

Systematic Review of Coastal Community Well-Being as Research Implementation and Challenges

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ABSTRACT

Coastal community welfare encompasses various aspects aimed at improving the quality of life of people living in coastal areas. Measuring coastal community welfare, including the function of the mangrove ecosystem, has not been comprehensively calculated. Calculating coastal community welfare based on various aspects, including social, economic, and environmental (ecological), is needed as a basis for government policy in managing coastal resources, particularly mangrove ecosystems, to improve the welfare of coastal communities. This study aims to review the existing literature on the concept and implementation of coastal community welfare measurement. This literature review provides recommendations for measuring improvements in coastal community welfare, not only partially, so that it can contribute to poverty alleviation in coastal communities.

INTRODUCTION

Indonesia has the second longest coastline in the world, which is 99,083 km and is an archipelagic country, so that many Indonesians live on the coast. Coastal areas and small islands throughout the world have high biodiversity and provide important economic, social and ecological benefits. However, managing these areas is not easy and is faced with a number of complex challenges. In Indonesia, a country with 17,001 islands and a long coastline, the challenges in managing coastal areas and small islands are also very significant. According to KKP data, the outermost small islands throughout Indonesia number 111 islands. This number consists of 42 inhabited islands and 69 uninhabited islands. Various issues have been raised by the government, media and research on uninhabited islands. Mongabay, an electronic media that publishes special environmental news, stated that in 2023, small uninhabited islands along the coast of the Riau Islands province are threatened by abrasion, both by waves facing the open sea, and by waves produced by large ships passing near the small islands (Statistics of Marine and Coastal Resources, 2023).

Mangrove forests are one of the ecosystems that make up the coast and ocean. This unique natural ecosystem has high economic and ecological value. The physical and biological functions of mangroves cannot be replaced by other ecosystems. The physical function is to protect the coast from the pounding of ocean waves, prevent abrasion, while the biological function is as a habitat for laying eggs, a food source, and growth for marine biota species. Indonesia has a mangrove forest area in the world of 15.9 million hectares, approximately 27%. Meanwhile, the total area of the potential mangrove area on the north coast of Central Java is 77,326 hectares. Based on the level of damage, it is classified as severely damaged covering an area of 61,194.16 hectares or 64.19% and moderately damaged (31,237.53 hectares or 32.76%). Meanwhile, only 2,902.33 hectares or 3.05% were not damaged (Kusmana C. & Onrizal, 1998). The socio-economic conditions of the community around the mangrove ecosystem area are generally less prosperous. Their education, health status, and bargaining position are also low. Government and community institutions in managing mangrove forests are also not yet solid and fragile. Legal compliance (law enforcement) is also low towards regional legal products (regional regulations) and national legal products (laws, government regulations). Community involvement and linkages greatly determine the success of the management and preservation of the mangrove ecosystem area.

The paradigm shift of forestry development from Timber Based Management, Forest Based Management to Community Based Management is a relatively long process and requires serious attention from ecosystem managers (Soedarmo, 2018). This study aims to review the existing literature on the concept and implementation of coastal community welfare measurement, along with the challenges faced in its development in various regions. This study attempts to analyze the theoretical and practical aspects of the coastal community welfare model. Coastal community welfare includes various aspects that aim to improve the quality of life of people living in coastal areas. Measurement of coastal community welfare involving the function of the mangrove ecosystem has not

been calculated comprehensively. Calculation of coastal community welfare based on various aspects, both social, economic, and environmental (ecological) aspects, is needed as a basis for government policy in managing coastal resources, especially mangrove ecosystems, in improving the welfare of coastal communities.

LITERATURE REVIEW

Coastal Community

Society is a group of people who interact and relate to each other and have strong values and beliefs to achieve their goals in life. Coastal community is a coastal village where most of the population works as fishermen.

Society can be interpreted in two concepts, namely (Suharto, 2005).

1. Society as a common place, namely a common geographic area.
2. Society as a common interest, namely similarities based on culture and identity.

The coast is an area where land and sea meet. Towards land includes parts of the land, both dry and submerged in water, which are still influenced by the characteristics of the sea such as tides, sea breezes, and salt water infiltration. While towards the sea includes parts of the sea that are still influenced by natural processes that occur on land such as sedimentation and fresh water flow, as well as those caused by human activities on land such as deforestation and pollution. Based on the Decree of the Minister of Marine Affairs and Fisheries Number: KEP.101/MEN/2002 concerning General Guidelines for Integrated Coastal Management Planning, Coastal Areas are defined as transitional areas between interacting terrestrial and marine ecosystems, where towards the sea 12 miles from the coastline for provinces and one third of the sea area (provincial authority) for districts/cities and towards the land administrative boundaries of districts/cities. Based on geographical aspects, coastal communities are communities that live, grow and develop in coastal areas. These communities depend on living by managing the natural resources available in their environment, namely water areas and small islands. In general, their economic resources are fishery resources (capture and cultivation) which are very important resources and these resources are the driving force of local economic dynamics in coastal villages (Nano, 2008).

The fishing community is the main actor who participates in determining the dynamics of the local economy. The current condition of the fishing community is the result of development policies in the fisheries sector called "fisheries modernization" since the early 1970s. This policy, which is based on productivity orientation, has given birth to various very important changes in the social, economic and ecological fields in coastal communities. Along with the growth of catch productivity and aquaculture, social and environmental problems have also emerged and have not been completely resolved until now (Arief, 2007).

The management of coastal area resources that manages is everyone with the object of everything in the coastal area. Examples of coastal area management are: fisheries management, coastal forest management, education and health. The

most important thing about the concept of coastal area management is the focus on the characteristics of the coastal area itself, where the core of the concept of coastal area management is a combination of adaptive, integrated, environmental, economic and social system development. (Belda, 2011).

Coastal Community Welfare

According to Besley (2002) welfare provides a basis for assessing market performance and policy makers in resource allocation. Where it is a microeconomic technique to simultaneously determine the efficiency of macroeconomic allocation and its impact on income distribution (O'Connell 1982). Welfare is also a framework used by most of the public to evaluate the income desired by society (Rosen 2005.)

Welfare discusses how economic activities can ultimately run optimally with the principles of justice for all levels of society. So that the discussion cannot be separated from the context of social sciences. Measurement of the level of welfare can be from the physical side, such as the Human Development Index, Physical Quality of Life Index, Basic Needs, and GNP/Capita. This measure of economic welfare can also be seen from two sides, namely consumption and production (scale of business). From the consumption side, welfare can be measured by calculating how much expenditure is made by a person or a family for clothing, food, shelter, and other needs in a certain time or period.

The dimensions of welfare can also be measured based on:

1. Material standard of living (income, consumption and wealth)
2. Health
3. Education
4. Individual activities including work
5. Political voice and governance
6. Social relationships and kinship
7. Environment (present and future conditions)
8. Insecurity, both economic and physical.

The environmental aspects of sustainability must be studied separately based on carefully selected physical indicators, clear indicators are needed at the level of dangerous environmental damage, such as that related to mangrove deforestation affecting reduced fish stocks (Stiglitz 2017).

METHODOLOGY

The literature study research method is carried out systematically, namely:

1. Formulating Research Questions

The first step in conducting a literature study is to formulate clear and focused research questions. This research question will be a guide for researchers in searching for relevant literature and investigating topics of interest.

2. Identifying Literature Sources

Researchers need to conduct a literature search using a variety of information sources, including academic databases, digital libraries, scientific journals, books, and other online sources. It is important to use a comprehensive search strategy and include clear inclusion and exclusion criteria to ensure the relevance and quality of the sources found.

3. Evaluating and Selecting Literature

After collecting a number of relevant literatures, the next step is to evaluate and select the most relevant and high-quality literature to include in the study. This can involve critical reading of the abstract, introduction, and other important parts of each source considered.

4. Organizing and Synthesizing Literature

After selecting appropriate literature, researchers need to organize the information found and synthesize important findings from various sources. This involves identifying key themes, arguments, and methodological approaches that emerge from the literature being studied.

5. Analysis and Interpretation

Next, the researcher needs to analyze and interpret the findings found from the literature being studied. This involves critically evaluating the evidence presented, comparing opinions and findings from various sources, and forming conclusions that are supported by the literature that has been studied.

This type of research uses a literature review method with reference sources originating from journals. The process of searching for journals to obtain the final selected journal is carried out with the following steps:

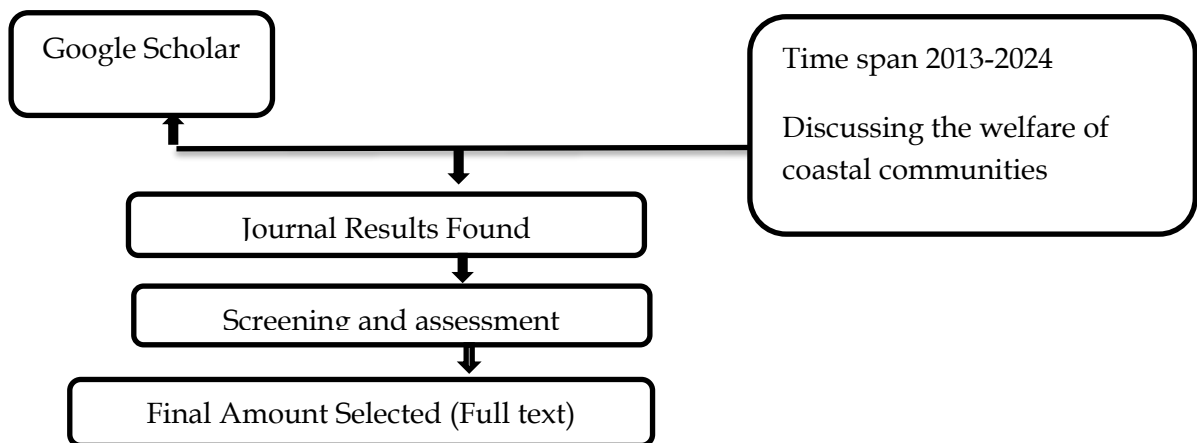


Figure 1. Study literature search process

This literature study examines various models of measuring the welfare of coastal communities, including measurement models using poverty indicators according to the World Bank, measurements based on food sufficiency lines, and models of measuring the welfare of coastal communities based on social, institutional and economic dimensions. This study analyses various models of measuring the welfare of coastal communities that are adjusted to the resources and characteristics of the area.

RESULT AND DISCUSSION

This study identifies several models of measuring the welfare of coastal communities, so far only calculated based on the availability of access to the fulfilment of basic people's rights, adequate education levels, and decent living standards. This is as if the services of the mangrove ecosystem (ecological

benefits) are ignored and coastal communities are below the poverty line. The model of measuring the welfare of fishermen around the mangroves is measured based on an analysis of the level of family welfare with indicators of family welfare according to the National Population and Family Planning Agency (BKKBN), there is also a measurement of coastal community welfare using SWOT.

Improving Coastal Community Welfare Through Community Empowerment

The form of coastal community empowerment carried out directly by the local government can be grouped into three categories. First, empowerment to drive the economy of traditional fishermen or small-scale fishermen. This is done by helping to provide equipment and supplies for sea activities such as pompon boats and fishing gear through the Improvement of Capture Fisheries and Aquaculture Facilities and Infrastructure program (Accountability Report on the Performance of the Marine, Fisheries, Agriculture and Forestry Agency of Batam City, 2011). This program is a DAK (Special Allocation Fund) program that has been started since 2006 and is still ongoing until the research was conducted. Until 2011, the Batam City Government has provided assistance for capture fisheries facilities and infrastructure, as well as aquaculture to fishermen in the hinterland area in the form of 15 PK outboard motors, catfish and sampan engines, tenggiri nets/drift gillnets, trap wire, crab traps, shrimp scoops, and fish aggregating devices. In addition, the Batam City Government also provides assistance in the form of solar home system facilities to provide electricity to fishermen's homes in hinterland areas that have not been reached by PLN electricity. The priority targets of this activity are coastal communities, especially fishermen who are classified as micro-small scale who are willing to work hard and have a livelihood in the field of fishing or fish farming but do not have sufficient capital to develop their business.

Through the assistance of facilities and infrastructure/equipment for capture and aquaculture fisheries provided by the Batam City Government, it is hoped that fishing communities can expand the operational reach of fishing grounds so that they can increase the income and welfare of fishermen. In addition to the Improvement of Facilities and Infrastructure for Capture and Aquaculture Fisheries, empowerment of coastal communities is also carried out through the Development of Facilities for Aquaculture Businesses and Fishery Product Processing program (Accountability Report on the Performance of the Agency for Marine Affairs, Fisheries, Agriculture and Forestry of Batam City, 2011). This program is part of the Poverty Alleviation Program of the Riau Islands Province. Through this program, coastal communities receive assistance in the form of facilities and infrastructure for aquaculture fisheries and fishery product processing. In this program, the community is given assistance for facilities and infrastructure for aquaculture and fishery product processing, including fixed net cages, floating net cages, cracker processing equipment, fish ball processing, presto milkfish processing, seaweed dodol processing, mackerel net materials, pomfret net materials, coral net materials, Apollo net materials, trap wire and outboard motors. Meanwhile, for freshwater cultivation, assistance is also provided in the form of catfish seed packages, feed and tarpaulin. The

community is also fostered and trained through an internship program and provides aquaculture stimulus assistance packages such as soft loans and fish seeds. Second, empowerment in the field of education for school children in coastal areas. The Batam City regional government is rolling out two forms of educational assistance for coastal children, namely educational assistance and the provision of public transportation in the form of school buses in coastal areas. Educational assistance is provided to selected students who continue to college and to young men and women who are trying to obtain or improve their skills in training institutions such as English language training. The process of distributing educational assistance is carried out by the Batam City Government in collaboration with youth organizations of the native Batam population, such as the Local Youth Association. Meanwhile, regarding the provision of transportation facilities, so far the transportation of school children between islands on the coast of Batam has not been resolved.

The Batam City Government once received assistance in the form of several ships from the Ministry of Transportation, but could not be optimized due to difficulties in maintenance and operation. Then the Batam City Government used ships owned by residents to transport students and the costs were paid by the Regional Government. This method is considered more economical than operating ships assisted by the Ministry of Transportation. In the future, the Batam City Government will establish a Community Learning Activity Centre (PKBM) or with a "Home Schooling" system to accelerate education on islands with a number of school-age children who do not meet the requirements for establishing study groups. Third, assistance for the sustainability of marine resources, namely in the form of providing funds for the implementation of the COREMAP program. COREMAP (Coral Reef Rehabilitation and Management Project) is a national program that aims to improve coral reef management and rehabilitate coral reefs that have been and are starting to be damaged, which will ultimately improve the welfare of coastal communities. The COREMAP program is carried out in 7 locations, namely Abang Island, Petong Island, Sembur Island, Karas, Air Saga, Nguan Island and Mubut Island. 2011 was the eighth year of the COREMAP program, and was the end of the second phase of the COREMAP II program (Qodriyatun, 2013).

Coastal Community Welfare Improvement Model Through Strengthening Sustainable Fishermen Cooperative Institutions

Coastal communities are identical to individuals who live in coastal areas that are sometimes forgotten by development because government policies only focus on coastal area development. The lives of fishermen who still depend on their fate from the sea, which is increasingly difficult and as a means for fishermen to improve their quality of life. In addition, most members of coastal community families are unproductive, especially in terms of economy, because they only depend on their husband's income from fishing, the wife only functions as a housewife.

On the other hand, the catch which is the main source is sold not to consumers directly but to middlemen or to other fishermen who are in better economic conditions (fish traders or fish traders), who have 2 functions, namely as fish traders and loan sharks. Fishermen must sell their fish at a very cheap price as compensation for the loan that has been given. This condition is what ensnares the necks of fishermen, who inevitably have to go through it for the sake of life and on the other hand they have to pay quite high interest. The results of the SWOT analysis of the empowerment of the fishermen's economy through strengthening the institutions of fishermen's cooperatives are a very appropriate solution, fishermen find it very difficult to develop because of the weak market power they have. But collectively through professional cooperative management, the market power of fishermen in the input and output markets will increase. Thus, the welfare of fishermen also increases (Indarti, 2015).

Improving Coastal Community Welfare through Integrated Pond Cultivation Management

Coastal communities are always trapped in a cycle of poverty due to minimal land control and limited production factors. Utilization of seaweed production factors integrated with milkfish to improve the welfare of coastal communities using Multiple Goal Programming data analysis. The results of the study showed that the average control of pond land by farmers was 5.1 Ha with seaweed production of 13,191 tons, and a profit of IDR 76,347,700.0 per year (1 USD is equivalent to IDR 13,000). Pond maintenance costs are one of the production factors whose availability is limited, while the production factors of seeds, seedlings, fertilizers, and pesticides are relatively available to farmers. The results of optimizing integrated pond management showed that the maximum income achieved was IDR 1,089.89 million, the absorption of 72 workers, and the seaweed production target reached 188.65 tons. This means that farmer welfare can be improved through pond expansion, additional production factors, especially capital and fertilizer (Laapo, 2016).

Measuring the Level of Family Welfare with the Indicator of Family Welfare According to BKKBN

A prosperous family is a family that is formed through a legal marriage and is able to fulfill proper material and spiritual needs (Law of the Republic of Indonesia Number 52, 2009). A prosperous family is the goal of every family, so the government must be actively involved in improving the welfare of fishing families in this area. This increase in welfare indicates a movement in the quality of life for a better life (Imron, 2012). There are 5 (five) groups of family welfare levels according to the National Population and Family Planning Agency (BKKBN, 2010), namely Pre-Prosperous Families (KPS), Prosperous Families I (KS 1), Prosperous Families II (KS II), Prosperous Families III (KS III), and Prosperous Families III Plus (KS III Plus) (Mandela et al, 2020).

Table 1. Level of Welfare of Fishermen's Families in Khairiah Mandah Village

Types of fishermen	Level of welfare (%)					Total
	KPS	KS1	KS II	KS III	KS III Plus	
fisherman	-	46	39	15	-	100
shrimp fisherman	8	61	23	8	-	100
crab fisherman	8	61	31	-	-	100
Total	5	56	31	8	-	100

Source: Mandela et al, 2020

Social Dimensions in Coastal Community Development

The low income of coastal communities that has an impact on their life structure is actually caused by several supporting aspects, for example the unstable fish catch, lack of facilities and infrastructure, inadequate human resources, and the structure of the fishing fleet that is still dominated by small/traditional businesses with low scientific and technological capabilities. Even other opinions state that, when compared to other community groups in the agricultural sector, the profession of fishermen (especially fishermen laborers and traditional fishermen) can be classified as the poorest social class, although in reality it cannot be said that all fishermen live in poverty. Community economic empowerment carried out by the government is an effort that aims to realize a participatory economic level and is able to provide fair access for a layer of society in the process of production, distribution and utilizing regional potential without any obstacles. Therefore, the role of local governments is very much needed to overcome this through policies implemented by the government for economic empowerment, so that the fishing community in the area in particular and the community in general can improve their economy in the future. Community empowerment that occurs in the Pangandaran coastal area is basically aimed at improving the welfare of all fishermen in the Pangandaran coastal area which is considered still low and underdeveloped (Anwar, 2013). Through various programs rolled out by the government to Pangandaran fishermen, both programs from the Ministry of Marine Affairs and Fisheries and programs from the Provincial and Regency Governments are expected to improve the level of welfare of the fishermen.

The empowerment program is rolled out in two types, namely assistance to increase fishing productivity, starting from motorization assistance, fishing gear assistance, large ship assistance and other assistance while the second type of assistance is by improving the ability and skills of fishermen to utilize the tourism potential in Pangandaran Village so that they are not too dependent on going to sea so that during the lean season fishermen have other abilities and skills that can generate income. Social Dimension, most of the areas in Indonesia consist of oceans and have quite large natural resource potential, so with all the marine products they have, they should be able to improve the welfare of the

fishing community in general. However, in reality, the lives of fishing communities are always plagued by poverty, even this condition is often identified with disadvantaged groups where the level of welfare of fisheries actors is currently still below other sectors, such as factory workers and farmers. Coastal communities are communities that live in coastal areas, most of whom are fishermen who have different characteristics from other communities. This difference is due to the close relationship with the economic characteristics of the region, cultural background and the availability of supporting facilities and infrastructure (Achmad W, 2022).

Factors Affecting Coastal Community Welfare

The development of the maritime sector in national economic development has always been in a marginal position (peripheral sector). The results of the study show that together the variables of work, household expenditure, income and assets have a significant influence on the welfare variable. In some cases, the income and wealth variables have a positive and significant influence on welfare. Meanwhile, the household expenditure variable has a positive but insignificant influence on welfare. The employment variable has a negative and insignificant influence on welfare.

The living conditions of coastal communities are described as follows: 1). Having Quite Complete Facilities and Infrastructure. 2). Working Conditions. Work is one of the main livelihoods for coastal communities in the two Districts of Cilamaya Wetan and Cilamaya Kulon, Karawang Regency to meet family needs as a logical consequence of the obligation to meet family needs, namely the more family members who are dependents, the greater the costs that must be incurred. The occupations of the research respondents were village officials, household assistants, service bureaus, teachers, housewives, employees, fishermen, traders, farmers, students, self-employed and unemployed. 3). Household Expenditure Conditions. The educational background of a fisherman is not important to them. This means that because most of their work as fishermen is manual labor that relies more on energy and experience, the highest level of education for them does not affect their skills in catching fish. For them, the issue of the importance of education levels is considered important when a fisherman wants to switch to another job that is more promising. In general, they tend to go to neighboring villages.

This is because their daily work is only as fishermen, so there are no shopping centers to meet daily food needs. Trade and service facilities in the two Districts of Cilamaya Wetan and Cilamaya Kulon, Karawang Regency are still very minimal and this is because the community only lives from fishing. The catch obtained is then marketed only in the surrounding villages, so the income obtained is only to meet daily needs. 4). Income Conditions. The level of education of respondents compared to the income received, will experience a shortage in financing decent living costs for their families such as food, clothing and shelter. Because if a family is unable to meet basic needs, then the family is classified as poor. In other words, the number of family dependents is one of the

factors that can affect whether a family is poor or not. 5). Asset/Ownership Conditions (Wulandari et al., 2024).

Mangrove Ecotourism Development to Improve Coastal Community Welfare

The potential of mangrove forests as ecotourism areas in improving the welfare and quality of life of coastal communities includes: Increasing Village and Community Income: The potential for village income comes from the sale of mangrove forest tour tickets and various activities and facilities in it. Increasing village income provides opportunities for villages to improve the welfare and quality of life of their residents. Minimizing Dependence of Coastal Village Residents: Providing employment opportunities to work in mangrove forest ecotourism areas can help minimize coastal residents' dependence on their main livelihoods as fishermen or pond laborers. Improving Social Quality of Life: Management and development of mangrove forest ecotourism by utilizing community-based tourism strategies that empower local community resources. In addition to social aspects, environmental awareness of village communities can also be increased (Bunga, 2024).

The challenge of calculating welfare based on several indicators and dimensions

Previous research results have not found a formulation for calculating the welfare of coastal communities based on several dimensions. Research from year to year on calculating the welfare of coastal communities is partially not comprehensive, this provides a challenge for further research, namely calculating welfare based on several indicators and dimensions. Modification of the calculation of coastal welfare based on indicators in each dimension in compiling the coastal community welfare index as seen in Table 2, based on social, economic and environmental dimensions. Calculations based on this method are expected to be able to calculate not only from the social and economic dimensions, but can also include the environment where coastal communities are very dependent on the mangrove ecosystem.

CONCLUSIONS AND RECOMMENDATIONS

Based on the description above, it can be seen that several models for measuring the welfare of coastal communities are discussed, including measuring welfare based on family welfare, SWOT analysis, measuring based on social dimensions, measuring based on community empowerment. In addition, a number of challenges faced were also identified, such as the problem of coastal communities still below the poverty line due to lack of education of their human resources, not having adequate means of production. Based on this literature review, there is great potential to combine the social dimension with the economic and environmental dimensions.

In addition, several research results recommend increasing the implementation of improving the welfare of coastal communities by increasing education in managing existing mangrove ecosystems, the importance of policies that support sustainability, strengthening the capacity of community empowerment, and increasing public awareness to maintain the mangrove ecosystem so that it is sustainable and utilizes it for welfare. This literature review provides recommendations for measuring improvements in the welfare of coastal communities, not partially, so that it can contribute to poverty alleviation in coastal communities.

ADVANCED RESEARCH

The limitation of this research is in obtaining journals that write about measuring the welfare of coastal communities, even though we have searched for a time span of 10 years.

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