENDATIONS

Considering Soligi Village has a large area for clove and coconut crops and readily available marine items, the value of the people's livelihood assets is physical and natural capital. According to research findings, it suggests that although nickel mining on Obi Island alters how people live, the community may still thrive by optimizing their natural and physical wealth.

Job diversification is one method for rural towns to thrive, which involves becoming part-time employees at a firm and maximizing their primary job.

This research still had limitations, such as not explaining quantitatively how job diversity impacts the fishery and planters as a local community.

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