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Optimizing Fisheries Assets and Levies to Enhance Regional Revenue in East Kalimantan

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ABSTRACT

The fisheries sector plays a strategic role in supporting regional fiscal independence in coastal provinces such as East Kalimantan; however, a persistent gap remains between its economic potential and realized Regional Original Revenue (PAD). Using a descriptive-quantitative approach combined with asset-based valuation and fiscal scenario analysis, this study examines the structure and performance of fisheries levies and evaluates the fiscal potential of key public fisheries assets based on primary interviews and official administrative data. The results show that fisheries levies reached IDR 1.08 billion in 2023, while the estimated fiscal potential could reach approximately IDR 4.3 billion per year, representing an increase of nearly 300 percent under integrated optimization scenarios. Hatchery facilities with an actual production capacity of about 1.2 billion fish and shrimp seedlings annually constitute the largest source of unrealized fiscal value. This study demonstrates that short-term gains can be achieved through port service optimization, auction revitalization, and hatchery asset intensification, while longer-term opportunities arise from revenue-sharing mechanisms under quota-based fisheries policies (PIT). The novelty of this research lies in its integrated analytical framework that combines levy structure analysis, public asset valuation, and strategic prioritization to assess fisheries-based fiscal autonomy at the regional level.

Keywords**:** Fisheries Levy; Regional Fiscal Independence; Asset Valuation; Fiscal Decentralization; East Kalimantan

INTRODUCTION

Regional fiscal independence constitutes a fundamental pillar of Indonesia's decentralization framework, particularly following the enactment of Law No. 23 of 2014 on Regional Government and Law No. 1 of 2022 on Central–Regional Fiscal Relations. Within this framework, Regional Original Revenue (PAD) plays a critical role in determining the capacity of subnational governments to finance development programs independently and sustainably (Bird & Slack, 2013; Oates, 1999). For coastal provinces, the fisheries sector represents a strategic economic base that not only supports food security and employment, but also holds substantial potential as a source of regional fiscal revenue when managed effectively (Béné et al., 2015; FAO, 2020).

East Kalimantan Province exemplifies this condition. With capture fisheries and aquaculture production exceeding 330,000 tons annually, supported by extensive marine waters, inland fisheries, and public fisheries

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infrastructure, the province possesses considerable economic and fiscal potential (KKP, 2023). However, empirical evidence indicates that the contribution of the fisheries sector to PAD remains relatively low. Fiscal realization data show that fisheries levies contributed approximately IDR 1.01 billion in 2022 and IDR 1.08 billion by October 2023—figures that are disproportionate to the scale of production and asset ownership. Similar discrepancies between resource potential and fiscal realization have been observed in other coastal regions in Indonesia (Setyowati et al., 2023; Suriani et al., 2023).

Several interrelated factors contribute to this condition. These include the suboptimal functioning of fish landing bases (PPI) and fish auction sites (TPI), underutilization of hatchery and laboratory assets, fragmented institutional authority between provincial and municipal governments, and limited adoption of digital levy systems (Setyawan & Mahfudz, 2021; Zuhdi et al., 2022). In addition, recent regulatory changes—particularly the abolition of fisheries licensing levies (SIUP, SIPI, SIKPI) under Law No. 1 of 2022—have fundamentally altered the fiscal landscape of the fisheries sector. While these reforms aim to improve governance and reduce administrative burdens, they simultaneously create fiscal adjustment challenges for regional governments that previously relied on licensing revenues (Maulana et al., 2021)

Previous studies on fisheries-related fiscal governance in Indonesia have primarily focused on port efficiency, licensing mechanisms, or descriptive evaluations of levy realization (Setyowati et al., 2023; Suriani et al., 2023). Such studies often examine individual components in isolation and rarely account for public asset valuation or the implications of recent regulatory transformations. Moreover, limited attention has been given to forward-looking fiscal scenarios that integrate institutional reform, asset optimization, and emerging policy instruments such as quota-based fisheries (Penangkapan Ikan Terukur/PIT) (Adhuri et al., 2020). As a result, existing literature provides insufficient guidance for regional governments seeking to adapt fisheries-based PAD strategies under the new fiscal and regulatory regime.

This study addresses these gaps by offering several novel contributions. First, it integrates fisheries levy structure analysis with public asset–based valuation to quantitatively estimate realistic PAD potential, moving beyond predominantly descriptive or sector-specific assessments found in previous studies (M. Maulana et al., 2021). Second, this research explicitly incorporates recent regulatory transformations—particularly Law No. 1 of 2022 on Central–Regional Fiscal Relations and the implementation of quota-based fisheries (PIT)—into regional fiscal scenario simulations, an aspect that has received limited empirical attention. Third, this study operationalizes inward-looking and outward-looking strategies within a unified analytical framework, linking institutional strengthening, digitalization of levy systems, and blue economy expansion to measurable fiscal outcomes at the provincial level (Adhuri et al., 2020; Setyowati et al., 2023).

Accordingly, this study aims to: (1) analyze the structure and performance of fisheries levies in East Kalimantan within the current decentralization and regulatory framework; (2) estimate the fiscal potential of fisheries-related public assets using an asset-based valuation approach; and (3) formulate evidence-based intensification and extensification strategies, including institutional strengthening, digitalization of levy systems, and preparation for quota-based fisheries (Penangkapan Ikan Terukur/PIT), to support sustainable regional fiscal independence. By

integrating empirical fiscal analysis with asset valuation and forward-looking policy scenarios, this study seeks to contribute both analytically to the literature on fiscal decentralization and practically to regional fisheries governance.

RESEARCH METHODS

This research employs a descriptive–quantitative design with qualitative enrichment to analyze the fiscal performance and potential of the fisheries sector in East Kalimantan. This approach focuses on fiscal estimation and policy-oriented analysis based on observable administrative, production, and financial data, rather than efficiency benchmarking or investment appraisal.

The research was conducted in East Kalimantan Province, focusing on Regional Technical Implementation Units (UPTD), Fish Landing Bases (PPI), Fish Auction Sites (TPI), and cultivation centers located in Samarinda City, Berau Regency, and Kutai Kartanegara Regency. Locations were selected purposively based on their fiscal contribution and the presence of productive public fisheries assets (Effendy, 2021; Suriani et al., 2023). Primary data were collected through semi-structured interviews with key informants from the Provincial Marine and Fisheries Service, the Regional Revenue Agency, and UPTD managers responsible for port and hatchery operations. Secondary data were obtained from official PAD realization reports, fisheries production statistics, and asset inventory documents to support data triangulation and ensure validity.

Primary data were collected through semi-structured interviews with officials from the Provincial Marine and Fisheries Service, UPTD managers, fisheries business actors, and levy administrators to obtain information on institutional practices, levy mechanisms, and asset utilization (Kvale, 1996). Direct field observations were also conducted at key fiscal facilities, including hatcheries, cold storage units, and testing laboratories, to assess operational conditions and the functionality of fisheries-related public assets. A total of 15 key informants representing provincial agencies, UPTD managers, and fisheries business actors were involved in this study. Secondary data were obtained from official regulatory and administrative documents, including East Kalimantan Provincial Regulation No. 4 of 2021 concerning Regional Levies, PAD realization reports for 2022–2023 from the Provincial Marine and Fisheries Office, and fisheries production and asset statistics from BPS (2023) and MPA (2023). Relevant findings from previous studies were reviewed to support data triangulation and ensure analytical consistency (Adhuri et al., 2020; Setyowati et al., 2023).

Data Analysis Techniques

1) Descriptive Statistical Analysis
   It is used to present the historical trends and composition of the fisheries sector levy. Quantitative data were processed using cross-tabulation and *time series trends* (Ghozali, 2018).
2) Valuation of Fiscal Assets
   Asset valuation is carried out using *an Asset-Based Valuation approach* based on actual output and potential fiscal income. This model refers to the approach of (Rimmer et al., 2020) and (M. Maulana et al., 2021) which measures the economic value of public facilities based on production capacity, utilization, and market value of production products.
3) Fiscal Scenario Analysis
   Fiscal scenario analysis was conducted to project the potential fiscal impact of alternative policy options, including the status quo, levy reform, and asset intensification scenarios. The simulation applied asset-based valuation results using annual fiscal

planning cycles as the time horizon and key parameters such as utilization rates, tariff levels, and revenue-sharing proportions. Sensitivity analysis was performed by adjusting key parameters to assess the robustness of PAD projections, following a scenario-based approach adapted to the regional fiscal context (Setyowati et al., 2023).

4) Institutional and Governance Analysis
   Institutional and governance analysis was conducted to assess institutional capacity, regulatory arrangements, and the performance of fisheries levy management systems. This analysis focused on identifying governance constraints and policy leverage points through document review and triangulation of institutional data and relevant literature (Delgado et al., 2022; Miles et al., 2014; Patton, 2015; Zuhdi et al., 2022).
5) Triangulation of Literature and Policy
   Triangulation of literature and policy documents was applied to enhance analytical validity by cross-confirming primary field data with official statistics, regulatory frameworks, and relevant scientific studies (Adhuri et al., 2020; Béné et al., 2015).

RESULTS AND DISCUSSION

Fishery Sector Levy Structure in East Kalimantan

Fisheries-related regional levies in East Kalimantan are derived from several service- and asset-based revenue sources, including port services at Fish Landing Bases (PPI), fish auction services (TPI), sales of regional fisheries outputs—particularly hatchery-produced seeds—laboratory testing services, and other technical services managed by Regional Technical Implementation Units (UPTD). Following the implementation of Law No. 1 of 2022, licensing-based levies such as SIUP, SIPI, and SIKPI were abolished, thereby increasing the fiscal importance of operational services and public asset utilization within the fisheries sector (Bird & Slack, 2013; Setyowati et al., 2023).

Based on PAD realization data for the 2022–2023 period, port-related levies remain the primary contributor to fisheries PAD, accounting for approximately 45–66 percent of total sectoral revenue. This pattern is consistent with previous findings showing that fisheries ports tend to function as the main fiscal nodes due to their concentration of landing, unloading, and supporting services (Delgado et al., 2022; Suriani et al., 2023). In East Kalimantan, this contribution is largely concentrated in several major PPIs, notably Sambaliung in Berau Regency, Selili in Samarinda City, and Manggar Baru in Balikpapan City, which benefit from relatively higher vessel traffic and better infrastructure readiness.

From a regional fiscal perspective, the relatively low contribution of non-port levy components does not indicate limited economic potential, but rather reflects persistent institutional and operational constraints. Previous studies have shown that underutilization of public fisheries assets is commonly associated with fragmented authority, limited managerial capacity, and weak integration between fiscal policy and sectoral development planning (Adhuri et al., 2020; M. Maulana et al., 2021). This condition is also evident in the limited fiscal performance of hatchery outputs, laboratory services, and auction-based levies in East Kalimantan, despite the availability of physical infrastructure and production capacity.

To provide a clearer overview of the relative contribution of each levy component, Table 1 summarizes the composition of fisheries levy revenues in East Kalimantan. The dominance of port service levies underscores the central role of fisheries infrastructure in regional fiscal generation, while the relatively small share of hatchery- and auction-based revenues indicates the presence of substantial untapped fiscal potential.

These structural characteristics form the empirical basis for the subsequent asset valuation and fiscal scenario analysis, as well as for the formulation of inward- and outward-looking optimization strategies discussed in the following sections (Rimmer et al., 2020; Setyowati et al., 2023).

Table 1.
Composition of Fisheries Levy Revenue in East Kalimantan (2023).

Levy Source	Revenue (IDR)	Contribution (%)	Notes
Port services (PPI: mooring, docking, landing)	540.000.000	50,0	Concentrated in major PPIs
Fish auction services (TPI)	180.000.000	16,7	Limited operation in several locations
Hatchery product sales (BBI & BBU)	210.000.000	19,4	Below optimal utilization
Laboratory and technical services	90.000.000	8,3	Demand-driven
Other fisheries services	60.000.000	5,6	Minor contribution
Total	**1.080.000.000**	**100,0**	

Source: Processed from PAD realization reports of the East Kalimantan Provincial Marine and Fisheries Office (2023).

The dominance of port service levies underscores the central role of fisheries infrastructure in regional fiscal generation. At the same time, the relatively limited contribution from hatchery- and auction-based revenues indicates the presence of substantial untapped fiscal potential within existing public assets. These structural characteristics provide the empirical basis for the subsequent asset valuation and fiscal scenario analysis, as well as for the formulation of inward- and outward-looking optimization strategies discussed in the following sections.

Fiscal Potential Based on Asset Valuation

Hatchery facilities (BBI and BBU) represent one of the most significant public fisheries assets in East Kalimantan. Based on administrative records, hatchery production reached approximately 1.2 billion fish and shrimp seedlings annually during the observation period. This figure reflects the actual average production capacity, rather than the maximum technical capacity, and therefore provides a conservative basis for fiscal valuation.

Using prevailing market prices and existing levy mechanisms, the estimated economic value of hatchery production reaches approximately IDR 36 billion per year. Nevertheless, only a limited portion of this value is currently captured as Regional Original Revenue (PAD), indicating substantial untapped fiscal potential. This gap highlights opportunities for asset intensification through improved utilization, pricing, and institutional coordination, consistent with asset-based valuation approaches applied to public fisheries facilities (M. Maulana et al., 2021; Rimmer et al., 2020).

Inward-Looking Strategy For Fiscal Optimization

The formulation of inward- and outward-looking strategies in this study is explicitly derived from the results of the levy structure analysis and asset valuation presented in the preceding

sections. The dominance of port-based levies, the underutilization of hatchery facilities, and the gap between estimated economic value and realized PAD serve as the main empirical considerations in defining strategic priorities for strengthening fisheries-based regional fiscal independence. Similar approaches linking fiscal performance with asset utilization and institutional capacity have been emphasized in studies on fisheries governance and regional fiscal management (Adhuri et al., 2020; Bird & Slack, 2013).

Inward-Looking Strategies (Short-Term Priorities)

Inward-looking strategies prioritize the improvement of existing fiscal instruments and institutional practices. In the short term, policy emphasis should be placed on optimizing port service levies through the full activation of levy objects, revitalizing fish auction activities at underperforming TPI, and strengthening the operational capacity of UPTD responsible for managing fisheries assets. The gradual digitalization of levy administration is also essential to improve transparency and administrative control, particularly in locations with high transaction intensity, as highlighted in previous studies on regional levy reform and digital governance (Setyowati et al., 2023; Zuhdi et al., 2022).

Outward-Looking Strategies (Long-Term Priorities)

Outward-looking strategies are oriented toward broadening the fiscal base of the fisheries sector through structural and policy-driven adjustments. Over the longer term, strategic priorities include strengthening coordination between provincial and municipal authorities in asset management, preparing institutional arrangements for revenue-sharing under quota-based fisheries policies (PIT), and integrating fisheries assets into wider blue economy initiatives. These directions are consistent with the literature on blue economy development and sustainable fisheries governance, which emphasizes value-chain integration and institutional alignment as key drivers of long-term fiscal sustainability (Adhuri et al., 2020; Béné et al., 2015).

Based on the above analysis, the strategic priorities for fisheries fiscal optimization are summarized in Table 2.

Table 2.
Strategic Priorities for Fisheries Fiscal Optimization

Strategy Orientation	Main Focus	Priority Horizon
Inward-looking	Levy activation, TPI revitalization, UPTD strengthening, administrative digitalization	Short-term
Outward-looking	Asset integration, fiscal coordination, PIT revenue-sharing, blue economy linkage	Long-term

Source: Processed data, 2023

CONCLUSION

This study confirms that the fisheries sector in East Kalimantan has substantial potential to support regional fiscal independence, yet current levy realization remains disproportionately low relative to its economic capacity. The analysis shows that reliance on port-based levies, underutilization of hatchery assets, and institutional constraints are the main factors limiting fisheries-based Regional Original Revenue (PAD). The application of asset-based valuation and

fiscal scenario analysis demonstrates that integrated inward- and outward-looking strategies can significantly enhance fisheries fiscal performance.

Theoretically, this study contributes to the literature on fiscal decentralization and fisheries governance by extending asset-based valuation into a regional fisheries context and by integrating levy structure analysis, public asset valuation, and strategic prioritization within a unified analytical framework. This integrated approach advances existing studies that tend to examine fiscal instruments or fisheries assets in isolation.

This study is subject to several limitations. The valuation relies on administrative production data and does not explicitly account for operational and maintenance costs, potentially affecting net fiscal estimates. In addition, data availability limits the temporal scope of analysis. Future research is therefore encouraged to incorporate cost-sensitive valuation models and longer-term datasets, as well as to examine the interaction between fisheries fiscal performance, governance dynamics, and sustainability outcomes under quota-based fisheries policies.

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