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Research Article

Implementation of the Blue Economy Program in Achieving SDGs : An Analysis of the Impact on Natuna Coastal Communities in the 2019-2024 Period

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Abstract: This research analyzes the implementation of the Blue Economy program in Natuna Regency to improve the welfare of coastal communities and achieve SDGs in 2019-2024. Natuna has abundant marine resources. However, the welfare level of coastal communities is still relatively low. Through a qualitative approach, this research analyzes the Blue Economy program implemented by the government by eradicating IUU fishing, developing Integrated Marine and Fisheries Centers (SKPT) that provide production, processing, and marketing facilities for marine products, including the involvement of coastal communities in decision-making and program implementation. Thus, this research is expected to evaluate Blue Economy programs and provide new insights into how these programs can be optimized to achieve economic, social, and environmental sustainability goals in Natuna and other coastal areas in Indonesia.

Keywords: Blue Economy; Coastal Community Welfare; Natuna; SDGs

1. Introduction

Indonesia is a country whose territory is mostly covered by oceans, making it an archipelagic state. The United Nations Convention on the Law of the Sea (UNCLOS), adopted in Montego Bay, Jamaica, in 1982, provides international recognition for archipelagic states, strengthening Indonesia's position in managing its maritime territory (Aziz, 2021). Therefore, managing marine resources focusing on sustainable fisheries and healthy marine ecosystems has become increasingly important for economic and ecological sustainability in globalization and climate change. Since the sustainable development, management, and utilization of marine resources are critical, Indonesia, through the Ministry of Marine Affairs and Fisheries of the Republic of Indonesia, has implemented the Blue Economy policy (Azzumar et al., 2023). The concept of the "Blue Economy" emerged in the early 2000s. Prof. Gunter Pauli is a Belgian entrepreneur and advocate for sustainability. According to Gunter Pauli, the ocean is one of the untapped sources of wealth that must be utilized. If managed and utilized correctly, these marine resources have the potential to solve many environmental and economic issues, such as poverty and energy scarcity.

This concept was further developed, with the ocean remaining a priority area at the United Nations Conference on Sustainable Development held in Rio de Janeiro, Brazil, in 2012, as part of efforts to achieve the Sustainable Development Goals. Since then, the concept of the "Blue Economy" has been recognized by the United Nations, the World Bank, and various countries, including Indonesia (Mangala, 2022). The Sustainable Development Goals have 17 global goals with 169 targets that are policy and funding requirements expected to be achieved by 2030. These goals and targets encompass the three dimensions of sustainable development: environmental, social, and economic (Daulay, 2022). Therefore, in efforts to achieve sustainable development, the concepts of Sustainable Development Goals and the Blue Economy have become two main pillars that complement each other. Both provide a framework and policies prioritizing economic growth alongside improved social welfare without damaging the environment. Implementing the Blue Economy has been

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structured and systematic during the second term of the 7th President of the Republic of Indonesia, specifically in 2021. The launch of the Indonesia Blue Economy Framework marked this. Indonesia adopted this concept due to its geographical conditions as an archipelagic nation with the world's second-longest coastline. Implementing the Blue Economy is also based on pillars aimed at achieving Indonesia's vision for 2045, including excellent human resources, a sustainable economy, equitable development, and strong national resilience (Kementerian Kelautan dan Perikanan RI, 2022). Thus, the Blue Economy emerges as an innovative solution to optimize the utilization of marine resources without compromising environmental sustainability. According to the World Bank (2017), the Blue Economy can significantly contribute to economic growth and job creation in the marine sector, particularly in developing countries like Indonesia (World Bank, 2017).

Natuna Regency in the Riau Islands Province was selected as the research location due to its vast marine area, comprising 154 islands and abundant marine resources such as fish, coral reefs, and other marine biodiversity (Yudha & Dina, 2020). Therefore, the community highly depends on the fisheries sector for their livelihoods. However, the coastal communities of Natuna still face challenges such as overfishing, environmental degradation, and economic uncertainty that threaten the sustainability of the ecosystem and the livelihoods of the local community. According to data from the Central Statistics Agency, between 2015 and 2019, the percentage of poor people in the Natuna Regency increased from 4.34% to 4.42% and reached its highest peak in 2018 at 4.68% (BPS Kab Natuna, 2019). This situation is exacerbated by slow human development due to limited access to education and infrastructure and Natuna's position as an outer island vulnerable to threats from illegal, unreported, and unregulated fishing by foreign vessels. Thus, the general condition of the coastal communities in Natuna before the establishment of the Blue Economy was characterized by relatively low-income levels (Ismail et al., 2018). This indicates that the Blue Economy program has great potential to improve the welfare of coastal communities in Natuna. However, its implementation still faces various challenges that need to be addressed. Therefore, an in-depth study on empowering marine resources based on the Blue Economy is needed to support local and national economic resilience. With the right approach, implementing the Blue Economy in Natuna can significantly contribute to the welfare of coastal communities.

This study is based on Gosta Esping-Andersen's Welfare State theory (1990), which emphasizes the importance of the state's role in ensuring the welfare of the community, especially vulnerable groups such as coastal communities. In the context of Natuna, state intervention through the Blue Economy program is expected to improve the standard of living of coastal communities, create jobs, and maintain environmental sustainability. Based on this background, this study aims to analyze the impact of the implementation of the Blue Economy program on the welfare of coastal communities in Natuna during the period 2019-2024, using the perspective of Gosta Esping-Andersen's Welfare State theory (1990) and its relevance to the achievement of the Sustainable Development Goals. Thus, this study is expected to evaluate Blue Economy programs and provide new insights into how these programs can be optimized to achieve economic, social, and environmental sustainability goals in Natuna and other coastal areas in Indonesia.

2. Literature Review

2.1. Theoretical Study

2.1.1. Welfare State

The term "welfare state" was first popularized by Alfred Zimmern in the 1930s to distinguish between democratic policies and the welfare state in several European regions. However, the beginning of the formation of a development strategy focused on welfare (welfare strategy) occurred after the end of World War II. The welfare state was a response to the decline experienced by society at that time due to the failure of the free capitalist political and economic system and because of its liberal state ideology. In a welfare state, a country whose fundamental characteristic is freedom (liberalism) is referred to as a "night watchman" state (Elviandri et al., 2019). A liberal state believes that the government does not have the right to monopolize its citizens; in other words, the state/government only protects citizens from attacks, theft, and other security threats. Thus, the welfare state emerged as a response to the failure of liberalism, where in the welfare state, the government has a responsibility to guarantee the happiness and welfare of its people (The greatest happiness/welfare of the most significant number of their citizens). Therefore, in a welfare

state, the government must take action through policies and programs to improve its citizens' happiness. As in the United Kingdom, Australia, and New Zealand, the welfare state is implemented through social security, health services, education, and personal social services (Elviandri et al., 2019). This is because, fundamentally, the welfare of a country must be based on the active role of the state in regulating its economy. In addition, the state is responsible for guaranteeing the availability of various welfare services for its citizens. In a welfare state, four indicators categorize a country as a prosperous country, according to Esping Andersen (1990: 21). These four indicators include social citizenship, full democracy, modern industrial relations system, and rights to education and the expansion of modern mass education systems (Sudiar, 2012). Therefore, in a welfare state, an important point to note is that a prosperous country is created because of the way the state uses social policies as a means to renew old views on the relationship between the state and its citizens (Timpal, Hadiwijoyo & Simanjuntak, 2024). Therefore, the use of the welfare state theory in this study is to explain the living conditions of coastal communities in Natuna and is also in line with analyzing the impact of the Blue Economy program on the welfare of coastal communities in Natuna in achieving the SDGs.

2.2. Previous Research

The first study, Development of Blue Economy Governance to Strengthen the Blue Economy Development Index in Indonesia (Sujiwo & Nurlaili, 2023). This study only focuses on identifying potential sectors to support blue economy development, analyzing the elements involved in blue economy governance, and analyzing the structural model of these elements to improve Indonesia's Blue Economy Development Index. Although the economic benefits of sustainable fisheries management are recognized, the first study did not explain or show data on how this directly improves coastal communities' income or quality of life.

The second study, Development of the Blue Economy as Indonesia's Strategy Towards an Advanced Economy (Alifa & Zahidi, 2024). This study only explains how the blue economy is implemented to improve the community's economy without explaining the coastal communities' participation. Therefore, it shows that coastal communities are often marginalized in decision-making processes related to natural resource management because the study did not explore further how community participation in Blue Economy programs can influence the success of implementation and its impact on their welfare.

Strategies for Developing the Blue Economy in Indonesia's Border Regions: Coastal Maritime Economy Governance in the Riau Islands (Akbar et al., 2022). This study only focuses on the constraints and problems in monitoring and protecting biodiversity in fisheries and marine management areas in the Riau Islands Province, so it is only general and does not specifically analyze the impact of specific programs on the welfare of local communities. Most previous studies, including the third study, have focused on the potential of marine resources or overall management policies without assessing the concrete results of these programs.

3. Proposed Method

This study uses qualitative research methods. According to Moleong (2006), qualitative research aims to understand phenomena in their natural context, where the researcher acts as the primary instrument in data collection. The researcher will conduct observations using descriptive documents and sources in this context. Therefore, this study employs data collection methods from official documents, policy reports, and previous studies because the focus of this research is to understand a complex social phenomenon, namely the impact of the implementation of the Blue Economy program on the welfare of coastal communities in the context of achieving the SDGs in Natuna.

4. Results and Discussion

4.1. Natuna Regency Profile

Natuna Regency, located in the Riau Islands Province of Indonesia, was officially established through Law No. 53 of 1999, enacted by Interior Minister Feisal Tanjung on October 12, 1999 (Apriadi et al., 2024). The regency, with Ranai as its capital, is part of the northernmost islands in the Karimata Strait, bordering several Southeast Asian countries, including Malaysia, Vietnam, and Cambodia. It serves as an international shipping route connecting Hong Kong, Japan, Korea, and Taiwan and is considered a gateway as it is part of the Indonesian Archipelagic Sea Lane (Pemerintah Kab Natuna, 2023). In 2024, the

administrative area of Natuna Regency is divided into 17 districts, namely Bunguran Timur, Bunguran Barat, Serasan, Bunguran Timur Laut, Bunguran Utara, Midai, Bunguran Batubi, Pulau Tiga, Bunguran Tengah, Subi, Serasan Timur, Bunguran Selatan, and Pulau Laut. Natuna Regency has a total area of 224,684.59 km², with a land area of 2,001.30 km² and a marine area of 222,683.29 km² (Dinas Perikanan Kab Natuna, 2023).

According to the local government of Natuna Regency, which is also recognized by the Ministry of Marine Affairs and Fisheries, there are 154 islands in the region (Pemerintah Kab Natuna, 2023). This is understandable since the area is an archipelago surrounded by the sea. Therefore, Natuna is classified as an archipelagic region due to its abundant marine resources, including fish, coral reefs, and other marine life. Thus, by the Ministry of Marine Affairs and Fisheries Regulation Number. 18/PERMEN-KP 2014, Natuna is included in the National Fisheries Management Area 711 due to its significant marine resource potential (Kementerian Kelautan dan Perikanan RI, 2021). Thus, given that most of Natuna Regency's territory consists of seas, this underscores the importance of the sea in sustaining life in Natuna Regency. This potential offers numerous opportunities for developing fisheries and marine-based economies (Yudha & Dina, 2020). Geologically, the regency possesses immense natural resource potential, as it is rich in marine resources and has significant potential in the mining sector. This is because the regency houses the Natuna D-Alpha Block, one of Indonesia's largest gas fields (Pemerintah Kab Natuna, 2023). Fisheries potential is also highly significant, with an exclusive economic zone spanning 256,852 square kilometres, providing marine resources for the economic development of coastal communities. As a result, the coastal communities of Natuna Regency, predominantly of Malay ethnicity, rely on fishing and agriculture as their primary livelihoods.

Understanding the geographical and demographic profile of Natuna Regency is an essential first step in evaluating the complex economic dynamics of coastal communities. Before examining the implementation of the Blue Economy program for the 2019-2024 period, it is essential to investigate the leading causes and economic characteristics of communities in this archipelago, which has unique socio-cultural characteristics. According to data published by the Natuna Regency Central Statistics Agency, in 2017, the population of Natuna Regency was 76,192, consisting of 39,180 males and 37,012 females (BPS Kabupaten Natuna, 2017). The population along the Natuna coast has diverse livelihoods that align with available resources. However, most Natuna residents work as fishermen, making it one of the most prominent livelihoods in the coastal areas of Natuna. Natuna Regency is endowed with abundant natural resources, including marine resources, oil, and gas. Despite this, the poverty rate in the regency remains very high, making poverty a critical issue of concern for both the central and local governments. One method for assessing development achievements is by examining poverty rates. A decline in poverty rates indicates successful development, while an increase suggests development failures. The poverty rate in Natuna Regency varied considerably between 2015 and 2019. The percentage of poor people in Natuna Regency rose from 4.34% to 4.42% during that period, reaching its highest point in 2018 at 4.68% (BPS Kab Natuna, 2019).

Therefore, it is essential to establish clear and strict regulations to achieve Indonesia's goal of utilizing marine resources sustainably and improving the welfare of coastal communities without damaging the environment. The government can assist coastal communities by encouraging businesses such as fish and seaweed farming, providing training to communities on environmentally friendly fishing methods, processing marine products into high-value products, and involving communities in marine management. One strategic step taken is the implementation of the Blue Economy Policy in 2019-2024. This policy is mandatory for implementation in Natuna because the area is included in the Indonesian National Fisheries Management Area 711, which is known for its abundant marine resources. The policy encompasses five priority programs, and through these initiatives, the coastal communities of Natuna who primarily rely on the fisheries sector are expected to experience tangible benefits in improving their living standards while maintaining environmental sustainability. Implementing the Blue Economy Policy aligns with the Ministry of Marine Affairs and Fisheries efforts to promote sustainable economic growth in the marine and

fisheries sector. (Koesnadi & Pratama, 2023). The implementation of these programs is based on clear legal frameworks governing the implementation of the Blue Economy Policy in Indonesia, including in Natuna and other marine areas, namely Law Number 32 of 2014 on Marine Affairs, particularly Article 14 (1), which states that marine management must be conducted using the principles of the Blue Economy for the greatest prosperity of the people through the sustainable utilization of marine resources (KKP DJPT, 2022).

4.2. Implementation of the Blue Economy Program for the Welfare of Coastal Communities in Natuna in Achieving the 2019-2024 SDGs

The concept of the Blue Economy emerged in the early 2000s. The term Blue Economy was first used by Prof. Gunter Pauli, a Belgian entrepreneur and sustainability advocate. Pauli used the term Blue Economy in his book "The Blue Economy: 10 Years, 100 Innovations, 100 Million Jobs" (Fisipol UGM, 2024). In his book, Pauli states that the ocean is one of the most underutilized resources. According to Prof. Gunter Pauli, proper management and utilization of marine resources can solve many economic and environmental problems, such as poverty and energy scarcity. The Blue Economy policy promotes economic growth, social inclusion, nature conservation, and livelihood improvement while maintaining environmental sustainability. The Blue Economy involves creativity and innovation, which includes various products, technologies, and human resources. The Blue Economy has significant potential to drive future growth and development, although its implementation will face various obstacles.

At the United Nations Conference on Sustainable Development held at Riocentro De Janeiro, Brazil, in 2012, discussions about the concept of the Blue Economy began, with the ocean remaining a priority area. Through this conference, the concept of the Blue Economy, which focuses on the sustainable use of marine resources to promote economic growth while maintaining environmental sustainability, has been recognized by many countries, including Indonesia (Mangala, 2022). The United Nations states that the implementation of the Blue Economy will help achieve the Sustainable Development Goals because this concept has several objectives, such as contributing to climate change mitigation, making the economy more circular and sustainable, preserving biodiversity, and providing benefits for tourism and the coastal economy. As an archipelagic country rich in marine resources, Indonesia benefits significantly from being one of the countries that has recognized the implementation of this concept. By adopting this concept, the utilization of marine resources for economic growth and sustainable livelihoods can be achieved while maintaining healthy marine ecosystems.

In Indonesia, the concept of the Blue Economy was first presented during the administration of the 6th President, Susilo Bambang Yudhoyono. However, during his administration, the focus was only on the "Global Maritime Fulcrum," there was no formal framework or structured implementation as it was still in the planning stage. Subsequently, during the administration of Joko Widodo, the seventh President of Indonesia, he presented a vision for Indonesia as a global maritime axis in the Archipelago and Island States Forum (AIS) to encourage collaboration in developing innovative solutions to climate change and promoting the implementation of a sustainable Blue Economy (Fisipol UGM, 2024). The implementation of the Blue Economy was carried out in a structured and systematic manner during the second term of the 7th President of the Republic of Indonesia, which was marked by the launch of the Indonesia Blue Economy Framework. Indonesia adopted this concept due to its geographical characteristics as an archipelagic country with the second longest coastline in the world. Implementing the Blue Economy is based on pillars that lead to Indonesia Emas 2045, which include superior human resources, a sustainable economy, equitable development, and strong national resilience (Kementerian Kelautan dan Perikanan RI, 2022).

According to the World Bank (2017), the Blue Economy can significantly contribute to economic growth and job creation in the marine sector, especially in developing countries such as Indonesia (World Bank, 2017). The Blue Economy's main characteristics include utilizing marine resources to benefit the economy, livelihoods, and the welfare of marine ecosystems (Binus University, 2023). In addition to the characteristics of the Blue Economy, which has become an approach that signifies a transformative approach to sustainable resource use, there are also main principles that underlie the concept of the blue economy namely Natural Resources Efficiency, which is the basic principle of the blue economy

concept, involving the optimal use of resources and reducing harmful environmental impacts; Zero Waste, which emphasizes the importance of minimizing waste production and promoting sustainable waste management techniques to protect marine resources; and Social Inclusiveness, which emphasizes the importance of meeting community needs and creating fisheries programs that support local communities. This covers various aspects, namely the Development of Sustainable Fisheries Programs, where communities are involved in sustainable fishing activities that provide economic benefits and pay attention to the sustainability of marine resources (Chandra et al., 2021). The characteristics of the Blue Economy are the basis for understanding how this concept is applied. Therefore, Indonesia, which has a potential fish resource of 12 million tons per year, as stated in Law Number 32 of 2014 concerning Marine Affairs, requires the Central Government and Regional Governments to implement Marine Management through the utilization and exploitation of Marine Resources by the principles of the Blue Economy (KKP DJPT, 2022). Thus, the strategy for implementing the Blue Economy aims to restore marine health and accelerate economic growth at the regional and national levels. The five priority programs of the Ministry of Marine Affairs and Fisheries of the Republic of Indonesia in the policy for developing the marine and fisheries sector based on the Blue Economy are:

1) Expansion of Marine Conservation Areas, Conservation Areas according to the International Union for the Conservation of Nature World Commission on Protected Areas, are areas with officially recognized, formally or informally established and managed boundaries to protect marine ecosystems over a long period (Ditjen PKRL, 2023). The central government's collaborative management strategy for conservation areas through Regulatory Planning for Law Enforcement by PERMEN KP 31/2020, with limited use of conservation areas, namely Tourism, Capture Fisheries, and Aquaculture (Ditjen PKRL, 2023). Therefore, the method considered effective for managing marine resources is developing Marine, Coastal, and Small Island Conservation Areas. To this end, the Indonesian government aims to designate 32.5 million hectares of conservation areas, or 10% of Indonesia's total marine area, by 2030 and approximately 97.5 million hectares, or 30% of Indonesia's total marine area, by 2045. Expanding and establishing new conservation areas, preserving carbon reserves, conserving biodiversity, improving the quality of conservation areas, and involving communities in managing and maintaining these areas. The expansion of marine conservation areas is aimed at protecting 58,000 hectares of seagrass beds, 211,000 hectares of mangroves, 1.2 million hectares of coral reefs, 30% of core zones for fish breeding, increasing carbon levels, and preserving marine ecosystem assets valued at Rp. 333 trillion per year. These targets align with global obligations under the Convention on Biological Diversity (CBD) and the Sustainable Development Goals 14 (Trenggono, 2023).
2) Quota Based Measured Fishing, The Ministry of Marine Affairs and Fisheries has formulated a strategy for implementing the *Blue Economy*, which aims to restore marine health and promote sustainable economic growth in the marine and fisheries sector at both the regional and national levels. The implementation of Government Regulation (GR) No. 11/2023 on Quota Based Fishing (Luthfia, 2023). Quota Based Measured Fishing aims to ensure that fishing efforts remain within the maximum sustainable production limits, which are determined by the status of fishing in each location. Therefore, it is expected that the implementation of Quota Based Fishing will facilitate the best management and utilization of fishery resources for the benefit of the community while adhering to sustainability and environmental carrying capacity principles, thereby ensuring sustainable benefits (Zaini, 2024). Thus, the strategies implemented by the Ministry of Marine Affairs and Fisheries include fishing based on catch quotas and designated fishing zones, landing fish at authorized ports, using data collection systems through information technology, implementing integrated monitoring utilizing satellites, spatial data, and IoT, enhancing value addition and market accessibility, empowering local fishermen, and promoting the development of advanced fishing villages.
3) Sustainable Marine, Coastal, and Land-Based Aquaculture Development, based on Law No. 17 of 2007 concerning the 2005-2025 National Long-Term Development Plan, has established a mission for the Ministry of Marine Affairs and Fisheries, namely to make Indonesia an independent, advanced, and resilient archipelagic nation based on national interests. (Ditjen Perikanan Budi Daya, 2024). The objectives of aquaculture

development are to increase the economic contribution of the aquaculture sub-sector to the national fisheries economy, thereby improving the welfare of aquaculture communities, optimizing the sustainable management of aquaculture zones, and increasing sustainable aquaculture production.

4) Coastal and Small Island Management and Supervision, imbalances between resource exploitation and environmental conservation often cause significant ecosystem damage. To address the imbalance between exploitation and conservation, the government has designed a Coastal and Small Island Management and Supervision program within the framework of the Blue Economy. According to the Regulation of the Minister of Marine Affairs and Fisheries of the Republic of Indonesia Number: Permen KP Number 69 of 2020, which relates to the Organizational Structure of UPT PSDKP in the field of Marine and Fisheries Resource Supervision responsible for supervising marine and fisheries resources (JDIH KKP, 2020). Coastal and small island surveillance and control are implemented to reduce the negative impacts of human activities and preserve and maintain the integrity of coastal and small island ecosystems. This includes enforcing regulations for protecting coastal and small island areas, designating areas for conserving coastal and small island ecosystems, and imposing restrictions on extractive practices.
5) Plastic Waste Cleanup in the Ocean through the Fishermen's Participation Movement in the Month of Love for the Sea, Indonesia, is located in the largest marine debris accumulation zone, Great Pacific Garbage Patch. In 2018, plastic waste in Indonesian waters was estimated at 270,000 to 590,000 tons annually. From 2018 to 2021, plastic waste in the oceans decreased by 28.5%, reaching 437,000 tons in 2021 (TKN PSL, 2022). The estimated plastic waste in the fisheries sector is 75,300 tons per year, accounting for 12.7% of total marine debris (Trenggono, 2023). The Indonesian government's Blue Economy strategy, outlined in the 2023 priority program of the Minister of Marine Affairs and Fisheries, is a program that involves the participation of fishermen in collecting marine debris, especially plastic, known as the Fishermen's Movement for the Love of the Sea. Activities conducted under the National Movement include fishermen collecting plastic waste for one month, establishing recycling centres along coastlines and small islands, improving waste management facilities and infrastructure at every PPS, PPN, PPP, and PPI, and addressing marine debris in the Indo-Pacific region. The goal is to achieve a 70% reduction in marine plastic waste by 2025 and a 100% reduction by 2040 (0% marine plastic waste) through pentahelix collaboration (Government, Community, Academia, Business, and Media) to manage marine plastic waste, and to establish a circular economy in plastic waste management (Trenggono, 2023).

Based on Regulation of the Minister of Marine Affairs and Fisheries No. 18/PERMEN-KP 2014, Natuna is classified as part of the National Fisheries Management Area 711 of the Republic of Indonesia due to its rich marine resources (Kementerian Kelautan dan Perikanan RI, 2021). As part of the Special Economic Zone (SEZ) for Marine Affairs, it is crucial to maintain the sustainability of marine ecosystems while promoting economic growth in the marine and fisheries sectors (Abidin, 2021). Therefore, Natuna requires special attention to achieve sustainable development, particularly the concept of the Blue Economy. For this reason, implementing the Blue Economy concept in the Natuna Regency has become a top priority for the central and local governments to utilize marine resources sustainably. This aligns with initiatives to enhance marine resource utilization, maintain marine ecosystems' sustainability, and promote sustainable economic development. To promote sustainable development in the Natuna region, several Blue Economy initiatives have been formulated to enhance marine and fisheries potential. The following are the main programs implemented in Natuna as part of efforts to achieve effective management of marine resources and improve the well-being of coastal communities:

1) Expansion of Marine Conservation Areas

Based on the Regulation of the Minister of Marine Affairs and Fisheries No. 18/PERMEN-KP 2014, Natuna is classified as part of the National Fisheries Management Area 711 due to its rich marine resources and inclusion in the Special Economic Zone (SEZ) (Kementerian Kelautan dan Perikanan RI, 2021). In this program, the Ministry of Marine Affairs and Fisheries has reaffirmed its commitment to preserving marine ecosystems by enacting Presidential Regulation Number. 41 of 2022 on March 17, 2022, regarding the Inter-Regional Zoning Plan for the Natuna Sea (BPK RI, 2022). The implementation of the Presidential Regulation on Inter-Regional

Zoning Plan aims to make economic activities in the Natuna Sea more structured. There will be no more overlapping activities that could hinder business activities between communities. This regulation was established to ensure sustainable harmony between economic activities and ecological sustainability, aligning with the Blue Economy's vision. Through this program, the Natuna Sea has been zoned into three main areas according to their intended use, namely: Zone I, covering 54,572 hectares, including Tiga-Sedanau Island and the surrounding waters, is prioritized for supporting sustainable fisheries activities; Zone II, spanning 52,415 hectares and including North Bunguran and the surrounding waters, is designated as a fisheries sanctuary; and Zone III includes: The eastern coast of Bunguran and the surrounding sea, prioritized for supporting marine tourism activities, covering an area of 35,990 ha (BPIW Natuna, 2020).

2) Sustainable Marine, Coastal, and Land-Based Aquaculture Development

Natuna Regency and its islands constitute the outermost border of the Republic of Indonesia; therefore, accelerating development in Natuna is of utmost importance. The strategies implemented for the sustainable development of aquaculture, coastal, and land-based farming include the revitalization of traditional pond farming zones, the implementation of area-based pond farming modelling, the application of environmentally friendly aquaculture technologies (such as waste treatment facilities and reservoirs), the provision of high-quality seeds, the use of local feed, the development of aquaculture villages, and the downstream processing of seaweed (Trenggono, 2023). The sustainable marine, coastal, and land aquaculture development program in Natuna has had a positive impact on the coastal communities of Natuna. The positive impacts of this program can be seen through various changes in the area, such as progress in the fish market in Ranai, after a meeting with the Director of Marketing for Marine and Fisheries Competitiveness Management to discuss the progress of fish market development in Ranai, which received funding support through a direct grant from the Japanese government to the Indonesian government, through the Japan International Cooperation Agency (JICA) (Diskan Natuna, 2023). On Thursday, August 3, 2023, the Regent of Natuna officially inaugurated the Ranai Traditional Market near the Small and Medium Industry Centre of Natuna. The construction of the new Ranai market was necessitated by the inadequacy and discomfort of the previous market (Pemkab Natuna, 2023). The development of this market aims to enhance the economy of Natuna's coastal communities and improve the cleanliness and comfort of public market facilities.

Additionally, the fishing village or advanced fishing village, an area focused on superior and local resources, integrates various potentials to promote competitive and sustainable fisheries cultivation businesses. Natuna has been designated as a Fisheries Cultivation Village with grouper as its main commodity by the Minister of Marine Affairs and Fisheries Decision Number. 111 of 2023 (Diskan Natuna, 2023). The designation of Natuna as a Fisheries Village will influence the advancement of fish cultivation businesses through priority initiatives by the Ministry of Marine Affairs and Fisheries. Assistance in fishing equipment is provided by the Ministry of Marine Affairs and Fisheries through the Integrated Marine and Fisheries Center. 2022, the assistance included 28 chest freezers, 25 cool boxes, 31 GPS devices, 50 solar panels, 50 fishing nets, and a 5 GT capacity vessel (Diskan Natuna, 2023). In 2023, Natuna District recorded 5,850 fishing households spread across 17 sub-districts, with a total of 4,753 vessels assisted, comprising 1,218 non-motorized boats, 358 motorized boats, and 3,176 motorized boats (Diskan Natuna, 2023).

However, assistance for infrastructure and facilities remains inadequate, necessitating improvements as it is crucial for increasing fishing production and optimizing the utilization of fishery resources. The UPT BBI provided fish seeds and freshwater fish fry in 2022, including fish feed assistance for 10 fish farming families in Bunguran Batubi and Bunguran Tengah sub-districts, distribution of catfish seeds to 4 families at risk of stunting in Bunguran Utara sub-district, and the formation of a stunting task force at the Fisheries Department. On August 18 and 28, 2023, 40,000 catfish fingerlings from the Natuna Sepempang Fish Seed Center were allocated to four organizations (Diskan Natuna, 2023). Furthermore, as part of this program, KKP introduced "Kusuka," a Marine and Fisheries Business Card serving as a single identity document for individuals engaged in the marine and fisheries sector (Diskan Natuna, 2023). Eligible individuals for this card include fishermen, fish farmers, salt farmers,

fish processors, and fish product marketers. This card is crucial for consolidating Kusuka identification data into a unified database of marine and fisheries business operators, which the Ministry uses to formulate policies and programs to protect and empower these businesses. The Natuna District Fisheries Office has conducted a census of fishermen, fish farmers, fish processors, and fish marketers in the Natuna District and has issued 2,723 Kusuka Cards for the area (Diskan Natuna, 2023).

3) Coastal and Small Island Management and Supervision

In implementing the Blue Economy program, the central government, together with the local government of Natuna Regency, has utilized several tactics, namely regulations on the protection of coastal areas and small islands, allocation of space for the conservation of coastal ecosystems and small islands, and restrictions on extractive use. In managing and supervising Natuna waters, the Ministry of Marine Affairs and Fisheries strictly enforces a ban on using catering fishing gear and its modifications because they are considered harmful to the environment. This is regulated in the Ministerial Regulation Number. 18 of 2020 (Permen KP Number. 18/2020), which bans cantrang fishing gear based on environmental impact assessments and facilitates the transition to environmentally friendly fishing gear (Ditjen PSDKP, 2022). Additionally, the Ministry of Marine Affairs and Fisheries has officially received two donated vessels from the Japanese government by signing an Exchange of Notes on February 14, 2020, and May 24, 2021, in Jakarta by representatives of both countries (Ditjen PSDKP, 2023). The first vessel delivered by the Japanese Government on June 19, 2023, previously named Hakurei Maru, has been renamed ORCA 05. On September 20, 2023, the second vessel was delivered from Japan, previously named Shirahagi Maru, and renamed ORCA 06 (Ditjen PSDKP, 2023). The two vessels, ORCA 05 and ORCA 06, are grants from the Japanese government to Indonesia, intended to strengthen surveillance in National Fisheries Management Area 711 Natuna-North Natuna Sea. In addition, the Ministry of Marine Affairs and Fisheries also conducts surveillance in the 12-mile waters, particularly in the Natuna Sea. The Ministry of Marine Affairs and Fisheries, through the Directorate General of Marine and Fisheries Resources Surveillance, has taken firm action against illegal fishing vessels, including those from Pantura operating within the 30-mile waters of Natuna (Ditjen PT, 2022). These actions are accompanied by administrative penalties for violations, including fines for fishing outside authorized areas. These measures are by Ministerial Regulation Number. 18 of 2021 on the Placement of Fishing Gear and Fishing Aids in the Fisheries Management Areas of the Republic of Indonesia and the High Seas, as well as the Regulation of Fishing Gear (Ditjen PT, 2022).

4) Plastic Waste Cleanup in the Sea through the Fishermen's Participation Movement in the Month of Love for the Sea

The Ministry of Marine Affairs and Fisheries and the Natuna Regency Government are organizing a national campaign as part of the Sea Love Month program, featuring a clean sea and beach campaign at Piwang Beach, Ranai, Bunguran Timur District, Natuna Regency, Riau Islands Province (Pemkab Natuna, 2022). The Natuna Regency Government and the Ministry of Marine Affairs and Fisheries are conducting a national Sea Love Month movement dedicated to honouring the sea, focusing on clean seas and beaches under the theme "Healthy Seas, Prosperous Indonesia." The Month of Love for the Sea campaign in Natuna Regency was held at Piwang Beach, near the proposed site for a modern fish market. This initiative aims to enhance Natuna Regency's fisheries potential by increasing aquaculture production, fish catch yields, the number of fishing boats, fishing zones, and the Ranai Fish Market Development Plan, funded by the Japan International Cooperation Agency (JICA). Waste production in Natuna Regency is recorded at 11,173 tons per kilometre per year, posing a challenge for the regency government to initiate waste recycling planning into value-added products (Pemkab Natuna, 2022). Many innovative products are being produced through recycling processes, thereby improving waste management efficiency and reducing waste accumulation. The Month of Love for the Sea initiative was launched in Natuna on October 20, 2022.

A) Impact of the Blue Economy Program in Natuna 2019-2024

The implementation of the Blue Economy in Natuna is carried out through several key mechanisms, such as strengthening surveillance and law enforcement to combat IUU fishing, developing Integrated Marine and Fisheries Centers that provide facilities for the production,

processing, and marketing of marine products, and enhancing the capacity of fishermen through training, provision of environmentally friendly fishing gear, and access to financing. Additionally, conservation and restoration efforts for marine ecosystems, such as coral reef and mangrove rehabilitation, are being carried out to ensure the sustainability of coastal resources. The impact of these initiatives is beginning to show, with an increase in fisheries sector productivity in 2020, where fish processing production reached 139.74 tons, then increased by 65.84% in 2021 to 409.16 tons, and in 2023, there was another increase of 22.25% to 526.29 tons (Diskan Natuna, 2024). The growth of marine-based SMEs due to the development of the Ranai fish market and freshwater fish assistance has resulted in approximately 117 young people from Natuna successfully receiving full scholarships at various universities in Indonesia by 2024. This shows that the Blue Economy provides not only economic benefits but also economic, social, and environmental benefits for the coastal communities of Natuna. When analyzed using Gosta Esping-Andersen's Welfare State Theory, the implementation of the Blue Economy in Natuna demonstrates the active role of the state in ensuring the welfare of the community, particularly coastal communities that are vulnerable to economic and environmental changes.

Although there are positive impacts resulting from the implementation of the Blue Economy program in Natuna Regency, there are still several obstacles, such as the expansion of marine conservation areas implemented in Natuna, which helps maintain the sustainability of Natuna's marine ecosystems, including the establishment of fisheries reserves and conservation areas supporting coral reef and mangrove restoration. However, Natuna still faces several challenges, including a 22-35% decline in biomass in four out of seven economically important fish species in Natuna's waters in 2023, resulting in adverse impacts on the livelihoods of coastal communities dependent on fisheries (Budiantara, 2024). Additionally, the area of mangrove forests in Natuna decreased by approximately 8.5% during the same period, despite mangrove rehabilitation programs that only managed to restore 3.2% of the lost area, rendering these rehabilitation efforts insufficient to counteract the rate of mangrove forest degradation (Ministry of Environment and Forestry, 2022). Furthermore, the development of marine, coastal, and land-based aquaculture, where Natuna's progress as an aquaculture village or advanced fishing village, has positively impacted the marine tourism sector by generating new income sources for coastal communities. Homestay programs and local tour guides have contributed to the Regional Domestic Product (RDP) and Local Revenue (LR). This can be seen in the increase in Local Revenue in 2023, although it remains fluctuating. Domestic tourist spending has significantly increased, reaching Rp 114,130,500 thousand in 2023 (Setiawan & Abdullah, 2024).

However, the tourism sector's contribution to Local Revenue in the Natuna Regency remains relatively low compared to other cities and regencies in the Riau Islands Province. Batam City, for example, contributed 55.20% of the province's total Local Revenue, while Natuna Regency only contributed 2.87% (Setiawan & Abdullah, 2024). Although several programs implemented have generated beneficial economic impacts, these economic benefits have not been evenly felt by the people of Natuna. This is due to limited community involvement in decision-making and the dependence of some local fishermen on traditional fishing techniques. In this regard, human resources in Natuna are not yet fully prepared, and community involvement in program implementation remains low, as these programs require adequate knowledge and skills. In addition, the measured fishing program contributes significantly to the income of coastal communities by promoting sustainable fish resource management, preserving marine ecosystems, and encouraging the economic welfare of fishermen through zoning regulations and regulated catch quotas. However, this program has not been implemented in Natuna by 2025, as indicated in the letter from the Minister of Marine Affairs and Fisheries, Number B.1954/MEN-KP/XI/2023, regarding the Relaxation of Policies during the Transition Period for the Implementation of Measured Fishing. The relaxation of the implementation of measured fishing refers to the postponement of the fishing quota program. The first suspension has shifted the start of the fishing season from 2024 to 2025 (CNBC Indonesia, 2024) so that coastal communities have not yet felt the benefits despite their significant potential contribution to coastal communities.

Therefore, although the implementation of the Blue Economy program in the Natuna Regency has had positive impacts, it has not yet fully lifted the coastal communities of Natuna to the desired level of welfare. In other words, the coastal communities of Natuna are still categorized as "sufficient" and have not yet achieved the "prosperous" level expected from the Blue Economy program. This is supported by poverty rate data for 2019-2024 published by the Natuna District Statistics Agency.

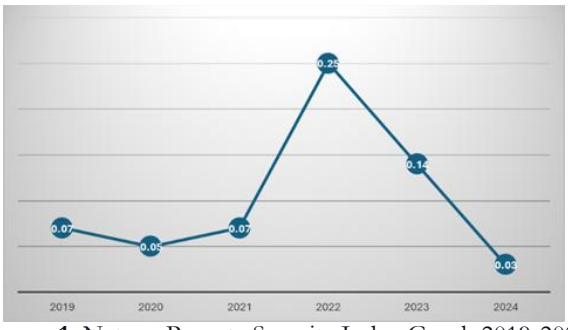

Figure 1. Natuna Poverty Severity Index Graph 2019-2024
Source: Natuna Regency Central Statistics Agency, 2024

The graph shows that the poverty severity index in Natuna from 2019 to 2024 indicates that, despite the implementation of the Blue Economy program, the socio-economic conditions in Natuna have not shown substantial improvement. This is evident from the drastic increase in poverty severity in 2022 and 2023 compared to previous years. Labour issues are complex and require solutions from various angles to prevent escalation that could negatively impact the well-being and security of the community. The labour force in Natuna is classified into three categories: fisheries, agriculture, and services. The fisheries sector dominates the labour force in Natuna; however, in 2022-2023, the fisheries sector only absorbed 17.04% of the labour force, reflecting a decrease of 1.06% (BPS Kab Natuna, 2024). As a result, the Natuna Regency Central Statistics Agency indicates that economic growth in Natuna Regency from 2020 to 2024 has slowed down, with the poverty rate in 2023 recorded at 5.25% and the poverty severity index at 0.14% (BPS Kab Natuna, 2024). The correlation between economic growth and the poverty severity index in Natuna has shown that despite various efforts to improve the economy through the Blue Economy program, the results have not been sufficient to reduce poverty levels. This indicates the need for evaluation and adjustment of strategies in implementing these programs to make them more effective in improving the welfare of coastal communities in Natuna. Esping-Andersen emphasizes that a welfare state must provide social protection, equitable distribution of development outcomes, and access to resources for all citizens.

B) The Impact of the Blue Economy Program in Achieving SDGs in Natuna Regency

Implementing the Blue Economy program in Natuna Regency for the 2019-2024 period shows interesting dynamics in achieving the SDGs, particularly in improving the welfare of coastal communities. The success of these programs cannot be separated from the collaboration between the central government, particularly the Ministry of Marine Affairs and Fisheries, the local government, and the coastal communities of Natuna. This collaboration is evident through several strategic programs that have been implemented, such as the modernization of the fishing fleet and the improvement of various other infrastructures. The improvement of infrastructure can increase the capacity and efficiency of distribution and provide opportunities for coastal communities to produce processed products from marine resources that are processed locally and of high quality. Furthermore, the direct impact of modernization and infrastructure improvement can be seen in the increased income of the communities involved, as evidenced by the increase in fishery processing output from 139.74 tons in 2020 to 526.29 tons in 2023. Additionally, the development and support of fish seed production expand economic opportunities for fishermen, farmers, and small businesses in the fisheries industry, aligning with the SDGs' emphasis on sustainable economic progress. Furthermore, the free school program and full scholarships that have reached 117 young people in Natuna by 2024 are tangible evidence of efforts to improve human resource quality, which is crucial for supporting SDG objectives, particularly in education and poverty reduction.

However, upon closer examination, the success of the Blue Economy program in Natuna has not been fully optimized. Disparities remain a significant concern, as the central government's achievements through the Ministry of Marine Affairs and Fisheries in providing various facilities and regulations have not been fully aligned with the readiness and involvement of the local community. Many fishermen still rely on traditional methods and have not fully adopted modern technology, both in fishing and processing. The lack of community involvement in decision-making and program implementation has resulted in

uneven economic benefits. Data from the Natuna District BPS shows that poverty rates and the poverty severity index increased significantly in 2022-2023 despite an increase in production and income in the fisheries sector. The expansion of marine conservation areas and zoning has contributed to ecosystem sustainability; however, a 22-35% decline in biomass in four of the seven important fish species in 2023 indicates that these efforts have not been sufficiently effective. Similarly, mangrove forest rehabilitation efforts have only restored 3.2% of lost land, while mangrove forest area decreased by 8.5% over the same period. This indicates that achieving SDGs in marine resource conservation and management requires greater focus and effort. Progress in marine tourism through homestay programs and tour guide training has generated new sources of income and increased local revenue, although its contribution remains minimal compared to other regions. This shows that economic diversification and equitable distribution of benefits from the Blue Economy program remain challenges that must be addressed to achieve comprehensive sustainable development goals. This phenomenon indicates that the program has not yet raised coastal communities to the standard of well-being expected in the SDGs.

Upon closer examination, the obstacles to implementing the Blue Economy program in Natuna do not originate from a single party. However, they result from an imbalance between the central government's role and coastal communities' readiness. The main obstacles arise from coastal communities' unpreparedness, limited knowledge, skills, and access to technology. Coastal communities have not been able to adopt and implement the program optimally, so the benefits received are still limited to specific groups. Furthermore, Ministry of Marine Affairs and Fisheries policies are not yet fully implemented, such as the lack of implementation of the Measured Fishing Program, indicating that policies expected to impact coastal communities, especially business actors, significantly are still delayed and unable to provide tangible benefits. Quota-based Measured Fishing is a program that specifically targets the measured and sustainable management of fishery resources, which has the potential to generate long-term impacts on the welfare of coastal communities. However, the government has tried to bridge the gap or delay the implementation of Quota Measured Fishing by optimizing other programs to empower coastal communities. Several other programs have been implemented and significantly impacted various areas, such as fleet modernization, fisheries infrastructure development, seed assistance, fish market construction, scholarship programs, and human resource training. The positive impacts of these programs are evident in increased fish processing yields, the creation of new jobs, and the expansion of marine product processing businesses, which have boosted community income.In addition, the development of the marine tourism sector has introduced new sources of income, although its contribution to local revenue is minimal. However, enhancing collaboration between the central and local governments and the community is vital. The success of the Blue Economy program depends not only on the infrastructure and policies provided by the central government but also on the active involvement of the community and their ability to adapt, innovate, and collaborate. An inclusive, bottom-up approach, sustainable training, and the enhancement of local human resources are essential to ensure that the benefits of this program are truly aligned with the Sustainable Development Goals (SDGs) and can be felt evenly. Additionally, the management of marine and coastal resources must be improved through monitoring, education, and collaboration to ensure the sustainability of ecosystems and the well-being of coastal communities. Implementing the Blue Economy in Natuna has laid a strong foundation for achieving the SDGs; however, additional efforts are still needed to ensure fair and sustainable benefits for all coastal communities. The success of this program depends on a balance between government support and active community involvement alongside sustainable natural resource management.

C) Analysis of the Impact of the Blue Economy Program in Natuna Regency in Achieving SDGs through Welfare State Theory

The correlation between the welfare conditions of the community in Natuna Regency with empowerment, as well as the management of marine resources based on the Blue Economy, can be analysed through the Welfare State Theory according to Gosta Esping-Andersen (1990) in "The Three Worlds of Welfare Capitalism." Esping-Andersen categorises national welfare systems into three main regimes: liberal, conservative-corporatist, and social-democratic. Each regime has distinct characteristics regarding the state's role, de-commodification degree, and social stratification. Implementing the Blue Economy program in Natuna Regency during the 2019-2024 period shows interesting dynamics in efforts to improve the welfare of coastal communities and achieve the Sustainable Development Goals.

In implementing the Blue Economy program in Natuna, collaboration between the central government, local government, and local communities has resulted in significant progress, such as modernising the fishing fleet, improved infrastructure, and increased access to education through scholarship programs. These advancements directly enhance the community's ability to increase production capacity and create new economic opportunities in the fisheries and marine tourism sectors.

Despite these advancements, when analysed through the Welfare State theory proposed by Esping-Andersen, the distribution of benefits from the Blue Economy implementation in Natuna indicates a conservative-corporatist regime. In this case, the Blue Economy program in Natuna demonstrates the active role of the state in developing the marine economy, but in practice, there are still disparities in terms of access and benefits, indicating the failure of the Welfare State model in achieving its desired goal of realising the principle of universalism in social services, as highlighted by Esping-Andersen. This creates social stratification due to the failure to implement the concept of universality, which should provide benefits equitably to all members of society. This situation is further clarified through its connection to achievements in Natural Resource Efficiency, Zero Waste Zero, Social Inclusiveness, and Sustainable Development Goals. Although the Blue Economy Program has demonstrated many achievements, disparities in the distribution of benefits among different social groups persist.

Natural Resource Efficiency, through the modernisation of the fishing fleet, improvement of fishing infrastructure and seafood processing, central government oversight by no longer issuing catering permits and developing marine conservation areas that support ecosystem restoration. Data on seafood processing production from 2020 to 2023 shows an increase in production output and community income as a positive outcome of these efforts. This indicates ongoing efforts to prevent overexploitation of marine resources and improve their efficiency. However, challenges remain, such as declining fish biomass and mangrove forest degradation, suggesting that resource efficiency is not yet fully optimised and further improvements are needed. In addition, the Blue Economy program also strives to achieve Zero Waste Zero as a way to strengthen the sustainability of marine resource management. This effort is reflected in implementing the Love the Sea Month program, which actively involves the community and government in beach clean-up activities. This program demonstrates awareness and collective efforts to reduce marine debris and promotes innovation by transforming 11,173 tons of marine debris per year into innovative, recyclable products. As a result, waste management efficiency and reduction can be achieved optimally. Additionally, social inclusiveness is crucial in ensuring that benefits are distributed equitably among all members of society. Through the construction of fish markets, freshwater fish seed assistance, and educational programs through scholarships for local youth, this program has successfully created new economic opportunities for coastal communities. Community involvement in the tourism industry has also increased, with homestays and local tour guides contributing to regional income. However, equitable distribution of benefits remains challenging due to the community's dependence on traditional methods and lack of community participation in decision-making. Therefore, to ensure that all coastal communities receive the program's benefits equitably and consistently, it is crucial to enhance the capacity and involvement of all community groups.

Furthermore, implementing the Blue Economy in Natuna Regency during 2019-2024 also shows interesting dynamics in achieving the Sustainable Development Goals. The Blue Economy concept closely relates to achieving the Sustainable Development Goals, particularly SDG 1 (No Poverty) and SDG 14 (Life Below Water). Regarding SDG 1, fisheries production in Natuna Regency increased from 139.74 tons in 2020 to 526.29 tons in 2023. However, data from the Natuna Regency Central Statistics Agency indicates that in 2022-2023, the fisheries sector only absorbed 17.04% of the workforce, reflecting a decrease of 1.06%. Additionally, the poverty rate in Natuna was recorded at 5.25% in 2022-2023, with a poverty severity index of 0.14%. This indicates that the coastal communities of Natuna are still categorised as "moderate" and have not yet achieved full prosperity. This is due to the lack of community involvement in decision-making processes and the limited capacity of human resources, resulting in uneven distribution of benefits across the entire community. Therefore, poverty reduction indicators are not yet optimal.

Meanwhile, SDG 14 shows a 22-35% decline in fish biomass in several vital species in Natuna, an 8.5% decline in mangrove forest area, and rehabilitation efforts that have only restored 3.2% of the lost area. In addition, the highly anticipated Measured Fishing program, which is expected to improve the sustainability of marine resources, has been delayed until

2025. Thus, despite stricter conservation and monitoring, damage to marine and mangrove ecosystems remains a significant problem. The delay also hampers optimising sustainable marine resource management in the measured fishing program. Conceptually, the Blue Economy and Sustainable Development Goals are aligned with the principles of sustainable development, which aim to achieve economic growth, equitable well-being, and sustainable environmental preservation. However, the achievements of the Blue Economy program indicate a gap between the Blue Economy policy vision and the reality of implementation. The misalignment between the Blue Economy policy vision and the Sustainable Development Goals is not the primary issue. The main problem lies in technical capacity limitations, social readiness, and suboptimal implementation mechanisms. The core objectives of the Sustainable Development Goals—inclusivity, equity, and sustainability—have not been achieved in Natuna because these obstacles prevent the benefits of the Blue Economy from being equitable and sustainable. Therefore, to ensure that the Blue Economy program can effectively drive the achievement of the Sustainable Development Goals in Natuna, changes are needed in the implementation strategy to make it more adaptive, inclusive, and community-based, focusing on strengthening local capacity. These changes are key to ensuring that the program's benefits are felt fairly and sustainably by all coastal communities in Natuna and serve as a relevant model for other coastal regions in Indonesia.

5. Conclusions

The development of the Blue Economy concept in Natuna Regency and Indonesia shows excellent potential for improving coastal communities' welfare while maintaining marine ecosystems' sustainability. If managed responsibly and sustainably, Natuna's abundant marine resources are essential for national economic development. The central and local governments have implemented various strategic programs since 2019-2024 under the Blue Economy policy, such as expanding marine conservation areas, developing marine and coastal aquaculture, and managing plastic waste in the ocean through participatory initiatives involving fishermen. Several other programs are underway and have significantly impacted various sectors, including fleet modernization, fisheries infrastructure development, seed assistance, fish market construction, scholarship programs, and human resource training. The positive impacts of these programs are evident in increased fisheries processing yields, the creation of new jobs, and the expansion of marine product processing businesses, which have boosted community income. In addition, the development of the marine tourism sector has introduced new sources of income, although its contribution to local revenue is minimal. However, implementing these policies still faces obstacles, such as coastal communities that cannot adopt and implement the programs optimally, so the benefits are still limited to specific groups. Furthermore, the Ministry of Marine Affairs and Fisheries policies are not yet fully implemented, such as the lack of implementation of the Measured Fishing Program, indicating that the policies expected to impact coastal communities, particularly small-scale fishermen significantly, are still delayed and have not yet been able to provide tangible benefits. Therefore, the success of Blue Economy development in achieving sustainable development goals in Natuna and Indonesia depends on a balance between government support and active community involvement.

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