

## DEVELOPMENT OF SUSTAINABLE MINAPOLITAN AREA IN TAMAKO DISTRICT, KEPULAUAN SANGIHE REGENCY

Yegar Sahaduta Hebzibah Kalampung<sup>1\*</sup>, Arwi Yudhi Koswara<sup>2</sup>

Institut Teknologi Sepuluh Nopember, Surabaya, Jawa Timur, Indonesia<sup>1,2</sup>

Email: yegarsahadutahk@gmail.com\*

### Abstract

The aim of this study is to address the challenges facing the Dagho Beach Fishing Port Area in North Sulawesi, which plays a pivotal role in the region's fisheries sector but suffers from inefficiencies in development systems, markets, distribution, and infrastructure. This dependence on natural resources has eroded community independence, exacerbated by issues such as illegal fisheries transactions, price disparities, and the absence of processing industries. Additionally, limited accessibility for exports and regulatory hurdles impede the area's potential, with only a small fraction of the population engaged in fishing activities. To tackle these issues, the study employs a comprehensive four-stage analysis approach. Firstly, Descriptive Analysis delineates the economic, political, social, and environmental characteristics of the area. Secondly, Analytical Hierarchy Processes (AHP) identify the most influential indicators for focused development efforts. Thirdly, a combination of Scalogram and Weighted Sum methods determines suitable minapolitan zones. Finally, Descriptive Direction offers development guidelines based on previous analyses. The research yields actionable directions, including the establishment of a modern market, enhancing fishery product marketing through the "Marketing Mix" and Free Trade Agreement (FTA) implementation. It advocates for technology-based processing units and integrated infrastructure, alongside policy development to support the fisheries industry and promote sustainable practices. The study emphasizes the importance of infrastructure development, economic collaboration, and community empowerment initiatives to foster local fishery development, cultivation, and business capital.

**Keywords:** Dagho Beach Fishing Port, Minapolitan, Sustainable.

### Introduction

Become a country that has the most number of islands in the world, Indonesia has a very wide sea area of 6.32 million km or about 62% of the total area dominated by waters. Therefore, Indonesia has great potential in the field of marine and fisheries. Statistically, the total estimated potential of fish resources in the State Fisheries Management Area of the Republic of Indonesia (WPPNRI) is 12.01 million tons per year with the Permitted Amount of Fish Catch (JTB) of 8.6 million tons per year (Keputusan Menteri Kelautan Dan Perikanan Nomor 19 Tahun 2022. Tentang Statuta Politeknik Kelautan Dan Perikanan Jembrana, n.d.).

Therefore, to maximize Indonesia's huge fishery potential, a suitable and accurate development concepts are required. Furthermore, some strategies must be developed to maximize fishery and marine potential based on regional development, namely Minapolitan (Peraturan Menteri Kelautan Dan Perikanan Nomor 32 Tahun 2010. Tentang

Penetapan Kawasan Minapolitan, n.d.). The Minapolitan area is a derivative of the Agropolitan Area, namely an area consisting of one or more activity centers in rural areas as a fishery production system and certain natural resource management described by the functional linkages and hierarchies of the settlement system units and the minabusiness system (Peraturan Daerah Nomor 26 Tahun 2007. Tentang Rencana Tata Ruang Wilayah Nasional, n.d.).

Theoretically, Minapolitan consists of the word Mina means "fish" and politan means "city". Furthermore, Minapolitan can be interpreted as a fishing city or a city that consists of fishing area. The concept of Minapolitan can be described as a fishery city based on the economic development of marine and regional fisheries with an integrated, efficient and quality area management approach and system. The Minapolitan program is a fishery activity that aims to coordinate the production, processing, and selling of raw materials in a succession of big activities in a production and trade hubs, services, settlements, and other associated activities in an area or region which include the entire town as a part of the Minapolitan concept. The Minapolitan concept aims to promote the acceleration of regional development with fisheries as the primary activity to raise the welfare and standard of living of the community, which was developed both on and off farm, such as fisheries facilities and other supporting services (Wiadnya, 2011).

North Sulawesi is one of the provinces that has great potential in terms of fisheries in Indonesia. Geographically, this province located between the Celebes Sea and the Pacific Ocean. Moreover, the province of North Sulawesi is a strategic area in terms of geo-economic trade routes and as well as a goods distribution center supported by large marine fisheries potential.

One area that has great potential in the fisheries and marine sector in North Sulawesi Province is the Sangihe Islands Regency. Based on the North Sulawesi Spatial Plan 2014-2034, the Sangihe islands are included in the Minapolitan area of fisheries industrialization. This regency has an area of about 11,863.58 km<sup>2</sup>, with a land area of 736.98 km<sup>2</sup> (6.2%) and an ocean of 11126.61 km<sup>2</sup> (93.8%) in other words dominated by water areas. Moreover, this regency contributes 3% of fish catches from the total catch fishery products of North Sulawesi or 11.122,000 tons in 2020 and is dominated by skipjack tuna which is a typical fish in Sangihe Regency (BPS North Sulawesi, 2021). Based on Sangihe Regency's GDRP contribution in 2022, sector A (Agriculture, Forestry, and Fisheries) is the first contributor with a percentage of 29 percent of the total (BPS Sangihe Regency, 2022).

Dagho Beach Fishing Port Area is an important key in the development and sustainability of the fisheries sector in the Sangihe Islands Regency. Based on the North Sulawesi Spatial Plan 2014-2034, this area is categorized as a fishery processing industry area. The Sangihe archipelago is famous for its rich natural resources, especially fisheries. Fishery products in the Dagho Beach Fishing Port Area include Skipjack, Grouper, Layang Benggol, and other fishery products (BPS Tamako, 2019).

As a contributor of one of the largest and best fishery contributors in North Sulawesi province, the Sangihe Islands, especially the Tamako district, have no its own fishery processing industry. There are only 3 industries engaged in fisheries and these industries are not fisheries processing industries (Sangihe Fisheries Service, 2023). Therefore, the catchment fish will be sent out to Bitung port due to the unavailability of an industry that processes raw fish into a typical regional product. As the result, these fishery products have no added value in each product (Dagho Fishing Port Inventory Data, 2019).

The majority of people in the fisheries sector rely on the sale of capture fisheries products in the form of raw materials (Campling et al., 2012). The phenomenon proves that the people of the Sangihe Islands district rely heavily on the exploitation of natural resources. Furthermore, the community only compete on price in the form of raw goods which are very cheap when compared to value-added products. Therefore, high dependency on raw natural resources will make people unable to obtain financially independent and have the mindset of a developed nation.

Capture fisheries production is strongly influenced by the harvest season. Fishermen will catch a lot of fisheries when the harvest season arrives. As the result, they will get a small amount of catchment fisheries when it is not in the harvest season. This is exacerbated by the climatic conditions of the Sangihe Islands which is vulnerable to storms and affect the fishermen to become vulnerable of losing their income when the hurricane season arrives. Dependence on raw materials also leads to limited job option and tends to increase unemployment rate when natural condition being unpredictable.

Being an archipelago, this area has no domination in fisheries workforce. According to BPS 2020, only 7 percent of the population who works in fishery industry. In contrast, the majority of the population works as civil servants. The professions in fisheries industry are less desirable and preferred to pursue a civil servant as their professional career. This has resulted in undeveloped fisheries in this regency due to the limited of quality and quantity of human resources.

In fact, the Sangihe Islands Regency has a lot of potential geography, and abundant natural resources. These potentials can contribute to the growth of the regional economy. However, there are many problems that need to be considered in improving the regional economy through the utilization of natural resources. These problems have a negative impact on the condition of the regional economy, such as fishery products that cannot contribute optimally to the provincial GRDP, the decreasing number of workers in the fisheries sector, and the lack of community welfare.

Concerning these issues, it is necessary to have an effective development direction related to fisheries in the Sangihe Islands Regency, especially in Dagho Beach Fishing Port Area. Based on the existing conditions, research on the development of the Minapolitan area around the district is required.

The aim of this study is to address the challenges facing the Dagho Beach Fishing Port Area in North Sulawesi, which plays a pivotal role in the region's fisheries sector but suffers from inefficiencies in development systems, markets, distribution, and infrastructure.

## **Research Methods**

### ***Research Approaches***

The approach used in this research is a rationalistic approach. The rationalistic approach emphasizes a holistic understanding that is carried out through theoretical conceptualization and literature studies as a benchmark for the test approach, analysis results, and discussion of a research problem to draw conclusions and meaning.

### ***Research Types***

This type of research is descriptive qualitative and quantitative research. Descriptive research is research that is intended to investigate the circumstances, conditions or other things that have been mentioned, the results of which are presented in the form of a research report. Quantitative research is research that uses numerical data such as population data and the fisheries sector with quantitative methods. While qualitative

research is research that uses text data types, maps and others such as data on physical environmental conditions, method of weighting location factors and determining small industrial centers for processing fishery products in the Dagho Beach Fishing Port Area

**Population and Sample**

In this research, the sampling technique used is purposive sampling. Purposive sampling is a sampling technique with certain considerations. The selection of a group of subjects in purposive sampling is based on certain characteristics that are considered to have a close relationship with previously known population characteristics. The appointment of stakeholders in this study was determined to be 5 namely Ministries of Maritime Affairs and Fisheries, the Port Authority Sector, the Public Works Service, the Fisheries Service, the private sector and fishermen.

**Research Variables**

In assessing the minapolitan in the Tamako district, the variables used are those that can assess the feasibility of becoming a minapolitan area. The research variables were obtained from a literature study conducted from literature related to the formulation of minapolitan criteria. The research variables used were as follows.

**Table 1. Research Variables**

<b>Factors</b>	<b>Indicators</b>
Human Resources	Quality of Human Resources
	Quantity of Human Resources
Natural Resources	Quality of Natural Resources
	Quantity of Natural Resources
Facilities and Infrastructure	Electricity Network
	Clean Water
	Waste Treatment and Disposal
	Telecommunication
	Cold Storage
	Fish Auction
Accessibility	Transportation
	Road Network
Marketing	Market Availability
	Market Demand
	Trade Linkage
Institutional	Capital
	Cooperatives
	Local Fisheries Community
Physical Carrying Capacity	Land Use
	Land Slope
	Agglomeration
Processing Industry	Fish Processing Unit
	Integrated Fisheries Business Unit
Policy	Development Policy
	Trading Policy

Source: Author’s Analysis, 2023

**Data Collection Methods**

Data collection is a qualitative and quantitative process to reveal various information regarding the existing condition of the research location in accordance with the scope of the research. Data collection can be done in two ways, namely primary survey and secondary survey. The primary survey was conducted through observation, interviews

and questionnaire. Meanwhile, the secondary survey was carried out through the process of collecting data from related documents.

### ***Analysis Method***

This study uses 4 methods of analysis. The analytical methods used are as follows:

1) Analytical Hierarchy Process

To determine the influential indicators, a weighting analysis using AHP (Analytical Hierarchy Process) is used. After correlating the variables that affect the determination of the Minapolitan area according to various resources, the variables that have been formulated will be used to determine the location of the center for the Minapolitan development. This step is supported by Expert Choice 11 software to determine the priority variables. The output will be a weighting value of each indicator (Kurniawati & Munir, 2017).

2) Qualitative Description

In determining the characteristics of the minapolitan in the planning area used descriptive analysis techniques which contain literature reviews and observations. This analysis aims to determine potentials and problems of the planning area in economic, social, politics and environmental aspects. The output of this analysis are the characteristics of this area including economic, political, social and environmental aspects. In addition, all descriptions of these characteristics will be combined into one based on these four aspects.

3) Weighted Sum

This analysis is used to determine the appropriate location for the Minapolitan area. In determining this location, the factors that have been obtained from the qualitative descriptive analysis stage and using the weights from the AHP. These factors and weights will be used in determining the location by depicting them on appropriate maps. This analysis uses ArcGIS software to find Euclidean Distance and Weighted Sum. Basically, the weighted sum analysis in this case uses 3 main data as consideration, namely the number of infrastructure facilities, residential land use, and land use function of the port location as well as considering the result of previous stage (Saragih, 2023).

4) Descriptive Direction

Triangulation is a data validity checking technique that utilizes something else. Outside the data for the purpose of checking or comparing the data. In this Triangulation Analysis, the results of the combination between the first Analysis Output in the form of characteristics in each indicator, second Analysis Output in the form of influential indicators which will be combined with existing policies and best practices. These considerations will be used to obtain the determination of directions in development based on the combination of each indicator and will become one direction for each factor in the Tamako District Minapolitan Area, Sangihe Islands Regency.

## **Results and Discussion**

### **Overview of Research Area**

Administratively, the research area is located in Tamako District, Sangihe Islands Regency, North Sulawesi Province, Indonesia. Geographically, the Sangihe Islands Regency is located between 2° 4' 13" – 4° 44' 22" North Latitude and 125° 9' 28" - 125° 56' 57" East Longitude. The research area is the border area between the Philippines and Indonesia. The average temperature in the research area in 2018 was 28°C with an average

rainfall of 255. Overall, Tamako District has an area of 25.15 km<sup>2</sup>, and the majority is a contoured area.

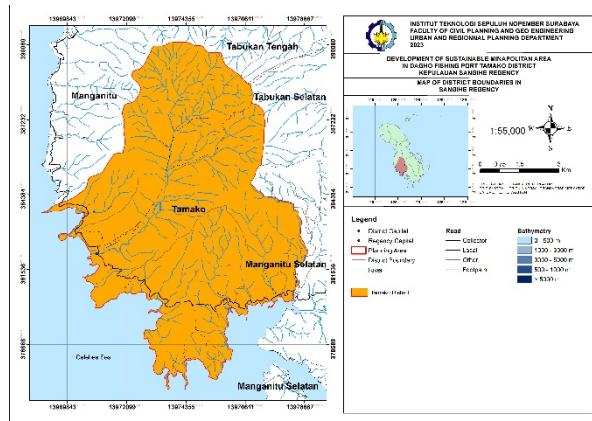


Figure 1. Planning Area Administrative Boundary

### Determining the Influential Indicators in Minapolitan Development

The figure 2 showed the result of AHP analysis on factors. Based on the weighting results using Expert Choice 11 Software, it can be concluded that the "Marketing" factor has the highest value with the number (.179). This shows that the "Marketing" factor is an important factor in the development of minapolitan in the Dagho Region. The factor that has the second highest score is "Processing Industry" with a value of (.159). The factor that has the third highest score is "Accessibility" with a total of (.140). Meanwhile, the factors other than those with the third highest score are as follows policy (.133), Natural Resources (.131), Infrastructure (.092), Human Resources (.079), Institutions (.044) and Basic Physics (.043).

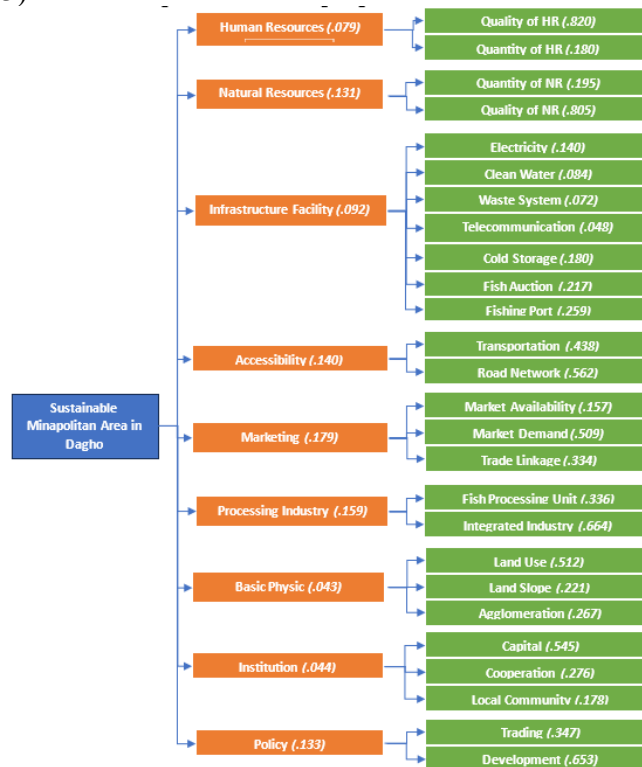
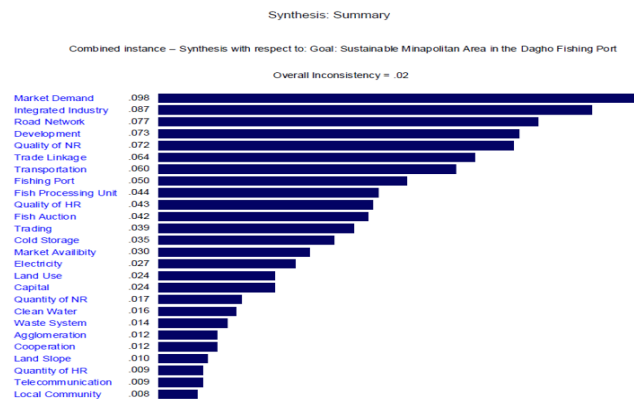


Figure 2. AHP Factors Result

The Figure 3 shows the result of AHP analysis on indicators. Based on the result in determining influential indicators, the "Market Demand" indicator is the most influential in the development of minapolitan in Tamako district. It can be assumed that this indicator greatly influences conditions in the Tamako district. The "Integrated Industry" indicator is the second most influential. In addition, the "Road Network" is the third influential indicator where road conditions are determined by the contours of the Tamako district area. Meanwhile, "Local Community" and "Telecommunication" are the least influential indicators according to experts.



**Figure 3. AHP Indicators Result**

### Identifying the Characteristics of Minapolitan in Tamako District

This analysis is used to find out the facts in the existing conditions. The assessment is carried out based on the indicators that have been determined. After that, these results will be summarized into 4 aspects, namely economic, social, political and environmental. This is done so that the conclusion of the characteristics becomes more specific.

Economy, economic activities in the region are based on agriculture, plantations, and fisheries. The economic level of the surrounding community is at the lower-middle level. The majority of income in fisheries is in the form of capture fisheries products or raw materials that do not include value-added processed products. This is because the Tamako district does not have its own fish processing industry even though it has a fairly good fishing port. In addition, this area also does not have cold storage and the fishermen must send their catches immediately out of the area. Facts in the field state that the price of fish in the Sangihe regency is very cheap, but the price will increase 1.5 - 2 times if sent out of the region or exported to neighboring countries. However, there are several financing facilities in the region such as banks, pawnshops, and others that can support minapolitan development.

Politics, this area is included in the design of the fisheries industry area in the North Sulawesi RTRW 2014 - 2034. Meanwhile, the authority of Dagho Beach Fishing Port was handed over to the Sangihe Regency government, giving the local government control over development. This has triggered political interests in the development of the fisheries industry area. The authority often experiences obstacles in development due to not being given a land use permit. However, there is a master plan for the Dagho fisheries industry that is not well realized. In addition, there are no specific policies or regulations governing trade with outside areas, which does not maximize the benefits of selling capture fisheries products. Trade cooperation is limited to independent cooperation between fishermen and traders.

Social, The majority of people have the highest education of junior high school - senior high school. Some people still do not use modern fishing gear to catch fish. Most of the people who work in the fisheries sector are fishermen who only rely on catches. In addition, in this planning area, a fishermen group has not been formed so that the majority of fishermen work independently.

Environment, the region has great fishery potential. At least the Capture Fishery Port can produce a minimum of 9 tons of Tuna fish alone in a day. In addition, the quality of the fisheries produced is also of a good class and has a good volume. This is the reason why this region is a supplier of capture fisheries to various regions. Moreover, this region also has many rivers that are used as power plants. There are also mangrove areas that are maintained in good condition and can be utilized to prevent disasters and maintain coastal ecosystems. In contrast, the contour conditions in this region tend to be classified as steep land. Therefore, the development of land is limited and difficult for minapolitan development needs.

### Determining the Suitability Minapolitan Location

The process uses the weighted sum feature in the ArcGIS software. This method is used to determine the boundaries in the planning area. There are several considerations used such as infrastructure, settlements, slope, elevation and others. The classification is divided into 7 classes to distinguish which locations are most suitable for development. The first class represents the most suitable location for the minapolitan area. There are 6 villages in the first class, namely Nagha 1, Hesang, Pokol, Pananaru, Kalama Darat, and Dagho. Moreover, Dagho village has the key of minapolitan development which is Fishing Port and Fishery industry. In conclusion, these three villages will cooperate and connected each other to achieve the common goal in order to develop minapolitan in Sangihe Regency.

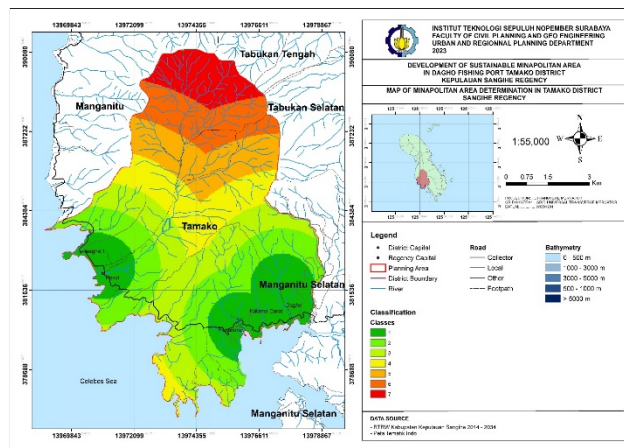


Figure 4. Weighted Sum Result

There are 2 areas that have the potential to be developed into a minapolitan. The first area includes Nagha I and Pokol villages. Meanwhile, the second area includes the villages of Pananaru, Kalama Darat and Dagho. After considering the classification of feasibility with slope, an area that is feasible to be developed into a Minapolitan Area can be formed as illustrated in figure number.



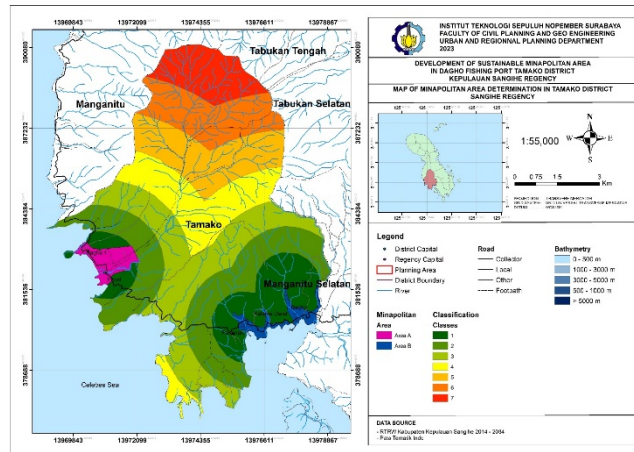


Figure 5. Leading Area in Tamako District

According to the analysis result, the region A consist of two villages namely Nagha Satu and Pokol. The determination of region A based on locations that have minapolitan supporting facilities. Furthermore, this region also has the largest market in the Tamako district and a shopping area that allows the sale of fishery products. Moreover, this region is facilitated with several financing institutions that allows it to ease the problem of costs in the development of Minapolitan.

According to the analysis result, the region B consist of three villages namely Pananaru, Kalama Darat, and Dagho. Determination of region B based on the location that is the core of Minapolitan development. This region has two ports that can be used, namely Dagho Beach Fishing Port and Pananaru Port. In addition, this region also has a fishing industry in the form of cold storage and ice cube processing for fish preservation purposes. Moreover, there are settlements close to the harbor that allow for a fisheries processing industry.

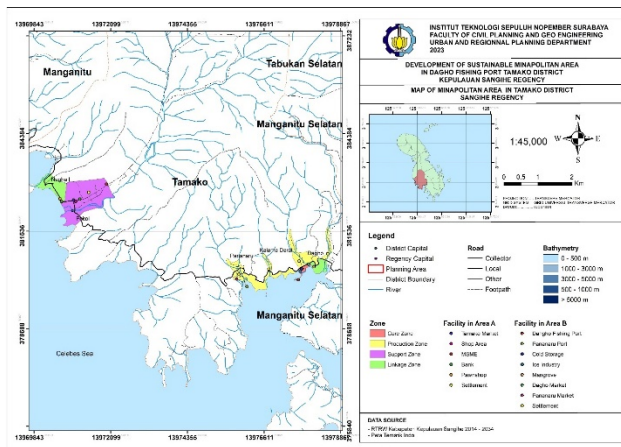


Figure 6. Minapolitan Zones in Tamako District

The zoning determination in this area is referred to the Regulation of the Minister of Maritime Affairs and Fisheries Number 18 of 2012 concerning “Guidelines for the Preparation of Minapolitan Area Development Plan”. Therefore, the planning area divided into 4 zoning that has interrelated functions (Peraturan Menteri Kelautan Dan Perikanan Nomor 18 Tahun 2012. Tentang Pedoman Penyusunan Rencana Induk, n.d.).

Minapolis, the fundamental determination as a minapolis area is to have a fishing port that functions as a capture fisheries production. The selection of the minapolis zone around the Dagho Beach Fishing Port is because there are several parts of the fishing industry in its existing condition. The minapolis zone is supported by facilities and infrastructure from the upstream minabusiness sub-system which functions as a support for sustainability in the production of capture fisheries.

Production Zone, the factor for selecting this area as a production zone is that the majority of land functions are residential, which can become a center for the production of fishery products. In addition, this area is also located adjacent to the Minapolis zone which allows the linkage of raw material production into a value-added product. This area will be supported by the downstream-Product Processing Sub-system that supports the processing of value-added products.

Supporting Zone, this area was selected as a support zone because there are several marketing facilities available in its existing condition. This area is suitable for marketing and development of fisheries companies with trading purposes. This area is related to the production zone, where this zone plays an important role in the function of marketing fishery products that already have added value. This zone is supported by the Downstream Marketing Sub-system which provides facilities and infrastructure for the sale of products produced.

Linkage Zone, this zone is the area that ensures the sustainability of the fishing industry. This zone focuses on meeting operational needs for other zones. There is a power plant that ensures the availability of electricity reserves for minapolitan development. In addition, there are several financing institutions that make it possible to help the local economy in the development of minapolitan. This area is supported by the operational support sub-system for the development of the minapolitan area.

### **Formulating Development Direction of Minapolitan Area in Tamako District**

This stage uses a triangulation analysis that considers three aspects: indicators, characteristics, and policies or best practices. The process of formulating development directions begins with finding directions based on indicators. Then the directions will be combined into factors according to the research variables. Therefore, each factor has its own development direction. The following are directions for minapolitan development based on existing factors:

Marketing. Established a modern market with a large, comfortable, and decent capacity. In addition, this is also supported by the fishery product marketing system "Marketing Mix" and applying the concept of "Free Trade Agreement (FTA)" to reduce taxation on export goods (Onibala et al., 2022).

Processing Industry. Provided modern technology-based capture fisheries product processing units in the fields of Canning, Drying, cultivation, preservation which integrated with each other in the areas of marketing, processing, and storage and are connected to transportation infrastructure such as airports and ports (Sumule & Angkasa, 2019).

Accessibility. Provided goods transportation vehicles in the form of fish transport vessels, vehicles for transporting processing products and capture fisheries products. Develop adequate road access conditions (Peraturan Menteri Kelautan Dan Perikanan Nomor 5 Tahun 2014. Tentang Sistem Logistik Ikan Nasional, n.d.).

Policy. Formulated policies for the physical development of the capture fisheries industry, and the processing industry in the core, production, support, and linkage zones

supported by trade policies that help market local fisheries products, facilitate the management of trade in goods, maintain the price of raw materials, and open investment channels for various parties (Lumbanraja, 2004).

**Natural Resources.** Maximized the production of capture fisheries by using the Gillnet method on fishing vessels so that the capture of bottom fish and demersal fish becomes more efficient while also considering the freshness conditions of the fish caught and the fish to be frozen as well as examine the sustainable fisheries aspects (Adam & Surya, 2013).

**Infrastructure.** Developed infrastructure supporting the development of minapolitan by providing the needs of fishing port facilities, construction of fish auction sites, expanding the capacity of cold storage rooms, building production waste management, building telecenters as information centers, meeting the needs of electricity and clean water throughout the zone (Peraturan Pemerintah (PP) Nomor 27 Tahun 2021 Tentang Penyelenggaraan Bidang Kelautan Dan Perikanan, n.d.).

**Human Resources.** Created a technopreneurship based community development training program in the areas of product diversification, marketing, financial management, and long-term prospects for the fishing industry.

**Basic Physic.** Established economic cooperation between surrounding areas by optimizing land use and conserving land use. Utilizing mangrove areas for shrimp and crab farming based on mangrove conservation (Pratama, 2020).

**Institution.** Created a community empowerment institution that functions to develop local fishery products, develop community skills, develop local product diversification, and guide fish cultivation. Provide efficient capital for fishery businesses. Develop technopreneurship-based community empowerment programs.

## **Discussion**

The process in the Analytical Hierarchy Process (AHP) analysis that has been carried out uses 9 factors and 26 variables to find the priority. Based on the Analytical Hierarchy Process (AHP) analysis of the existing factors, the top three factors that has the highest influence as consideration of minapolitan development namely: Marketing, Processing Industry, and Accessibility. Moreover, the top three variables that has the highest priority namely: Market Demand, Integrated Industry, and Road Network. Furthermore, these 3 variables must be in the consideration in terms of developing minapolitan concept in Tamako District.

The characteristics of the planned location have been determined based on four aspects. **Economic.** The region's economy is primarily based on agriculture, plantations, and fisheries, with the surrounding community at a lower-middle level. Fisheries income mainly comes from capture products or raw materials without value-added processing. The Tamako district lacks a fish processing industry and cold storage, forcing fishermen to send their catches out. Although fish prices in the Sangihe regency are low, they increase 1.5-2 times if exported or exported to neighboring countries. Financing facilities like banks and pawnshops support minapolitan development. **Politic.** The North Sulawesi RTRW 2014-2034 design includes the Dagho Beach Fishing Port, but local government control over development has led to political interests. The authority faces obstacles due to lack of land use permits. The master plan for the Dagho fisheries industry is not well realized, and trade with outside areas is limited to independent cooperation between fishermen and traders. **Social.** Most people have high school education, but some still use traditional fishing gear. Most fishers rely on catches and work independently, without

forming a group in the planning area. Environmental. The region has significant fishery potential, with the Capture Fishery Port producing 9 tons of Tuna fish daily. The quality and volume of fish make it a supplier of capture fisheries to various regions. The region also has numerous rivers for power plants and mangrove areas for coastal ecosystems. However, the steep land contours make land development limited and difficult for minapolitan needs.

Based on Weighted Sum and Scalogram location analysis, there are villages that are the result of both analyses, namely Dagho, Nagha Satu, Pokol, Pananaru and Kalama Darat. These 4 villages are classified as potential location and suitable to be developed as minapolitan due to the availability of various supporting infrastructure for Minapolitan development such as ports, markets, banking, electricity networks, water networks, and settlements. The planning area is divided into 4 zones, namely Minapolis which supported by Upstream Minabusiness Sub-system, Production Centers which supported by Downstream-Product Processing Sub-system, Development and Support Zone which supported by Downstream Marketing Sub-system, and Linkage Zone which supported by Operational Support Sub-system.

In conclusion, to overcome economic problems in the fisheries sector, there are several sustainable strategies that can be implemented as follows: 1. Established a modern market with a sizable, comfortable, and decent capacity as well as supported by the fishery product marketing system "Marketing Mix" and applying the concept of "Free Trade Agreement (FTA)" to reduce taxation on export goods; 2. Provided modern technology-based capture fisheries product processing units in the fields of Canning, Drying, cultivation, preservation which integrated with each other in the areas of marketing, processing, and storage and are connected to transportation infrastructure such as airports and ports; 3. Provide goods transportation vehicles in the form of fish transport vessels, vehicles for transporting processing products and capture fisheries products as well as supported by adequate road access conditions; 4. Formulated policies for the physical development of the capture fisheries industry, and the processing industry in the core, production, support, and linkage zones supported by trade policies that help market local fisheries products, facilitate the management of trade in goods, maintain the price of raw materials, and open investment channels for various parties; 5. Maximized the production of capture fisheries by using the sustainable fishing method on fishing vessels so that the capture of bottom fish and demersal fish becomes more efficient while also considering the freshness conditions of the fish caught and the fish to be frozen as well as examine the sustainable fisheries aspects; 6. Developed infrastructure supporting the development of minapolitan by providing the needs of fishing port facilities, construction of fish auction sites, expanding the capacity of cold storage rooms, building production waste management, building Telecenters as information centers, meeting the needs of electricity and clean water throughout the zone; 7. Created technopreneurship based community development training program in the areas of product diversification, marketing, financial management, and long-term prospects for the fishing industry; 8. Established economic cooperation between surrounding areas by optimizing land use and conserving land use as well as utilizing mangrove areas for shrimp and crab farming based on mangrove conservation; 9. Created a community empowerment institution that functions to develop local fishery products, guide fish cultivation and provide efficient capital for fishery businesses.

## Conclusion

In conclusion, the development of the minapolitan concept in Tamako District presents a multifaceted opportunity to address economic, social, and environmental challenges while leveraging existing strengths. Through meticulous analysis utilizing the Analytical Hierarchy Process (AHP), key factors and variables have been identified, prioritizing Marketing, Processing Industry, and Accessibility, as well as Market Demand, Integrated Industry, and Road Network, respectively. The planned location's characteristics underscore the region's agricultural and fishery-based economy, coupled with political and social considerations, alongside significant environmental potential. The identification of potential villages such as Dagho, Nagha Satu, Pokol, Pananaru, and Kalama Darat, highlights strategic areas for minapolitan development, bolstered by existing infrastructure and zoning considerations. Proposed sustainable strategies, ranging from modern market establishment to technological integration in processing units and policy formulation, offer a comprehensive approach to revitalizing the fisheries sector and fostering community empowerment. Through collaborative efforts and strategic interventions, the envisioned development pathway holds promise for sustainable growth, economic resilience, and enhanced livelihoods within the Tamako District.

## BIBLIOGRAPHY

- Adam, L., & Surya, T. A. (2013). Kebijakan pengembangan perikanan berkelanjutan di Indonesia. *Jurnal Ekonomi Dan Kebijakan Publik*, 4(2), 195–211.
- Campling, L., Havice, E., & McCall Howard, P. (2012). The political economy and ecology of capture fisheries: market dynamics, resource access and relations of exploitation and resistance. *Journal of Agrarian Change*, 12(2-3), 177–203.
- Keputusan Menteri Kelautan Dan Perikanan Nomor 19 Tahun 2022. Tentang Statuta Politeknik Kelautan dan Perikanan Jember.
- Kurniawati, A. T., & Munir, M. (2017). Analytic Hierarchy Process (AHP) untuk Penentuan Rangkings Penggunaan Lahan. *Journal of Research and Technology*, 3(1), 54–62.
- Lumbanraja, P. (2004). Kebijakan Pengembangan Pelabuhan Sibolga Dalam Rangka Mendukung Pertumbuhan Ekonomi dan Pembangunan di Wilayah Pantai Barat. *Diambil Pada Tanggal*, 23.
- Onibala, C., Andaki, J. A., Rarung, L. K., Manoppo, V. E. N., & Dien, C. R. (2022). Bauran Pemasaran Pada Berbagai Produk Perikanan Tangkap Di Desa Bulutui Kecamatan Likupang Barat Kabupaten Minahasa Utara. *Akulturas: Jurnal Ilmiah Agrobisnis Perikanan*, 10(1), 14–24.
- Peraturan Daerah Nomor 26 Tahun 2007. Tentang Rencana Tata Ruang Wilayah Nasional.
- Peraturan Menteri Kelautan dan Perikanan Nomor 18 Tahun 2012. Tentang Pedoman Penyusunan Rencana Induk.
- Peraturan Menteri Kelautan dan Perikanan Nomor 32 Tahun 2010. Tentang Penetapan Kawasan Minapolitan.
- Peraturan Menteri Kelautan dan Perikanan Nomor 5 Tahun 2014. Tentang Sistem Logistik Ikan Nasional.
- Peraturan Pemerintah (PP) Nomor 27 Tahun 2021 tentang Penyelenggaraan Bidang Kelautan dan Perikanan.

- Pratama, A. D. (2020). Hubungan Tenaga Kerja, Rumah Tangga Dan Produksi Perikanan Dalam Aglomerasi Industri Di Kabupaten Tanggamus. *Jurnal Ekonomi Pembangunan*, 9(3), 126–137.
- Saragih, D. F. (2023). Pemilihan Lokasi TPA Limbah Padat Menggunakan Metode Analisis Keputusan Multi Kriteria Berbasis Sistem Informasi Geografis: Sebuah Usul Modifikasi SNI 03-3241-1994: Selection of Solid Waste Landfill Sites Using the Multi-Criteria Decision Analysis Method Based on Geographical Information Systems: A Proposal Modification of SNI 03-3241-1994. *Jurnal Teknologi Lingkungan*, 24(1), 89–97.
- Sumule, O., & Angkasa, W. I. (2019). Pengembangan Industri Pengolahan Hasil Perikanan Laut Berkelanjutan Kabupaten Lingga. *Prosiding Seminar Nasional Universitas Indonesia Timur*, 1(1), 172–184.
- Wiadnya, D. G. R. (2011). Konsep perencanaan minapolitan dalam pengembangan wilayah. *Makalah Workshop Penyiapan Peningkatan Kualitas Penataan Ruang Di Kabupaten Tematik Tanggal*, 22–23.

---

**Copyright holder:**

Yegar Sahaduta Hezbibah Kalampung, Arwi Yudhi Koswara (2024)

**First publication right:**

Syntax Literate: Jurnal Ilmiah Indonesia

**This article is licensed under:**

