

## INCOME AND WELFARE OF SMALL-SCALE FISHING HOUSEHOLDS DUE TO TOURISM DEVELOPMENT IN PRIGI BAY, TRENGGALEK REGENCY

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**Abstract:** Karanggonggo Village has become known for its white sand beach and various other beaches that serve as tourist attractions. Nonetheless, numerous small-scale fishermen continue to engage in fishing activities. Small-scale fisherman employ vessels with a power output below 20 PK and utilize various fishing gear, including nets. This study aims to examine the economic conduct of small-scale fishing households regarding production activities, labor hours, household income, consumption habits, and overall welfare levels. This survey had 34 households as respondents. The findings indicated that the production behavior of fisher households encompassed both fishing and farming activities within the perhutani region. Fishing activities occur for four months during the peak season each year. The mean duration at sea is 12 hours daily. Throughout the fishing season, daily trips to the sea occur. The species of fish caught are layur, tongkol, tengiri, and anchovies. In the moderate season, the typical individual ventures to sea 4 to 5 times weekly. The primary catch during the medium season consists of squid and octopus. During the off-season for fishing, fishermen engage in agricultural pursuits. Merely four responders continue to venture to sea despite the absence of the fishing season. Through fishing and farming operations, households can satisfy their fundamental food and non-food requirements. Certain responders are capable of saving their income. According to the BPS welfare indicator criteria from 2014, small-scale fishing households in Karanggandu Village are classified as rich families. Many households in the Watulimo Sub-district region have yet to access health facilities.

**Keywords:** Household Economy, Household Welfare, Small-scale Fishermen

### 1. Introduction

Numerous literature frequently state that fishing communities represent the most disadvantaged segment of society. Nevertheless, (Satria, 2009) states that specific statistics regarding the quantity of poor fishermen in Indonesia remains unavailable. (Muflikhati et al., 2010) found that fishing households demonstrate more economic prosperity compared to non-fishing families. (Tajerin & Yusuf, 2011) stated that a genuine positive correlation exists between the welfare levels and food security of poor fishing households in both urban and rural settings. Meanwhile, the status of fish farming households within the Fishery Cultivation Center is clearly classified as non-poor. It is categorized as a high degree of welfare according to BPS welfare indicators in Susenas 2011 (Rizal et al., 2018). The research by (Sutawijaya et al., 2013) indicates that freshwater ornamental fish farming households in Cipedak Village, Jagakarsa, South Jakarta, are not poor, as evidenced by 11 BPS 2005 indicators categorizing them within a high welfare level.

The fishermen's residential area in Karanggongso Village is experiencing rapid development, particularly regarding tourism infrastructure. The establishment of recreational areas in Karanggongso will require adaptation to environmental changes among the local population. The resilience of coastal communities can be assessed by the tactics employed to reduce vulnerability. The functionality of coastal ecosystems as marine protected areas affects the household economy of coastal communities. (E. Susilo et al., 2017) Social changes in the coastal communities of Karanggongso, within the context of social structure dynamics, can be identified into three phases: (1) **The Isolation Period** (pre-1975), characterized by the primarily productive economic activities of community

households, including agriculture, forestry, fishing, and livestock trading (specifically chickens and goats). The dynamics of social structure during this phase involve the clearing of forested areas and the gradual integration of Karanggongso into the broader external environment. **The Open-1 period** (1975-1990) was marked by the economic pursuits of Karanggongso households as farmers, engaging in agriculture (both on Tegalana and in forested areas), cattle management, fishing, and fish trading activities. The dynamics of the social structure during the Open-1 period included reforestation efforts, the establishment of an elementary school, the initiation of Karanggongso Tourism, the arrival of the Lugano Priest who constructed a facility for Catholic religious activities, and conflicts regarding resource utilization. **The Open Period-2** (1991-2009): Defined by the economic activities of the Karanggongso community, including agriculture (both Tegalana and forest cultivation), livestock raising, fishing, and participation in international fish trade, alongside the initiation of the Southern Crossing Line construction. The establishment of the Southern Cross Line, linking Tulungagung Regency and Trenggalek Regency in 2023, contributed to the growth of marine tourism in Trenggalek Regency. Tourist visits to Prigi Bay have risen, alongside the emergence of new tourist spots like Mutiara Beach.

The development of tourism in Prigi Bay obviously affects the adaptation of small-scale fishers to environmental changes. Fishing households implement coping mechanisms as an adaptation. The study results (Edi Susilo et al., 2021), indicated that fisherman households employed resource utilization for coping methods by diversifying their income sources. The enhancement of household coping methods is facilitated by the collaboration between formal institutions within the community and government agencies as policymakers.

The development of tourism in Prigi Bay would affect the livelihoods of small-scale fisherman in the area. This study aims to (1) examine the income of small-scale fisherman in Prigi Bay and (2) assess the welfare level of small-scale fishermen households.

## 2. Research Methods

The research was conducted in Prigi Bay, specifically in Karanggonggo, Watulimo Subdistrict, a tourist attraction in the area. Karanggongso Hamlet has three tourist beaches: White Sand Beach, Pearl Beach, and floating cottages. This investigation was conducted in August and September 2024.

The type of methodology is the survey method. To accelerate data gathering, "Rapid Rural Appraisal" is applied. Using purposive sampling, 42 small-scale fisherman were selected as respondents. Small-scale fisherman prevalent in the research area utilize fishing poles, powered by a driving force of 5 GT.

The data were analyzed using descriptive qualitative and quantitative methodologies. Quantitative descriptive methods were applied to assess the production and revenue of fishing line fishermen, alongside non-fishing income and household expenditures of the fishermen. Production and income were assessed by financial analysis, including the capital invested in fishing operations, expenses, revenues, and profits. The welfare level is assessed using indicators of a wealthy family as per BPS in 2022, including parameters such as population, health and nutrition, education, employment, consumption levels and patterns, housing and environment, poverty, and other social factors, as illustrated in Table 1.

**Table 1. Welfare based on BPS in 2022**

No	Indicators for Measuring Welfare Levels	Score	Level
1	<b>Population</b> The majority of age demographics within the family: Productive (3); Moderately productive (2); Unproductive (1) Number of non-relatives living: < 4 persons (3); 5 persons (2); > 5 persons (1) Number of family dependents: < 4 persons (3); 5 persons (2); > 5 persons (1) Marital status: Married (3); Single (2); Divorced (1)	3	Good (10-12)
		2	Enough (7-9)
		1	Less (4-6)
2	<b>Health and Nutrition</b> Family health conditions: All healthy (3); Few unwell (2); The	3	Good (24-30)
		2	Enough (17-23)

No	Indicators for Measuring Welfare Levels	Score	Level
	Majority unwell (1) Conditions of nutritional intake in the family: Good (rice, vegetables, meat, fruit, milk); Enough (rice, vegetables, meat); Less (rice) Existing health facilities: Hospital (3) ; Community Health Centers (2); Traditional healers (1) Available healthcare professionals: Doctor (3); Midwife (2); Traditional healers (1) Maternity care facility: Labor and delivery hospital (3); Clinic/Midwife (2); Home (1) Sources of medication for the family: Community Health Centers (3); Traditional healers (2); Over the counter (1) Medical expenses: Affordable (3); Moderately affordable (2); Difficult to reach (1) Health Care Insurance: BPJS (3); Health insurance (2); Personal expense (1) The family owns a birth certificate: Yes (3); Some have (2); None have (1) Implementation of immunization for children under five: Often (3); Sometimes (2); Never (1)	1	Less (10-16)
3	<b>Education</b> Family members aged 10 and older with proficient reading and writing skills: Fluent (3); Moderately fluent (2); Non-fluent (1) Review of children's education: Crucial (3); Moderately important (2); Unimportant (1) Educational ability: Sufficient (3); Moderately sufficient (2) ; Not sufficient (1) Child's educational facilities: Satisfactory (3); Unsatisfactory (2); Deficient (1) Importance of out-of-school education: Essential (3); Moderately essential (2); Non-essential (1) Children's educational achievement: Senior High School (3); Junior High School (2); Elementary School (1)	3	Good (15-18)
		2	Enough (11-14)
		1	Less (6-10)
4	<b>Employment</b> Number of people employed in the family: 3 persons (3); 2 persons (2); 1 persons (1) Work hours per week: > 35 hours (3); 30-35 hours (2); < 30 hours (1) Alongside conducting business, family members engage in additional jobs: Yes (3); Seeking (2); None (1) Category of additional jobs: Self-employed (3); Laborer (2); None (1) Period of the day designated for additional jobs: Throughout the year (3); Following the agricultural season (2); Uncertain (1)	3	Good (13-15)
		2	Enough (9-12)
		1	Less (5-8)
5	<b>Levels and Patterns of Consumption</b> The family regards rice as a fundamental dietary component: Yes (3) Occasionally (2) No (1) Total consumption spend in one month: > IDR 1.000.000 (3); IDR 1.000.000 (2); < IDR 500.000 (1) Daily rice consumption pattern: Three times daily (3); Twice daily (2); Once daily (1) Adequacy of monthly household income for food and non-food expenditures: Yes (3); Occasionally (2); No (1)	3	Good (10-12)
		2	Enough (7-9)
		1	Less (4-6)
6	<b>Residential and Ecological Context</b>	3	Good (37-45)

No	Indicators for Measuring Welfare Levels	Score	Level
	Residential house status: Owned (3); Rented (2); Boarded (1) Residential land status: Owned (3); Rented (2); Boarded (1) Housing classification: Permanent (3) Semi-permanent (2) Non-permanent (1) Roof types utilized: Tile (3) Asbestos (2) Thatch (1) Wall materials: Cement (3) Plank (2) Gabble (1) Floor types utilized: Ceramic (3); Cement (2); Land (1) Floor area: > 50 m <sup>2</sup> (3); 20-50 m <sup>2</sup> (2); < 20 m <sup>2</sup> (1) Type of lighting used: PLN electricity (3); Non-PLN electricity (2); No electricity (1) Fuel used: LPG Gas (3); Kerosene (2); Wood (1) Type of family drinking water: Branded bottled water (3); Refill water (2); Tap water (1) Source of water for bathing/washing: PAM/ledeng (3); Well (2); River (1) Drinking water usage within the family: Own (3); Shared (2); Public (1) Ownership of WC: Own (3); Shared (2); Public (1) Garbage disposal location: Pit/garbage can (3); Yard (2); River (1) Classification of living environment conditions: Clean and orderly (3); Clean but disorderly (2); Unclean and disorderly (1)	2	Enough (26-36)
		1	Less (15-25)
		3	Good (3)
7	<b>Poverty</b> My classifications of perspectives on poverty levels: Not poor (sufficient to meet fundamental daily requirements) (3); Poor (sufficient merely to meet fundamental daily requirements) (2); Extremely inadequate (incapable of meeting all daily requirements) (1)	2 1	Enough (2) Less (1)
8	<b>Alternative Social</b> Access to knowledge via media Fulfilled (TV and computer) (3); Partially fulfilled (TV only) (2); Not fulfilled (1) Access to communication: Fulfilled (all family members own mobile phones) (3); Partially fulfilled (only some family members own mobile phones) (2); Not fulfilled (1). Internet access location: Homeownership (3); Non-homeownership (2); Public venue (1) Family's capacity to access entertainment: Met (recreation frequently) (3); Less met (recreation infrequently) (2); Not met (no recreation) (1) Neighborhood safety: Safe (3); Moderately safe (2); Unsafe (1)	3	Good (13-15)
		2	Enough (9-12)
		1	Less (5-8)

Source: (Badan Pusat Statistik, 2022)

The welfare level of fisher households is divided into three classifications with score intervals as follows (BPS, 2022):

- Scores between 8-13 = Low Welfare
- Scores between 14-19 = Moderate welfare
- Scores between 20-24 = High Welfare

### 3. Results and Discussions

#### Development of Coastal Tourism in Karanggongso

In 2023, the maritime tourist sector in Karanggongso Prigi experienced fast growth following the inauguration of the southern causeway linking Trenggalek Regency with Tulungagung Regency. The scenic view of the sea along

the southern causeway has captivated travelers. Mutiara Beach Tourism, located near Karanggongso, experienced a significant surge in tourist attendance, with total visitors in 2023 reaching 262,024, a twofold increase from 120,739 in 2022. Mutiara Beach is a freshly inaugurated beach that has swiftly progressed in comparison to other beaches in the Karanggongso region. Alongside Mutiara Beach, the Karanggongso region also features Pasir Putih Beach and Sambironce Beach, which were inaugurated prior.

### **Production activity inside fishermen's households**

The advancement of the tourism sector in Karanggongso reveals that not all small-scale fisherman along the coast possesses the ability to exploit business development prospects inside this sector. Fishing remains the predominant occupation. The village data indicates a total population of 563 residents, with 415 fisherman utilizing fishing rods, purse seines, and nets. Out of 42 responders, only 12 are employed as tour guides. Tour guide activities occur on Saturdays, Sundays, and national holidays. Meanwhile, their daily activities remain as fisherman. Six responders are exclusively engaged in fishing year-round. The remainder engage in agricultural pursuits as secondary occupations.

Fishing operations generally use boat motors ranging from 12 to 30 horsepower. Nonetheless, two responders continue to utilize oars. The ownership of boat assets comprises 73% fiberglass boats, with the remainder constructed from wood. In 2008, all fishing vessels were constructed from wood. The cost of each fiberglass boat unit ranges from IDR 17,000,000 to IDR 30,000,000, although wooden boats are priced more, between IDR 40,000,000 and IDR 60,000,000 per unit. The boat's lifespan is ten years.

The propulsion engine of the boat exhibits a power range of 12 to 24 PK. The cost of the propulsion engines varied between IDR 7,500,000 to IDR 23,000,000. Prices were derived from the data collection period's pricing. Similarly, the technical lifespan is projected from the present until the engine becomes inoperable. The operational lifespan of the boat engine ranges from 5 to 10 years. The cost of fishing equipment utilized by fisherman ranges from IDR 1,300,000 to IDR 1,500,000. This fishing equipment has a lifespan of two years. Fishing rods are typically utilized for a duration of three months. Fishing activities occur throughout the course of one day, lasting 10 to 12 hours. The prime fishing season occurs from August to November. The species of fish captured comprise layur, tuna, anchovy, octopus, and squid. The medium fishing season is from April to July. During this season, fisherman continue to catch fish, albeit not daily. The average is three times every week at sea. Species captured during the intermediate season comprise tuna, anchovies, octopus, and squid.

Production expenses comprise fixed costs and variable costs. Categories of fixed costs encompass boat depreciation, engine depreciation, and fishing gear depreciation. Furthermore, there are expenses associated with boat and engine maintenance, including oil. The annual average fixed cost is IDR 7,300,000. Variable costs comprise gasoline and compensation fees. Moreover, fishing rods are often utilized once a month. The monthly expenditure for acquiring fishing rods ranges from IDR 150,000 to IDR 400,000. The utilization of fishing rods is contingent upon the species of fish and the catch involved. Each trip necessitates gasoline costs ranging from IDR 150,000 to IDR 300,000, in addition to a retribution fee of IDR 50,000 each trip. The mean variable cost per journey is IDR 480,000.

The average amount of fish capture during the peak season is 7,874 kg each season. The mean selling price is IDR 30,000 per kilogram. The average revenue generated by fisherman during the peak season is IDR 236,220,000 every season. The average catch of fisherman during the medium season is 49 kilogram each season. The mean selling price is IDR 25,000 per kilogram. The average revenue of fisherman during the medium season is IDR 19,800,000 per season. The income from fishermen's catch is the difference between revenue and the entire costs associated with fishing activity. This net profit constitutes the household income derived from the fishing sector. The average income of fisherman during the peak season is IDR 112,056,000, whereas the average income during the middle season is IDR 19,770,000.

Small-scale fishing households typically engage in business activities beyond the fishing industry. Households engage in this activity due to the fact that the prime fishing season lasts only four months each year. Fishing households operate several activities, including agriculture, forestry, marine tourism, and aquaculture. Forty-one respondents were employed as agricultural and forestry practitioners. The agricultural outputs are rice and corn.

As a forest farmer, the household engages in cultivating forest land as a “Goplo” through a social forestry initiative by Perhutani. The outcomes of forest cultivation comprise cloves, durian, bananas, rice, and corn. The revenue earned by fishers, as well as agricultural and forestry growers, is illustrated in Table 2.

**Table 2. Fisher household income in the agriculture/forest sector**

Farm Type	Number (Person)	Average income (IDR /Year)
Clove	38	43,700,000
Durian, mangosteen	6	3,400,000
Banana	4	2,125,000
Rice	1	36,000,000
Corn	2	2,100,000

The respondents are involved in goat and poultry farming, as well as lobster aquaculture. One fisherman respondent has a supplementary occupation as a bird breeder, earning IDR 38,000,000 annually, while another respondent engages in goat breeding, generating an income of IDR 18,000,000 per year. Twelve responding fishermen households conducted maritime trip guiding utilizing their fishing boats. The average annual income for a tour guide was IDR 15,600,000. Sixteen percent of fishermen's spouses were identified as contributors to the income of fishermen's households.

### Fundamental dietary and non-dietary consumption of fishing households

According to the Central Bureau of Statistics, food consumption expenditure is categorized into 14 groups: grains, tubers, meat, fish, eggs, milk, vegetables, nuts, fruits, oils and fats, beverage ingredients, condiments, other consumables, processed foods and beverages, and tobacco and betel. This dietary intake is essential to meet their physiological requirements.

The average monthly expenditure on basic food and non-food items for small-scale fisher households in the study region was IDR 3,675,000, comprising IDR 1,385,000 for basic food and IDR 2,290,000 for basic non-food items. Therefore, the fundamental non-food spending exceeds the fundamental non-food expenditure. Consequently, fisher households may be classified as affluent. Certain culinary items utilized by homes are derived from fish catches, some of which serve as accompaniments. Certain kind of veggies are harvested from the garden and heath. The predominant food expenditure is allocated to carbohydrate sources, with rice or grain consumption totaling IDR 250,000 monthly. The predominant food expenditure is to animal food intake, including fish at IDR 192,000 per month, meat at IDR 150,000, and eggs and milk at IDR 78,000 per month. These three meal classes are costlier than other varieties of side dishes. The value of fish consumption is the monetary valuation of fish obtained from personal catch.

Household non-food expenditures for products and services, including children's education, transportation, motor fuel, and medical expenses, average IDR 1,110,000 per month. Additionally, non-food expenditures for the housing and residential amenities category, which includes power, mobile phone credit, and internet packages, amounted to IDR 460,000 per month.

### Welfare status of small-scale fishing households

The welfare status of fishing households in Karanggongso Village is assessed using the welfare metric established by BPS in 2022. The welfare level of fishing families in Karanggongso is assessed using various criteria, including demographics, health and nutrition, education, employment, consumption habits, housing, environmental conditions, and additional social aspects.

### Population

Research conducted by (Putranto et al., 2023) on traditional fisherman in Cilacap Regency indicates that the size of fishermen's families is substantial, as they believe that having numerous children correlates with increased

sustenance. Fishermen believe that the substantial number of family members will not impact their economic circumstances. Fishermen believe that their daily earnings from fishing sufficiently fulfill the economic requirements of their families.

The population variable employs three scores: score 3 for good population criteria (10-12), score 2 for very good population criteria (7-9), and score 1 for bad population criteria (4-6). There are 50 households meeting the criteria for the adequate population condition.

**Table 3. Population Indicator Score**

Population Indicator	Score (percentage)		
	3	2	1
The majority of family age	40 (80%)	4 (8%)	6 (12%)
Number of outsiders staying	44 (88%)	2 (4 %)	4 (8%)
Dependents in the family	50 (100%)	0	0
Marital status	49 (98%)	1 (2%)	0

### Health and Nutrition

Animal protein derived from marine items is extensively utilized and consumed in coastal areas. Coastal inhabitants exhibit a relatively adequate protein intake in toddlers. Nonetheless, numerous studies indicate that the malnutrition prevalence among toddlers from fishing families is 80% higher than that of those from farming families (Yuliantini et al., 2022). Three scores are utilized for the health and nutrition variable: score 3 for good health and nutrition criteria (24-30), score 2 for satisfactory health and nutrition criteria (17-23), and score 1 for inadequate health and nutrition criteria (10-16). Fifteen households exhibited relatively good health and nutrition, whereas thirty-five families demonstrated good health and nutrition.

**Table 4. Health and Nutrition Indicator Score**

Health and Nutrition Indicator	Score (percentage)		
	3	2	1
Family health conditions	33 (66%)	12 (24%)	5 (10%)
Conditions of nutritional intake in the family	26 (52%)	11 (22%)	13 (26%)
Existing health facilities	45 (90 %)	3 (6%)	2 (4%)
Available healthcare professionals	40 (80%)	10 (20%)	0
Maternity care facility	45 (90%)	4 (8%)	1 (2%)
Sources of medication for the family	12 (24%)	29 (58%)	9 (18%)
Medical expenses	23 (46%)	23 (46%)	4 (8%)
Health Care Insurance	47 (94%)	3 (6%)	0
The family owns a birth certificate	23 (46%)	23 (46%)	4 (8%)
Implementation of immunization for children under five	47 (94%)	3 (6%)	0

### Education

Education is a fundamental determinant of familial and communal well-being. Education can transform the social standing of a society in terms of economic and other familial elements (Eha, 2024). The education variable employs three scores: score 3 for good education criterion (15-18), score 2 for satisfactory education criteria (11-14), and score 1 for inadequate education criteria (6-10). Under the criterion for favorable educational conditions,

25 households qualified. Simultaneously, 17 additional families satisfied the criterion for equitable schooling.

Table 5. Education Indicator Score

Education Indicator	Score (percentage)		
	3	2	1
Family members aged 10 and older with proficient reading and writing skills	38 (76%)	10 (20%)	2 (4%)
Review of children's education	50 (100%)	0	0
Educational ability	42 (84%)	8 (16%)	0
Child's educational facilities	15 (30%)	17 (34%)	18 (36%)
Importance of out-of-school education	34 (68%)	13 (26%)	3 (6%)
Children's educational achievement	20 (40%)	17 (34%)	13 (26%)

### Employment

Every household member will designate time for economic activities. Economic activities encompass endeavors undertaken to generate income. The range of job is predominantly associated with fishing activities. The revenue generated will contribute to household income. The prevailing occupations of family members in Bogak Village are crab fillers, shrimp peelers, and fleet cleaners. This study seeks to ascertain the work hours of fishermen households, the types of work undertaken, household income, and to examine the impact of work hours on the income of fishing households (Jeni et al., 2020). The satisfaction of wants is typically constrained by the family's money, particularly in low-income households. A high family income provides greater options for fulfilling the requirements of its members, hence decreasing the proportion of revenue allocated to expenditures, indicating that the family is rich. Conversely, when an augmentation in household or family income alters the expenditure patterns on necessities, the family may be deemed non-prosperous (Utaminingsih & Suwendra, 2022).

The employment variable utilizes three scores: score 3 for favorable employment criteria (value 13-15), score 2 for moderately productive employment criteria (value 9-12), and score 1 for unproductive employment criteria (value 5-8). Eight households satisfy the criterion for productive employment conditions. Simultaneously, 39 additional households are classified as somewhat productive. The remaining three families meet the criteria for unproductive labor conditions.

Table 6. Employment Indicator Score

Employment Indicator	Score (percentage)		
	3	2	1
Number of people employed in the family	6 (12%)	13 (26%)	31 (62%)
Work hours per week	48 (96%)	2 (4%)	0
Alongside conducting business, family members engage in additional jobs	42(84%)	2 (4%)	6 (12%)
Category of additional jobs	36 (72%)	7 (14%)	7 (14%)
Period of the day designated for additional jobs	11 (22%)	33 (66%)	6 (12%)

### Levels and Patterns of Consumption

The research findings (Arimawan & Suwendra, 2022) indicate a favorable and significant correlation between consumption habits and the wellbeing of fishing households in Bunutan Village, Abang District. The satisfaction



of the consumption requirements of fishing households in Bunutan Village, Abang Subdistrict would influence their welfare level. As consumption demands are satisfied, family welfare increases; conversely, as consumption needs diminish, family welfare declines. To enhance the welfare of fishing families in Bunutan Village, Abang Sub-district, it is essential to meticulously plan and manage household consumption patterns to adequately fulfill needs according to their respective hierarchies, beginning with primary, followed by secondary, and then tertiary needs. Given the fluctuating income of fishing families, it is imperative to manage consumption expenditures judiciously, prioritizing essential needs while disregarding less critical ones to facilitate savings from the remaining income. This aims to ensure that the consumption habits of fishermen's families in Bunutan Village, Abang Sub-district, are adequately maintained despite a decline in income.

Three scores are utilized for the level and consumption pattern criteria: score 3 corresponds to a value of 10-12, score 2 corresponds to a value of 7-9, and score 1 corresponds to a value of 4-6. Nineteen families satisfy the requirements for optimal consumption levels and patterns. Thirty families satisfied the requirements for optimal consumption levels and patterns. The last family was classified as impoverished.

Table 7. Levels and Patterns of Consumption Indicator Score

Levels and Patterns of Consumption Indicator	Score (percentage)		
	3	2	1
The family regards rice as a fundamental dietary component	50 (100%)	0	0
Total consumption spend in one month	40 (80%)	9 (18%)	1 (2%)
Daily rice consumption pattern	17 (34%)	5 (10%)	28 (56%)
Adequacy of monthly household income for food and non-food expenditures	14 (28%)	5 (10%)	31 (62%)

### Residential and Ecological Context

Three scores are utilized for the residential space and ecology variable: score 3 represents good housing and environment criteria with a range of 37-45, score 2 denotes satisfactory housing and environment criteria with a range of 26-36, and score 1 indicates inadequate housing and environment criteria with a range of 15-25. Forty-four families satisfied the criterion for adequate housing and environmental circumstances. The six remaining families satisfied the standards for equitable housing and environmental circumstances.

Table 8. Residential and Ecological Indicator Score

Residential and Ecological Indicator	Score (percentage)		
	3	2	1
Residential house status	41 (82%)	0	9 (20%)
Residential land status	41 (82%)	0	9 (20%)
Housing classification	48 (96%)	1 (2%)	1 (2%)
Roof types utilized	49 (98%)	1 (2%)	0
Wall materials	49 (98%)	1 (2%)	0
Floor types utilized	48 (96%)	0	2 (4%)
Type of lighting used	50 (100%)	0	0
Fuel used	48 (96%)	0	2 (4%)
Type of family drinking water	7 (14%)	21 (42%)	22 (44%)
Source of water for bathing/washing	48 (96%)	2 (4%)	0
Drinking water usage within the family			
Ownership of WC	45 (90%)	2 (4%)	3 (6%)
Garbage disposal location	41 (82%)	6 (12%)	3 (6%)
Classification of living environment conditions	43 (86%)	7 (14%)	0

### Poverty

The poverty variable employs three scores: score 3 for good criterion, valued at 3; score 2 for fairly good criteria, valued at 2; and score 1 for bad criteria, valued at 1. All respondents meet the requirements for poverty conditions, indicating they are in decent or pretty good circumstances.

**Table 9. Poverty Indicator Score**

Poverty Indicator	Score (percentage)		
	3	2	1
My classifications of perspectives on poverty levels	46 (80%)	4 (8%)	0

### Alternative Social

Three scores are utilized for social and other variables: score 3 indicates favorable social and other criteria with scores ranging from 13 to 15, score 2 denotes acceptable social and other criteria with scores from 9 to 12, and score 1 signifies inadequate social and other criteria with scores between 5 and 8. Twenty-one families satisfied the requirements for favorable social and other situations. Nineteen families satisfied the criteria for favorable social and other situations. Simultaneously, ten additional households were classified as experiencing inadequate social and other circumstances.

**Table 10. Alternative Social Indicator Score**

Alternative Social Indicator	Score (percentage)		
	3	2	1
Access to knowledge via media	15 (30%)	22 (44%)	13 (26%)
Access to communication	28 (56%)	7 (14%)	15 (30%)
Internet access location	3(6%)	8 (16%)	39 (78%)
Family's capacity to access entertainment	22 (44%)	17 (34%)	11 (22%)
Neighborhood safety	29 (58%)	18 (36%)	3 (6%)

The welfare measure categorizes families into three groups: low-welfare families with scores ranging from 8 to 13; medium-welfare families with scores from 14 to 19; and high-welfare families with scores from 20 to 24. The comprehensive summary of the indicators for each family yielded the values presented in Table 11.

**Table 11. Recapitulation of the Classification of Research Results on Welfare Indicators according to BPS 2022**

No	Categories	Scores	Number of Respondents	Percentage of Respondents
1	Moderate Welfare	14-19	1	2 %
2	High Welfare	20-24	49	98 %
<b>Total</b>			<b>50</b>	<b>100 %</b>

According to the research findings about the wellbeing of fishing households, 49 respondents are classified as having high welfare, whereas 1 respondent is in a family situation characterized by moderate welfare. According to BPS in 2022, a family classified as having a high degree of welfare possesses a score within the range of 20-24 on the study indicators. Families with moderate welfare have scores between 14 and 19, while families with low welfare have scores ranging from 8 to 13.

### 4. Conclusion

The tourism sector in the Karanggongso coastal region is expanding swiftly; yet, fishing remains the primary

livelihood of the Karanggongso community. A limited percentage of fishermen participate in tourism operations. Fishing rods continue to prevail as the primary fishing equipment. Household income derives not just from fishing but also from the cultivation of forestry land. The welfare status of small-scale fisher households is predominantly affluent. Fishermen can satisfy their fundamental food, non-food, and health requirements, as a significant portion of their revenue is derived from non-fisheries activities, particularly moorland cultivation.

This research suggests that fisher households might leverage local tourism development to create new business opportunities, such as selling fisheries items tailored for beach visitors. This can augment their household income and enhance their welfare.

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### References

1. Satria, Laut dan Pesisir Untuk Kesejahteraan Masyarakat. Bogor: IPB Press, 2009.
2. I. Muflikhati, H. Hartoyo, U. Sumarwan, A. Fahrudin, and H. Puspitawati, "Socio-economic Factors and Family Welfare: The Case of Coastal Area in West Java," *J. Ilmu Kel. dan Konsum.*, vol. 3, no. 1, pp. 1–10, 2010, doi: 10.24156/jikk.2010.3.1.1.
3. A. Tajerin and R. Yusuf, "Level of Welfare and Food Security of Poor Fisher Households. Case Study in Marunda Baru Village, DKI Jakarta and Tanjung Pasur Village, Banten," *J. Sosek KP*, vol. 6, no. 1, pp. 83–102, 2011.
4. A. Rizal, Rosidah, and G. Fathira, "Potrait of Household Welfare Level of Fish Farmers in Ciganjur of South Jakarta," *Sosiohumaniora - J. Ilmu-ilmu Sos. dan Hum.*, vol. 20, no. 1, pp. 39–44, 2018.
5. A. A. Sutawijaya, S. Rochaeni, and A. T. Nugraha, "Analysis of the Level of Welfare of Freshwater Ornamental Fish Farmer Households in Cipedak Village, Jagakarsa District, South Jakarta," *Agribus. J.*, vol. 7, no. 1, pp. 59–76, 2013, doi: 10.15408/aj.v7i1.5170.
6. E. Susilo, P. Purwanti, and M. Fattah, *Adaptasi Manusia, Ketahanan Pangan dan Jaminan Sosial Sumberdaya*. Malang: UB Press, 2017.
7. E. Susilo, P. Purwanti, M. Fattah, V. A. Qurrata, and B. S. Narmaditya, "Adaptive coping strategies towards seasonal change impacts: Indonesian small-scale fisherman household," *Heliyon*, vol. 7, no. 4, p. e06919, 2021, doi: 10.1016/j.heliyon.2021.e06919.
8. Y. Putranto, A. P. Sudarmo, and M. Patanda, "Influence of Factors of Age, Education, Number of Family Members Affecting Income Traditional Fishermen in Cilacap Regency (Case Study: Lengkong and Menganti Kisik Fish Auction Place Cilacap Regency)," *ALBACORE J. Penelit. Perikan. Laut*, vol. 7, no. 1, pp. 023–035, 2023, doi: 10.29244/core.7.1.023-035.
9. E. Yuliantini, K. Kamsiah, T. C. Maigoda, and A. Ahmad, "Food intake with stunting events in fisherman family in Bengkulu city," *AcTion Aceh Nutr. J.*, vol. 7, no. 1, p. 79, 2022, doi: 10.30867/action.v7i1.579.
10. J. La Eha, "Analysis of the Influence of Education Level on Community Welfare Using National Population and Family Planning Board Indicators," *J. Geogr. Sci. Educ.*, vol. 2, no. 1, pp. 27–35, 2024, doi: 10.69606/geography.v2i1.82.
11. J. Jeni, F. Nugroho, and Kusai, "The Effect of Working Hours on Households in Batu Bara Regency, North Sumatra Province," *J. Sos. Ekon. Pesisir*, vol. 1, no. 3, pp. 63–67, 2020.
12. N. L. A. Utaminingsih and I. W. Suwendra, "The Influence of Income and Number of Family Members on Family Welfare in Karangasem Village," *Ekuitas J. Pendidik. Ekon.*, vol. 10, no. 2, pp. 256–263, 2022, [Online]. Available: <https://ejournal.undiksha.ac.id/index.php/EKU>.
13. I. N. D. Arimawan and I. W. Suwendra, "The Influence of Income and Consumption Patterns on the Welfare of Fishermen's Families in Bunutan Village, Abang District," *Ekuitas J. Pendidik. Ekon.*, vol. 10, no. 1, pp. 153–160, 2022, [Online]. Available: <https://ejournal.undiksha.ac.id/index.php/EKU/article/view/33900>.