

Implementation of Seaweed Cultivation Village Policy in Southeast Maluku

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ABSTRACT

Government policies supporting the management of fishery and marine resources based on the Blue Economy include one of the priority programs, namely the development of environmentally friendly aquaculture in freshwater, brackish, and marine waters. Policies are made in the form of cultivation village development activities. This study aims to find out the process of implementing the seaweed cultivation village policy in Southeast Maluku. The research method used is qualitative descriptive, namely through observation, interviews, and documentation studies from journals, reports, and news media relevant to the research topic. The results of the research show that the implementation of the seaweed cultivation village policy in Southeast Maluku has not been running optimally. Sustainability factors with environmentally friendly cultivation have been implemented but not fully realized. Downstream activities are still constrained by the absence of investors and the cooperation of related parties in advancing the seaweed industry in Southeast Maluku. The condition of human resources still needs sustainable assistance and coaching to improve technical and managerial competence. Local community participation has been running quite well, with existing policies able to meet the needs of the seaweed farming community, as well as government bureaucratic support in developing seaweed cultivation in Southeast Maluku.

KEYWORDS Policy Implementation, Cultivation Villages, Seaweed, Blue Economy Sustainable Cultivation



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INTRODUCTION

Policy is everything that is made and implemented by the government (Lassance, 2021). According to Wahab (2008), policy is a decision made with authority, with goals, and supporting resources (Hudson et al., 2019). Policies usually have several characteristics (Frisch Aviram et al., 2020). First, the state, through its legislative, executive, and judicial institutions, makes public policies (Fatile, 2017). Second, they can regulate the general public, not specific individuals or groups.

Since 2012, the blue economy has entered a phase of development and exploration (Gill & Iqbal, 2021; Pace et al., 2023). Many countries and regions have proposed

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strategic structures and action plans to develop it, including ensuring the preservation of the environment and coastal and marine resources and driving economic growth in the marine and fisheries sectors (Prayuda & Sary, 2019). According to Sarker (2018), the "blue economy" is a term that refers to the sustainable use of marine resources to improve the economy, livelihoods, and preserve the environment. In addition, it generates economic and social benefits (Algarni et al., 2023; Kumar, 2020). This concept emphasizes the relationship between sectoral activities due to their impact on marine resources (Yin et al., 2018). Natural capital calculation to determine and communicate the value of natural resources, marine spatial planning to manage cross-sectoral trade-offs, consultation with various stakeholders, data enhancement, and "blue financing" are some examples of integrated management approaches (World Bank, 2021).

Peters (2020) said that policy is a collection of actions carried out with a specific purpose by an individual or a group to solve a certain problem. This statement aligns with the implementation of the blue economy concept policy because the policies developed by the Ministry of Maritime Affairs and Fisheries represent significant progress in supporting the sustainability of marine and fisheries resources (Fadhlillah, 2025; Mulianto et al., 2024; Sabrina & Putra, 2025). This shows that sustainability is one of the important components in the management of marine and fishery resources, particularly in the development of marine aquaculture (Carballeira Braña et al., 2021; Jiang et al., 2022; Sonesson et al., 2023). One of the main efforts of the Ministry of Maritime Affairs and Fisheries to support conglomerates is to provide support for the development of the blue economy (Whisnant & Vandeweerd, 2019). To increase the production of the aquaculture sub-sector, especially seaweed, which is a high-quality local leading commodity, *aquaculture village policies* must be implemented while taking environmental sustainability factors into account (Brakel et al., 2021; Mendez et al., 2024).

Hariram (2023) & Ghimire (2023) stated that sustainable development rests on three pillars: the economy, which includes growth, efficiency, and stability; social, which includes empowerment, participation, and institutions; and environment, which includes pollution, diversity, and natural resources. The social pillar is very important for implementing the *seaweed cultivation fishery village policy* because of its relationship with population density and quality of life (Mirera et al., 2020; Rameshkumar & Rajaram, 2019).

Research conducted by Teniwut (2020) related to seaweed development policy in West Southeast Maluku Regency explains several strategies for developing seaweed policies that can be carried out, including making regulations on cultivation spatial planning, providing adequate budget support, extensifying and intensifying cultivated land with optimal resource utilization, and improving the function of technical and institutional development for seaweed cultivation groups at the location.

Handani (2025) research entitled Capture Fisheries Policy Implementation Strategy in Central Maluku Regency Limited explains the analysis of policy implementation in the capture fisheries sector, including supporting facilities, the

implementation of policy strategies, and the social conditions of coastal communities affected by the policy.

Mohamad Sam'un (2020), in his dissertation entitled Implementation of the Development Policy of Minapolitan Capture Fisheries Ppi (Fish Landing Base) Karangsong Indramayu, analyzed the implementation of the Minapolitan village development policy in the field of capture fisheries. This dissertation shares several conceptual similarities, as Minapolitan village is an integrated concept in fisheries and marine activities starting from production to post-production, including supporting facilities, policy implementation strategies, and social conditions of coastal communities affected by the policy. Meanwhile, the research plan that will be implemented will discuss sustainability factors related to the implementation of policies in aquaculture, especially seaweed (Henríquez-Antipa & Cárcamo, 2019; Mendez et al., 2024).

Seaweed is an aquaculture commodity that has high economic value and a unit value comparable to other commodities such as fish and shellfish (Theuerkauf et al., 2022). Seaweed has developed into the second largest aquaculture product in terms of quantity over the past fifty years (FAO, 2018). Seaweed is one of the fishery commodities that has gained government attention, considering Indonesia's high potential, making seaweed one of the key marine aquaculture activities (Rimmer et al., 2021). This is supported by Presidential Regulation of the Republic of Indonesia Number 3 of 2017 concerning an action plan to accelerate the development of the national fisheries industry, including the improvement of the seaweed industry. To achieve this, the production and continuity of seaweed raw materials must be improved.

With an area of 4,676 km², a water area of 3,180 km², and a coastline length of 632.15 km, Southeast Maluku Regency is suitable for seaweed cultivation. There are 14,138.86 hectares of potential land for seaweed cultivation, with 8,662.23 hectares in Kei Kecil and Kei Besar that can be used for seaweed farming. The Hoat Sorbay area is one of the cultivation areas in Southeast Maluku Regency, designated through the Decree of the Regent of Southeast Maluku Number 167 of 2020 concerning cultivation areas. The 1,346.41 hectares of Hoat Sorbay consist of 543.30 hectares of seaweed cultivation, which accounts for 30% of seaweed production in Southeast Maluku.

Table 1. Seaweed Cultivation Area of Southeast Maluku

District Name	Area (Ha)	Function
Kei Kecil District	4.310,20	Seaweed Cultivation and Floating Net Cages
Kei Kecil Barat District	1.500,50	Seaweed Cultivation and Floating Net Cages
East Kei Kecil District	2.865,06	Seaweed Cultivation and Floating Net Cages
Kei Besar District	1.172,67	Seaweed Cultivation
South Kei Besar District	226,58	Seaweed Cultivation and Floating Net Cages
Kei Besar Utara Timur District	82,43	Seaweed Cultivation

Source: BAPPEDA Southeast Maluku Regency

Table 2. Development of Seaweed Production in Southeast Maluku in 2019-2023

Year	Number of Cultivators	Land Use Area (Ha)	Production of Aquaculture Products (kg)
2019	2016	4680	20858,62
2020	2016	1449	24156,36
2021	1929	1429	31442,60
2022	2015	1476	34414,29
2023	2214	1486	40670,70

Source: Southeast Maluku Fisheries Service 2024

Public policy is used to select and demonstrate the best ways to improve the lives of both government and private organizations. Public policy is the applicable regulation, characterized by consistent and repeated actions of policymakers and policy-affected parties. According to Morrell (2016), a country that does not have policy elements that include public order and morals is considered a failure because it is only a group of people living together. The government usually makes public policies, which consist of many decisions, including the decision not to take action (Howlett & Cashore, 2020). Public policy consists of policy analysis, public policy, and recommendations.

According to Jannah theory (2024), implementation is "those activities directed toward putting a program into effect" (the process of realizing the program until it shows the results). However, according to Horn and Meter, implementation is "those actions by public and private individuals (or groups) that are achievement or objectives set forth in prior policy." Therefore, implementation is an action that is carried out after the existence of a policy, making implementation an important step in the process of planning regulations or policies. It deals with regulations or policies that focus on the interests of the community. A policy will only be useful once it has been implemented.

According to Kgwete (2021), implementation models that use both bottom-up and top-down perspectives have the potential to help policymakers because they focus on "implementer disposition," which includes cognitive maps, incentives, and resources available to those ultimately responsible for implementing implementation. The components in question are (1) policy design, (2) inter-organizational communication, (3) implementing disposition, (4) policy impact, (5) policy learning, and (6) environmental, social, economic, and political actions.

Policy Design is an approach made by the government in an effort to identify, improve, and become a solution to a policy problem faced. In terms of efforts to increase the productivity of superior commodities such as seaweed, policies for the development of aquaculture villages are outlined in the Decree of the Minister of Marine Affairs and Fisheries Number 111/KEPMEN-KP/2023 concerning the determination of the location of aquaculture villages throughout Indonesia, including seaweed Aquaculture Villages (KPB) in Southeast Maluku Regency.

The definition of an Aquaculture Village is contained in the Regulation of the Minister of Marine Affairs and Fisheries Number 47 of 2021 concerning Aquaculture Villages, where it is explained that Aquaculture Villages (KPB) are areas based on

superior commodities and/or local commodities by synergizing the various potentials owned to encourage the development of competitive and sustainable fish and seaweed farming businesses, maintaining the sustainability of aquatic resources, and driven by the community so that it is able to ensure the availability of production in a sustainable manner.

Based on the presented background, this study addresses the research problem: "Why has the *Seaweed Cultivation Village Policy in Southeast Maluku* not been implemented optimally?" The research objectives are to: (1) analyze the implementation process of the *seaweed cultivation village policy in Southeast Maluku*; (2) identify factors inhibiting optimal policy implementation; and (3) evaluate the effectiveness of policy components including environmental sustainability, human resource development, community participation, and bureaucratic support. The study's significance lies in providing empirical evidence and practical recommendations for improving blue economy policy implementation in Indonesia's marine aquaculture sector, thereby contributing to enhanced seaweed production, environmental conservation, and coastal community welfare.

METHOD

This study used a qualitative method to systematically describe the implementation of the seaweed cultivation village policy in Ohoi Letvuan, Hoat Sorbay District, Southeast Maluku Regency. The purpose was to assess the extent to which the policy addressed various challenges, especially efforts to increase seaweed production.

The research took place in Ohoi Letvuan Village, one of the designated seaweed cultivation villages in the Hoat Sorbay Bay area. Besides being a seaweed cultivation village, Letvuan was also known as a tourist village with unique attractions, which contributed to better governance and community empowerment.

Primary data were collected through field observations and direct interviews with informants from the Directorate of Seaweed, Directorate General of Aquaculture Fisheries, Southeast Maluku Fisheries Service, seaweed cooperatives, and cultivation groups in Ohoi Letvuan. Secondary data were gathered from documentation such as Strategic Plan and Performance Reports, along with relevant media reports.

Data were analyzed using the triangulation method to ensure validity. This involved comparing interview results with supporting documents, cross-checking information from different sources to identify discrepancies, and validating findings through observations and interviews.

RESULTS AND DISCUSSION

Geographical Conditions and Demographics of Southeast Maluku Regency

Geographically, Southeast Maluku Regency has a very strategic position because it is flanked by two oceans: the Banda and Arafura fishing areas. For many years, Southeast Maluku has served as the political and economic center of the southern part of Maluku. This makes its position very advantageous politically and economically. Because

it is located on the trade route between southern eastern Indonesia and southern Papua, Southeast Maluku is also a very potential place for trade.

Astronomically, Southeast Maluku Regency is located at the coordinates of 131° - 133° 5' East Longitude and 5° - 6.5° South Latitude. Administratively, Southeast Maluku Regency is bordered by:

- The north is bordered by the city of Tual
- To the south it is bordered by Tanimbar Islands Regency and the Arafura Sea
- The west is bordered by the Banda Sea
- To the east it borders Aru Islands Regency



Figure 1. Map of Southeast Maluku Regency

Source : Google Earth (2025)

With a coastline length of 632.15 km, Southeast Maluku is rich in marine resources for fish and non-fish. However, there are still patterns of community behavior, which are sometimes detrimental, such as fishing using harmful materials that can damage the aquatic environment and this is still a problem. A handling or policy solution related to aquatic environmental rehabilitation is needed that is quite intensive so that the condition of the waters in Southeast Maluku Regency can be well maintained.

In addition to its potential, Southeast Maluku is also very vulnerable to economic, trade, and transportation problems. Since Southeast Maluku is an archipelago with 68 islands, its people are highly dependent on nature for daily activities, such as production and marketing. As a result, to support community activities, adequate transportation infrastructure, accessibility, and connectivity are needed.

The population of Southeast Maluku Regency continues to increase from year to year. In 2023, the population will reach 129,034 people, up from 128,305 people in 2022 with 62,255 males and 62,713 females, with a population density of 120 people/km².

Table 3. Number of Population in Southeast Maluku Regency

No.	District	Total Population (km ²)	Area	Density (People/km ²)
1.	Kei Kecil	34.179	109,27	312,79
2.	Kei Kecil Barat	7.770	95,76	81,14
3.	Kei Kecil Timur	9.039	68,26	132,42
4.	Hoat Sorbay	10.714	82,28	130,21

No.	District	Total Population (km2)	Area	Density (People/km2)
5.	Manyeuw	6.262	61,93	101,11
6.	Kei Kecil Timur Selatan	5.804	55,48	104,61
7.	Big Cat	19.970	112,97	176,77
8.	Kei Besar North East	13.476	167,09	80,65
9.	Kei Besar Selatan	7.399	78,83	93,86
10.	Kei Besar North West	10.435	157,81	66,12
11.	Kei Besar Selatan Barat	3.986	42,13	94,61

Source: BPS Southeast Maluku in 2024 Figures

Hoat Sorbay District is ranked fourth in the sub-district with population density, including Ohoi Letvuan which is the location of a research village for seaweed cultivation, where the results of interviews show that almost 90% of the population in Ohoi Letvuan are seaweed cultivators.

Seaweed Cultivation Fishing Village of Southeast Maluku Regency

Southeast Maluku Regency, also known as the "banda sea area" located in eastern Indonesia, is one of the areas selected for the construction of marine and fisheries centers by the Ministry of Marine Affairs and Fisheries (KKP). One of the potential industries that will be developed there is seaweed cultivation because of the potential that exists there (KKP). Southeast Maluku Regency refers to the regional spatial plan and strategic environmental study, namely areas that have the potential to be developed based on the RTRW of Southeast Maluku Regency for 2012-2032 which is stipulated through Regional Regulation Number 13 of 2012 covering fishery designated areas consisting of capture fisheries areas covering almost all coastal areas and waters in the Regency and marine aquaculture areas (mariculture) covering the western part of Kei Kecil and the south of Kei Besar.

The seaweed cultivation fishery village policy is one of the development policies of the fisheries and marine sector, especially in the field of environmentally friendly and sustainable cultivation. Policy research on the development of seaweed cultivation villages in Southeast Maluku is based on several components, namely environmental conditions and market conditions (investment), human resource conditions, local community participation and bureaucratic conditions.

Regarding policy design, the policy of seaweed cultivation villages is prepared based on the process of formulating and implementing effective policies, this includes the analysis of the problems to be solved, the determination of goals and objectives as well as the form of intervention to be carried out. The seaweed cultivation village policy answers problems related to the low productivity value of seaweed in Southeast Maluku, this shows that the value of the potential use of the land owned is still low and the limitation of technical resources such as quality seaweed seeds and supporting infrastructure facilities owned by cultivators.

The policy design also includes clear structures and procedures in the selection process of Letvuan, Hoat Sorbay being one of the locations of the seaweed cultivation village. PermenKP Number 47 of 2021 states that the process of determining the location of cultivation villages consists of three stages, namely (1) Proposal Stage, (2) Verification

Stage and (3) Determination Stage. The same thing with the excerpt of the interview conducted with the Director of Seaweed shows that the determination of the policy of seaweed cultivation villages in Southeast Maluku has gone through several processes in accordance with the rules that have been set.

"Well, that's it, so the goal is not only to increase production, but also to increase and maintain germplasm. Well, we received proposals from the agencies, then scoring was carried out. The parameters that are measured are how the local government supports, then how the production is, how much the RTP is, there are many."

The purpose of the seaweed cultivation village policy is to increase seaweed production while still paying attention to the sustainability factors of the aquatic environment.

Table 4. Seaweed Production in Southeast Maluku Regency 2017 – 2022

Regency	Production Value (Tons)					
	2017	2018	2019	2020	2021	2022
Southeast Maluku	97.808	102.320	234.607	24.156	31.443	34.409

Source: BPS Maluku Province in Numbers (2023)

The trend of seaweed production in Southeast Maluku has experienced significant fluctuations, especially in the period of 2019 – 2020, the occurrence of the COVID-19 pandemic resulted in an economic decline, including the seaweed cultivation sector. This is in line with what Arthatiani, F et al. (2021) stated that most of the seaweed is exported as the main commodity of Indonesian fisheries. Dried seaweed is the dominant export material. The PRC is an export destination country. The COVID-19 pandemic had a negative impact on this commodity, with a decline in exports of 36.77% in the first quarter of 2020.

The seaweed cultivation village policy in Southeast Maluku was established to answer the needs of the community in the process of developing a seaweed cultivation business to be better. One of the government's supports in increasing the effectiveness of this policy is through priority assistance such as seaweed seed assistance, tissue culture, and assistance for seaweed seedling garden facilities.

In supporting the downstream of the seaweed industry in Southeast Maluku, policy communication plays an important role in supporting the success of a policy implementation. Cook & Hunsaker stated that communication aims to improve coordination, share information, and meet social needs. In terms of policy governance, Mustiqowati stated that public governance refers to government institutions and can be understood as good governance within these institutions. Corporate governance is an important component where cooperation between the private and public sectors to achieve more efficient and effective results.

The seaweed cultivation village policy in Southeast Maluku requires the support of all parties, and this will be realized with effective communication. Nekwek (2022) revealed that communication is a link between the government and the community, elements such as delivery, message content and media used are things that need to be

considered. One of the challenges that occur in the development of seaweed cultivation in Southeast Maluku is downstreaming. Limited resource support, technology that has not developed with current conditions, and other technical problems are still limiting factors, this is where the role of policy communication in efforts to establish partnerships with external parties is one of the solutions to improve the seaweed downstream sector in Southeast Maluku.

Proper involvement and development of human resources (HR) can improve policy performance. Human resources who are skilled and have a good level of competence can increase productivity and success of cultivation businesses. In addition, the development of good human resources helps the efficient application of technology, ensures the sustainability of cultivation practices, and improves the welfare of local communities. This is in line with what Tjiptono expressed in Sari (2021) there are at least 4 factors that affect the human resource development process, they are knowledge, attitudes and behaviors, skills or competencies possessed as well as individual motivation and responsibility.

Table 5. Number of Cultivating Households (Southeast Maluku RTP 2019 – 2023

Region	Number of Cultivating Households (Sea)					
	2019	2020	2021	2022	2023	2024
Maluku Tenggara Regency	1390	1375	963	1010	1034	-

Source : One MPA Data (2024)

The table above shows that the support of human resources in the field of cultivation in Southeast Maluku always shows an upward trend every year. Seaweed cultivation that is a mainstay must be supported by competent human resources, and this is also related to community participation in efforts to support the seaweed cultivation village policy implemented. The same thing was expressed from the results of an interview with the Head of Fisheries of Southeast Maluku Regency, about the importance of community empowerment in improving the quality of human resources.

"The policy from us from the Fisheries Service, we focus on it, we still focus on empowerment, we stay in areas that have been designated as KPB, especially in Hoat Sorbay. So we continue to provide various interventions for activities there, both in the form of facilities and mentoring activities, training activities, it is still every year that we hold, we continue to involve cultivators in the KPB area".

The Ministry of Maritime Affairs and Fisheries has developed a strategic policy to develop export-oriented aquaculture fisheries with superior commodities, one of which is seaweed. The results of the interview also show that seaweed cultivation is the main livelihood for the community in the location of the seaweed cultivation village and the results obtained are a motivation for the cultivating community.

Law No. 7 of 2016 concerning the Protection and Empowerment of Fishermen, Fish Farmers, and Salt Farmers, Government Regulation of the Republic of Indonesia No. 50 of 2015 concerning the Empowerment of Fishermen and Small Fish Cultivators, and Decree of the Minister of Maritime Affairs and Fisheries No. 14 of 2012 concerning General Guidelines for the Growth and Institutional Development of Major Fisheries

Actors, show that the empowerment of the main actors of the fishery business plays an important role in supporting the sustainability of the sector marine and fisheries. Community empowerment is still constrained by limited supporting resources, but this must be overcome with effective and sustainable planning, Ernie & Saefullah, Assess success, achievements, and targets using established indicators, Take action to clarify and correct possible errors, and Find various ways to solve problems related to business success.

Bureaucratic structures significantly affect the implementation of seaweed policies through inter-agency coordination, resource allocation, and policy implementation in the field. Effective bureaucracy can speed up implementation and ensure that policies go as planned.

One of the factors that support the success of the policy implementation process is the existence of good support and commitment from the government, such as political support from both the central government and local governments in the implementation of the seaweed farming village policy in Southeast Maluku, this is related to the political ability to regulate the allocation of resource needs, both financial and non-financial

Public policy is designed by the government (Kristian, I). Public policy outputs, such as funding or actual services provided, are included in the implementation process (Agbazure, 2020). For effective implementation of public policies, clarity and specificity of policies, the institutional capabilities of implementing organizations, the selection of appropriate target groups, and the environment in which policies will be implemented are all necessary (Obikaze, Anthony).

CONCLUSION

The blue economy policy aims to boost the economy while ensuring environmental sustainability, with the seaweed cultivation village policy serving as a key initiative to increase seaweed production, preserve biodiversity, and improve cultivators' welfare. This policy emphasizes environmentally friendly practices and governance; however, challenges remain, particularly due to limited stakeholder and private sector involvement in developing the downstream seaweed industry in Southeast Maluku. The presence of competent human resources and active community support are strengths that aid policy implementation, alongside ongoing empowerment and mentoring efforts. Strong collaboration between central and regional governments and consistent political backing are crucial to address resource limitations and fully realize the region's potential as a leading seaweed producer. Future research should explore strategies to enhance stakeholder engagement and develop the downstream seaweed industry to maximize economic benefits and sustainability in Southeast Maluku.

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