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Fisheries Blue Economy Role in Sorong City SEZ Policy

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ABSTRACT
This study aimed to analyze the potential of the blue economy concept in the fisheries sector to support the development of the Sorong Special Economic Zone (SEZ) in West Papua. The research focused on evaluating the contribution of the fisheries sector to the regional economy and its role in ensuring sustainable marine resource management. A quantitative descriptive method was employed, utilizing Location Quotient (LQ) and Shift Share Analysis (SSA) to identify key sectors and assess regional competitiveness. The findings revealed that the agriculture, forestry, and fisheries sector in Sorong experienced fluctuating contributions to the Gross Regional Domestic Product (GRDP) between 2019 and 2023, with a notable decline in 2020 due to the COVID-19 pandemic. Nevertheless, the sector demonstrated a recovery in the following years and was identified as a base sector in 2023, as indicated by an LQ value greater than one. These results emphasized the strategic importance of the fisheries sector in driving regional economic growth and underscored the need for a sustainable development framework. Strengthening investment, enhancing fisheries infrastructure, and empowering local fishers were identified as crucial strategies. The integration of the blue economy approach into SEZ policies could promote inclusive and sustainable economic growth while supporting the achievement of the Sustainable Development Goals (SDGs), particularly Goals 8 and 14.
Keywords*: blue economy, fisheries development, Sorong SEZ, sustainable growth, regional economy.*

INTRODUCTION

One of the key indicators for assessing the dynamics of a region's economic development is the rate of economic growth. Although often used interchangeably, there is a fundamental difference between the concepts of economic growth and economic development. Economic development is defined as a process aimed at increasing real per capita income over the long term, involving structural changes and institutional transformation. In contrast, economic growth focuses more on the increase in output, such as Gross Domestic Product (GDP) or Gross National Product (GNP), without taking into account the balance between population growth and structural changes in the economy (Todaro & Smith, 2011). In another sense, economic growth is also understood as the increase in a country's capacity to provide goods and services to its people over the long term (Kuznets in Todaro & Smith, 2011). Iskandar (2013) adds that economic growth can be measured by the increase in national income over a certain period, and the development of economic activities that increase the volume of goods and services will enhance

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societal welfare. Given the complexities of the modern era, a country's success is increasingly judged by its commitment to sustainability and social responsibility (Sundoro et al., 2025).

Within the framework of sustainable development, the concept of the blue economy has become a vital strategy for optimizing marine and coastal resources without neglecting environmental conservation. The World Bank (2017) defines the blue economy as a development approach that emphasizes a balance between the exploitation of marine resources and ecosystem protection, aiming to generate long-term economic benefits for both communities and marine environments. Sorong Regency in West Papua Province is an area with significant maritime economic potential, particularly in the fisheries sector. If managed with a sustainable and modern approach, the fisheries sector could become a key driver of regional economic growth.

The Sorong Special Economic Zone (SEZ) is designed as a hub for the development of industries based on natural resources, including the fisheries sector. Therefore, a comprehensive understanding of this sector's contribution to the regional economy is essential. One indicator that can be used to measure the contribution of the fisheries sector is the Gross Regional Domestic Product (GRDP). An analysis of the GRDP development in the fisheries sector is expected to provide a clear picture of the sector's economic contribution, as well as the challenges faced in formulating blue economy-based policies.

Table 1: Gross Regional Domestic Product (GRDP) of Sorong Regency at Constant Prices by Industry, 2019–2023

Year	Agriculture, Forestry, and Fisheries (Billion Rupiah)
2019	786,5
2020	756,0
2021	770,9
2022	794,4
2023	784,7

Source : BPS

The data in **Table 1.** shows a fluctuating trend in the GRDP of the Agriculture, Forestry, and Fisheries sector in Sorong Regency during the 2019–2023 period. There was a significant decline from 786.5 billion rupiahs in 2019 to 756.0 billion rupiahs in

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2020, caused by the impact of the COVID-19 pandemic on supply chains and fishing activities. However, the sector began to recover in 2021, reaching 770.9 billion rupiahs and continued to increase to 794.4 billion rupiahs in 2022. Unfortunately, a slight decline occurred in 2023 to 784.7 billion rupiahs, indicating challenges in maintaining the sector's growth.

This study aims to: (i) Analyze the potential for optimizing the blue economy concept in the fisheries sector within the Sorong Special Economic Zone (SEZ), focusing on sustainable marine resource management that supports long-term benefits for both communities and marine ecosystems, in alignment with SDG 8 and SDG 14; (ii) Measure the contribution of the fisheries sector to the GRDP of West Papua during 2019–2023 and identify the factors causing significant fluctuations, particularly the sharp decline in 2022, in relation to sustainable economic growth under SDG 8; (iii) Formulate policy strategies to increase investment, improve fisheries infrastructure, and support fishers and fisheries entrepreneurs in driving economic recovery and development, supporting the sustainability of the economy and marine ecosystems in accordance with SDG 8 and SDG 14.

In terms of methodology, this study employs a quantitative descriptive approach using Location Quotient (LQ) and Shift Share Analysis (SSA) as analytical tools to identify leading sectors and measure the competitiveness of the fisheries sector in Sorong Regency. Preliminary results from the LQ analysis indicate that the Agriculture, Forestry, and Fisheries sector became a basic sector in 2023, with an LQ value of 1.08, suggesting that this sector plays a more significant role compared to the national average. This highlights a strategic opportunity to promote the fisheries sector as a backbone of economic growth in the Sorong SEZ.

By integrating economic analysis, sustainable resource management, and data-driven policy recommendations, this study is expected to make a meaningful contribution to the formulation of sustainable and inclusive maritime development strategies in West Papua.

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THEORETICAL BACKGROUND

Blue Economy Concept

The concept of the blue economy is a development approach that relies on the sustainable use of marine resources. According to the World Bank 2017 the blue economy emphasizes the importance of balancing the exploitation of marine resources with the protection of their ecosystems to generate long-term economic benefits that the blue economy encourages innovation in marine-based production systems that are not only efficient but also environmentally friendly.

Recent international studies further define the blue economy as an integrated framework that combines marine resource management, economic resilience, and sustainability governance to support long-term regional development (Lee et al., 2020; Martínez-Vázquez et al., 2021). The blue economy also strengthens sectoral competitiveness in fisheries and marine-based industries through sustainable value creation and ecosystem-based management (Picken, 2025; Roy & Akbar, 2026).

In Indonesia, the implementation of this concept is considered strategic in driving the transformation of coastal development and accelerating the achievement of the Sustainable Development Goals (SDGs), particularly SDGs 8 (inclusive economic growth) and SDGs 14 (marine ecosystems), which are closely linked to sustainable marine governance (Lee et al., 2020; Ratten, 2024).

Fisheries Sector and Regional Economic Contribution

The fisheries sector is a leading sector in Indonesia's maritime economy, emphasized that developing a blue economy-based fisheries sector can increase the added value of catches, shorten distribution chains, and ensure the sustainability of fisheries stocks. Empirical evidence from international contexts shows that sustainable fisheries development enhances export performance, regional income generation, and employment in coastal regions (Lee et al., 2020; Martínez-Vázquez et al., 2021).

In addition, the integration of fisheries-based industries within Special Economic Zones (SEZs) has been shown to strengthen trade intensity and firm-level export performance (Davies & Mazhikeyev, 2019; Frick & Rodríguez-Pose, 2023). Based on data from the Central Statistics Agency (2019–2023), the GRDP of the agriculture, forestry, and fisheries sector in Sorong Regency shows a fluctuating trend, reflecting the importance of policy support, infrastructure quality, and investment integration to

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stabilize and enhance the sector's contribution to regional economic growth (Carlucci et al., 2025; Buonocore et al., 2023).

Location Analysis and Competitiveness of Leading Sectors

Analysis of leading sectors in the context of regional economic planning is generally conducted using the Location Quotient (LQ) and Shift Share Analysis (SSA) methods. Kurniawati & Cahyono (2022) explain that LQ is used to identify core sectors, while SSA analyzes the influence of national growth and local competitiveness on the performance of specific sectors.

International regional development studies confirm that LQ and input–output approaches are widely used to measure regional specialization patterns and sectoral competitiveness (Buendía Azorín et al., 2022; Anaman & Shaibu, 2024). Infrastructure accessibility and spatial integration are also critical determinants of sectoral performance within designated SEZ areas (Buonocore et al., 2023). Both methods are useful in providing an overview of the potential of leading sectors that can be developed to drive region-based economic growth and enhance competitiveness within SEZ frameworks (Frick & Rodríguez-Pose, 2023).

Sorong Special Economic Zone and Maritime Potential

The Sorong Special Economic Zone (SEZ) was established as a center for economic growth in West Papua, particularly based on marine natural resources. Supardi et al. (2022) demonstrated that the Sorong SEZ has advantages in the fisheries and seafood processing industries.

International evidence suggests that SEZs are designed to attract foreign direct investment (FDI), promote exports, and stimulate regional economic growth through regulatory and fiscal incentives (Frick & Rodríguez-Pose, 2023; Carlucci et al., 2025). However, the effectiveness of these zones depends heavily on infrastructure integration, logistics efficiency, and regional accessibility (Davies & Mazhikeyev, 2019; Buonocore et al., 2023).

Therefore, the successful integration of blue economy policies and the optimization of the fisheries sector's contribution to regional GRDP are essential in strengthening the economic role of the Sorong SEZ within the broader regional competitiveness framework.

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Development Hypothesis

Based on the literature review above, the hypotheses proposed in this study are:

H1: The fisheries sector contributes significantly to Sorong Regency's GRDP within the framework of blue economy development.

H2: Fluctuations in the fisheries sector's contribution to GRDP are influenced by external factors such as the COVID-19 pandemic, as well as internal factors such as infrastructure and investment.

H3: Implementing blue economy-based policies can increase the competitiveness of the fisheries sector and support the achievement of SDGs 8 and 14 in the Sorong Special Economic Zone (SEZ).

METHOD, DATA AND ANALYSIS

This study uses a quantitative descriptive method that aims to analyze the influence of variables such as Gross Regional Domestic Product (GRDP), fishery production, production value, and labor on the development of Special Economic Zones (SEZs) in Sorong Regency. This approach was conducted using Location Quotient (LQ) analysis, which was then developed to evaluate the contribution and advantages of these sectors to economic growth and the implementation of the blue economy concept. The data used in this study consisted of secondary data obtained through official documents, statistical reports, and publications from the Central Statistics Agency (BPS) and other relevant institutions.

1. **First Stage: Location Quotient (LQ) Analysis**

$$LQ = \frac{Si/Ni}{Ni/N} = \frac{Si/S}{Ni/N}$$

Description :

Si = GRDP of sector i in study area k (district/city)

S = Total GRDP of all sectors in study area k

Ni = GRDP of sector i in reference area p (province)

N = Total GRDP of all sectors in reference area p

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$$DLQ = \left| \frac{1 + average\ growth\ in\ the\ value\ of\ commodity\ i\ (subdistrict) \Big/ 1 + average\ growth\ in\ total\ value\ (subdistrict)}{1 + average\ growth\ in\ the\ value\ of\ commodity\ i\ (district)) \Big/ 1 + average\ growth\ in\ total\ value\ (district)} \right|$$

If the SLQ value in sector i > 1, it means that the role of sector i in region k is superior to the role of sector i in region p, so sector i is a leading sector. Meanwhile, if the SLQ value in sector i < 1, it means that the role of sector i in region k is less superior than the role of sector i in region p, so sector i is not a leading sector.

Tabel 2: LQ Analysis Results

Sector	2019	2020	2021	2022	2023
Agriculture, Forestry, and Fisheries	0,904974798	0,907165141	0,894006707	0,920548085	1,083675862
Mining	1,043347533	0,93019447	0,93474222	0,93430854	0,794944527
Management Industry	1,507006277	1,53110250	1,536080857	1,517850315	1,220366876
Electricity and Gas Supply	0,672584202	0,714379783	0,681385778	0,703127446	0,771793017
Water Supply, Waste Management, Wastewater, and Motorcycles	0,537694543	0,545815876	0,539844436	0,543574195	0,846824086
Constructions	0,85877380	0,887819111	0,949904979	0,981050567	1,28630551
Wholesale and Retail Trade: Car and Motorcycle Repair	0,465464448	0,485015207	0,481312331	0,471124799	0,692537542
Warehouse Transportation	0,236237874	0,257491083	0,261506331	0,250885821	0,363394481
Provision of Food and Beverage Accommodation	0,367289778	0,386576525	0,382155937	0,35868509	0,462131165
Information & Communication	0,20790775	0,206651841	0,206737954	0,206809364	0,351771941
Financial Services & Insurance	0,420801549	0,430575318	0,38653791	0,386941458	0,503054384
Real Estate	0,309230045	0,329093428	0,328408823	0,524752247	0,841629878

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Corporate Services	0,579640643	0,563296149	0,551099203	0,524752247	0,841629878
Government Administration, Defense, and Mandatory Social Security	0,738823518	0,759869097	0,738438103	0,73956231	0,800050746
Education Services	0,646859433	0,640876867	0,631027963	0,632302573	0,938562032
Health Services	0,558070468	0,569000847	0,542397589	0,577520321	0,770161698
Other Services	0,29590718	0,299550162	0,296450383	0,298489228	0,448334538

Source: BPS (Statistics Indonesia), processed

Based on the Location Quotient (LQ) analysis, Manufacturing, Construction, and Agriculture, Forestry, and Fisheries are identified as base or emerging base sectors in Sorong Regency, as reflected by LQ values that approach or exceed unity during the observation period. This indicates that these sectors exhibit a relatively higher degree of specialization and play a more prominent role in the regional economic structure compared to the provincial average. In contrast, sectors such as Wholesale and Retail Trade, Transportation and Warehousing, Financial Services, and Information and Communication consistently record LQ values below one, suggesting that their contributions to the regional economy remain less dominant. Nevertheless, the presence of these non-base sectors points to potential opportunities for future development, particularly through improvements in infrastructure, enhanced market accessibility, and targeted policy support in line with the objectives of Special Economic Zone (SEZ) development in Sorong Regency.

2. Second Stage: *Shift Share* Analysis

Calculating Shift Share

Calculate the absolute change in ADHK GRDP obtained from the reduction in 2023 compared to 2019 in all sectors. Then, presenting these changes, through this grouping we can determine whether the sector has experienced positive changes or the opposite. If Mij < 0, the sector's growth rate is slow; if Mij > 0, the growth rate is fast; if Cij < 0, it has low competitiveness compared to the reference region; if Cij > 0, it has high competitiveness compared to the reference region.

Classifying Sectors into *Klassen Typology*

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Based on the 4 Quadrants, namely Leading Sectors with an LQ index > 1 and SS (Cij+1), Potential Sectors if LQ < 1 and SS (Cij+1), still included in Potential Sectors if LQ > 1 and SS (Cij-1), and Underdeveloped Sectors if LQ < and SS (Cij-1)

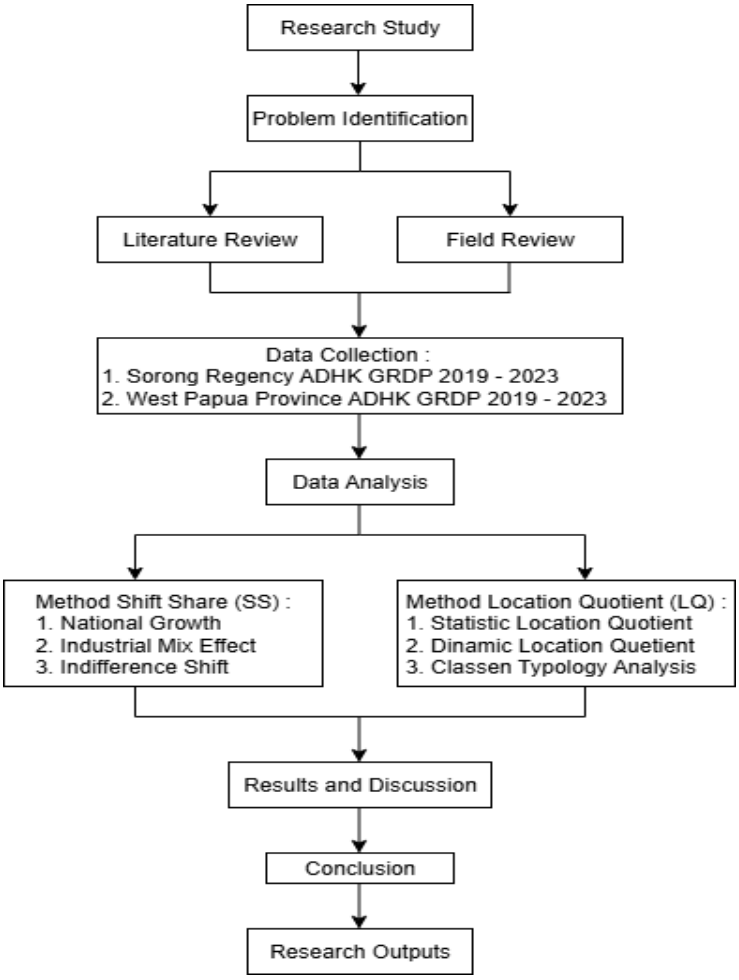

Figure 1. Research Flow Chart

RESULTS

This section presents the results of research on the development of Special Economic Zones (SEZs) in Sorong Regency using two analytical approaches, namely Location Quotient (LQ) and Shift Share. LQ analysis is used to identify base sectors that have a competitive advantage in Sorong Regency compared to the West Papua Province as a reference. Meanwhile, the Shift Share analysis is used to examine the dynamics of economic sector growth, both from national growth and local competitive advantages, to

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understand the contribution of these sectors to regional economic growth. The use of both methods is expected to provide a comprehensive overview of the leading sectors that can drive the acceleration of SEZ development and identify the potential and challenges in the effort to develop the area sustainably. The discussion in this chapter will be structured systematically, beginning with the results of the LQ analysis, followed by the results of the Shift Share analysis, and the interpretation of both results to formulate strategic recommendations for the development of the SEZ in Sorong Regency.

Analysis Location Quotient (LQ)

Based on the Location Quotient (LQ) results presented in Table 2, base (leading) and non-base sectors in Sorong Regency during the 2019–2023 period can be identified. Sectors with LQ values greater than one indicate a higher degree of regional specialization compared to West Papua Province as the reference region. The results show that the Manufacturing Industry consistently records LQ values above one throughout the study period, ranging from 1.50 in 2019 to 1.22 in 2023, confirming its role as a core sector with a strong comparative advantage in the regional economy. Although a slight decline is observed in 2023, this does not alter its position as a leading sector. The Construction sector exhibits a notable upward trend, increasing from 0.85 in 2019 to 1.28 in 2023, indicating a structural shift from a non-base to a base sector. This transition reflects the growing importance of construction activities and highlights its strategic potential in supporting the development of Special Economic Zones (SEZs). Meanwhile, the Agriculture, Forestry, and Fisheries sector records an LQ value above one in 2023 (1.08), suggesting emerging specialization despite previously recording values below one, which points to its increasing contribution to the regional economic structure.

Shift Share (SS) Analysis Results

Table 3: Shift Share Analysis Results

Sector/ Industry	Component			PDRB (Dij)	rij-rin
	National Growth (Nij)	Industry Mix (Mij)/(Ps)	Competitive Advantage (Cij)		

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Agriculture, Forestry, and Fisheries	-2,311,666,475	-1,060,245,446	3,718,160,232	2,655,603,119	4,727,476
Mining	-488,139,311	2,542,517,437	2,825,034,727	536,267,077	1,701,008
Management Industry	-1,156,332,898	7,701,366,486	9,600,991,367	1,729,079,452	2,440,392
Electricity and Gas Supply	-64,661,999	3,101,504,455	1,217,492,588	1,247,861,012	5,534,057
Water Supply, Waste Management, Wastewater, and Motorcycles	-158,715,816	-1,122,362,215	3,659,608,222	2,535,658,849	6,777,052
Construction	-2,894,506,223	-2,526,041,342	5,469,633,689	2,940,697,841	5,554,055
Wholesale and Retail Trade: Car and Motorcycle Repair	-8,120,959,275	-4,940,696,187	1,809,127,159	1,314,245,444	6,547,691
Transportation and Warehousing	-1,622,428,346	-1,421,901,757	3,199,975,453	1,776,451,268	5,797,057
Accommodation, Food, and Beverage Services	-534,931,085	-164,203,876	1,033,423,826	8,686,850,194	5,678,153
Information & Communication	-1,087,497,261	-8,435,976,967	2,692,451,442	1,847,766,248	7,276,896
Financial Services & Insurance	-1,516,617,802	-4,371,324,533	2,662,723,082	2,224,074,011	5,160,316
Real Estate	-993,443,444	-3,885,764,193	2,068,556,327	1,678,986,465	6,119,989
Business Services	-167,533,362	-1,374,040,645	3,113,355,875	1,737,639,896	5,462,028
Government Administration, Defense, and Mandatory Social Security	-1,638,887,764	-3,076,389,069	2,422,765,524	211,348,773	4,344,988
Education Services	-4,267,691,953	-3,413,579,158	8,033,729,532	4,615,882,682	5,532,872 58
Health Services	-1,125,706,624	-3,674,045,799	2,570,488,322	2,201,958,035	6,711,458
Other Services	-208,681,907	-1,274,361,154	4,789,999,423	3,513,551,449	6,746,478
TOTAL PDRB	**-2,527,666,944**	**5,114,851,526**	**3,331,350,358**	**3,328,922,691**	**9,211,197**

Source: BPS (Statistics Indonesia), processed

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Based on the results of the Shift Share analysis, all economic sectors in Sorong Regency show positive competitive advantage (Cij) values, indicating that all sectors are more competitive than the reference region, namely West Papua Province. A positive Cij value indicates that the growth of these sectors is not only following national or structural growth but is also driven by local competitive advantages, such as efficiency, innovation, or supportive regional policies. The sector with the highest Cij value is Manufacturing, at 9,600.99 billion rupiah, followed by Education Services at 8,033.73 billion rupiah, and Other Services at 4,789.99 billion rupiah. These three sectors demonstrate very strong competitiveness and have the potential to become the main drivers of regional economic growth. Additionally, Construction (5,474.98 billion), Water, Waste, and Waste Management (3,659.61 billion), and Business Services (3,113.36 billion) also exhibit high competitive performance, reflecting the strength of the service and infrastructure sectors in this region.

Other sectors such as Agriculture, Forestry, and Fisheries (3,718.16 billion), Mining and Quarrying (2,829.88 billion), Transportation and Warehousing (3,198.30 billion), and Information and Communication (2,692.45 billion) also contributed significantly to competitiveness. Even the Real Estate, Financial Services and Insurance, and Electricity and Gas Supply sectors, although generally considered supporting sectors, still recorded positive Cij values above 1,000 billion rupiah. With no sector having a negative Cij value, it can be concluded that all economic sectors in Sorong Regency possess strong local competitive potential that can be further developed. This serves as an important foundation for planning the development of a Special Economic Zone (SEZ), as it indicates that the development of any sector in this region has the potential to grow based on its own internal strengths.

Grouping Sectors Into Klassen Typology

Based on the 4 Quadrants, namely Leading Sectors with an LQ index > 1 and SS (Cij+1), Potential Sectors if LQ < 1 and SS (Cij+1), still included in Potential Sectors if LQ>1 and SS(Cij-1), and Backward Sectors if LQ < and SS (Cij-1).

Table 4: Klassen Typology Analysis

	LQ > 1	LQ <1
CIJ (+)	• Manufacturing Sector. • Construction Sector.	• Education Services Sector • Agriculture, Forestry, and Fisheries Sector.

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	• Agriculture, Forestry, and Fisheries Sector.	• Mining Sector • Water Supply, Waste Management, Wastewater Management, and Motorcycle Sector. • Electricity and Gas Supply Sector. • Government Administration, Defense, and Mandatory Social Security Sector. • Accommodation and Food & Beverage Services Sector. • Wholesale and Retail Trade Sector; Motor Vehicle and Motorcycle Repair Sector. • Information and Communication Sector. • Financial Services and Insurance Sector. • Real Estate Sector. • Business Services Sector. • Health Services Sector. • Other Services Sector.
CIJ (-)	(None)	(None)

Based on the Klassen Typology approach, the economic sectors in Sorong Regency are grouped into four quadrants, but based on the available calculations, only two quadrants are filled, namely Quadrant I (Leading Sector) and Quadrant II (Potential Sector). This is based on the LQ and Cij values, where:

Quadrant I Key Sectors: LQ > 1 and Cij > 0

This means that the sector has become a key sector in the region (contributing significantly to the regional GDP relative to the province) and also has high competitiveness, making it worthy of being a top priority for development and investment.

The sectors in this category are:

- Manufacturing Industry
- Construction
- Agriculture, Forestry, and Fisheries

These three sectors hold a highly strategic position in supporting sustainable local economic growth. They are not only structurally important (as a foundation) but also competitively superior compared to reference regions, making them the main pillars in the development of the Special Economic Zone (SEZ) in Sorong Regency.

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Quadrant II Potential Sectors: LQ < 1 and Cij > 0

Sectors in this quadrant are not yet core sectors but demonstrate high competitive potential. This means that although their contribution to the Regional Domestic Product (RDP) is relatively small compared to the province, these sectors have the potential for rapid growth if given proper attention and development.

The potential sectors include:

- Education Services
- Mining and Quarrying
- Water Supply, Waste Management, Sewage, and Motorcycle Services
- Electricity and Gas Supply
- Government Administration, Defense, and Mandatory Social Security
- Accommodation and Food Services
- Wholesale and Retail Trade; Motor Vehicle and Motorcycle Repair
- Information and Communication
- Financial and Insurance Services
- Real Estate
- Business Services
- Health Services
- Other Services

These sectors reflect the hidden strengths of the regional economy, which, if supported through policies, incentives, infrastructure investment, or improvements in human resource quality, have the potential to become leading sectors in the future. Interestingly, no sectors were found in Quadrant III (LQ > 1 and Cij < 0) or Quadrant IV (LQ < 1 and Cij < 0). This indicates that no sectors are classified as stagnant or underdeveloped in this analysis, and generally signifies that Sorong Regency has a sufficiently healthy and competitive regional economic foundation.

DISCUSSION

This This section interpreted the study's findings and reflected on their implications for applying the blue economy concept to fisheries development within the Sorong

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Special Economic Zone (SEZ). The empirical analyses (Location Quotient, Shift-Share and Klassen typology) were used to move beyond descriptive accounting and to understand structural strengths, vulnerabilities, and policy levers. Below I synthesize those insights, relate them to the study's original aims and the wider literature, identify the contribution to knowledge, and note the study's limitations.

Interpreting the results in relation to the research question

The research asked whether the blue economy concept applied through targeted SEZ policy could support inclusive and sustainable regional growth by leveraging the fisheries sector. The analyses indicated that the fisheries-related sector possessed a discernible regional comparative advantage and recovery potential following external shock. This pattern suggested that fisheries were well placed to serve as one of the economic pillars of SEZ development, but only if policy and investments addressed structural bottlenecks (infrastructure, value-adding capacity, market access, and governance). In short, the results were aligned with the original question: fisheries show promise as a blue-economy anchor for Sorong SEZ, conditional on deliberate upgrading and sustainability measures.

Mechanisms and sectoral complementarities

The classification of sectors into leading and potential groups highlighted important complementarities. Leading sectors provide immediate engines of growth and employment; potential sectors (services, utilities, and knowledge-intensive activities) represent latent capabilities that can support fisheries through human capital, logistics, finance, tourism linkages, and business services. This implies a two-track development strategy: (1) consolidate primary competitiveness in fisheries by improving the supply chain and governance, and (2) stimulate supportive service sectors so that value capture and multiplier effects increase within the regional economy.

Consistency with existing evidence and novelty

The qualitative pattern identified pandemic-induced contraction followed by recovery and eventual strengthening of local comparative advantage is consistent with broader evidence showing that fisheries and aquatic value chains were disrupted by COVID-19 but showed resilience where local supply, processing, or domestic demand recovered. The study's novel contribution lies in applying a combined LQ, Shift-Share,

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Klassen typology specifically to the Sorong SEZ context, thereby linking sectoral competitiveness diagnostics directly to SEZ planning. This fills a local evidence gap by identifying which sectors can realistically be prioritized within an SEZ framework that emphasizes blue economy principles.

Policy implications (interpretive, not repetitive)

The discussion points to practical policy directions that follow logically from the diagnostics:

1. Align SEZ incentives with sustainable value-chain upgrading (processing, cold storage, quality control and certification) rather than raw extraction incentives alone.
2. Prioritize infrastructure investments that reduce post-harvest losses (ports, landing sites, cold chain and transport) and improve market connectivity.
3. Strengthen institutional arrangements for sustainable fisheries management (co-management, catch monitoring, enforcement, and marine spatial planning) to safeguard long-term resource rents.
4. Foster linkages between fisheries and service sectors (logistics, finance, ICT, tourism, and education) through targeted training, credit facilities, and public-private partnerships.
5. Promote inclusive measures (small-scale fishers, cooperatives, women's participation) so that the SEZ's benefits are distributed and social license for development is sustained.

These policy directions prioritize both growth and sustainability consistent with SDG objectives.

Limitations and methodological caveats

The study's approach and data impose several constraints that qualify interpretation. First, the analysis relied primarily on secondary statistical series aggregated at sectoral levels; such aggregates can mask within-sector heterogeneity (e.g., artisanal vs. industrial fisheries) and informal economic activity. Second, LQ and Shift-Share diagnostics are descriptive of comparative advantage and growth decomposition but do not establish causal mechanisms—additional econometric or modelling work is needed to test drivers. Third, the temporal window includes an exceptional shock (the COVID-19 period), which complicates trend interpretation and may overstate short-term

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volatility. Finally, environmental and ecological indicators were not integrated in the competitiveness metrics; therefore, the analysis cannot directly adjudicate long-term ecological sustainability.

Suggestions for future research

To strengthen policy relevance and fill remaining knowledge gaps, future studies should combine the present diagnostics with: (a) primary field surveys of fishers, processors and firms to capture value-chain dynamics and constraints; (b) environmental impact and resource-stock assessments to align growth targets with sustainability ceilings; (c) spatial analyses (GIS-based marine spatial planning) to manage user conflicts inside the SEZ; and (d) scenario modelling (e.g., CGE or cost-benefit) to evaluate investment trade-offs and distributional impacts.

Closing synthesis leading to the conclusion

Overall, the discussion confirms that the fisheries sector presents a pragmatic entry point for a blue-economy-oriented SEZ strategy in Sorong, but realization of that potential depends on purposeful policies that combine infrastructure investment, value-chain development, institutional strengthening, and environmental safeguards. The study therefore supports an SEZ pathway that is growth-oriented and sustainability-conscious a balance that will determine whether fisheries become a durable engine of inclusive regional development.

CONCLUSIONS

This study provides empirical and methodological contributions to the literature on blue economy–oriented regional development, particularly in the context of Special Economic Zones (SEZs) in eastern Indonesia. By integrating Location Quotient (LQ), Shift Share Analysis (SSA), and Klassen typology, this research offers a structured diagnostic framework to assess sectoral competitiveness and development potential within a blue economy policy setting—an approach that remains limited in previous SEZ-focused studies.

Empirically, the findings demonstrate that the Agriculture, Forestry, and Fisheries sector in Sorong Regency has transitioned into a base sector in 2023, indicating an emerging comparative advantage after a period of vulnerability caused by external

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shocks, notably the COVID-19 pandemic. This dynamic evidence contributes to scientific understanding by showing that fisheries-based regional economies can recover and regain competitiveness when structural conditions and local advantages are present, even in peripheral or resource-dependent regions.

From a policy-science perspective, this study advances the application of blue economy principles by linking sectoral competitiveness analysis directly to SEZ development planning. Unlike prior studies that treat the blue economy largely as a normative or conceptual framework, this research operationalizes the concept through quantitative regional economic tools, thereby strengthening its analytical rigor and practical relevance. The results confirm that fisheries can function not merely as a traditional extractive sector, but as a strategic growth anchor when supported by value-chain upgrading, infrastructure development, and sustainable governance mechanisms.

Furthermore, the identification of complementary potential sectors highlights the importance of cross-sectoral integration in blue economy implementation. This contributes to the theoretical discourse by emphasizing that sustainable maritime development within SEZs depends not only on natural resource endowments but also on service-sector linkages that enhance value creation, resilience, and inclusivity.

In conclusion, this study contributes scientifically by (1) providing an integrated analytical framework for assessing blue economy readiness at the regional level, (2) generating empirical evidence on fisheries-sector competitiveness within an SEZ context, and (3) strengthening the policy relevance of blue economy research through direct alignment with SDG 8 and SDG 14. These contributions position the study as a reference for future research and policy design aimed at fostering sustainable, inclusive, and resilient maritime-based regional economies.

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