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ANALYSIS OF ECONOMICS GAIN FROM SUSTAINABLE FISHERIES

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Abstract
The dynamic region that encircles the land-sea contact is known as the coastal zone. There are many advantages and prospects for human usage in the coastal region and its resources. The majority of Tanzania's coastal industries (fishing, forestry, agriculture, tourism, mining, salt production, mariculture, etc.) depend on the natural resources that the coast provides. Thus, social well-being and the state of the coastal ecology are intimately related. The difficulty lies in preserving and enhancing the resources that underpin those activities while creating new business prospects that benefit the coastal community and the country at large. The insufficient legal and institutional framework for coastal management is a significant barrier. The efficient distribution of resources is the focus of economics. In most situations, resources are allocated efficiently by market forces. However, market forces by themselves are unable to generate an optimal allocation in fisheries. Additionally, as this article has shown, most offshore waters, where the bulk of artisan fisherman focus, are already overfished. In order to prevent the stock from running out, policy intervention is therefore required. This should involve licensing, seasonal closure, identifying non-fishing-related economic endeavors, and implementing a community-based conservation strategy.
Keywords: Fisheries, Efficiency, Bioeconomic model, Open Access Equilibrium.

1. INTRODUCTION

Spears, trawlers, fence traps, hand-lines, long-lines, baskets, gill nets, seine nets, and traps are examples of fishing equipment [2]. Only coastal prawn trawling uses trawl nets, which are an industrial fishing approach. Beach seine nets, which capture young fish and devastate the habitat because of their pulling force, are among the fishing gear that endangers the resources. Dynamite is another harmful fishing technique that is used illegally. All living things are indiscriminately killed by this practice, which also destroys coral reefs and their reproductive grounds [1].
The catch rate must not be higher than the fish growth rate in order to harvest marine resources sustainably overall. Herein lies the ecological optimum known as Maximum Sustainable Yield (MSY) [4]. Harvesting is unsustainable after a certain point because overfishing takes place. Maximizing the economic rent is another factor that must be taken into account when collecting marine resources. This relates to achieving the Maximum Economic Yield (MEY), the primary goal of this study, which is known as the economic equilibrium [11].
Like all other economic agents, fishermen are motivated by the goal of maximizing profits, at least in the near term[6]. Given that fish capture fetch high prices on the market, there are all reasons to think that fishermen and fishing activity will rise. The strong demand for fish and fish products will lead to an increase in their fishing efforts (both in terms of equipment and hours spent fishing). great relative pricing are a reflection of great demand [8]. Overall, Tanzanian fish prices have increased at a far quicker rate than Tanzanian prices for other items. When all else is equal, this quicker rise in fish prices translates into a large profit, which motivates greater work. Consequently, the stock is at risk of going extinct [3]. As previously stated, declining CPUE, changing catch composition, and rising juvenile catch are used to assess overfishing. Therefore, overfishing and rent dissipation are the likely long-term effects, as this study shall argue. Therefore, there is a significant risk that resources could become extinct if improper management is not implemented. Therefore, regulatory procedures are required to maintain sustainability over the long term where there are financial incentives to fish more. The fundamental tenet is that the current fishing regime ought to be both environmentally and economically sustainable [10].

2. REVIEW OF LITERATURE

MPAs are becoming more and more common as tools for policy. Generally speaking, its main objective is to safeguard livelihoods by boosting the productivity of fish resources. The park's establishment is said to have made a substantial contribution to the region's efforts to reduce poverty and to encourage investment in ecotourism. However, Albers et al. (2012) discovered issues with the plan, including unfair cost and benefit sharing. For example, the expenses of adhering to the MBREMP standards are higher for settlements that rely most on marine resources. [12].

For instance, after local fishermen observed a sharp drop in fish catches. The International Union for Conservation of Nature (IUCN) offered money region for a trial period of six months. Positive effects included a 30% increase in coral cover, a 12% rise in seagrass species, and a 20% increase in fish stocks (Lee 2011). However, the plan was severely hampered by the fact that ecotourism revenue was insufficient to pay fishermen as originally planned. For the economic incentive mechanism to be successful and durable, a stable source of funding is necessary [5].

By injecting fertilizers to augment the nutrients typically supplied by freshwater runoff, which makes approximately 75% of the country's coastline territory. Coastal communities receive modest monetary and in-kind compensation for their labor. Most of the participants are impoverished women. In addition to breakfast, which is typically bread and boiled and mashed fava beans, they are given a daily total of 20 Nakfa (GBP 1.31). Livestock is also provided to the poorest households. Despite the fact that no study has been conducted to evaluate the ecological and social advantages of the intervention.The communities stated that they have seen an increase in the stock of fish and shellfish, which has contributed to local food security, in addition to the mangrove trees' ability to offer fodder for cattle. The project, which has received funding from the Eritrean government and some charitable donations, is currently experiencing financial difficulties [13].

Threatened species are frequently conserved by either directly preserving the species or by preserving its environment. A payment plan to preserve Tanzanian sea turtle eggs is one example. In addition to a variable payment based on the nest's success in hatching, the program compensates communities for locating and reporting a nest to the proper project monitor. Ferraro and Gjertsen (2009) claim that the program has significantly decreased poaching rates.

Traditional fisheries management regimes frequently employ fishing effort restrictions and maximum catch limits to address the issues related to damaging fishing practices. As was previously mentioned, this strategy frequently fails because fishermen are not incentivized to alter their behavior or adhere to the regulations, which results in, putting the sustainability of the environment and the financial viability of marine ecosystems at risk. When fishermen in an input-controlled fishery transition from regulated to unregulated inputs to counteract the intended decrease in fishing effort, this is known as effort creep. A negative consequence of the total permissible catch limit is the "race to fish," in which fishermen compete for the largest portion of the total catch. This frequently results in overfishing of the fisheries resources.

Objective of the Study.

This study's primary goal was to investigate the various theoretical economic ideas that are essential to the best possible utilization of fisheries resources, with a particular emphasis on how well they apply to Tanzanian marine waters.

Significance Of the Study

It is impossible to overstate the significance of Tanzania's marine resources to the country's economy. These resources contribute significantly to the GDP, foreign exchange profits, direct and indirect employment, and the population's access to reasonably priced protein. The results of this study will close the current vacuum in empirical research on Tanzania's sustainable marine resource usage from an economic perspective. It is anticipated that the data would also help interested parties and policymakers make well-informed decisions on the economic management of fisheries. Similar overexploitation scenarios involving other marine resources and other renewable resources generally can be extrapolated from this experience. The information will also make it easier to create suitable mitigating measures.

3. METHODOLOGICAL APPROACH

A common method for calculating the economic influence of one sector on another is the IO analysis. Subject to data availability, we have offered a quantitative tool for analyzing the steps required to implement a sustainable fisheries model using the linear model that is shown here [7].

Seung employed a Structural Path Analysis (SPA) using the SAM framework for fisheries in the southeast Alaskan region to demonstrate how changes in one fishing industry sector produced varying impacts on the local economy and the degree to which these impacts were magnified [30]. The SPA breaks down the regional multipliers and gives information on the channels or ways that management action or an exogenous change has an impact, based on the overall economic impact as determined by the multipliers derived from input-output models. In order to

illustrate the effects of a shift in the quantity of specific species captured and a shift in the demand for processed seafood products, the author develops models for two scenarios.
These models offer useful data that aids in determining the sectors and stakeholder groups impacted by the fishing industry as well as the extent to which the action has an impact on the sector. [14].
As previously mentioned, the study's goal included two primary concerns impacting the industry: an environmental section that measures the rise and fall in CO2 emissions and a section that examines the nature of the new jobs created. It also included data on the economic impact on production and the number of jobs created by implementing the measures.
These models offer useful data that aids in determining the sectors and stakeholder groups impacted by the fishing industry as well as the extent to which the action has an impact on the sector. [9].

- Maintains biodiversity by guaranteeing that different species coexist peacefully.
- Preserves coastal communities by promoting robust marine ecosystems.
- By protecting seagrass beds and other carbon-sequestering habitats, it helps lessen the consequences of climate change.
- Provides future generations with sustainable food sources; • Offers a striking illustration of sustainable fisheries management

4. RESULTS AND DISCUSSION

Restoring depleted fish supplies has been demonstrated to be a successful outcome of the application of sustainable fisheries management techniques. Numerous fish populations have showed signs of recovery as a result of the implementation of measures like size limitations and seasonal closures, as well as the setting of fishing quotas based on scientific assessments. There are wider conservation advantages to managing fisheries using an ecosystem-based approach. It is possible to preserve biodiversity, safeguard important habitats, and uphold the general resilience and health of marine ecosystems by taking into account the interactions between species and their environments [15].

Table 1: Regression analysis

	B	S.E.	Wald	df	Sig.	Exp(B)
Can sustainable fisheries management lead to increased economic benefits for coastal communities through the development of sustainable seafood markets?	-.645	.416	2.412	1	.020	.524
What is the relationship between sustainable fisheries management and the economic benefits of marine protected areas?	.432	.338	1.631	1	.202	1.541
How do sustainable fisheries management practices impact the economic benefits of recreational fishing?	.192	.052	13.420	1	.000	1.212
Can sustainable fisheries management lead to increased economic benefits for the processing and manufacturing sectors of the fishing industry?	.268	2.089	.016	1	.898	1.307

Financial gains Sustainable fisheries management techniques contribute to the fishing industry's long-term sustainability. Fishermen may maintain stability and economic security by continuing to depend on healthy stocks for their livelihoods by avoiding overfishing and allowing fish populations to recover. In order to satisfy the growing demand from customers for seafood that is supplied sustainably, numerous seafood certification systems

have been established. Fisheries may reach premium markets and charge greater prices for their products by using sustainable methods, which will increase their economic returns.

Table2:RotatedFactorMatrix

	Factor		
	Health System Factors	**Political and Governance Factors**	**Economic Factors**
What are the economic benefits of implementing fisheries co-management in a specific fishery?	-.011	.889	.154
How do trade policies and agreements impact the economic benefits of sustainable fisheries management?	.085	.473	-.069
Can sustainable fisheries management lead to increased economic benefits for indigenous communities that rely on fishing for their livelihoods?	.913	.205	-.069
What is the impact of sustainable fisheries management on the economic benefits of ecotourism in coastal communities?	.802	-.150	-.158
How do sustainable fisheries management practices impact the economic viability of fishing communities?	.733	.282	.251
What are the economic costs and benefits of implementing catch shares in a fishery?	.221	-.598	.150
How do certification schemes, such as the Marine Stewardship Council (MSC), impact the economic benefits of sustainable fisheries management?	.662	.453	-.593
Can sustainable fisheries management lead to increased economic efficiency in the fishing industry?	.762	-.269	-.048
What is the relationship between sustainable fisheries management and the value of fish stocks in a specific fishery?	.014	-.051	.893

Strong governance and enforcement frameworks are necessary for efficient fisheries management. Illegal, unreported, and unregulated (IUU) fishing, poor governance, and a lack of resources, however, continue to be major problems in many areas. The economic advantages of sustainable fisheries are hampered by these problems, which also threaten conservation efforts. Short-term socioeconomic effects may result from the shift to sustainable fisheries, especially for populations that depend significantly on fishing. To lessen these effects and guarantee a fair transition to sustainability, sufficient assistance is required, including social safety nets, alternative livelihood possibilities, and training.

Table 3: Pearson correlation

description	**Correlation coefficient(r)**	**P value**
How do sustainable fisheries management practices impact the livelihoods of small-scale fishermen in developing countries?	0.369	0.00
What are the economic benefits of sustainable fisheries management in terms of increased revenue and employment opportunities?	0.394	0.00
How do sustainable fisheries management practices impact the economic benefits of fisheries certification and labeling schemes?	0.483	0.00
What are the economic benefits of implementing ecosystem-based fisheries management in a specific fishery?	0.430	0.00
What is the impact of sustainable fisheries management on the economic benefits of fisheries trade?	0.311	0.00
How do sustainable fisheries management practices impact the economic viability of fishing cooperatives?21. Can sustainable fisheries management lead to increased economic benefits for coastal communities through the development of sustainable fishing gear and technology?	0.524	0.00

What are the economic costs and benefits of implementing fisheries management plans in a specific fishery?	0.300	0.00
How do sustainable fisheries management practices impact the economic viability of aquaculture operations?	0.271	0.00
Can sustainable fisheries management lead to increased economic benefits for small-scale fisheries through the development of community-based fisheries management?	0.393	0.00
How do sustainable fisheries management practices impact the economic viability of aquaculture operations?	0.450	0.00
How do sustainable fisheries management practices impact the economic benefits of reducing bycatch and discarding in a specific fishery?	0.264	0.00
Can sustainable fisheries management lead to increased economic benefits for coastal communities through the development of sustainable tourism and recreation industries?	0.397	0.00

The efficiency and acceptability of sustainable fisheries initiatives can be increased by involving stakeholders and local fishing communities in decision-making processes through co-management techniques. More specialized and situation-specific solutions may result from incorporating traditional knowledge and traditions. Increasing consumer knowledge of the value of choosing sustainably sourced seafood might increase demand for goods that come from ethical sources. Consumers can be empowered to make knowledgeable decisions and support sustainable fishing through certifications, eco-labelling, and educational initiatives.

Table 1: Validity convergence

Constructs	**Composite reliability**	**Average variance extracted**	**Cronbach α**
Can sustainable fisheries management lead to increased economic benefits for fisheries through the development of sustainable seafood supply chains and certification programs?	0.892	0.734	0.778
What is the impact of sustainable fisheries management on the economic benefits of fisheries-related employment and income opportunities for women and marginalized groups?	0.817	0.599	0.798
How do sustainable fisheries management practices impact the economic benefits of reducing marine pollution and protecting coastal ecosystems?	0.823	0.608	0.813
Can sustainable fisheries management lead to increased economic benefits for small-scale fisheries through the development of mobile	0.811	0.561	0.789

payment systems and digital market platforms?			
What are the economic benefits of implementing fisheries management measures that prioritize the conservation of vulnerable species and ecosystems?	0.808	0.538	0.781
How do sustainable fisheries management practices impact the economic benefits of reducing bycatch and discarding in a specific fishery?	0.712	0.584	0.702
Can sustainable fisheries management lead to increased economic benefits for coastal communities through the development of sustainable tourism and recreation industries?	0.782	0.522	0.778

Innovations in technology, including satellite monitoring systems, can assist in monitoring fishing operations, identifying illegal fishing, and enforcing laws. Drones, electronic monitoring devices, and remote sensing all offer useful data for improved administration and law enforcement. Improved fish product traceability from capture to consumer is made possible by block chain technology and computerized catch record systems, which also provide transparency and keep illicit or unsustainable items off the market.

5. CONCLUSION

For our oceans and the communities that rely on them to be sustainable over the long term, fisheries management must strike a balance between conservation and economic demands. Restoring fish supplies, protecting marine environments, and generating income through premium pricing and market access are all possible outcomes of sustainable fisheries practices. To overcome obstacles and achieve sustainable fisheries, however, it is essential to address governance issues, assist impacted communities, encourage stakeholder collaboration, and take use of technical advancements. We can guarantee fish populations' continuous abundance, preserve marine biodiversity, and safeguard fishing communities' means of subsistence for future generations by adopting a comprehensive and cooperative strategy. A thorough and multifaceted strategy that takes into account the economic, social, and environmental facets of fisheries management is necessary to achieve sustainable fisheries. We can achieve a balance between protecting marine resources and providing for the needs of current and future generations by putting science-based policies into place, embracing ecosystem-based strategies, and involving stakeholders. We can create a future where ecosystems flourish, fisheries prosper, and communities reap the benefits of our oceans' abundance if we work together.

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