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Policy brief

Estimating the impact of irregular and unsustainable fishing of distant-water fishing fleets in Peru

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Abstract

This policy brief provides an overview of the composition and practices of Peru's fishing fleet, highlighting the prevalence of longliners in both domestic and foreign vessels operating within the Peruvian Exclusive Economic Zone (EEZ). It also addresses concerns regarding unsustainable practices, incidental catch, and the fishmeal industry's impact on marine biodiversity.

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About this publication

This policy brief provides synthesises information from the report *Fishy Business: estimating the impact of irregular and unsustainable fishing of distant-water fishing fleets in Ecuador, Ghana, Peru, the Philippines and Senegal* (Gutierrez et al., 2024). It was produced as part of the UNDP Ocean Innovation Challenge.

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Introduction

This policy brief synthesises information from the report Fishy Business: estimating the impact of irregular and unsustainable fishing of distant-water fishing fleets in Ecuador, Ghana, Peru, the Philippines and Senegal (Gutierrez et al., 2024). It provides an in-depth analysis of the composition and practices of Peru's fishing fleet, highlighting the prevalence of longliners in both domestic and foreign vessels operating within the Peruvian Exclusive Economic Zone (EEZ). It also addresses concerns regarding unsustainable practices, incidental catch, and the fishmeal industry's impact on marine biodiversity.

Overview of Peru's geographical and marine environment

Peru spans over 1.28 million km^2 and boasts a diverse geographical landscape that includes a lengthy coastline of about 2,414 km along the Pacific Ocean. This geographic advantage, coupled with significant rivers like the Amazon and the Ucayali, enriches its marine ecosystem (Tapia et al., 2021). The Humboldt Current System enhances Peru's marine productivity, making it one of the most biologically productive areas globally – especially beneficial for the growth of phytoplankton and a diverse marine ecosystem (Tapia et al., 2021).

Composition of Peru's fishing fleet

We have built a relational database, drawn from expertise in fisheries, specialised literature, and the FishSpektrum Krakken® V15.0 high-granularity data registry. Krakken® V15.0 is the largest registry of fishing vessels, owned by the Seattle-based Allen Institute for AI (a non-profit research institute founded by Microsoft co-founder Paul Allen). Our analysis shows that the Peruvian fishing fleet is categorised into artisanal and industrial vessels. The artisanal sector, essential for small-scale fishing activities along the coast, involves an estimated 2,500 vessels in squid fishing alone. In contrast, the industrial sector is more varied, including purse seiners, trawlers, longliners, and gill netters, with over 1,400 vessels being monitored for fishing activities like anchovy, hake, and tuna. This division underscores the diverse nature of Peru's fishing operations and its capacity to support both local and industrial fishing needs.

The Peruvian domestic fleet predominantly consists of longliners (42.42%), gill netters (36.47%), and seiners (13.13%). These vessels mainly target species like swordfish, tuna, halibut, and sablefish. The fleet is less fragmented compared to other countries, with significant players such as Tecnológica de Alimentos SA (TASA) operating a considerable number of vessels, primarily seiners.

Foreign vessels operating in the Peruvian EEZ are mostly longliners (39.26%), too, followed by seiners (34.07%) and squid jiggers (10.37%). A significant portion of these vessels are flagged to Spain (25.19%), Panama (14.81%), and China (11.11%). Notably, Panama is identified as a flag of convenience (FoC). The ownership of foreign vessels is diverse, with companies from Chile, Colombia, China, and Spain being prominent.

Ownership, concerns and other issues

Several companies operating within Peru's national and foreign fleets have been implicated in unsustainable practices and wrongdoing. This includes the operation of blacklisted vessels and involvement in activities that harm marine ecosystems.

Despite regulations prohibiting the conversion of species intended for human consumption into fishmeal, there have been instances where these rules were relaxed, benefiting companies that violated them. For example, TASA exceeded the permitted limit for processing certain species into fishmeal on 425 occasions within less than two years but was only sanctioned once (Quevedo Castañeda, 2021). The fishmeal industry, driven by the demand for anchovy conversion into fishmeal, has been linked to the capture of juvenile anchovy and illegal species. This not only affects marine biodiversity but also raises concerns about the sustainability of fishing practices. The fishmeal market is characterised by high concentration, opacity, and the use of tax havens (Luna Amancio, 2017; Salazar Herrera, 2011, 2021). Of the companies in our list, TASA, Corporación Pesquera Inca, Pesquera Exalmar SAA, Pesquera Diamante SA, CFG Investments SAC, Pesquera Hayduk SA, Austral Group SAA, Pesquera Centinela SAC, and Pesquera Cantabria SA appear in the investigation as companies exceeding their mackerel limitations (Quevedo Castañeda, 2021; Salazar Herrera, 2011). The top four companies, including TASA and Corporación Pesquera Inca, control over 70% of the fishmeal market (Luna Amancio, 2017).

Export and price dynamics

In 2020, Peru's export of squid and tuna significantly contributed to the economy, with squid exports amounting to $597.8 million and tuna to $46 million. However, a marginal decline was observed in 2022, with tuna exports dropping to $41.4 million and squid to $582.5 million. Squid has emerged as a dominant force in the frozen product segment, constituting 65% of the export volume and 44% in dollar value, with a total of 252,302 tons exported (Ministerio de la Producción, 2023). This highlights squid fishing's significant role as the second-largest fishing activity in Peru, both in catch volume and in export revenue contribution.

The domestic prices of tuna and squid have seen notable fluctuations over the years. Tuna prices peaked in 2020 at $1.41 per kilogram but saw a decrease to $0.81 in 2022. Conversely, squid prices

reached their highest in 2021 at $4.84 per kilogram, significantly higher than tuna, but decreased to $2.06 in 2022. These fluctuations reflect the variable demand and supply dynamics influencing the fisheries sector.

The export prices of tuna and squid have also varied, with tuna prices reaching a high of $5.01 per kilogram in 2012 and a low of $2.18 in 2016. In 2022, the export price of tuna increased to $3.84. Squid export prices followed a slightly different trajectory, peaking at $2.74 in 2018 and showing an increase to $2.17 in 2022 from the previous year. These trends indicate the international market's evolving preferences and the impact of global trade dynamics on Peru's fisheries exports (Ministerio de la Producción, 2023).

Challenges from illegal fishing activities

Peru faces significant challenges from illegal fishing activities, particularly by a large fleet of over 600 Chinese vessels targeting squid in Peruvian waters. This illicit activity leads to substantial annual losses, estimated at 50,000 metric tons of squid. The presence of extensive Chinese fishing operations also raises concerns over the sustainability of tuna and other species, indicating a potential threat to local economies and the marine environment due to overfishing and depletion of resources. To combat the challenges posed by illegal, unreported, and unregulated (IUU) fishing, the Peruvian government has implemented several measures (Global Fishing Watch, 2023; Aronson, 2023):

- **Vessel tracking and monitoring:** Partnering with Global Fishing Watch, Peru aims to enhance vessel monitoring to tackle IUU fishing effectively.
- **Regulatory decrees:** The implementation of a decree mandating the use of vessel monitoring system (VMS) devices for all domestic and foreign vessels docking at Peruvian ports.
- **Collaboration with NGOs:** Working alongside the World Wide Fund for Nature (WWF) to initiate a pilot programme focused on creating and strengthening fishing cooperatives to mitigate IUU fishing.
- **Catch register and traceability systems:** This initiative requires fishing cooperatives to maintain a catch register and develop traceability systems, providing members with fishing licences and vessel registration as incentives.

Impact estimation methodology

The methodology for estimating the economic impacts of firms involved in wrongdoing, irregularities, or unsustainable behaviour in the fisheries sector across the five case study countries – Ecuador, Peru, Ghana, Senegal, and the Philippines – represents a comprehensive approach to assessing the potential consequences of such activities. This multi-faceted

evaluation, structured into three main chapters in the full report, delves into the specifics of tonnage conversion, payload calculation, price determination, and the consequent estimations of economic impact, GDP impacts, employment impacts, and poverty impacts.

1. **Tonnage conversion and payload calculation:** The methodology begins with a tonnage conversion formula to transition from gross tonnage (GT) to net tonnage (NT), reflecting the vessel's capacity utilised for fish storage. This step is critical for understanding the economic output and efficiency of the fishing sector. Payload, representing the quantity of fish carried, is calculated using the formula:
   Payload = NT−(NT×60%)
   This calculation is pivotal for assessing the volume of fish caught and its potential economic contribution.
2. **Price determination and economic impact estimation:** The average price per fish species aids in determining the financial value of the catch. The economic impact attributable to the fishing activities of these firms is then estimated by multiplying the payload by the fish price and a constant factor, offering insights into the financial significance of the fishing industry within each country's economy.
3. **GDP impacts:** The GDP contribution per ton of fish caught is calculated by first determining the total GDP contribution of the fisheries sector and then dividing this by the total catch in tons. This method facilitates a comparison of the economic efficiency and productivity of the fisheries sector across different countries, highlighting the variance in economic impact due to the activities of the examined firms.
4. **Employment and poverty impacts:** The analysis extends to evaluating the employment impacts, presenting the number of direct and indirect workers per ton of caught fish, disaggregated by country. This approach provides a granular view of the workforce involved in fishing and related activities, shedding light on the sector's employment significance. Furthermore, the text explores the relationship between GDP growth and poverty reduction, employing the growth elasticity of poverty (GEP) to estimate potential impacts on poverty rates in the case study countries. This methodology offers a nuanced understanding of how economic changes within the fisheries sector can influence broader socio-economic conditions, including employment and poverty levels.

Impact on Peru's GDP of firms with a history of wrongdoing, irregularities, or unsustainable behaviour in the fisheries sector

In 2020, Peru emerged as one of the leading fish producers worldwide, with a staggering total catch of 5.77 million tons, predominantly from fisheries. This catch significantly contributes to the nation's economy, accounting for 0.53% of Peru's GDP, and the export of fish and fish products generating approximately $2.8 billion (GLOBEFISH, 2023). Artisanal fisheries, constituting a major portion of the total fish production, play a crucial role in the economic value generated from this sector.

The economic implications of IUU fishing activities are substantial. The total catch, combining both domestic and foreign catches, amounts to 64,759.68 tons, translating to an estimated GDP contribution of $241,643,131.20. Specifically, the domestic catch of tuna significantly overshadows other categories with 54,680.76 tons, valued at approximately $209,974,118.40, while the foreign catch of tuna and squid adds $22,528,972.80 and $9,140,040.00 respectively to the GDP. These figures underscore the tuna industry's dominance in Peru's fishing sector and its substantial contribution to the national economy. The combined catch from these activities signifies a 22.58% impact on the fisheries sector's GDP contribution and a 0.12% impact on national GDP.

Impact on Peru's employment of firms with a history of wrongdoing, irregularities, or unsustainable behaviour in the fisheries sector

The fisheries sector is a significant employment generator in Peru, with activities related to human consumption providing about 230,000 jobs, 87% of which are within the sector itself (FAO, 2021). Artisanal fisheries, in particular, play a critical role in employment, poverty mitigation, and food security for the poorer population segments. This dual role underscores the importance of supporting and regulating this sector to ensure sustainable livelihoods and food supply.

The employment impact analysis of IUU activities reveals that for every ton of fish caught, approximately 0.03 jobs are affected, divided between 0.01 jobs for fishers and 0.02 jobs in related

sectors, totalling 1,943 potentially affected jobs. This indicates the significant role of the fishing industry in generating employment within Peru, particularly in coastal communities and the broader fisheries value chain.

Impact on poverty in Peru of firms with a history of wrongdoing, irregularities, or unsustainable behaviour in the fisheries sector

Most small-scale fishers in Peru live in poverty, exacerbated by unsustainable fishing efforts and declining fleet ratio indicators, such as catch per unit of effort and revenue per unit of effort. Fishers employing the least selective gear or engaged in illegal fishing activities tend to have more stable incomes. Various factors, including environmental changes like El Niño events and socio-economic drivers, significantly influence these conditions. Addressing these challenges requires a multifaceted approach, integrating environmental conservation, legal frameworks, and economic support for the fishing communities.

In terms of the impacts of IUU activities on the current poverty rate of 22.7% (WDI, 2023), based on the estimated GDP contribution of 0.12%, our analysis projects that the activities of these companies could potentially affect an additional 41,225 individuals, considering Peru's poverty rate and population. This highlights the socio-economic implications of the fishing industry, emphasising its capacity to influence poverty levels through economic contributions and employment opportunities.

Conclusions

The Peruvian fishing fleet, both domestic and foreign, plays a significant role in the country's economy and the global fishmeal industry. However, the prevalence of unsustainable practices, incidental catch, and regulatory challenges pose threats to marine biodiversity and the long-term sustainability of fishing operations. Addressing these issues requires concerted efforts from the government, industry stakeholders, and international bodies to ensure the adoption of sustainable fishing practices and the protection of marine ecosystems.

Peru's strategic geographical positioning and rich marine biodiversity have established it as a key player in the global fisheries sector, contributing significantly to its economy. However, the challenges posed by illegal fishing activities necessitate concerted efforts and innovative strategies to safeguard marine resources. Through regulatory measures, international

cooperation, and the implementation of sustainable fishing practices, Peru is actively working towards ensuring the long-term viability of its fisheries sector, protecting local economies, and preserving its marine ecosystem for future generations.

The quantitative impacts derived from the analysis of Peru's fishing industry, focusing on tuna and squid, reveal the sector's significant environmental, economic, and social implications. The stark contrasts between domestic and foreign fleets in terms of catch composition and capacity, the substantial economic contributions to Peru's GDP, and the considerable employment opportunities underscore the fishing industry's critical role in the country's economy. However, the nuanced impacts on poverty levels also underscore the need for sustainable and equitable fishing practices that balance economic growth with social welfare. This analysis emphasises the importance of effective management and regulation to maximise the positive impacts while mitigating the negative repercussions associated with fishing activities in Peru.

Recommendations for policymakers

Strengthen regulatory framework

- Implement advanced monitoring technologies, such as satellite tracking and electronic reporting systems, to ensure compliance with fishing regulations and to detect illegal, unreported, and unregulated (IUU) fishing activities.
- Apply stringent penalties for companies and vessels involved in unsustainable practices, including the operation of blacklisted vessels and the exceeding of catch limits for species intended for human consumption.
- Reevaluate and enforce regulations prohibiting the conversion of species intended for human consumption into fishmeal to prevent overfishing and ensure the sustainability of marine resources.

Promote sustainable fishing practices

- Encourage the adoption of sustainable fishing methods, such as selective gear and techniques that minimise bycatch and reduce the impact on marine ecosystems.
- Facilitate access to sustainable fishing certification for Peruvian fleets, which can help improve market access and promote environmentally responsible fishing practices.
- Provide training and resources to fishers and companies on sustainable fishing practices and the importance of biodiversity conservation.

Enhance transparency and accountability

- Require detailed disclosure of ownership and operational practices for both domestic and foreign fleets operating in the Peruvian EEZ to prevent illegal activities and ensure accountability.
- Foster collaboration between the government, fishing industry, and non-governmental organisations to share best practices, data, and strategies for sustainable fishing.
- Implement a public reporting system for fishing activities, sanctions, and compliance with sustainability standards to increase transparency and accountability in the fishing industry.

International cooperation and management

- Reinforce international agreements and collaborations to address transboundary fishing issues and promote regional marine conservation efforts.
- Adopt an ecosystem-based management approach to fishing that considers the entire marine ecosystem, including the impacts of fishing on marine biodiversity and habitat.
- Invest in research and development to improve understanding of marine ecosystems, assess the impact of fishing practices, and develop innovative solutions for sustainable fisheries management.

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