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Blue Accounting in Community-Based Mangrove Management: A Case Study of PPDL on Dompok Island

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Abstract

Sustainable mangrove management requires approaches that integrate ecological conservation with community governance and resource accountability. This study examines the implementation of blue accounting in community-based mangrove management on Dompok Island through a qualitative empirical case study of the Petani Pesisir Dompok Laut (PPDL) community. Data were collected through in-depth interviews, participatory observation, documentation review, and focus group discussions and analyzed using thematic analysis. The findings indicate that mangrove management is conducted through a community-based approach, with PPDL serving as the primary coordinating institution. Blue accounting practices have begun to emerge through the informal recording of conservation-related expenditures, including mangrove seedling procurement, nursery preparation, planting activities, monitoring costs, transportation expenses, and activity documentation. These records are maintained by PPDL members during routine conservation activities and are documented through simple financial notes, activity records, and supporting conservation reports used for internal coordination and communication with external partners. The partnership with Carbon Ethics further encouraged more systematic documentation and accountability practices. Although these recording activities have not yet developed into a formal accounting system, the findings suggest that simple accounting-related practices may support transparency, coordination, and accountability within community-based mangrove management. This study provides empirical insight into the early-stage implementation of blue accounting within a small-scale coastal community context.

KEYWORDS

blue accounting; mangrove management; community-based governance; environmental accountability; coastal communities.

Introduction

Riau Islands Province (Kepri) is an island province with more than 96% of its territory consisting of sea waters and only around 4% land (Akbar et al., 2022). This geographic location makes coastal and marine ecosystems a strategic asset for regional development. One of the Riau Islands' key ecosystems is mangroves, which serve as coastal protection, carbon sequestration, biodiversity buffers, and a source of livelihood for coastal communities (Arifanti et al., 2022). However, various reports indicate that mangrove management in island regions still faces serious challenges, particularly related to ecosystem degradation, weak institutional governance, and the suboptimal integration of ecological values into regional economic systems (Affandi et al., 2024).

Tanjungpinang City, as the capital of the Riau Islands Province, plays a strategic role in coastal development. One of the city's key coastal areas is Dompok Island, which, in addition to being the center of provincial government offices, also boasts a mangrove area with significant ecological and economic potential (Affandi et al., 2024). Mangroves on Dompok Island serve as natural coastal protection against abrasion and have the potential to be developed as part of an ecosystem-based economy. However, preliminary field observations and interviews with members of the Petani Pesisir Dompok Laut (PPDL) indicate that mangrove conservation activities are still managed through informal administrative practices, with conservation-related expenditures such as seed

procurement, transportation, and monitoring costs recorded inconsistently and without a structured environmental accounting framework. As a result, the economic dimension of mangrove conservation activities remains weakly integrated into community-level resource management and decision-making processes.

Figure 1 is provided as supporting documentation of field observation during the research process. Empirically, mangrove management on Dompok Island involves coastal community groups, one of which is the Petani Pesisir Dompok Laut (PPDL). This group has been conducting mangrove conservation activities independently, but still faces limitations in terms of institutional capacity, particularly in financial management and conservation cost recording. Costs arising from mangrove planting, maintenance, and protection activities have not been systematically recorded, so the economic value of these conservation efforts cannot be quantified. As a result, mangroves are still perceived as a cost burden, rather than as an ecological asset with economic value.

In the context of sustainable development, the blue economy approach has been widely introduced as a development paradigm that emphasizes the balance between economic growth and marine ecological sustainability (Brears, 2021). However, at the implementation level, the blue economy is often conceptual and macro-policy in nature, and is not yet equipped with technical instruments that can be directly applied by actors at the community level (Spinrad, 2021). The absence of ecologically based economic recording and measurement instruments means that the value of ecosystem services, including mangroves, is not reflected in the economic decision-making system (Nayak, 2020).

Blue accounting is a derivative approach of the blue economy that focuses on measuring, recording, and reporting the economic-ecological value of coastal and marine resources (Winarsih, 2020). Blue accounting allows conservation costs, ecosystem service benefits, and carbon-related ecological value, including blue carbon potential, to be systematically recorded within organizational or community-based management practices (Abreu, 2019). Thus, blue accounting acts as a bridge between ecological values and economic systems, particularly at the institutional level of society (Negara & Darmawan, 2021).

While environmental accounting generally focuses on the environmental impacts of organizational activities and carbon accounting primarily emphasizes the measurement and reporting of carbon emissions and sequestration (Gao et al., 2024), blue accounting places greater emphasis on the governance and economic-ecological management of marine and coastal resources (Failler, 2023). In this study, blue accounting is considered the most appropriate analytical lens because the research focuses not only on carbon-related issues, but also on how mangrove conservation activities, operational costs, and community-based accountability practices are recorded and managed within a coastal institutional context.

This research involved Carbon Ethics as a partner providing simple bookkeeping assistance to the PPDL group. This assistance is the first step in implementing blue accounting principles, where financial records focus not only on conventional economic transactions but also take into account mangrove conservation costs and activities as part of sustainable investment. Through this approach, mangroves are no longer viewed solely as objects of conservation but as assets with potential economic value for future development, including in the context of environmental services and carbon potential.

Given these conditions, this research is crucial to examine in-depth how the blue accounting concept can be applied to community-based mangrove management on Dompok Island.

This research is expected to contribute scientifically to the development of sustainable accounting literature and provide a practical basis for strengthening coastal community institutions in managing mangroves sustainably. Based on this background, the problem formulation in this research is:

1. How is the mangrove management practice on Dompok Island carried out by the PPDL group?
2. How are blue accounting principles applied in recording and managing community-based mangrove activities?
3. What is the role of PPDL's partnership with Carbon Ethics in supporting sustainable mangrove management?
4. What are the implications of implementing blue accounting for ecological sustainability and community institutions?

Research Limitations

This research has several limitations, including:

1. The research did not carry out quantitative economic valuation calculations of the mangrove ecosystem.
2. The analysis focused on one community, so the research results are contextual and not intended for broad generalization.
3. The carbon accounting aspects are analyzed conceptually and narratively, without technically measuring carbon emissions or absorption.

Despite these limitations, the study provides valuable empirical insights into the practical application of blue accounting at the community level.

Sustainable Mangrove Management

Mangrove ecosystems play a critical role in coastal protection, biodiversity conservation, and climate change mitigation through carbon sequestration. Sustainable mangrove management emphasizes the integration of ecological preservation with social and economic considerations to ensure long-term ecosystem resilience (Arifanti et al., 2022). In island and coastal regions, mangrove sustainability is closely linked to community participation, institutional capacity, and governance effectiveness (Affandi et al., 2024).

Several studies highlight that mangrove degradation is often driven by weak management institutions and the absence of integrated governance mechanisms (Alongi et al., 2016). Community-based mangrove management has therefore been promoted as a strategic approach to enhance conservation outcomes while improving local livelihoods. However, many community-led initiatives face challenges related to limited financial capacity, weak accountability, and the absence of



Figure 1. Joint documentation of PPDL reviewing the Mangrove Plantation location in Dompok Island

Source: Authors' documentation, 2025

systematic recording of conservation activities (Damastuti et al., 2023). These limitations suggest the need for governance tools that can bridge ecological objectives with economic and institutional management.

Blue Economy and Community-Based Coastal Governance

The blue economy concept promotes sustainable economic development derived from marine and coastal resources while maintaining ecological balance (Brears, 2021). In practice, blue economy policies often operate at macro or national levels, leaving limited operational guidance for implementation at the community level (Spinrad, 2021). This gap creates challenges for coastal communities in translating blue economy principles into everyday management practices.

Community-based governance is increasingly recognized as essential for effective blue economy implementation, particularly in small-island and coastal contexts (Nayak, 2020). Local institutions play a vital role in operationalizing sustainability principles through participatory management, collective decision-making, and resource stewardship. However, without appropriate measurement and recording instruments, the economic value of ecosystem services—such as mangroves—remains invisible in community-level governance systems.

Blue Accounting as an Environmental Governance Instrument

Blue accounting is an extension of environmental accounting that focuses on measuring, recording, and reporting the ecological and economic value of marine and coastal resources (Abreu, 2019; Winarsih, 2020). Unlike conventional accounting, which emphasizes financial transactions, blue accounting incorporates conservation costs, ecosystem services, and long-term environmental benefits into accounting practices.

Previous studies on blue accounting largely focus on conceptual models or macro-level applications, such as national accounting systems and policy frameworks (Abreu, 2019). Empirical applications at the community level remain limited, particularly in the context of mangrove management. Blue accounting has the potential to function not only as a technical recording system but also as a governance mechanism that enhances transparency, accountability, and institutional learning (Winarsih, 2020). Through systematic recording of environmental activities, communities can reposition conservation efforts from cost burdens to long-term investments.

Community Institutions and Environmental Accountability

Institutional accountability is a key factor in sustaining community-based environmental management (Alamsyahbana et al., 2026). Accounting practices play a strategic role in shaping organizational behavior, decision-making processes, and perceptions of resource value (Silver et al, 2015). In community-based conservation, simple and context-appropriate accounting systems can strengthen trust, improve transparency, and support collective governance.

Studies on environmental accounting emphasize that accounting tools can influence how organizations perceive environmental activities—from being seen as non-economic obligations to recognized assets with long-term value (Solovida & Latan, 2017). In coastal communities, the adoption of environmental accounting practices supports institutional resilience by enabling better planning, reporting, and stakeholder engagement. This perspective positions blue accounting as an institutional mechanism rather than merely an administrative tool.

Research Gap

Although existing literature has discussed sustainable

mangrove management, blue economy frameworks, and environmental accounting, several important gaps remain. Previous blue accounting studies have predominantly focused on macro-level policy frameworks (Abreu, 2019), environmental valuation, and conceptual sustainability reporting systems (Nocker, 2023), with limited attention to how accounting practices are operationalized within community-based coastal institutions (Pattinaja, 2023). In particular, prior studies have rarely examined informal conservation recording practices, community-level accountability mechanisms, and the management of conservation-related operational costs in small-island mangrove communities.

Empirical evidence explaining how blue accounting practices emerge through everyday governance routines and resource management activities at the local community level also remains limited. As a result, the role of blue accounting as a practical governance mechanism within community-based mangrove management has not been sufficiently explored. This study addresses these gaps by examining how blue accounting principles are interpreted and applied by the Petani Pesisir Dompok Laut (PPDL) community in managing mangrove conservation activities on Dompok Island. Specifically, this study investigates mangrove management practices, conservation-related recording activities, the role of institutional partnerships, and the implications of blue accounting implementation for community governance and sustainability practices.

Methods

Research Approach and Type

This study employs a qualitative approach with an empirical case study design to examine the implementation of blue accounting within community-based mangrove management practices on Dompok Island. A qualitative case study was selected because it enables an in-depth exploration of organizational practices, institutional interactions, accountability processes, and conservation-related recording activities that cannot be fully captured through quantitative methods alone. The case focuses on Petani Pesisir Dompok Laut (PPDL), a community-based institution actively involved in mangrove planting, monitoring, and coastal conservation activities in Tanjungpinang City, Riau Islands Province.

A qualitative approach allows researchers to explore the processes, actors, and institutional dynamics underlying the emergence of blue accounting practices within community-based mangrove management (Sugiyono, 2022). Through an empirical case study, the research seeks to understand how conservation-related expenditures, activity documentation, and accountability practices are recorded and utilized within the daily operations of a local conservation institution. The data collected from interviews, observations, focus group discussions, and supporting documents were subsequently analyzed using thematic analysis following the framework proposed by Clarke & Braun (2017).

Location and Subject of Research

The research location is Dompok Island, Tanjungpinang City, Riau Islands Province. This area was chosen because it has a mangrove ecosystem actively managed by the local community and serves as the site for various community-based conservation activities.

Research subjects include:

1. Petani Pesisir Dompok Laut (PPDL) is the main implementer of mangrove management and conservation.
2. Carbon Ethics representatives as partners and strengtheners of conservation capacity and carbon management potential.

3. Representatives of academics and campus program managers involved in collaboration and mentoring activities.

Informants and Sampling Technique

The study involved 10 informants consisting of:

1. 6 PPDL administrators and members directly involved in mangrove conservation activities,
2. 1 representatives from Carbon Ethics involved in mentoring and partnership activities,
3. 2 academics participating in community assistance programs,
4. 1 local stakeholders involved in coastal environmental activities.

Informants were selected using purposive sampling based on their direct involvement in mangrove management activities, conservation-related decision-making, and community recording practices associated with blue accounting implementation.

Types and Sources of Data

This study uses two types of data, namely (Hamzah, 2019):

Primary Data

Primary data is obtained through:

1. In-depth interviews with PPDL administrators and members regarding the mangrove planting process, waste management, and recording of financial transactions and activities.
2. Direct observation of mangrove conservation activities, waste management, and community operational mechanisms.
3. Focus group discussions (FGD) to gain a collective understanding of management practices and challenges in implementing blue accounting.

Secondary Data

Secondary data includes:

1. PPDL internal documents (activity notes, simple reports, transaction evidence).
2. A memorandum of understanding (MoU) between Carbon Ethics and STIE Pembangunan Tanjungpinang.
3. Scientific literature, policy reports, and regulations related to mangrove management, blue economy, and blue accounting.

Data Collection Techniques

Data collection techniques used (Yin, 2018) in this case study include:

1. Semi-structured interviews, to gather information related to mangrove management practices, recording of economic activities, and the roles of each actor.
2. Participatory observation, by directly observing mangrove planting activities and community activities.
3. Documentation study, to analyze simple financial documents and records used by the community.
4. Focus Group Discussion (FGD), to validate findings and obtain collective perspectives from community members.
5. Data collection was conducted between January and November 2025. Semi-structured interviews lasted between 45 and 90 minutes and were conducted directly at the mangrove conservation site and community activity locations on Dompak Island.
6. Participatory observations were conducted during mangrove planting, monitoring, community coordination meetings, and conservation-related activities. In addition, the study reviewed several supporting documents, including simple financial records, activity notes, conservation reports, transaction evidence, partnership

documents, and memorandums of understanding (MoU) between PPDL and partner institutions.

Data Analysis Techniques

Data were analyzed using thematic analysis following the framework proposed by (Clarke & Braun, 2017). The analysis began with data familiarization, where interview transcripts, observation notes, and supporting documents were reviewed repeatedly to gain a comprehensive understanding of the data. The researchers then conducted initial coding by identifying meaningful statements related to mangrove management practices, conservation activities, accountability mechanisms, cost recording practices, and community participation.

The resulting codes were subsequently grouped into broader categories based on similarities and recurring patterns across data sources. Through an iterative process of comparison and interpretation, these categories were refined into several themes that reflected the implementation of blue accounting within community-based mangrove management. Examples of emerging themes included community-based conservation practices, informal conservation cost recording, accountability and coordination mechanisms, and the role of external partnerships in supporting mangrove governance.

The identified themes were continuously reviewed against the interview data, observation records, and supporting documents to ensure consistency and credibility. Finally, the themes were interpreted and synthesized to explain how blue accounting practices emerged and operated within the mangrove management activities of the Petani Pesisir Dompak Laut (PPDL) community on Dompak Island.

Trustworthiness of Data

To ensure the trustworthiness of the data, this study applied source triangulation, technical triangulation, and member checking. Source triangulation was conducted by comparing information obtained from different informants, including PPDL members, Carbon Ethics representatives, and supporting institutional actors involved in mangrove conservation activities. Technical triangulation was implemented through the comparison of interview results, participatory observations, and supporting documents such as activity records, transaction notes, and partnership documents.

Member checking was conducted by discussing preliminary findings and interpretations with several key informants from PPDL to confirm the accuracy of the researchers' interpretations and reduce potential bias. In addition, repeated observations and continuous engagement during field activities were carried out to strengthen the consistency and credibility of the findings (Miles et al., 2019).

Result and Discussion

Mangrove Management Practices by the PPDL Group on Dompak Island

The research results show that the Petani Pesisir Dompak Laut (PPDL) is implementing mangrove management practices on Dompak Island through a community-based approach. The main activities include mangrove planting, maintenance of planted areas, and coastal environmental management around Dompak Island.

Mangrove planting is carried out in stages and iteratively, adapting to tidal conditions and the characteristics of the coastal substrate (see Figure 2). This activity is oriented not only towards ecosystem rehabilitation but also towards long-term sustainability through the active involvement of community members. The PPDL acts as the primary driver, organizing the workforce, managing planting logistics, and ensuring the sustainability of conservation activities.

These findings indicate that mangrove management

practices on Dompok Island have been carried out as an integrated socio-ecological process, where conservation is not carried out separately from local community activities and structures.

Application of Blue Accounting Principles in Recording and Managing Mangrove Activities

The PPDL's application of blue accounting principles in mangrove management is still rudimentary, but it reflects the basic essence of environmental accounting. Observations and interviews indicate that the PPDL has recorded mangrove activities, encompassing both environmental and economic aspects.

Mangrove planting activities are documented by PPDL administrators as part of routine conservation management. The records include the number of mangrove seedlings ordered and planted, planting locations, implementation dates, and operational expenditures incurred during nursery preparation, planting, and monitoring activities. In addition, costs related to seedling procurement, planting equipment, transportation, and other operational needs are recorded in cash books and activity reports prepared by PPDL administrators.

Based on interview findings, recording activities are conducted whenever seedling orders are received and mangrove planting activities are carried out. For each seedling order, PPDL issues an order receipt that serves as proof of transaction and as a source document for recording organizational revenue (see Figure 3). The recorded information is subsequently compiled into financial records and activity reports used for internal administrative purposes and reporting to external partners. The existence of these recording practices was verified through interviews with PPDL administrators, direct observation of conservation activities, and examination of supporting documents, including seedling order receipts, cash books, and activity reports that were obtained and reviewed by the researchers during the study.

Although not yet formalized in financial reporting, this practice demonstrates that environmental activities are beginning to be positioned as part of the community's economic entity. In the context of blue accounting, this

recording represents an initial integration between ecological activities and economic resource management, serving as a basis for community transparency and accountability.

Mangrove planting activities on Dompok Island generate various types of costs that are often not formally recorded within community-based conservation initiatives. These costs include raw materials, labor, and supporting operational expenses incurred during nursery preparation, planting, and post-planting monitoring. Table 1 presents an illustrative example of the Cost of Production (HPP) associated with mangrove planting activities on Dompok Island, based on information obtained from interviews with the Petani Pesisir Dompok Laut (PPDL). This cost structure demonstrates how conservation activities involve measurable economic resources, which can be systematically recorded using a blue accounting approach (see Figure 4).

In this study, blue accounting is not positioned merely as a



Figure 2. Mangrove Planting Implemented by PPDL
Source: Authors' Documentation, 2025



KELOMPOK PETANI PESISIR Dompok LAUT
Tanjung Siambang, RT. 001/ RW. 001
Kel. Dompok, Kec. Bukit Bestari,
Kota Tanjungpinang, Kepulauan Riau
Telp. +62 858-3134-8189

INVOICE#04/PPDL/12/2025
Issue date : 04/12/2025
Due date : 06/12/2025

Customer Info:
P3M STIE Pembangunan Tanjungpinang
Jl. R.H. Fisabilillah No. 34, Kecamatan Bukit Bestari
Kota Tanjungpinang, Provinsi Kepulauan Riau
0812 6160 7313 (Muhammad Isa Alamsyahbana)

Product Of Service	Details of Quantity	Price Per Unit (Rp)	Total
Supply Kebutuhan Penanaman	200 Bibit Mangrove <i>R. Stylosa</i>	Rp5.000	Rp1.000.000
	100 Ajir	Rp2.000	Rp200.000
Edukasi dan Asistensi	4 Edukasi lingkungan pesisir dan pendamping kegiatan penanaman (jam)	Rp200.000	Rp800.000
	Total		Rp2.000.000
Tgl: DP			Rp0
Tgl: 05 Des 2025 Lunas			Rp2.000.000
Jumlah Tertagih			Rp0

Hormat Kami,
Petani Pesisir Dompok Laut

Syamsinah
Ketua Kelompok



Informasi Rekening:
Petani Pesisir Dompok Laut
Bank Riau Kepri Syariah
821-43-00676
NPWP: 1000 0000 0477 6664
Mohon kirimkan bukti pembayaran ke +62 858-3134-8189 (Syamsinah)

Figure 3. PPDL invoice document Source: Authors' documentation, 2025

technical bookkeeping practice, but as a governance mechanism that links environmental activities with institutional accountability at the community level. The recording of mangrove-related activities and conservation costs functions as an accounting-based control system that supports transparency, collective decision-making, and organizational sustainability. This perspective distinguishes blue accounting from conventional administrative recording by emphasizing its role in strengthening accountability structures within community-based environmental management.

Interview findings indicate that simple recording practices introduced within mangrove conservation activities began to influence how PPDL members discussed operational expenditures and activity planning. One PPDL member explained:

"Previously, conservation activities were carried out collectively without clear records of expenditures. After we started recording planting and operational costs, discussions during group meetings became more structured because members could see where resources were used." (PPDL Member, Interview, 2025)

Similar views were expressed by another informant, who stated:

"The recording process helped the group monitor planting activities and made it easier to explain conservation expenses to partners and community members." (PPDL Administrator, Interview, 2025)

These findings suggest that blue accounting in this context is not positioned merely as a technical bookkeeping practice, but also as a governance-supporting mechanism that links environmental activities with institutional accountability at the community level. The recording of mangrove-related activities and conservation costs functions as an accounting-based coordination and control practice that may support transparency, collective decision-making, and organizational sustainability. Rather than functioning as a formal accounting system, these practices reflect an early-stage integration of accountability mechanisms within community-based environmental management.

The Role of PPDL's Partnership with Carbon Ethics in Supporting Sustainable Mangrove Management

The partnership between PPDL and Carbon Ethics plays an important role in supporting community-based mangrove management on Dompak Island. Beyond technical conservation assistance, the partnership contributed to changes in organizational routines related to activity coordination, documentation, and conservation-related recording practices (see Figure 5). Based on interview findings, Carbon Ethics encouraged PPDL members to begin documenting operational expenditures, planting activities, and monitoring processes more systematically as part of conservation accountability practices.

One informant explained:

"Previously, conservation activities were mostly carried out informally. After the collaboration with Carbon Ethics, we became more accustomed to documenting activities and discussing operational needs in a more organized way" (PPDL Member, Interview, 2025)

The partnership also strengthened the institutional legitimacy of PPDL by connecting the community group with external stakeholders, including educational institutions and environmental networks. This relationship expanded access to conservation knowledge, external support, and broader discussions regarding mangrove sustainability and climate-related initiatives. In this context, the partnership did not merely function as a conservation assistance program, but also contributed to the gradual development of accountability

practices and institutional coordination within community-based mangrove management.

This collaboration provides an opportunity for PPDL to view mangrove planting not only as a local activity but also as part of climate change mitigation efforts through its potential for carbon sequestration. Furthermore, this partnership is strengthened through collaboration with educational institutions, which provides institutional legitimacy and opportunities for research-based program development. With this partnership, PPDL not only functions as an implementer of conservation activities, but also as a community actor connected to external networks in sustainable mangrove management.

Implications of Blue Accounting Implementation on Ecological Sustainability and Community Institutions

The findings indicate that blue accounting practices within the PPDL community remain informal and are primarily

Table 1. Cost of Production (HPP) for Mangrove Planting Activities

Cost Category	Item	Amount
Raw Material Costs	Mangrove seedlings	Rp. 1.000,-
	Polybags	Rp. 50,-
	Stakes (Ajir)	Rp. 1.000,-
Labor Costs	Nursery services	Rp. 1.500,-
	Planting services	Rp. 2.000,-
	Monitoring services	Rp. 1.000,-
Overhead Costs	Transportation cost	Rp. 1.000,-
	Others operational cost	Rp. 1.000,-
Total		Rp. 8.550,-

Source: Interview Results, 2025

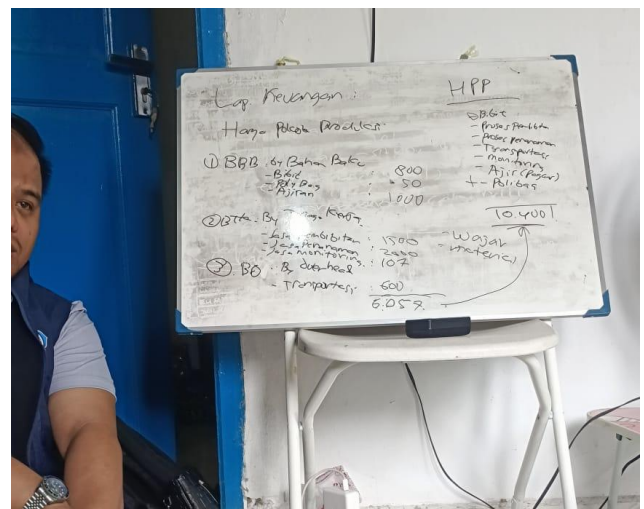


Figure 4. Discussion on the Determination of the Cost of Production for a Single Mangrove Seedling Implemented by PPDL

Source: Authors' Documentation, 2025



Figure 5. The partnership between PPDL and Carbon Ethics

Source: Authors' Documentation, 2025

reflected through activity documentation, operational cost recording, and conservation-related coordination practices. Unlike previous blue accounting studies that predominantly emphasize macro-level environmental valuation, sustainability reporting, or national accounting frameworks (Abreu, 2019; Winarsih, 2020), this study illustrates how accounting-related practices may emerge within small-scale community-based mangrove management activities.

The findings indicate that the implementation of blue accounting within PPDL remains informal and practice-oriented, focusing primarily on the recording of seedling orders, conservation-related expenditures, activity reports, and supporting documentation. These findings differ from much of the existing blue accounting literature, which has predominantly emphasized environmental valuation, marine resource accounting, and policy-level sustainability reporting systems. While previous studies generally position blue accounting as a formal framework for measuring and reporting environmental value, the present study demonstrates how accounting-related practices can emerge in a simplified form within a community-based conservation setting.

The findings also resonate with environmental accounting studies that emphasize the role of accounting in supporting transparency and accountability beyond conventional financial reporting. In the case of PPDL, recording practices were not primarily designed for formal financial reporting but served as administrative tools that facilitated internal coordination, documentation of conservation activities, and communication with external partners. This suggests that accounting practices may contribute to governance processes even when they are not embedded within a formal accounting system.

Furthermore, the findings are consistent with community-governance literature that highlights the importance of documentation, accountability mechanisms, and institutional learning in strengthening community-based natural resource management. However, unlike many governance studies that focus on decision-making structures or stakeholder participation, this study highlights the role of simple accounting records as part of the organizational practices that support conservation management.

Rather than proposing a formalized blue accounting model, this study suggests that blue accounting may be understood not only as a measurement framework but also as an emerging governance-supporting practice within community-based mangrove management. This contribution remains context-specific and reflects the early-stage implementation of accounting-related conservation practices within the PPDL community on Dompok Island. Therefore, the findings should be interpreted as empirical insights from a single community case rather than as a generalizable model for all coastal conservation organizations.

The application of blue accounting to mangrove management on Dompok Island has important implications

for ecological sustainability and community institutions (see Figure 6). By documenting mangrove planting and related conservation activities, blue accounting can support more consistent monitoring of rehabilitation efforts and strengthen the accountability of community-based mangrove management.

From an institutional perspective, blue accounting may serve as a tool for strengthening community governance. Recording activities and expenses promotes transparency, increases trust among members, and strengthens accountability in resource management. This serves as a crucial foundation for PPDL's sustainability as an environmentally-based community entity.

Another implication is the potential for future integration of blue accounting with carbon accounting approaches, particularly through a partnership with Carbon Ethics. Thus, blue accounting serves not only as a recording tool but also as a strategic approach to supporting the ecological and institutional sustainability of coastal communities.

The introduction of blue accounting practices also influences community decision-making processes by increasing awareness of the financial and ecological implications of mangrove management activities. Through systematic recording, community members are encouraged to reflect on resource allocation, sustainability trade-offs, and long-term conservation planning. This shift demonstrates that accounting practices can play a transformative role in guiding community-based environmental governance.

Although the implementation of blue accounting in this study is closely linked to community engagement activities, the findings indicate that the emerging recording practices also influenced how conservation activities were discussed and evaluated within the PPDL community. Interview findings suggest that conservation expenditures, which were previously viewed primarily as operational burdens, gradually began to be discussed as part of long-term environmental and organizational sustainability efforts.

One informant explained:

"Previously, planting activities were carried out as routine community work, and the costs were rarely discussed in detail. After we started recording expenditures and monitoring activities, members became more aware that mangrove conservation also involves resources that need to be managed responsibly." (PPDL Member, Interview, 2025)

Another informant stated:

"The documentation and recording process helped us explain conservation activities more clearly to external partners and community members." (PPDL Administrator, Interview, 2025)

These findings suggest that accounting-related practices within the PPDL community were not limited to administrative documentation, but also contributed to gradual shifts in accountability practices, organizational coordination, and



Figure 6. Documentation of Planting Mangrove in Dompok Island
Source: Authors' Documentation, 2025

perceptions regarding the value of mangrove conservation activities. In this sense, the study provides analytical insight into how simple recording practices may shape institutional behavior and environmental governance within a community-based conservation context.

Conclusion

This study examines the application of blue accounting within community-based mangrove management practices on Dompok Island through an empirical case study of the Coastal Environmental Care Group (PPDL). Mangrove management activities on Dompok Island are carried out through a community-based approach involving local participation in planting, monitoring, and conservation activities, with the findings indicating that PPDL functions as the primary coordinating actor in sustaining community-based mangrove management practices. The study further finds that blue accounting principles have begun to emerge through simple and informal recording practices related to conservation activities and operational expenditures; although these practices have not yet developed into a formal accounting system, they reflect initial efforts to integrate ecological activities with community-level resource management and accountability processes. In addition, the partnership between PPDL and Carbon Ethics contributed to the development of conservation-related coordination, documentation practices, and broader discussions regarding mangrove sustainability and climate-related issues, suggesting that external partnerships may support institutional learning and strengthen access to conservation networks and organizational support. Overall, the study suggests that simple accounting-related practices may support transparency, coordination, and accountability within community-based mangrove management; however, the study does not claim direct ecological outcomes or formalized governance improvements, as the findings are limited to qualitative evidence derived from community practices, interviews, and activity records. Therefore, the contribution of this study lies primarily in providing empirical insight into the early-stage implementation of blue accounting within a small-scale coastal community context.

Recommendation

Based on the research findings, several policy implications and recommendations can be formulated. Local governments need to encourage community-based mangrove management by recognizing and supporting local institutions such as the PPDL, support that can take the form of program facilitation, capacity building, and community integration in coastal area management planning. The implementation of blue accounting should also be promoted as an initial approach to coastal resource governance, particularly at the community level, with governments and supporting institutions developing simple recording guidelines that are easy for coastal communities to implement without

overburdening their capacity. Furthermore, multi-stakeholder partnerships involving local communities, environmental organizations such as Carbon Ethics, and educational institutions should be maintained and further developed; in the PPDL case, these partnerships were associated with improved documentation practices, enhanced communication with external stakeholders, and opportunities for conservation-related learning activities, and while the findings are limited to a single community context, they suggest that collaborative arrangements may play a supportive role in strengthening community-based mangrove management initiatives. Finally, further research is recommended to develop a more technical integration of blue accounting with carbon accounting, including measuring mangrove carbon sequestration and valuing environmental benefits, which will enrich the basis for policymaking and strengthen the position of mangrove management within the sustainable development agenda.

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Author contributions

Muhammad Isa Alamsyahbana conceptualized the research framework, developed the study design, and supervised the overall research process. Rachmad Chartady contributed to the development of the methodology and data analysis. Juliani Sari Siregar and Rizky Ramadhana Putra conducted field data collection, interviews, and documentation review. Indra Bastian Tahir contributed to the literature review, data interpretation, and manuscript drafting.

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