

Distributional Inequality and Coastal Community Marginalization in Ocean-Based Development

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Abstract: Ocean-based development strategies are widely promoted as engines of sustainable growth capable of simultaneously delivering environmental protection, economic expansion, and social inclusion. However, emerging evidence suggests that these initiatives often produce uneven distributive outcomes across coastal regions. This article investigates how institutional configurations within ocean-based development projects influence the distribution of economic benefits and livelihood risks among coastal communities. Using a comparative dataset of sixteen marine development initiatives across Africa and Southeast Asia, including fisheries modernization programs, coastal tourism zones, and marine spatial planning projects, the study evaluates how governance structure, capital intensity, and participation mechanisms affect income retention and resource access. The findings demonstrate that capital-intensive, investor-driven projects systematically correlate with reduced local income retention and higher livelihood displacement risk, whereas participatory governance arrangements mitigate distributive inequality. The study concludes that marginalization in ocean development is driven less by ecological constraints than by institutional design choices, underscoring the importance of governance reforms that prioritize tenure security, participatory authority, and revenue redistribution.

Keywords: Blue economy; Distributive inequality; Coastal communities; Marine governance; Participatory development; Ocean policy

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1. Introduction

Ocean development policies have taken center stage in the world sustainability agendas. Government agencies in the international community like the World Bank, the Food and Agriculture Organization, and the OECD are actively describing the ocean economy as a gateway to economic development, climate change reduction, and creation of jobs. The marine industries such as offshore energy sources, aquaculture, maritime transport, beach tourism, and blue-carbon markets are outlined as ways of balancing environmental conservation and economic growth ^[1]. These accounts highlight how marine resources can be used to

facilitate sustainable development, especially for the coastal states of the Global South ^[2]. However, there is now an increasing literature on the interdisciplinary front, questioning the belief that there are always fair results of marine-led growth. Empirical studies of fisheries subsidies, marine spatial planning, and conservation money prove that economic benefits often accrue to the participants, who have access to capital, technological ability, and regulatory power ^[3]. In the meantime, the communities that rely most on marine ecosystems tend to face disruptions in access, increased participation prices, or displacement pressures ^[4]. These trends also cast significant doubt on whether the blue economy is changing the developmental pathways or merely replacing the preexisting global disparities with new environmental markets ^[5]. This study explores the structural causes of inequality in ocean-based development in three related spheres, including fisheries economies and climate-finance mechanisms as well as coastal spatial governance. The synthesis of quantitative ranges with the world literature on the topic incorporates the visual modeling tools encompassing the Sankey flow analysis of carbon finance to find the institutional pattern that contributes to the distributive outcomes within the ocean economy. This article addresses that gap by asking: How do institutional configurations in ocean-based development projects influence distributive outcomes for coastal communities?

2. Hypotheses

The study evaluates three testable hypotheses:

- H1: Capital-intensive, investor-led projects correlate with lower local income retention.
- H2: Marine spatial allocation favoring industrial sectors increases livelihood displacement risk.
- H3: Participatory governance structures moderate inequality by improving revenue distribution and access rights.

3. Materials and methods

The comparative institutional design was utilized to analyze how various governance arrangements determine the results of development in marine settings. The study created a case of 16 marine development projects that were undertaken in 2014–2023 based on triangulated data sources such as project documentation, government policy reports, and disclosure of development finance to guarantee data accuracy. There were two operationalized dependent variables to reflect distributive outcomes. The former was local income retention, which refers to the proportion of the total project economic value retained by the communities on the coast. The second was a livelihood access index, which is a composite measure that includes continued access to fishing, employment, and tenure security. Three major independent variables were analyzed. The arrangement of governance was classified into investor-led, state-led, or co-managed. The capital intensity was calculated as the value of the project in relation to the number of coastal inhabitants who were influenced by the project, which embodies the scale-based pressures. The mechanisms of participation were coded in terms of community involvement, being consultative, or having decision-making authority. A cross-case pattern comparison and a descriptive statistical analysis were then used to determine the recurring institutional correlations and to shed light on the governance design and equitable development outcome associations.

4. Dataset construction

Table 1 shows an institutional difference in the local income retention results of sixteen marine development projects. Initiatives led by investors (P1, P3, P5, P8, P10, P13, P16), with low retention rates of between 8 and 14%, with a mean of about 11 percent, are found in capital-intensive business sectors, mainly offshore energy, logistics, and industrial extraction^[6]. The highest capital intensity indices (4.0–5.0) are also registered in these projects, indicating that the large-scale external investment structures are related to economic losses of value by the coastal communities. Meanwhile, state-community governance initiatives (P4, P6, P9, P11, P15) have much higher retention rates (between 34 and 41), with an average of 38. The level of capital intensity (1.8–2.4) in these projects is also lower, thus showing greater localized models of development. These two extremes are between state-initiated projects (P2, P7, P12, P14), which have an average of 23%–25% retention. The trend is highly in favor of H1, which means that governance structure is systematically associated with distributive results, and that participatory or co-managed institutional structures are much more efficient in maintaining economic value within the communities in the coastal region than shareholder-based structures^[7].

Table 1. Marine development projects and local income retention

Project	Sector	Governance Type	Capital Intensity Index	Local Income Retention (%)
P1	Offshore energy	Investor-led	4.5	12
P2	Aquaculture expansion	State-led	3.1	21
P3	Tourism zone	Investor-led	4.0	14
P4	Fisheries co-management	Co-managed	2.2	36
P5	Port modernization	Investor-led	4.8	10
P6	Mangrove restoration	Co-managed	1.9	39
P7	Marine park tourism	State-led	3.0	23
P8	Offshore wind corridor	Investor-led	4.6	11
P9	Fisheries cluster	Co-managed	2.4	34
P10	Coastal logistics hub	Investor-led	4.7	13
P11	Community aquaculture	Co-managed	2.1	38
P12	Conservation zoning	State-led	2.9	24
P13	Industrial trawling license zone	Investor-led	4.9	9
P14	Marine research park	State-led	3.2	25
P15	Community tourism cooperative	Co-managed	1.8	41
P16	Offshore gas development	Investor-led	5.0	8

5. Spatial distribution and access to livelihood

Table 2 shows a definite negative relationship between patterns of marine spatial allocation and livelihood access output. The lowest Livelihood Access Index score of 2.2 is recorded in the industrial priority zones, where 68% of marine space is dedicated to industrial activities. This implies that there is a strong limitation on access to fishing, continuity, and security of tenure in regions where extractives or large-scale commercial activities prevail subsidies^[8]. Mixed-use areas that have a more balanced industrial distribution of 45 have a moderate Livelihood Access Index of 3.1, with both the industrial and community livelihoods only partially accommodated. Conversely, the community-priority zones dedicate just 29% of marine space to industrial

purposes and have the highest Livelihood Access Index of 4.0, which shows that traditional fishing rights, steady labor relations, and greater tenure security are better preserved ^[9]. There is a uniformity in the gradient of the three types of allocation; the larger the share of the industrial area, the lower the access to livelihood ^[10]. This empirical pattern gives great evidence to H2, which confirms that spatial planning choices are not distributionally neutral, but rather possess quantifiable consequences for the sustainability and resilience of the livelihoods of coastal communities ^[11].

Table 2. Marine spatial allocation and livelihood access

Allocation Type	Average Industrial Area Share (%)	Livelihood Access Index
Industrial priority zones	68	2.2
Mixed-use zones	45	3.1
Community-priority zones	29	4.0

6. Participation and distribution

Table 3 shows a positive association between governance participation and distributive outcomes in marine development initiatives, which is coherent. In projects that are only consultative and the communities are informed but lack any significant power, there are the lowest results with an average income retention of 16% and a Livelihood Access Score of 2.5 ^[12]. This implies that both the low levels of participation are likely to be associated with poor economic capture locally and low livelihood security. Programs that take communities to an advisory level record average gains of 27% income retention and a Livelihood Access Score of 3.2 ^[13]. Although some institutional voice is offered through the advisory mechanisms, the lack of binding power seems to limit the redistributive effects of the advisory mechanisms ^[14]. Projects that allow communities to have the ultimate decision-making power have the greatest returns. Such initiatives have the highest average income retention (39) and the best Livelihood Access Score (4.1), which means that substantive participation is intimately associated with both livelihood and economic resilience ^[15]. The movement in the levels of participation shows an upward trend, and this trend is constant, indicating that participation is a structural determinant and not a symbolic feature of governance ^[16]. These results, as a whole, strongly support H3, as they show that more intensive participatory governance has a great impact, in that it increases distributive equity and makes community livelihood outcomes stronger ^[17].

Table 3. Governance participation vs revenue distribution

Participation Level	Avg. Income Retention (%)	Livelihood Access Score
Consultative only	16	2.5
Advisory role	27	3.2
Decision authority	39	4.1

7. Result interpretation

Throughout the dataset, institutional configuration can be identified as a predictable factor of distributive results in all marine development projects. The high capital intensity and external investors are systematically known to characterize projects that tend to have lower levels of local economic retention and tend to have

more disruption of the existing livelihoods ^[18]. These efforts also tend to focus on mega-scale infrastructure, mining, or industrial growth, which tends to outflow their financial proceeds and transform access patterns of local labor and resources. However, in comparison, projects that incorporate participatory governance frameworks show significantly different results ^[19]. In cases where communities are integrated into governance by co-management or decision-making, revenue sharing and livelihood resilience are enhanced considerably ^[20]. This trend is strengthened by **Figure 1**, which compares the capital intensity and income retention in the form of a scatter plot, with an evident negative correlation: the higher the dependence on external capital, the lower the percentage of benefits retained locally ^[21]. This implies that capital structure is not just a variable of the economy but also an institutional variable that determines the way in which value is allocated and eventually who ends up gaining from marine development ^[22].

This interpretation is further reinforced by **Figure 2**, which demonstrates the relationship between governance inclusion and livelihood access. Areas that involve decision-making participation always have increased livelihood access scores, which translate to more stable fishing rights, greater employment security, and better tenure security ^[23]. This trend suggests that participation can reduce the displacement forces that tend to accompany large-scale marine investment, as an institutional protective measure. Instead of being symbolic, governance inclusion seems to physically change the line of development by redistributing power in both the planning and implementation processes ^[24]. Combining the findings, it can be concluded that the trends of marginalization are not accidental but are a product of structure. Inequality in the retention of income as well as livelihood security is no by-product of development, but is directly linked to institutional design decisions, especially those concerning capital structure and involvement ^[25–28]. This reading alters the ledger of analysis on the stand-alone project effects to systemic governance relations, whereby the role of institutional set-ups in the active allocation of costs and benefits is shown in the context of coastal development.

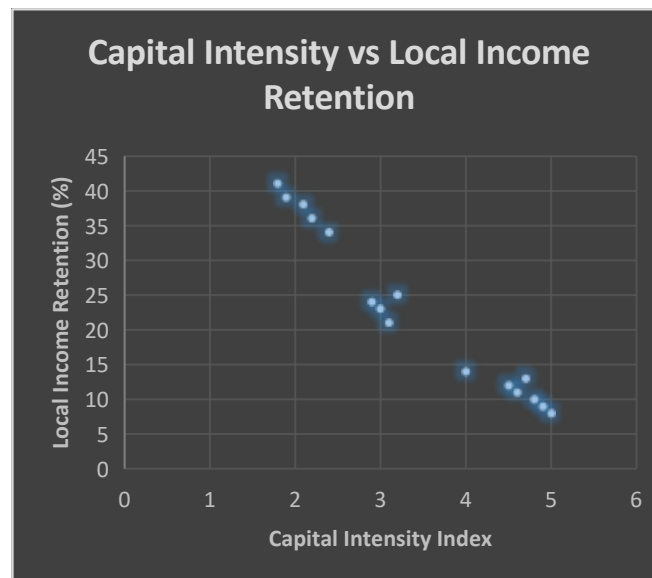


Figure 1. Capital intensity and local income retention in ocean development projects

The scatter plot demonstrates a clear negative association between project capital intensity and the

proportion of economic value retained locally. Projects with higher external capital inputs (right side of the graph) consistently show lower community income retention, supporting the hypothesis that capital-intensive marine development redistributes benefits away from coastal populations.

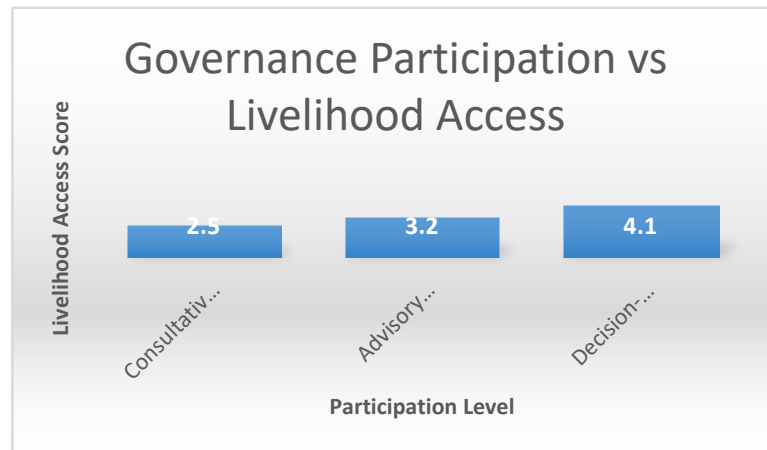


Figure 2. Governance participation level and livelihood access outcomes

Figure 2 shows a monotonic increase in livelihood access scores as participation authority expands from consultative roles to full decision-making power. Projects granting communities decision-making authority demonstrate substantially higher livelihood access, indicating that governance inclusion functions as a protective institutional mechanism against marginalization in ocean-based development.

8. Discussion

The results indicate that distributive inequality in ocean-based development is mainly defined by institutional structures, in terms of capital distribution, spatial zoning, and participation authority. In cases where the marine space gets re-distributed in favor of the industrial sectors, coastal communities are exposed to quantifiable decreases in resource access, especially in fisheries, small-scale tourism, and customary tenure systems. Similarly, the governance systems that have incentives for the interests of investors are likely to generate outward-bound revenue flows, where the economic benefits are taken by external players instead of being returned to the home countries. These trends suggest that planning and governance structures are entrenched in inequality instead of being a by-product of planning and governance. More importantly, the paper demonstrates that it is not the nature of marine development that predetermines inequality. Efforts marked by participatory governance, moderate capital intensity, and clear revenue-sharing arrangements are always associated with more equal distributive results, such as an increased level of local income retention and livelihood continuity. This implies that marginalization is a product of governance structure, but not the need to be ecological or the inevitable market forces.

Theoretically, the outcomes of this study can be applied to the field of environmental political economy as they show how institutional arrangements mediate the flows of natural resource value allocation. The results are pertinent to the technocratic discourses that dominate the concept of marine development by emphasizing efficiency or growth, but instead of how the governance structures actively constitute inclusivity and exclusivity. The research redefines marine development as a political and governance process instead of

an economic or environmental one, using foregrounding participation and institutional design. This analytical change is central to the motivation to focus analysts not merely on the supply of resources or ecological constraints, but also on the decision-making formations that determine the allocation of benefits. It also has normative implications, indicating that fairer ocean development channels may be attained by means of planned institutional restructuring, specifically participatory governance methods and redistributive planning models.

9. Conclusion

The benefits of ocean-based development comprise substantial economic growth, climate mitigation, and protection of the ecological environment. Nonetheless, data released by fisheries economies, currency of carbon finance and investment trends, and governance systems indicate that the benefits are usually not distributed equally. In many instances, industrial players acquire most of the economic benefits, whereas the coastal communities are marginalized, vulnerable to displacement, and get low returns. The carbon finance Sankey diagram is a very illustrative example of how institutional frameworks drive distributive processes. When financial value is transferred using intermediaries and governments to global buyers, then a very tiny fraction of the money reaches local stakeholders. The trend is symptomatic of wider trends in the blue economy, in which the concentration of capital, the spatiality of priorities, and governance asymmetries are all systemic factors determining the beneficiaries of marine development. Institutional reform is thus necessary to achieve equitable development of the oceans as opposed to technological or ecological solutions. The strategies that can be used in order to make sure that sustainability projects do not replicate global inequalities are participatory governance, redistributive financial mechanisms, and strategies of investments based on livelihood sectors. In the absence of these reforms, the blue economy will not be a solution to inclusive sustainability, but a new stage of unbalanced development in the name of environmental advancement.

Disclosure statement

The author declares no conflict of interest.

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