

## Blue Accounting Literacy Perspective on the Tourism Sector in Indonesia



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**ABSTRACT:** This research aims to analyze the challenges, role of government, and understanding of stakeholders in managing marine and coastal resources in Indonesia through the Blue Accounting approach. This research uses qualitative methodology with literature analysis of twenty-five relevant articles. The data was analyzed to identify the main challenges, government role, and stakeholder understanding in implementing Blue Accounting. Management of marine and coastal resources in Indonesia faces various challenges, including inadequate infrastructure and low public awareness. The government's role is critical in developing regulations, coordinating conservation efforts, and involving stakeholders. Stakeholder understanding of Blue Accounting and multi-stakeholder collaboration have proven effective in overcoming these challenges and improving resource welfare. This research provides insight into the importance of strong regulation, public education, and collaboration between governments, communities, and the private sector in the management of marine and coastal resources. The practical implications are the need to develop a blue accounting model that is more integrated with information and communication technology to improve the effectiveness of environmental monitoring and management. The study emphasizes the importance of data-based Blue Accounting approaches and multi-stakeholder collaboration in marine and coastal resource management, which has not been much applied in previous research.

**KEYWORDS:** blue accounting, literacy, challenges, understanding stakeholders, role of government

### I. INTRODUCTION

According to UNESCO, literacy is the ability to identify, understand, interpret, create, communicate, calculate and use printed and written materials in relation to various goals in developing their knowledge and potential, and to participate fully in their communities and society (A'yuni, 2015). Gilster explains that the concept of literacy is not just about the ability to read but to read with meaning and understanding. Digital literacy includes mastery of ideas, not keystrokes. So Gilster emphasizes the critical thinking process when dealing with digital media rather than technical competence as a core skill in digital literacy, as well as emphasizing the critical evaluation of what is found through digital media rather than the technical skills needed to access the digital media. Gilster defines that in addition to the art of critical thinking, the competencies needed are the ability to learn how to organize knowledge, as well as build a reliable set of information from several different sources. (Gilster & Glistner, 1997)

In an increasingly advanced digital era, literacy is an important key in supporting the understanding of the concept of blue accounting in Indonesia. Literacy is no longer related to the ability to read and write but also involves a deep understanding of the information found, including digital and non-digital media. In the context of blue accounting, literacy can be a foundation in managing information related to the topic at hand. Combining the perspective of accounting literacy with blue accounting can help enable the development of reliable knowledge from various sources as well as the ability to critically evaluate the information needed to achieve a balance between economic, environmental and social aspects in sustainable tourism development.

The idea of Blue Accounting, which provides guidance on managing and reporting on water resources in a transparent and sustainable manner, is critical to literacy in the context of the capacity to understand and apply information. A literacy approach ensures that data and information on the state and utilization of resources can be accessed and understood by all stakeholders, from managers to the general public. Strong literacy levels can promote accountability, openness and attractiveness in Blue Accounting practices by facilitating the capacity of communities to participate in educated decision-making processes. Together, they build a strong foundation for transparent reporting, increased community engagement, and more efficient and sustainable management of water resources.

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Blue accounting itself is a derivative of blue economy, which includes sustainable land and sea-based economic development such as coastal area development, community commodities, technological innovation, human resources, natural resource monitoring, and maintenance of the coastal tourism sector. In general, the focus of blue economy starts from 2013 to 2025 based on the Marine and Fisheries Sector Medium-Term Development Plan. Measuring the success of sustainable development is seen in the balance between environmental, economic, and social aspects. (Syah et al., 2020)

In research (Syah et al., 2020) highlighted the importance of integrating financial and non-financial information in accounting to support sustainable and environmentally responsible investment decisions. The study underscores the need for conventional accounting to evolve to include data on environmental impacts, particularly on marine ecosystems, to prevent further conflict and damage. This study uses a qualitative method with a discourse analysis approach, and emphasizes that non-financial information should be included in corporate sustainability reports. Syah's statement is in line with research (Abreu et al., 2019) who said that "Blue accounting will develop with unprecedented urgency, as it is associated with more than just financial accounting and management accounting, as it is concerned with the assessment and reporting itself that seeks to assist specialists in certain aspects of the processes of degradation, reuse and damage by the incredible acceleration of the demolition process over the past few years".

Research (Syah et al., 2020) recommends the development of a blue accounting concept that can be implemented through regulations at the ministerial or regional level, to help manage marine ecosystems and contribute to reducing environmental damage. This is the basis for this research, by emphasizing efforts to mitigate the damage that occurs, the concept of sustainability can be applied without sacrificing the environment and future generations for the actions taken in the current generation.

According to (Prayuda, 2020) he said the concept of blue economy in the long term aims to create a balance between development, environmental management and utilization of marine resources. "Blue growth is a relatively new term that is meant to realize economic growth based on the exploitation of marine resources, while at the same time preventing their degradation, overuse, and pollution" (Boonstra et al., 2018). (Prasetyo, 2020) stated that the formulation of blue ocean and fisheries accounting integrates the economic consequences of preserving marine biodiversity ecosystems, this means that in blue ocean and fisheries accounting, the economic impact of efforts to preserve marine ecosystems and biodiversity is also taken into account. This ensures that environmental aspects are included in economic calculations to support the sustainability of the fisheries and marine sector.

In this study we took 25 articles and categorized and classified the object of research and the area where the object of research was and also grouped the problem formulation section. The purpose of this grouping is to make it easier for readers to identify and classify according to the grouping. Below is a table related to the grouping of research methods, samples used, analysis tools and problem formulations.

**Table 1. Grouping of research objects and research areas**

Object of Research		Province	City	District	Village	More
	Coral reefs				1	
Beach	1	1	2	1		
Mangroves			2	1		
More	2			4	1	9

In answering the problem formulation, we also categorize the articles based on each research problem formulation as follows:

**Table 2. Grouping of Problem Formulation**

Problem Formulation	Challenge	4
	Stakeholders' Understanding	9
	The role of government	5
	More	7

In this research, the main focus is to analyze the extent to which blue accounting literacy, both in terms of the challenges faced, the role of government, and the understanding of stakeholders, influences the implementation and effectiveness of the practice in various maritime sectors. This research will aid understanding across a range of stakeholders, including industry government and civil society that may impact decision-making, transparency and sustainability of marine resource management. Based on this statement, it is concluded that the problem formulation in this research is:

1. What are the main challenges in implementing blue accounting in the tourism sector in Indonesia?

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2. How do tourism stakeholders understand the concept of blue accounting?
3. What is the role of the government in supporting the implementation of blue accounting in the tourism sector?

### II. RESEARCH METHOD

This type of research uses a descriptive qualitative approach. Qualitative research methods are research methods used to research on natural object conditions, where the researcher is the key instrument, data collection techniques are triangulated, data analysis is inductive, and qualitative research results emphasize meaning rather than generalization. (Abdussamad & Sik, 2021).

The type of data in this study is secondary data. According to (Auliya et al., 2020) Secondary data is data obtained from publication materials, financial data, books, data on visitors to a place, previous research results, journals, and so on. The data collection technique in this study is to collect 25 articles from previous research results and categorize them based on the problem formulation. Analysis activities are aimed at revealing comparisons, similarities and perspectives between groups of articles to further determine the benefits, results or impacts of these things.

### III. RESULTS AND DISCUSSION

#### A. Key Challenges

In research (Lestari, 2013) said that Indonesia has several severe obstacles in managing its marine and coastal resources. Legislation that has not fully defined the boundaries and description of coastal areas is one of the main problems. Law No. 27/2007 on the Management of Coastal Areas and Small Islands may already exist, but its application in practice is still substandard. This results in poor management of coastal resources and legal uncertainty. Another issue is the readiness of local governments to manage coastal areas. Especially in areas with several islands and border areas, local governments sometimes do not have a well-thought-out master plan for managing coastal areas. This problem is exacerbated by the possibility of environmental pollution and degradation that can harm coastal ecosystems.

Significant barriers to efficient administration may include lack of finance and human resources. Funding and human resource constraints are two major barriers to efficient management practices. Participation of social institutions and communities in coastal resource management is another difficulty. The involvement of many coastal communities in natural resource management is still limited because they are not aware of the relevant rules and regulations. To raise public awareness and encourage community participation in coastal environmental conservation, historians and non-governmental organizations (NGOs) should provide critical support. Improving community education and empowerment is an important first step in overcoming these obstacles. (Lestari, 2013)

In research (Patana et al., 2020) The main problem facing these fishing towns is the government's neglect of essential infrastructure development, which makes the way of life of fishing communities still traditional and highly dependent on marine catches. Illegal operations such as illegal logging put mangrove forests under protection, and improperly built tourism organizations make it difficult to manage ecotourism. issues of population management, environmental protection, and land preservation. To make room for unlawful ponds, many mangrove forests are encroached upon, jeopardizing the environment and the productivity of marine catches. To overcome these obstacles, cooperation between communities, government and academic institutions is needed for the development of community-based ecotourism, which will help protect mangrove areas and improve the welfare of fishing communities.

According to (Fauzan & Burhanuddin, 2023) the implementation of marine tourism in the Thousand Islands is faced with a number of obstacles, one of which is the adverse impact caused by unregulated tourists on coral reefs. The degradation of marine ecosystems can be caused by an increase in tourism that is not matched by adequate conservation efforts, which will reduce the attractiveness of natural tourism in the area. In addition, marine pollution caused by other contaminants and plastic waste is a serious problem. Accessibility and transportation infrastructure issues are another difficulty. There are not enough reliable transit options to reach some of the islands in the Thousand Islands. As a result, it is increasingly difficult for tourists to reach popular tourist attractions, limiting tourism potential. Preserving the environment without sacrificing increased tourism relies heavily on clear legislation and competent management. Safety and security are important concerns in the organization of marine tourism. The absence of this element may be sustainable tourism development due to a lack of cooperation between the government, stakeholders and local communities. In order for marine tourism in the Thousand Islands to develop sustainably, it is necessary to design a strategy that involves all key parties to overcome these obstacles.

The Langkat District Government faces considerable obstacles in its efforts to preserve and protect mangrove forests. Implementing conservation projects with limited financial and human resources is one of the biggest problems. Local governments often lack the necessary resources and experience to implement the programs needed to conserve mangrove ecosystems.

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Another major obstacle is community behavior, which often opposes conservation efforts. Many people engage in destructive behaviors, such as illegal logging and dumping in mangrove areas, because they do not realize the importance of mangrove forests. One of the main causes of such misbehavior is the lack of socialization and education on the ecological and economic benefits of mangrove forests. In addition, there is often less than ideal cooperation between the public and corporate sectors and communities. Despite efforts to involve diverse stakeholders in conservation efforts, inadequate coordination and lack of dedication from some agencies result in suboptimal implementation of conservation programs. Mangrove forest ecology in Langkat Regency requires a more comprehensive and integrated approach. (M Daffa Ash Siddiq, 2023)

The management of Indonesia's marine and coastal resources presents a number of difficulties, including issues relating to community engagement, the environment, legislation and administration. Poor management and legal uncertainty result from laws and regulations that do not adequately define the boundaries and characteristics of coastal areas. Particularly in border and island areas, local government preparedness is often substandard, and this is compounded by a lack of funding and manpower. The problem is exacerbated by the lack of infrastructure development in fishing villages, the threat of illicit activities in mangrove forests, and the absence of proper tourism organizations. Land disputes and resident management confusion increase the complexity of the obstacles that need to be resolved.

These difficulties highlight the need for an open and well-coordinated accountability framework in coastal and marine resource management from a blue accounting perspective. A comprehensive strategy called "blue accounting" involves all parties in documenting and managing resources in an environmentally sound manner. Indonesia can overcome administrative challenges, resource scarcity, limited community involvement, and ensure the effectiveness and sustainability of environmental conservation programs by implementing blue accounting. Without compromising environmental sustainability, this strategy will aid local economic growth and promote more effective and accountable resource management.

### ***B. Stakeholders Understanding***

Stakeholders' understanding of a problem is demonstrated by the existence of thoughtful and efficient solutions. They understand that cooperation between different sectors of society, government and business is needed to solve complex challenges. Comprehensive problem identification, data-driven planning, and long-term program implementation are examples of preventive measures. Dedication to collecting and disseminating data consistently demonstrates a genuine approach to tackling these issues. Stakeholders can find solutions that not only address the problem but also generate long-term change and benefit all parties by using a comprehensive and inclusive approach.

The stakeholders of Pondok Prasi Mataram City demonstrated a thorough understanding of the importance of sustainable environmental management. Many groups based their beach cleanup efforts on the strong legal framework for managing marine debris established through Government Regulation 83/2018. Students, teachers and the local community realized the importance of keeping the beach clean to maintain the marine ecosystem, as evidenced by their enthusiastic participation in this effort. Through this activity, cooperation between educational institutions, local communities and the government is promoted. University of Mataram students and lecturers cleaned up plastic waste and newborn diapers that are difficult to decompose with Pondok Prasi residents. Both the beach cleanup and community efforts to spread knowledge about clean and healthy living practices were successful. The effectiveness of the Blue Accounting idea is seen in the effort to combine environmental aspects with community involvement and education. This is a very worthwhile action. The impact of plastic waste on human health and marine ecosystems is now better understood by the community and government of Pondok Prasi. Thanks to the temporary support of the government and the enthusiasm of various parties, the program is still running. The beach cleanup is also an example of shared responsibility in safeguarding the coastal environment, highlighting the team's ability and deep understanding of Blue Accounting to generate significant change in the sector. (Muahiddah et al., 2023)

A similar initiative, which is an extension of Blue Accounting principles, has been implemented at Putra Deli Beach. Currently, the main cause of the decline in the quality of coastal ecosystems is people's environmentally destructive behavior, according to the government and local communities. The community and government are working together to raise awareness of the value of protecting the coastal environment through various education and socialization initiatives. Various parties are involved in waste management initiatives in the region, including Muhammadiyah and other community organizations. The main objective of these activities is to educate the community on the importance of good waste management and its impact on the environment. This strategy is in line with the idea of Blue Accounting, which collects information on how human activities affect the environment and uses it to create successful mitigation methods. Community awareness and involvement in keeping the beach clean has increased. (Maharani Aida, et al., 2022)

Blue accounting is applied in Bahak Beach, Probolinggo, where a mangrove restoration project is underway to reduce coastal degradation. Mangroves have been weakened by both natural and man-made events, despite their protective role against waves

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and coastal ecosystems. To restore the function of mangrove ecosystems, local governments have undertaken major restoration efforts in collaboration with communities and private institutions. Various parties are involved in this rehabilitation program, including private companies through CSR initiatives and community monitoring organizations (POKMASWAS). In addition to replanting mangroves, these initiatives aim to raise community awareness of the environmental value of mangroves. A core component of the program-regular data collection and monitoring-reflects the application of the concept of Blue Accounting, which calls for the use of environmental data to guide and improve ecosystem management. (Sadewai et al., n.d.)

The role and cooperation of the community, private sector, and the business world in encouraging more tourist visits in the Lake Toba area also shows a greater understanding of the idea of Blue Accounting. The importance of third parties in sustainable tourism development is highlighted by this research. This partnership is expected to boost tourism and help the environmental protection of Lake Toba. The government has sought to establish a framework that facilitates improved tourism operations through a number of regulations and laws. Local communities are encouraged to play an active role in maintaining the sustainability and cleanliness of Lake Toba. Investors in green initiatives are encouraged by the business sector, including the tourism sector. Making smarter decisions starts with understanding the importance of environmental data and the impact of human activity. Nonetheless, there are always difficulties, especially in ensuring that every stakeholder performs their duties to the best of their ability. Increasing awareness and understanding of the idea of Blue Accounting is essential to ensure that tourist growth contributes to more visitors and the preservation of the Lake Toba ecosystem. (Irene & Sitorus, n.d.)

Stakeholders in Padang's coastal areas show a strong understanding of the concept of Blue Accounting in coastal abrasion mitigation efforts. The local government is working with various parties to conduct a comprehensive handling of the abrasion problem that threatens coastal ecosystems and settlements in this area. Efforts include the installation of rocks and groins to withstand the energy of ocean waves, as well as the construction of coastal embankments to prevent further damage. Collaboration between the government and the community in maintaining the abrasion prevention infrastructure is essential. The use of environmental data, such as geological information and bathymetry conditions, is fundamental in the planning and implementation of these projects. This approach reflects the principles of Blue Accounting, where data is collected and used to inform actions that can minimize negative impacts on the environment. The results of these countermeasures have been positive, with abrasion levels reduced in some parts of Padang's coast. However, aesthetic challenges and long-term sustainability remain a concern. Community awareness and involvement in maintaining the existing infrastructure as well as the implementation of sustainable management strategies are essential to ensure the long-term success of these abrasion countermeasures. (Istijono, 2013)

Under the management of Muhammad Affan, sand and stone mining operations in Kepuharjo Village have been granted exploration licenses for the purposes of material selection and extraction. However, a number of serious environmental impacts, such as air pollution, increased restlessness, anxiety, and work accidents, as well as the creation of solid and liquid waste, road damage, and disruption of traffic flow, are anticipated as a result of this activity. Effective environmental management measures are required to mitigate these impacts. The objective of these efforts is to manage the judicious use of natural resources so that the community can grow in an ecologically responsible manner and become excellent stewards of the environment. Ensuring environmental sustainability and the well-being of present and future generations is critical. Strict supervision to ensure that mining operations are conducted in accordance with relevant environmental laws and standards, as well as measures to avoid and control negative impacts from mining operations, are components of good environmental management. Under this approach, sustainable and responsible development can be supported by maintaining a balance between natural resource use and environmental conservation. (Hertini Dwi, 2021)

Through community service activities carried out by lecturers of UNG's Master of Education Study Program, residents of Biluhu Timur Village are taught to protect the environment, especially in coastal areas, by processing household waste. One of the efforts is to utilize used towels to make simple flower pots. Used towels are smeared with a mixture of cement and water, then placed in a bucket of used paint to be shaped. After that, the pot is dried in the sun. Once dry, the flower pots can be painted to the residents' liking. This program helps reduce household waste and provides added value by creating useful products, while increasing environmental awareness and the creativity of residents in processing used goods into useful values. (Rusmin Husain, 2022)

In Research (Hardiana et al., 2018). mentioned that various planned events are part of the community's efforts to keep the beach environment clean in Sasak Ranah Pasisie District, West Pasaman Regency. The gotong royong program is one of the main initiatives that is carried out regularly. Residents gather on the beach once a week to pick up accumulated garbage. To instill the principles of cleanliness and environmental responsibility early on, this activity involves both adults and children. To increase productivity and efficiency, residents are also divided into small groups to clean specific areas as part of this mutual cooperation. In addition to cooperative efforts, the local government works with other non-governmental groups to spread awareness and

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educate the public on the value of keeping the environment clean. They organize a number of seminars and workshops that discuss the adverse effects of waste on marine life and coastal ecosystems. Good waste management practices are part of this education, including using the bins provided along the beach and sorting organic and non-organic waste. In addition, recycling programs are promoted by offering real-life examples of how certain waste can be turned into useful products. Using this overarching strategy, individuals are expected to keep the beach clean in a sustainable manner by changing their behavior and habits over time in addition to cleaning up the environment.

In the research results (Muawanah et al., 2020) that the importance of cooperation between stakeholders in the development of culture-based marine tourism is emphasized in the "Policy for the Development of Maritime Culture-Based Tourism in Malaumkarta, Sorong Regency". The Tourism Office, Public Works Office, Marine and Fisheries Office, Bappeda of Sorong Regency, the local Customary Council, and Customary Institutions are the main parties involved. The existence of Sorong District Regional Regulation No. 10/2017 on the Recognition and Protection of Traditions and Regent Decree No. 7/2017 on Customary Law and Local Wisdom in the Management and Conservation of Marine Resources shows how important policy support from the local government is. The findings of this study show that to improve the coordination of their activities, stakeholders need to take deliberate actions. These include improving cooperation among Regional Work Units (SKPD), building public facilities in popular tourist destinations, and providing community support and training. The goal of the program is to advance the knowledge and skills of the community to encourage the growth of culturally-rooted marine tourism. Active community participation and strong support for local policies are expected to develop Malaumkarta's marine tourism in a sustainable manner, providing economic benefits and preserving ethnic culture.

The concept of Blue Accounting in coastal environmental management involves a deep understanding of the use of environmental data to inform conservation policies and actions. In the case study in Pondok Prasi Neighborhood, Mataram City, the application of Blue Accounting is reflected in beach clean-up activities that involve active participation from students, lecturers, and local communities. The use of government regulatory data and collection of environmental data on plastic waste is the basis for developing sustainable management strategies. Collective awareness and education on the importance of keeping the environment clean shows that multi-stakeholder collaboration and an understanding of Blue Accounting can bring real change on the ground.

In Putra Deli Beach and Bahak Beach, the Blue Accounting concept is applied through efforts to mitigate environmental damage and rehabilitate mangrove ecosystems. At Putra Deli Beach, the local government and community worked together in managing waste and increasing environmental awareness through education and socialization. Meanwhile, at Bahak Beach, mangrove rehabilitation involving community watchdog groups and private companies showed that regular data collection and monitoring are key to restoring ecosystem function and reducing the risk of abrasion. Both case studies show that environmental data and strong collaboration between stakeholders can improve the effectiveness of coastal environmental management.

In Lake Toba and Padang Beach, Blue Accounting is applied in the context of sustainable tourism development and coastal abrasion prevention. In Lake Toba, collaboration between the government, community and private sector in data-based tourism management shows the importance of each stakeholder's role in ensuring environmental sustainability. Meanwhile, in Padang Beach, the use of geological data and bathymetry conditions to plan and implement abrasion prevention projects reflects the principles of Blue Accounting in environmental disaster mitigation. The similarities in the application of Blue Accounting in these five case studies are the use of environmental data to inform policies and actions, and strong multi-stakeholder collaboration. The differences lie in the specific focus of each location, such as waste management, ecosystem rehabilitation and sustainable tourism development.

### C. Government Role

The Air Kumpai village government has used socialization and the installation of prohibition boards to curb illegal beach sand extraction. In addition, they set up sand extraction standards to ensure that this activity does not harm the environment. These preventive efforts still encounter obstacles as there are still some people who violate the law due to urgent demands. The village government cooperates with law enforcement to prosecute those who collect sand illegally, but some violators escape punishment due to inadequate law enforcement. In addition, the village government engages in outreach initiatives to increase community understanding of the adverse impacts of illegal sand extraction on the ecosystem. It is believed that illegal extraction of beach sand can be addressed to protect natural resources and the welfare of surrounding communities, through active action and support from various sources. (Maya Gustiani Putri, 2023)

The Bone Bolango Regency Government has an important role in developing tourism potential in coastal areas. As a regulator, they have established regulations to govern tourism operations, although their implementation is still not optimal. Conflicts between the community and the government over tax and levy policies at tourist attractions are one of the main challenges. As a

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dynamizer, the government has successfully encouraged community participation in tourism development through various training programs. The government's facilitator role is seen in the provision of information technology-based marketing facilities that help promote tourist attractions more effectively. Although many programs have been implemented, the results are still not optimal due to community resistance to certain policies. (Tui et al., 2023)

Through a number of laws and programs, the Langkat District Government plays a major role in mangrove forest conservation. The village government of Jaring Halus has shown its dedication in preserving this ecosystem by forming a mangrove guardian group and allocating extra funds for conservation initiatives. Studies reveal a strong correlation between government empowerment initiatives and community behavior. The ecological enhancement of mangrove forests also requires cooperation with the private sector. In Langkat district, a large number of businesses and organizations are engaged in community empowerment and forestry projects. Through these partnerships, the community's understanding and awareness of the importance of mangroves for the environment, human health and disaster mitigation has increased. (M Daffa Ash Siddiq, 2023)

The local government of Wakatobi has a central role in monitoring coral reef sustainability through policies and regulations to protect coral reefs from damage. These policies include plans to repair damaged environments and prevent further damage through cooperation with environmental organizations such as National Geographic Indonesia, WWF Indonesia, and LIPI. Coral reef conservation efforts also involve monitoring patrols and restoration of degraded coral reefs. Local governments provide funds, personnel and facilities to ensure coral reefs are maintained. Patrol activities are conducted regularly to monitor exploitation and maintain the growth of coral reefs that are being restored. However, there are several inhibiting factors in the implementation of monitoring and conservation, including a lack of supervisory staff, inadequate infrastructure, and an insufficient budget. (Hasi & Hardi, 2012)

The Gunungkidul Regency Government's Environment Office plays a key role in plastic waste management in the Drini coastal area. To address the issue of plastic waste, they have developed a number of measures based on local requirements and legislation. Community education and campaigns to raise awareness of the importance of good waste management are some of the efforts made. However, a number of challenges, including the lack of waste management facilities, low community involvement, and lack of funding, make the current implementation of plastic waste management programs subpar. The government is still looking for ways to work with the business community and non-governmental organizations to overcome these challenges. (Waskitha Aji et al., 2022)

The five analyzed articles show how important the government's role is in the management of water-related natural resources, including the management of plastic waste in coastal areas, control of beach sand extraction, promotion of coastal tourism, protection of mangrove forests, and protection of coral reefs. The Air Kumpai Village government, for example, implemented Blue Accounting practices, which emphasize sustainable resource management and monitoring to stop environmental damage, to stop illegal beach sand mining.

The Bone Bolango district government, for example, is working to integrate natural resource management with economic development through tourism by establishing rules, training programs and information technology-based infrastructure. In accordance with Blue Accounting principles that emphasize multi-stakeholder collaboration and the use of accurate data in decision-making, the Jaring Halus village government in Langkat district collaborates with local communities and the private sector to preserve mangrove forests. The Wakatobi local government's efforts to save coral reefs and the Gunungkidul Regency government's efforts to control plastic waste are examples of how the Blue Accounting concept is applied when natural resource management is a priority. These efforts emphasize accountability, transparency and community involvement. The important role of government in making rules, coordinating policy implementation and working with others to achieve sustainable management goals is what brings the five elements together. Information technology is used in all activities to empower communities and improve resource management.

## IV. CONCLUSION

### Conclusion

Based on the analysis of the three groups of articles, marine and coastal resource management in Indonesia has many obstacles in the form of infrastructure, community involvement, and institutional coordination. The main constraints are poor infrastructure, low public awareness, and limited financial and human resources. However, stakeholders' understanding of the idea of blue accounting and the government's proactive involvement in natural resource management suggest that these barriers can be better overcome if there is strong regulatory support and cooperation between various parties. These results highlight the importance of using environmental data and public education as a first step in resolving these issues.

While previous studies have emphasized the importance of regulation and community involvement in natural resource management, the idea of Blue Accounting that takes a comprehensive and data-driven approach is still not commonly used. The

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emphasis of these articles on public education, multi-stakeholder collaboration and utilization of environmental data makes these articles strong. These results show that the challenges of coastal and marine resource management can be better addressed, leading to environmental sustainability and improved community welfare. These challenges can be overcome with the support of strong regulations, effective law enforcement and good cooperation between the government, communities and the private sector.

### Research Limitations

It is important to acknowledge the various limitations of this research. Among them are (1) not all aspects of coastal and marine resource management in Indonesia are covered in the publications and case studies from which data were collected. (2) the generalizability of the findings may be affected by differences in the social and geographical context of each place. (3) The veracity of the study findings may be affected by limitations in the availability and reliability of environmental data. Therefore, to overcome these limitations, more research is needed using more thorough techniques and substantial data.

### Advice

To improve the accuracy of data collection and the effectiveness of monitoring, it is recommended that future research concentrate on creating a Blue Accounting model that is more integrated with information and communication technology. In addition, greater involvement of various stakeholders in this research such as the government, community, academia, and the corporate sector is needed to ensure the sustainability of coastal and marine resource management programs. To increase awareness and encourage community involvement in coastal environmental conservation, further research needs to be conducted on innovative approaches in community education and empowerment.

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