

## Factors Influencing the Sustainability of the Marketing of Mangrove Products in the Parish of San Gregorio, Muisne Canton, Esmeraldas

Factores que influyen en la sostenibilidad de la comercialización de productos del manglar de la parroquia San Gregorio, Canton Muisne - Esmeraldas

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### ABSTRACT

This exploratory-descriptive study evaluated the factors that undermine the sustainability of mangrove product marketing in San Gregorio, Muisne, through structured interviews (N=10) and a literature review. The central finding is systematic inequality in the market. Marketing is predominantly indirect, allowing intermediaries to capture the lion's share of the profit margin. This drastically reduces the price at the source and creates an unfair economic situation for the harvester, who bears the greatest risk of the activity. This economic vulnerability feeds into the fragility of the ecosystem. Although community management plays a regulatory role (fines for violations of the closed season), the lack of a solid social agreement and intense demand pressure lead to non-compliance with minimum size limits and illegal harvesting.

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These actions undermine the reproductive capacity of mangrove products and degrade the ecosystem. The activity is trapped in a cycle of low income and high environmental risk. The key to future sustainability lies in organizational strengthening that enables vertical integration (direct sales) and the use of technology to monitor and capitalize on the ecological value of the mangrove, transcending the current dependence on intermediaries.

**Keywords:** Sustainability, Marketing, Mangrove Products, Market, Community Management.

## RESUMEN

La investigación de carácter exploratorio – descriptivo, evaluó los factores que comprometen la sostenibilidad de la comercialización de los productos del manglar en San Gregorio, Muisne, mediante la aplicación de entrevista estructuradas (N=10) revisión documental. El hallazgo central es la inequidad sistemática en el mercado. La comercialización es predominante indirecta, lo que permite a los intermediarios obtener la mayor parte del margen de ganancia. Eso reduce drásticamente el precio en origen y genera una viabilidad económica injusta para el extractor, quien soporta el máximo riesgo de la actividad. Esta vulnerabilidad económica se retroalimenta con la fragilidad. Aunque la gestión comunitaria posee un rol normativo (multa por veda), la falta de un acuerdo social sólido y la intensa presión de la demanda provocan el incumplimiento de la talla mínima y la captura ilegal. Este accionar socava la capacidad reproductiva del producto del manglar y degrada el ecosistema. La actividad está atrapada en un ciclo de baja renta y alto riesgo ambiental. La clave para la sostenibilidad futura reside en el fortalecimiento organizacional que permita la integración vertical (venta directa) y el uso de la tecnología para fiscalizar y capitalizar el valor ecológico del manglar, trascendiendo la actual dependencia del intermediario.

**Palabras clave:** Sostenibilidad, Comercialización, Producto del manglar Mercado, Gestión comunitaria.

## INTRODUCTION

Mangrove ecosystems are vital to coastal communities, as they provide a variety of products that are sold commercially. The sustainability of this commercial activity depends on multiple interrelated factors that ensure a balance between financial benefits, ecosystem conservation, and community development.

The parish of San Gregorio, located in the Muisne canton of Esmeraldas, is a coastal area where mangroves are a fundamental pillar of the local economy. Families living in this region depend on the resources these ecosystems provide for their daily livelihood. The commercialization of products such as crabs, concha prieta, and fish represents the primary source of income for a large number of residents.

Sustainability and commercialization in San Gregorio are influenced by several factors that can be categorized as environmental, economic, and institutional. The interaction among these factors will determine whether the commercialization of mangrove products is viable in the long term. Weak institutional control (institutional factors) can lead to overfishing (economic factor), which in turn causes mangrove degradation (environmental factor) and negatively affects the communities that depend on it (social factor)

To fully understand the factors affecting the viability of commercialization in San Gregorio, a multidisciplinary approach is required. The research was based on gathering information through surveys, visits, and field observations with local harvesters and traders. A value chain analysis was conducted, as well as assessments of the community's perceptions regarding sustainability. Additionally, previous studies on mangrove management and the commercialization of marine products in similar contexts were reviewed. The parish of San Gregorio, in the Muisne canton, Esmeraldas, faces a critical situation that threatens the viability of the commercialization of its mangrove products. The economic dependence of its inhabitants on species such as the crab and the concha prieta contrasts with unsustainable practices and a series of socioeconomic and environmental factors that threaten the long-term viability of this activity.

The central problem lies in the overexploitation of aquatic resources. Harvesters, driven by economic necessity, often fail to respect minimum sizes or closed seasons, which disrupts the species' reproductive cycles. This lack of regulation has led to a significant decline in crab and conch populations, forcing harvesters to venture into more remote areas where harvesting is more labor-intensive and less profitable. In the medium and long term, this unsustainable trend could completely deplete the resources, causing the community's main source of income to collapse.

Unregulated harvesting practices, combined with deforestation and waste pollution, have caused progressive degradation of the mangrove ecosystem. The destruction of natural habitats not only reduces shelter and food for commercial species but also weakens the mangrove's protective function against phenomena such as coastal erosion and extreme weather events. The loss of these ecosystem services directly affects the community's

resilience and the mangrove's ability to regenerate and sustain the life on which they depend.

The marketing chain in San Gregorio is precarious. Mangrove products are sold to middlemen at low prices without any added value.

The lack of adequate collection centers, refrigeration infrastructure, and efficient transportation forces harvesters to accept prices that barely cover their costs, drastically reducing their profit margins. This economic vulnerability drives them to intensify harvesting to compensate for low prices, creating a vicious cycle of overexploitation.

Despite the existence of national regulations, enforcement and oversight are deficient at the local level. The lack of a strong and cohesive community organization hinders the implementation of sustainable management plans and collective price negotiations. Without effective local governance, unsustainable practices persist, perpetuating the problem. This institutional weakness prevents the community from acting in unison to protect its resources and ensure a sustainable future.

The central issue lies in the uncertainty regarding the effectiveness of the AUSCMs (Mangrove Use and Stewardship Agreements) in ensuring the sustainable commercialization of mangrove products in the San Gregorio parish. Although the law requires communities to ensure that these agreements implement management plans and sustainable harvesting measures, it is unclear whether these guidelines are being followed and whether socioeconomic, market, and community management factors allow for truly sustainable commercialization.

The rationale for this study is based on its relevance and methodology within the social and environmental spheres, as it addresses a crucial issue with a view toward the sustainable development of the country's local coastal populations.

This study will help fill a gap in the academic literature and public policy regarding the effectiveness of Mangrove Use and Stewardship Agreements (AUSCM) as a tool for conservation and development. Although Ecuadorian environmental policy promotes these agreements as a sustainable management market, there is limited empirical evidence analyzing how they translate into sustainable resource commercialization.

The research offers an analytical framework for understanding the multidimensional factors (socioeconomic, market, and management) that will determine the success of these programs, thereby generating knowledge applicable to other similar communities. The parish of San Gregorio and, more broadly, the communities of Muisne, depend directly on mangrove resources for their subsistence. The sustainability of commercialization is not merely an environmental issue but a key element for food security, economic continuity, and the well-being of these fishing and shellfish-gathering families.

By identifying the factors that limit or promote sustainable commercialization, this research can provide valuable information for designing strategies that improve the value chain, strengthen community organization, and generate fair income, thereby reducing the vulnerability of local stakeholders.

Overexploitation and unsustainable commercialization practices pose a direct threat to the biodiversity and integrity of the mangrove ecosystem, which acts as a natural barrier against disasters, a crucial habitat for various species, and a carbon sink. By focusing on the key elements affecting the viability of commercialization, this research seeks to promote responsible practices that ensure the long-term regeneration of resources.

The mangrove is a fundamental ecosystem in the coastal zone of Esmeraldas, Ecuador. Not only does it provide vital economic services such as coastal protection and the breeding of fish and crustaceans, but it is also a source of livelihood for local residents who depend solely on the commercialization of its products, such as crab, concha prieta, and scallops.

However, the sustainability of this commercial activity faces various challenges.

According to Jaramillo (2018), although the study focuses on the Cayapas-Mataje Ecological Reserve, it is highly relevant to the study of mangrove product marketing in San Gregorio, as it offers a detailed analysis of the black conch value chain. Its findings on the different actors involved, the flow of products, and the marketing challenges are directly applicable, thus allowing for a comparison and contrast with the local commercial structure and providing a solid foundation for understanding market dynamics in the study area.

“National Approach to the Protection and Sustainable Use of Ecuador’s Mangroves” by the Ministry of the Environment (2015) is a fundamental reference for the project in San Gregorio, as it outlines the regulations and state policies governing the management of these ecosystems in the country. By contextualizing the commercialization of mangrove products within this official document, local practices can be evaluated against national regulations and the sustainability goals proposed by the government.

According to Poveda (2019), this study is crucial for the research in San Gregorio, as it focuses on the red crab, a key species, and the community of Bocana de Bique, which is geographically close to the study area. This work provides a valuable source of empirical data on the socioeconomic factors driving extraction and commercialization, such as household income and economic dependence. By analyzing these dynamics in a similar context, this study can serve as a comparative reference to understand and validate the findings of your own analysis in San Gregorio.

Salinas, M.P (2020) It is crucial for the San Gregorio project because it establishes a direct link between the commercialization of mangrove products and the food security of local communities. This approach goes beyond a simple economic perspective to address the social impact of the activity, demonstrating how sustainable commercialization is vital for the community’s social development.

The objective of this article is to analyze the socioeconomic, market, and community management components that influence the sustainability of mangrove product commercialization in the San Gregorio Parish, Muisne Canton, to evaluate the effectiveness of the AUSCM (Agreement on the Use and Stewardship of Mangroves).

The sustainability of mangrove product marketing in the San Gregorio parish depends largely on the health of the ecosystem, which is threatened by overexploitation, pollution, and deforestation. To counteract these impacts, it is crucial to implement proper resource management, including measures such as the establishment of fishing moratoriums and the creation of protected areas.

Guerrero, S. (2017). Focuses on the crucial role of community organizations in the value chain of mangrove products in Muisne, a factor that is fundamental to sustainability and local entrepreneurship.

This study explores how the collective organization of harvesters and marketers of products such as shellfish, crabs, and shrimp can influence ecosystem resources by improving incomes and reducing the role of intermediaries.

Castillo, C. and Romero, M. (2019). This study delves into the socioeconomic impact of the commercialization of mangrove products in the province of Esmeraldas, offering key insights into the situation in the San Gregorio parish. It analyzes the market structure, identifying all stakeholders from harvesters to end consumers.

Fernández & Pérez, (2022). Addresses the topic of marketing and distribution strategies for consumer products, which can serve as a reference.

Analyzes the market dynamics and logistical challenges faced by products from rural coastal areas, making it a suitable theoretical framework for investigating marketing and distribution tactics for mangrove products in the San Gregorio parish. This study explores how organizing value-added generation and the use of information technologies can improve the profitability and sustainability of commercial activities.

UEES (2020). Manglar APP is an electronic governance tool that operates as a two-way link. It allows consumers within the mangrove ecosystem to report socio-environmental incidents directly to regulatory agencies, thereby improving response capacity and crisis management. Although it does not focus directly on commercialization, it demonstrates how the use of technology, such as a mobile app, can strengthen governance and sustainability. By facilitating interaction between community members and government entities, issues such as overfishing and pollution can be reported more efficiently. WWF Ecuador (2022) emphasizes that, to ensure a sustainable future for marine products, it is essential to transform fisheries management through the use of technology that ensures transparency.

Díaz, P. (2011). The current market in Quito has dissatisfied customers regarding the fish sold; these customers are potential buyers, creating an opportunity to establish a business that offers a fresh, high-quality product at a competitive market price.

Community organization is a key pillar. Guerrero (2017) highlights how associations empower communities to negotiate better prices, make decisions, and protect the ecosystem. The study by Castillo and Romero (2019) complements this view by analyzing market structure and the impact of intermediaries on local income, underscoring the need for communities to gain greater control and profitability.

Customer satisfaction and technology are becoming increasingly relevant. Díaz's (2011) work highlights that quality, freshness, and hygiene are vital for consumer satisfaction. On the other hand, technology offers solutions to improve sustainability

Oviedo, J. (2018). Sustainability of artisanal fishing in the Cayapas-Mataje ecological reserve. Although this study focuses on artisanal fishing in a nearby reserve, it is relevant because it discusses how massive demand can lead to overexploitation. Castillo, C. and Romero, M. (2019). Commercialization of mangroves and its socioeconomic impact in the province of Esmeraldas.

This study directly analyzes the value chain in Esmeraldas. It identifies that mass commercialization is often dominated by intermediaries who buy large volumes at low prices from local harvesters. This market structure, driven by high demand, not only reduces benefits for the community but also pressures them to increase their catches, which can lead to unsustainable practices.

(Philip Kotler, 2023). A pioneer of contemporary marketing, he emphasizes that mass marketing seeks to find ways to maximize public engagement, using simple and direct messages that resonate with the majority. This perspective is relevant for understanding how companies have used broad communication strategies for high-demand products. A Mexican marketing expert asserts that the primary objective of marketing—to increase sales volume, expand the customer base, boost purchase frequency, and optimize sales prices—has no other business justification for its implementation. The focus on growth and sales as the main goal of marketing may contrast with the need for sustainability and conservation in the commercialization of products derived from delicate ecosystems such as mangroves.

(Seth Godin, 2018). This author on permission marketing argues that, in the digital age, mass marketing is becoming less and less effective. He proposes that the new marketing strategy consists of building relationships with customers, not invading their space with unsolicited advertising. For producers in Muisne, this facilitates access to a set of digital tools to obtain permission and use customer data to communicate offers, with the aim of encouraging repeat purchases and loyalty.

This relates directly to the marketing of mangrove products in the parish of San Gregorio, Muisne, by highlighting the importance of traditional marketing channels in contexts with low digital penetration. In the San Gregorio parish, as in many emerging markets, internet access and the use of digital platforms may be limited for a large portion of the local population and potential consumers. Therefore, a marketing strategy that relies exclusively on digital marketing would be ineffective. (McDonald and Sargeant, 2018).

(Craig Davis, 2001). We must transition from interruption to relevance, highlighting a key challenge of mass marketing in the digital age. For the sustainable marketing of mangrove products, this means that a traditional marketing strategy focused solely on product promotion is likely to fail. Instead of trying to capture attention in a forced manner, producers in San Gregorio, Muisne, can adopt a more effective approach.

Marketing is defined as a strategic process through which organizations and/or individuals satisfy their needs and desires through the creation and exchange of goods and value (according to Philip Kotler, 2000). This definition is crucial, as it underscores that marketing goes beyond a commercial approach to mangrove products; it involves creating value by highlighting their sustainable origin and the efforts of local communities, which can justify a higher price and ensure the economic viability of the collectors.

A marketing framework relevant to the sustainability of mangrove products in the parish of San Gregorio, Muisne (Michael Porter, 1985). In his work on competitive advantage, he argues that one of the main tactics for achieving a sustainable advantage is differentiation. This strategy is based on creating an offering perceived as unique, which justifies a premium price.

In the context of mangrove products, sustainability, artisanal fishing practices, and the history of local communities are unique attributes that can differentiate these products from others on the market.

(Pérez, 2023). It focuses on analyzing how the supply chain for products such as shellfish and other mangrove resources affects local communities; the main concept emerging from this title is the sustainability of marketing. This refers to the capacity of a community—in this case, the San Gregorio parish—to sell its mangrove products in a way that is economically viable, socially just, and environmentally responsible in the long term

To formulate or design a marketing strategy, in addition to considering our objectives, resources, and capacity, we must first analyze our target market. (Ley Borrás, 2000)

Distribution channels are the means through which products reach end consumers, and their proper selection is crucial for the sustainability of marketing products such as those from the mangrove

Pricing, promotion, and sales strategies constitute an essential pillar of marketing, as they allow mangrove producers to compete effectively in the market, generate sustainable income, and raise awareness of the value of their products. (Quiñonez Cabeza et al., 2020) The commercial and quality characteristics of *A. tuberculosa* are related to the aspects that make it a sought-after and desirable product in home kitchens, restaurants, picanterías, and cevicherías in the coastal towns of Ecuador and other countries that produce it. It is considered an aphrodisiac delicacy, with significant local demand in restaurants and tourist sites, where it is served fresh (raw) in cocktails, fried, grilled, or boiled and industrially canned; considerable quantities are also exported within the region. (OSPESCA, 2018)

Morphometric indicators (length, width, height, total weight, and fresh weight); catch per unit of effort, density, and growth rate; and market attributes (size, freshness, nutritional quality, and compliance with international standards on health and safety) are analyzed. It is concluded that biological aspects and productivity are closely related to market attributes, which are essential for achieving sustainable production. (Eveligh C Prado & Manuel Quiñonez C, 2021)

(Manuel Ruvín Quiñonez C & Ingrid T Nazareno, 2020). The objective is to study the marketing and harvesting process of the conch (*Anadara tuberculosa* and *Anadara similis*) and its economic impact on families in the San Lorenzo canton, Ecuador. The quantities of conch harvested and marketed from Ecuador and Colombia were evaluated, along with the percentages of males and females, to identify economic benefits by gender. The number of canoes and people providing services in this activity was documented and analyzed, along with the operational costs during the various stages of harvesting and marketing, leading to the establishment of profit margins for the shellfish gatherer (supplier), intermediaries, and warehouse owners; as well as the generation of employment, income, and benefits for families in the area. The results indicate that 52% of the harvested and marketed conch comes from San Lorenzo, while 48% comes from Colombia. At the end of the process, they earn incomes below the established unified monthly minimum wage. It is concluded that the commercialization of mangrove products has a significant impact on families

## **MATERIALS AND METHODS**

For this study, a descriptive approach was chosen, as it allows for the observation and understanding of reality in its natural state. This method is ideal for describing the characteristics of a phenomenon without altering it, which is essential for understanding its context and dynamics. Thus, valuable information regarding the phenomenon under study was collected, providing a solid foundation for interpreting the results objectively. Regarding the research process, data collection was carried out using the following techniques: interviews and document analysis.

To collect information, a survey was designed and administered to merchants in the commercial district of San Gregorio. This research instrument allowed for the collection of quantitative and qualitative data directly from customers, which was essential for analyzing their perceptions, preferences, and behaviors regarding the services offered. Thanks to the cooperation of the merchants in the parish, a detailed review of internal records was conducted. This process facilitated access to historical and relevant information, which was analyzed to enrich and verify the data collected through the interviews.

In the execution of this project, primary and secondary technical sources of information collection were employed to ensure a comprehensive and reliable data analysis. The methodology used is presented below. Interviews were employed as the primary source of data. This research tool allowed for the evaluation of customer satisfaction regarding two fundamental dimensions: product quality and the effectiveness of customer service. The interview was structured with questions designed to obtain quantifiable and comparable information.

I. Secondary sources were used to complement and contextualize the study. A literature review and a documentary analysis of online databases were conducted. These

sources provided a theoretical and referential framework that allowed the empirical data to be verified against previously validated information. The interview is an information-gathering technique that, in addition to being one of the strategies used in research processes, has value in and of itself. Whether conducted as part of a research project or designed outside of a systematic study, the interviews with the harvesters highlight their techniques and patience in harvesting, their respect for species conservation, and their ability to identify characteristics to select suitable products. This work requires knowledge of the ecosystem and contributes to the livelihoods of many families, reflecting a constant effort and commitment to the sustainability of the mangrove.

This study proposes estimating the means of a finite population under the assumption of an overpopulation model. It considers the existence of an auxiliary variable whose observation cost is lower than that of the variable of interest, and a two-phase design. In the first phase, only the auxiliary variable is observed, while in the second phase, the variable of interest is observed. This study determines the optimal estimate, as well as the sample size to be selected in each phase.

Twenty-four (24) interviews were conducted with members of the community harvesting blue crabs (*Cardiosoma crassum*) and concha prieta (*Anadara tuberculosa* and *Anadara similis*) in the San Gregorio–Muisne parish, through direct dialogue.

For data collection in this study, we must start from the premise that an interview is a communication process that normally takes place between two people; in this process, the interviewer obtains information directly from the interviewee.

## RESULTS

When harvesting crabs, mangrove foragers use various methods, among which the following stand out:

- a. Reaching into the burrows among the mangrove roots with their arms.
- b. Using a J-shaped iron rod measuring 1 to 1.30 meters to reach the crabs.
- c. Running
- d. Using traps
- e. Nets

The community of San Gregorio maintains sustainable traditional practices in crab and shellfish harvesting, combining manual methods with simple tools that reflect a balance between harvesting efficiency and respect for the mangrove ecosystem. These techniques are part of local knowledge passed down through generations, representing an expression of traditional ecological knowledge.

Crab harvesting is a daily and sustainable activity, where the harvest volume varies between 40 and 50 units per day, depending on environmental factors. Furthermore, the highest overlap indicates a common and established practice within the harvesting community.

Closed season. This is a temporary prohibition period to allow for species reproduction.  
Minimum size. A specific measurement of 10 to 15 cm to ensure that mature crabs are

caught. There is a legal framework, the association's regulations, which include conservation measures, minimum size, closed season, and fines.

Fishermen or crab harvesters recognize and apply self-regulatory mechanisms regarding harvesting seasons and sizes.

These practices not only reinforce the sustainable management of resources but also complement national legislation on fisheries and aquaculture.

There is a duality in the marketing of blue crabs: some opt for direct sales to obtain better margins, while others rely on intermediaries, which can hinder price standardization.

The most significant factor is seasonality, as the closed season significantly reduces crab catches, causing prices to rise slightly; transportation is also a key factor in moving the product. This depends heavily on the intermediary, who adds value at the mangrove source. The harvester sells at a low price to ensure the sale and avoid the risk of loss, since the intermediary obtains the highest profit margin because they have their own transportation.

Low integration of the harvesters, lack of development, absence of investment in infrastructure, limited advertising of their products and the area where they can be purchased, and a lack of technological development by the association keep the harvesters in the role of mere raw material suppliers. This prevents the capitalization of the activity and the negotiation of a guaranteed minimum price that could protect their income.

There is a vicious cycle where demand pressure—especially during festive seasons in the country's various cantons and provinces—overwhelms the association's capacity for self-regulation, leading to non-compliance with the specified size limits for harvesting. This harvesting practice has direct and indirect consequences for the destruction of the mangrove's natural capital, jeopardizing its future reproduction.

The association has the mandate and formal tools (closing seasons, fines) for management, but its operations are intermittent. This inconsistency in enforcement and conservation of the species, particularly regarding compliance with the closed season. The planned analysis indicates that compliance with shell size limits is essential for their sale and conservation.

One of the main strategies is training for shellfish harvesters to ensure they do not harvest shells that are of reproductive size, along with better organization among members to sell the product directly and avoid intermediaries.

The marketing process remains informal and dependent on intermediaries, which limits the collectors' bargaining power and reduces local profit margins. This demonstrates that, although harvesting practices are moving toward sustainability, the sales system still does not support the economic development of community members.

Limited access to direct markets reduces the community's ability to position its products with added value. This situation not only decreases income but also prevents the community from leveraging the environmental advantage of the AUSCM (Agreement on

the Use and Stewardship of Mangroves) as a distinguishing feature, hindering the development of sustainable marketing models.

A more robust organizational structure with enhanced administrative capacity would improve decision-making, enable better negotiation terms, and facilitate the development of shared commercial strategies (such as agreements with restaurants, fairs, or cooperative sales). This would demonstrate that community governance not only protects the resource but can also become a driver

## CONCLUSIONS

The research leads to the conclusion that the viability of marketing mangrove products (crab and concha prieta) in the San Gregorio parish is at a point of critical vulnerability, where the economic dependence of harvesters clashes with structural deficiencies in the value chain and local governance. Although the Mangrove Use and Stewardship Agreements (AUSCM) represent a valuable legal tool for conservation, their effectiveness on the ground is limited due to intermittent enforcement and the lack of a community organization capable of transforming artisanal harvesting into a sustainable business model.

Specifically, three key factors are identified:

**Environmental and Extractive Dimension:** Traditional ecological knowledge promotes sustainability (respect for minimum sizes and closed seasons); however, pressure from immediate economic needs and massive demand during peak seasons drive non-compliance with these regulations. Ecosystem degradation not only threatens biodiversity but also acts as a factor in impoverishment by reducing the profitability of fishing efforts.

**Economic and Market Dimension:** The marketing system is the weakest link. The middleman dominates the chain, capturing the largest profit margin and relegating the harvester to the role of a low-cost raw material supplier. The lack of value-added processing, collection centers, and refrigeration technology prevents the community from accessing direct or competitive markets, such as those in major cities (Quito or Guayaquil), where there is unmet demand for fresh, high-quality products.

**Institutional and Technological Dimension:** Local governance requires urgent strengthening. The transition from “disruptive marketing” to “relevant” and differentiated marketing (based on sustainable origin and fair trade) will only be possible through administrative training and the adoption of technological tools (such as the Manglar APP). These innovations could improve transparency, resource monitoring, and direct connection with the end consumer.

Ultimately, sustainability in San Gregorio will not be achieved solely through environmental bans, but rather through a comprehensive strategy of competitive differentiation. It is imperative to empower local associations to act as a collective bargaining unit, transforming the mangrove from a source of precarious subsistence into a strategic asset that guarantees food security and long-term economic development.

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