



## Social sustainability assessment of blue economy sectors in the Kepulauan Seribu regency, Indonesia

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### Abstract

In general, the literature agrees that social sustainability plays a crucial role in achieving sustainable development goals. In the context of blue economy development, social sustainability must be achieved to ensure that blue economy development encourages the creation of a more just and prosperous society without compromising the needs of future generations. However, assessments focused on the social sustainability of blue economy development are still relatively limited. This study aims to fill this gap by exploring potential economic sectors for development, identifying social sustainability indicators, and assessing the social sustainability achievements of blue economy sectors. This study used a survey method to measure public perceptions of the development of blue economy sectors and the social sustainability achievements of each sector. The study location was on Untung Jawa Island, situated in the village of Untung Jawa, Kepulauan Seribu Regency, DKI Jakarta Province, Indonesia. The results showed that the marine tourism sector had the highest social sustainability in terms of empowerment, community participation, and cultural preservation within the blue economy sector. Meanwhile, the aquaculture sector, which is part of the blue economy, had the highest social sustainability in terms of equality. These findings have implications for the significant role of marine tourism in promoting social sustainability through its capacity to provide employment, foster community involvement, and preserve local cultural heritage.

**Keywords:** social sustainability, blue economy sectors, Kepulauan Seribu Regency)

### Introduction

In general, the literature acknowledges that social sustainability is a vital component of sustainable development goals. Social sustainability in the context of development refers to efforts to ensure that current development processes address social performance indicators. Social sustainability encompasses various aspects, including empowerment, equality, participation, and the preservation of local community culture (Cope *et al.*, 2022) <sup>[1]</sup>. Although conceptualized differently, experts agree that social sustainability is one of the pillars of sustainable development. Social sustainability focuses on the development of individuals and communities to achieve a high quality of life for both current and future generations (McGuinn *et al.*, 2020) <sup>[2]</sup>.

One coastal development model widely cited in the literature is the blue economy development model. In the literature, the blue economy is defined as the sustainable use of marine and coastal resources for economic growth while maintaining ocean health. Alternatively, it can be described as the sustainable use of marine and coastal resources for economic development, improved livelihoods, and job creation, all while maintaining the health of marine ecosystems. Although there is still debate about the definition of the blue economy, most definitions have attempted to balance economic, environmental, and social objectives consistent with the Sustainable Development Goals (Benzaken & Hoareau, 2021; Martínez-Vázquez *et al.*, 2021) <sup>[8, 9]</sup>. The blue economy encompasses several economic sectors. According to Bappenas [2023], eight economic sectors can be categorized as blue economy sectors: aquaculture, seafood processing, seaports, shipbuilding and repair, offshore oil and gas, marine manufacturing and construction, marine business services,

marine research and development, coastal tourism, and coastal flood defense.

Furthermore, the literature review indicates that quantitative research on the blue economy and its impact on achieving sustainability remains limited, particularly in the Indonesian context. Specifically, a previous study found that, despite being cited as a sustainable development model, the blue economy still faces several obstacles in its implementation, including economic, environmental, and social challenges (Sujiwo & Nurlaili, 2022) <sup>[11]</sup>. This study seeks to fill the gap in the blue economy literature, particularly regarding the social sustainability outcomes of development in blue economy sectors. Specifically, this study has three objectives. First, to identify blue economy sectors with potential for development. Second, to identify valid and relevant social sustainability indicators in the context of blue economy development. Third, to measure the social sustainability outcomes of blue economy sectors.

### Methodology

#### 1. Research Location

The research location is the Kepulauan Seribu Regency, DKI Jakarta Province, Indonesia. This regency has 112 islands. Of these 112 islands, 11 are inhabited and the rest are uninhabited. Of these 11 islands, several offer blue economy activities, including marine tourism, shipyards, ports, and aquaculture. To provide more focused results, this study focuses on blue economy activities on the island of Untung Jawa. This island is located in the Untung Jawa Island Village, South Kepulauan Seribu District, Kepulauan Seribu Regency, DKI Jakarta Province (Figure 1)



Fig 1: Research location

**2. Data Collection and Analysis Methods**

In general, this study employed several methods to collect data, including literature reviews, interviews, questionnaires, and field observations. The literature study aimed to identify indicators relevant to social sustainability. This study also employed the Delphi method to identify valid social sustainability indicators and their relevance in the context of blue economy development in Indonesia. Next, this study used questionnaires and interviews to measure respondents' perceptions of the development of blue economy sectors and the social sustainability achievements of each sector. The respondents involved were 54 respondents representing local communities, business actors in the blue economy sector, consumers, and village officials. Finally, this study conducted field observations to gain a visual understanding of blue economy activities. The

data collection process took place from January to March 2025.

**3. Operational Definition of Variables**

Social sustainability is one component of sustainable development, alongside economic and environmental sustainability. Social sustainability focuses on the well-being of individuals and communities affected by development operations (Abd Rashid *et al.*, 2020). Table 1 shows social sustainability indicators summarized from various sources. These indicators need to be established to help track the performance of the blue economy sector towards social sustainability goals and to ensure that blue economy development can meet the social needs of the present generation without compromising the ability of future generations to meet their own social needs.

Table 1: Dimensions and indicators of social sustainability of blue economy development

No	Dimensions	Indicator
1	Empowerment	a. The provision of resource assistance (e.g., financial, training, and mentoring) for communities to develop the knowledge and skills needed to address social sustainability challenges, b. The realization of leadership development and individual development to foster a sense of responsibility for the sustainability of their own development. c. The realization of strengthening connections and social networks to facilitate collaboration and action between stakeholders
2	Equality	a. Everyone has equal access to opportunities and resources for developing the blue economy. b. Blue economy development policies remove barriers and promote equal access to jobs and other essential services. c. Blue economic development addresses the symptoms and root causes of inequality in society.
3	Participation	a. Communities are actively involved in the development planning process for the blue economy. b. The community is actively involved in the process of implementing blue economic development. c. The community is actively involved in the evaluation process of blue economy development.
4	Local cultural identity and values	a. Preservation of historic buildings, traditional crafts, and local customs. b. Integrating local cultural values into the planning and implementation of blue economy development c. Promoting traditional knowledge, values, and practices in the implementation of blue economy development

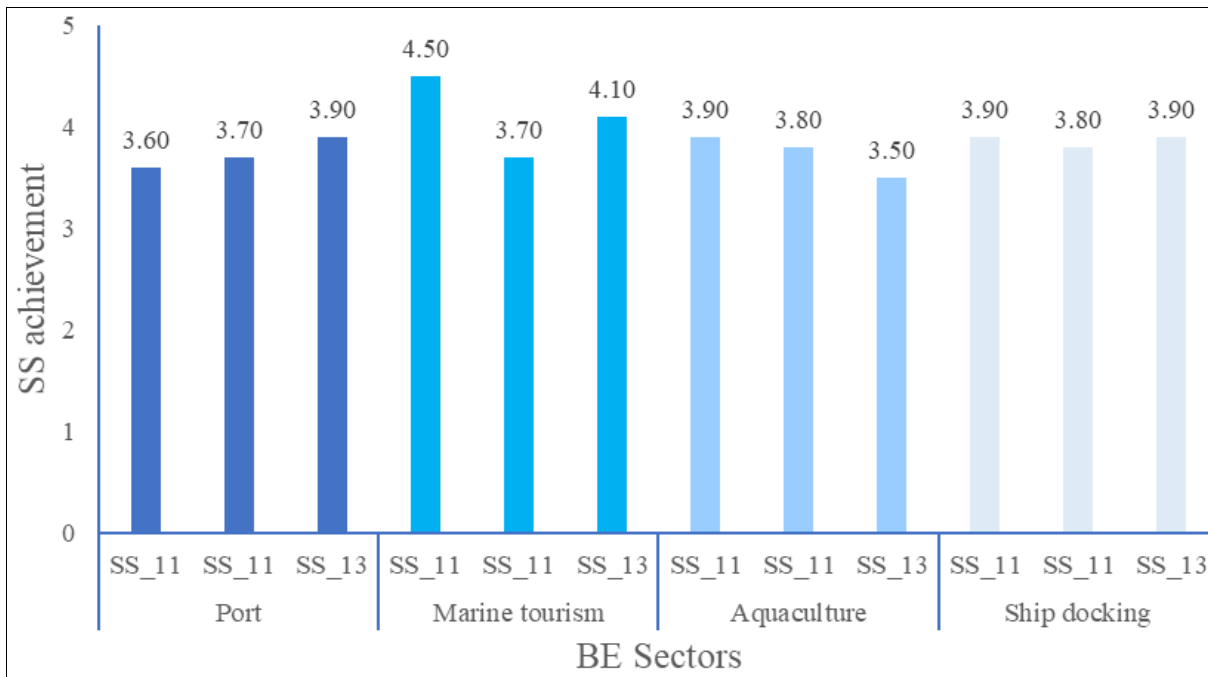
(Source: Abd Rashid *et al.*, 2021; Barron *et al.*, 2024; Isgren *et al.*, 2024) [3, 6, 7]

**Results and Discussion**

**1. Blue Economy, Social Sustainability, and Empowerment**

Three key indicators can assess the impact of blue economic development on community empowerment: the provision and support of resources, leadership development, and social capital development (Auad & Fath, 2022) [5]. This implies that blue economic development must be able to [1] provide resource assistance (e.g., finance, training, and

mentoring) for communities to develop the knowledge and skills needed to address social sustainability challenges, [2] leadership development and individual development to foster a sense of responsibility for their sustainable development, and [3] strengthening social connections and networks to facilitate collaboration and collective action. Figure 1 displays the social sustainability achievements of the development of blue economic sectors in terms of community empowerment.



**Fig 2:** Social sustainability achievements of the development of blue economy sectors in terms of empowerment

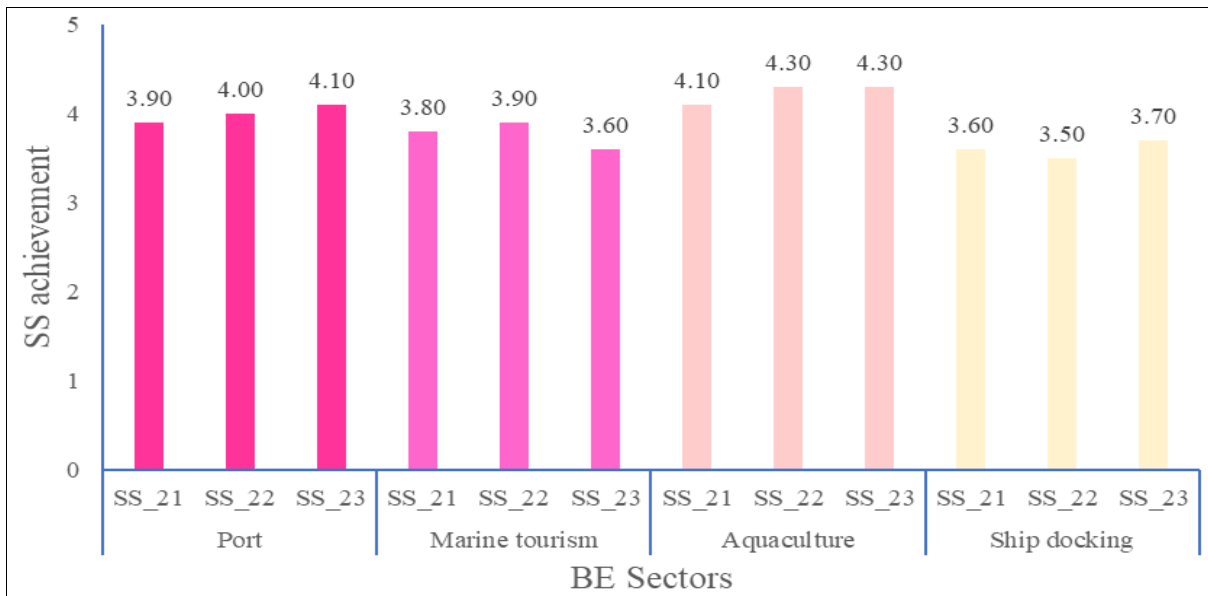
As seen in Figure 1, the blue economy sector with the lowest community empowerment score is aquaculture (3.50 points), while the marine tourism sector with the highest score is 4.50 points. Overall, the community empowerment scores for the ports, marine tourism, aquaculture, and docking sectors were 3.73, 4.10, 3.73, and 3.87 points, respectively. In other words, the blue economy sector with the highest social sustainability in terms of community empowerment is marine tourism. This finding supports the view expressed in the literature on the important role of marine tourism in supporting social sustainability through its ability to provide employment, encourage community involvement, and preserve local cultural heritage. However, the literature also cautions that marine tourism development presents challenges that have the potential to hinder social sustainability, including its potential negative impacts on the environment and ecosystem. Therefore, the management of the marine tourism sector must adhere to the principles of sustainability to prevent social inequality, promote inclusivity, and foster a sense of belonging (Cavallini *et al.*, 2023) <sup>[13]</sup>.

**2. Blue Economy, Social Sustainability, and Equality**

Equality is an important indicator of social sustainability in blue economy development. Proportional equality plays a crucial role in social sustainability due to its ability to <sup>[1]</sup> ensure justice and equity in the distribution of resources and opportunities, <sup>[2]</sup> prevent high levels of inequality, and <sup>[3]</sup> foster an inclusive society. Without implementing the principle of equality, blue economy development can have potentially detrimental impacts on certain community groups, thereby hindering the goal of blue economy development to improve community welfare (Cisneros-Montemayor *et al.*, 2021) <sup>[10]</sup>. This study used three indicators to measure social sustainability in terms of

equality: namely, equality for every member of society in accessing opportunities and resources for blue economy development (SS-21), the impact of blue economy development policies in eliminating barriers to access to jobs and blue economy services (SS-22), and the impact of blue economy development in addressing inequality issues in society (SS-23). Figure 2 presents a summary of the social sustainability achievements of blue economy sector development in terms of equality.

As seen in Figure 2, this study found that for the equality indicator, the blue economy sector with the lowest achievement is the aquaculture and ship docking sector (3.60 points). In comparison, the sector with the highest achievement is the aquaculture sector (4.30 points). Overall, the equality achievements of the port, marine tourism, aquaculture, and ship docking sectors are 4.00 points, 3.77 points, 4.23 points, and 3.60 points, respectively. In other words, the aquaculture sector is the blue economy sector with the highest social sustainability in terms of equality. This finding supports the view expressed in the literature on the crucial role of aquaculture in promoting social sustainability, particularly for communities residing in coastal areas. Aquaculture has an important role because of its ability to <sup>[1]</sup> support food security, <sup>[2]</sup> create jobs, and <sup>[3]</sup> build a more prosperous society. In addition, aquaculture also contributes significantly to <sup>[1]</sup> poverty alleviation, <sup>[2]</sup> improving economic levels, and <sup>[3]</sup> ensuring the availability of nutritious food. However, the literature also emphasizes the importance of responsible practices to ensure that aquaculture development minimizes negative environmental and social impacts. Therefore, aquaculture management must adhere to sustainability principles to avoid social inequality, promote inclusivity, and foster a sense of ownership (Wang, 2024) <sup>[4]</sup>.

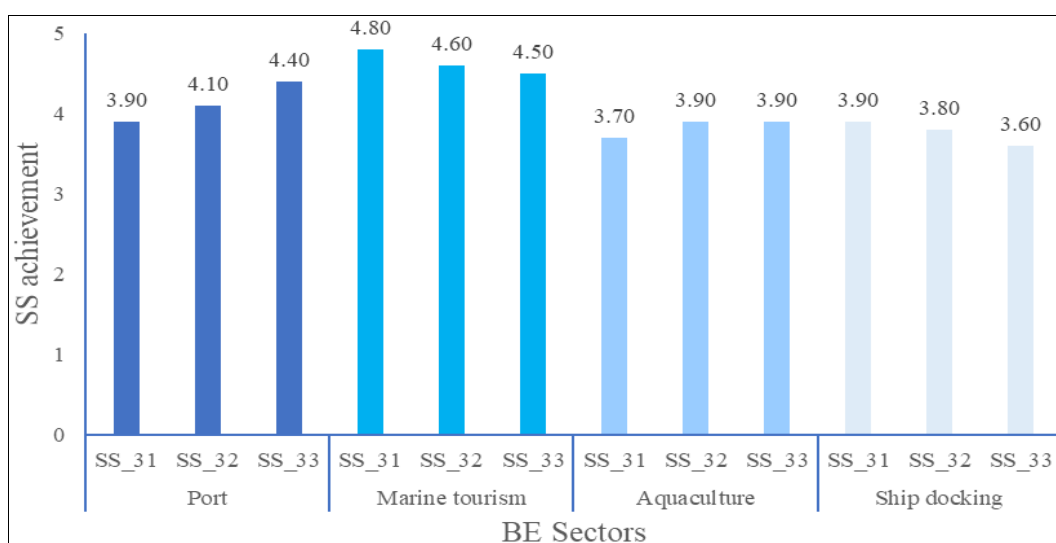


**Fig 3:** Social sustainability achievements of the development of blue economy sectors in terms of equality

### 3. Blue Economy, Social Sustainability, and Participation

The third indicator of social sustainability assessed in this study is the level of community participation in the development of the blue economy. The principle of participation in blue economy development emphasizes the importance of active community involvement in the planning, implementation, and evaluation of blue economy development. Community participation plays a crucial role in ensuring that blue economy development can help meet basic needs, accommodate aspirations, and sustainably enhance the quality of life (Cope *et al.*, 2022) [1]. In this study, social sustainability in terms of equality is measured using three indicators: active community involvement in the planning, implementation, and evaluation of blue economy development (SS 3-1), involvement of all levels of society and ensuring the equitable distribution of benefits from blue economy development (SS 3-2), and transparent community participation in the development process (SS 3-3). Figure 3 presents a summary of the social sustainability achievements in blue economy development, specifically in terms of community participation.

As seen in Figure 3, the blue economy sector with the lowest community participation score is the ship docking sector (3.60 points), while the marine tourism sector has the highest score (4.80 points). Overall, the community participation scores for the ports, marine tourism, aquaculture, and ship docking sectors were 4.13, 4.63, 3.83, and 3.77 points, respectively. In other words, the blue economy sector with the highest social sustainability in terms of community participation is the marine tourism sector. This finding supports the view expressed in the literature on the important role of marine tourism in supporting social sustainability through its ability to provide employment, encourage community involvement, and preserve local cultural heritage. However, the literature also warns that marine tourism development presents challenges that have the potential to hinder social sustainability, including its potential negative impacts on the environment and ecosystem. Therefore, the management of the marine tourism sector must adhere to the principles of sustainability to prevent social inequality, promote inclusivity, and foster a sense of belonging (Tang *et al.*, 2022) [14].



**Fig 3:** Social sustainability achievements of the development of blue economy sectors in terms of community participation

#### 4. Blue Economy, Social Sustainability, and Participation

The fourth indicator of social sustainability assessed in this study is the level of community participation in blue economic development. The principle of participation in blue economic development emphasizes the importance of active community involvement in the planning, implementation, and evaluation of blue economic development. Community participation plays a crucial role in ensuring that blue economic development can help meet basic needs, accommodate aspirations, and improve the quality of life in a sustainable manner (Abd Rashid *et al.*, 2023). In this study, social sustainability in terms of equality is measured using three indicators: active community involvement in the planning, implementation, and evaluation of blue economic development (SS 4-1), involvement of all levels of society and ensuring the equitable distribution of benefits from blue economic development (SS 4-2), and transparent community participation in the development process (SS 4-3). Figure 3 presents a summary of the social sustainability achievements of blue economic development in terms of community participation.

As seen in Figure 3, the blue economy sector with the lowest community participation score is the ship docking sector (3.50 points), while the marine tourism sector has the highest score (4.50 points). Overall, the community participation scores for the ports, marine tourism, aquaculture, and ship docking sectors were 4.13, 4.33, 3.90, and 3.53 points, respectively. In other words, the blue economy sector with the highest social sustainability in terms of community participation is the marine tourism sector. This finding supports the view expressed in the literature on the important role of marine tourism in supporting social sustainability through its ability to provide employment, encourage community involvement, and preserve local cultural heritage. However, the literature also cautions that marine tourism development presents challenges that have the potential to hinder social sustainability, including its potential negative impacts on the environment and ecosystem. Therefore, the management of the marine tourism sector must comply with the principles of sustainability to avoid social inequality, encourage inclusivity, and foster a sense of belonging (Cavallini *et al.*, 2023)<sup>[13]</sup>.

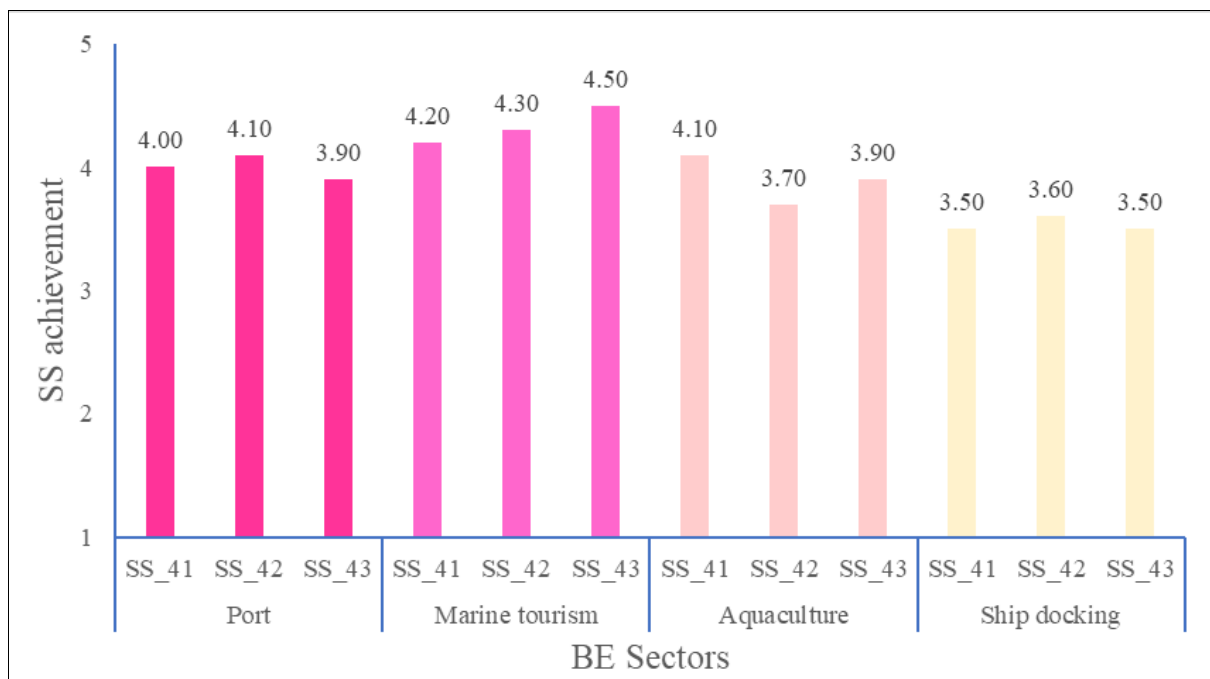


Fig 4: Social sustainability achievements of the development of blue economy sectors in terms of participation

#### Conclusion

In general, this study focuses on three key issues: identifying blue economy sectors with potential for development, determining valid and relevant social sustainability indicators in the context of blue economy development, and evaluating the social sustainability achievements of each blue economy sector's development. This study used a survey method to obtain relevant data. Data collection was conducted by distributing questionnaires to 54 respondents, who were considered representative of stakeholders in the blue economy, including local communities, business actors in the blue economy sector, consumers, and village officials. The research location was located on Untung Jawa Island, in the village of Untung Jawa, Kepulauan Seribu Regency, DKI

Jakarta Province, Indonesia. Based on the results of the literature review, this study has identified 11 relevant variables to be indicators of social sustainability. By applying a two-round Delphi process, this study identified that only four variables were valid and relevant in the context of blue economy development in Kepulauan Seribu Regency. The four variables are empowerment (3 items), equality (3 items), participation (3 items), and preservation of local culture (3 items).

Based on the survey results, this study identified four noteworthy points. First, the blue economy sector with the highest social sustainability in terms of community empowerment is the marine tourism sector (SS = 4.10 points). Second, the blue economy sector with the highest social sustainability in terms of equality is the aquaculture

sector (SS = 4.23 points). Third, the blue economy sector with the highest social sustainability in terms of community participation is the marine tourism sector (SS = 4.63 points). Fourth, the blue economy sector with the highest social sustainability in terms of community participation is the marine tourism sector (SS = 4.33 points). These findings support the view expressed in the literature on the important role of marine tourism in supporting social sustainability through its ability to provide employment, encourage community involvement, and preserve local cultural heritage. However, the literature also cautions that marine tourism development presents challenges that have the potential to hinder social sustainability, including its potential negative impacts on the environment and ecosystems. Therefore, tourism sector management must adhere to sustainability principles to prevent social inequality, promote inclusivity, and cultivate a sense of ownership.

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