Policy brief

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

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Abstract

This policy brief provides an overview of the composition and practices of the Ecuadorian fleet and foreign fleets present in the Ecuadorian Exclusive Economic Zone (EEZ). It describes the types of vessels operating in this area, and their ownership structure, as well as discussing the controversies surrounding some of the major companies involved in the country's fishing industry. It also addresses the ecological concerns associated with Fish Aggregating Devices (FADs), including their impact on marine life and the generation of marine litter (Pons et al., 2023; Rattle, 2023).

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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 highlights the composition of the Ecuadorian fleet and foreign fleets present in the Ecuadorian Exclusive Economic Zone (EEZ). It describes the types of vessels operating in the area, and the ownership structure, as well as discussing the controversies surrounding some of the major companies involved in the country's fishing industry. The impacts of illegal, unreported and unregulated (IUU) fishing activities are discussed. This brief also addresses the ecological concerns associated with *Fish* Aggregating Devices (*FADs*), including their impact on marine life and the generation of marine litter (Pons et al., 2023; Rattle, 2023).

The 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).

Geographical and biological context of Ecuador

Ecuador, a South American country with a vast coastline and an exclusive economic zone, is strategically positioned for marine biodiversity. Its geographical coordinates place it at the heart of rich marine ecosystems, particularly due to the upwelling areas along the coast (Cruz et al., 2003). These upwellings, especially prominent during El Niño events, are crucial for biological productivity, fostering a diverse marine ecosystem (ibid.). This natural advantage is vital for Ecuador's fisheries sector, providing a rich foundation for marine life and, by extension, fishing activities that are central to the country's economy.

Fleet composition and types of vessels

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 Ecuador's fleet is predominantly made up of multipurpose ships (92.96%), most of them small vessels that engage in various seasonal activities, including non-fishing ones such as transportation. Seiners (targeting schooling pelagic fish) and longliners are also part of the fleet, but in smaller numbers. The domestic fleet is divided into artisanal and industrial vessels, with the artisanal fleet operating mainly in coastal regions and the industrial fleet being more diverse, including seiners, trawlers, longliners, and gill netters.

Meanwhile, based both on Krakken® V15.0 and on satellite tracking data and analysis, we have determined that the foreign vessels operating in the Ecuadorian EEZ are mostly seiners (48.41%) and longliners (29.37%). We found that most of them are flagged to Spain (23.02%), Panama (19.84%) – a flag of convenience (FoC) – and Japan (10.32%); many of the foreign owners and operators are Colombian and Spanish. The study includes data from 2021 and 2022.

Ownership, concerns and other issues

According to our database, the principal owners and operators of the domestic fleet include a couple of big companies with blacklisted vessels, or vessels implicated in wrongdoing or involved in diverse unsustainable practices.

NIRSA (Negocios Industriales Real) is the most prominent national flotilla, with a significant export volume of tuna (El Universo, 2021). However, there are discrepancies between official reports and the number of vessels detected in our investigation as owned by NIRSA and its subsidiary Delipesca SA. Further, NIRSA has been listed in the Panama Papers, which reports companies operating in tax havens (CENAE, 2019). NIRSA has also been denounced for selling illegally captured tuna (Greenpeace, 2007). Empresa Pesquera Polar, another significant player, has faced legal issues in Peru and conflicts with local communities in Ecuador over the construction of a fishmeal industrial plant on an archaeological site (gob.pe, 2023; Roux, 2013; Betancourt Medranda, 2017).

Fish Aggregating Devices (FADs) are structures deployed to attract fish, making them easier to catch. However, their use has led to ecological issues, such as the capture of protected species like sharks, marine litter from FAD residues, and ghost fishing. These devices are employed by both domestic and foreign fleets in Ecuador (Hammond, 2021). A report by Earth Journalism Network indicates that FADs are being used in Galapagos (Vega Granja, 2022). FADs are then dragged into the protected sea by the Humboldt Current when they are launched at the southeast of the Galapagos Marine Reserve, catching tuna and protected species such as sharks (ibid.). The Galapagos' rich surrounding waters attract national and foreign seiners and longliners. What is especially worrying is the drifting of FADs into this Marine Protected Area.

Catch volumes and exports

Ecuador's fisheries production, notably of tuna and dorado (mahi-mahi), is substantial. In 2020, fisheries production hit 634,400 tons, with tuna and dorado (mahi-mahi) being the primary exports. Catch volumes for mahi-mahi saw an increase from 2016 to 2022, whereas tuna catches showed fluctuations within the same period. Export data from 2020 to 2022 highlight a decrease in tuna exports by 30%, while dorado exports saw significant growth.

The National Chamber of Fisheries reports significant exports of these species, indicating not only their economic value but also the sector's capability to meet both domestic and international demand. The growth in mahi-mahi catches and the fluctuations in tuna catches reflect the dynamic nature of the sector, influenced by various factors including environmental conditions and market demands (National Chamber of Fisheries, 2023).

Ecuador's status as one of the world's leading fish producers has profound implications for its economy. The country's fisheries exports, particularly tuna and dorado, contribute significantly to the trade balance. The growth in export volumes, especially of dorado, and the fluctuations in tuna exports reflect Ecuador's response to global market trends and demands. The export dynamics also emphasise the importance of sustainable fishing practices and the need for robust regulatory frameworks to maintain market access and competitiveness.

Fish prices

The retail price range for Ecuadorian tuna in 2023 was $3.75 to $5.45 per kilogram, with wholesale prices slightly lower. Prices for mahi-mahi varied seasonally, affecting both wholesale and retail markets (The Fish Site, 2023).

The price of fish, both at retail and wholesale levels, is indicative of the sector's economic dynamics. In 2023, the retail price range for Ecuadorian tuna and the fluctuations in dorado prices underscore the market's responsiveness to supply and demand, as well as seasonal variations. These price dynamics are crucial for understanding the economic viability and sustainability of the fisheries sector, affecting everything from the income of fishers to the affordability of fish for consumers.

The variability in fish prices, both at retail and wholesale levels, directly affects the economic viability of the fisheries sector. Prices are influenced by a range of factors, including supply and demand dynamics, seasonal variations, and international market trends. For fishers and processors, these price fluctuations can significantly impact income and profitability, affecting the sector's overall contribution to the economy. Moreover, fish prices have broader implications for food security and affordability, impacting consumer access to nutritious food sources.

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

The fisheries sector is a significant contributor to Ecuador's GDP. Although its contribution has seen a slight decline from 1.5% of the total GDP in 2015 to about 1.06% by 2020, the sector remains a critical component of the national economy (WDI, 2023; GLOBEFISH, 2023). This is further emphasised by Ecuador's status as one of the world's leading fish producers, a testament to the sector's growth and its importance in the global market. The country has also implemented measures to monitor and control fishing activities, like the Integrated Aquaculture and Fisheries System (SIAP), to combat illegal fishing and ensure sustainable practices, highlighting the government's commitment to the sector's prosperity and sustainability (Global Fishing Watch, 2023; FAO, 2021).

IUU fishing activities by blacklisted vessels have a quantifiable impact on Ecuador's GDP. The combined value of tuna and mahi-mahi catches, heavily influenced by such practices, amounts to approximately $78.2 million. This figure, while representing a minor fraction (0.08%) of the national GDP, underscores the significant economic footprint of the fisheries sector. It reflects not just the direct economic contributions through fish catches but also the ripple effects across the fisheries value chain, including processing, transportation, and export activities. The nuanced economic implications highlight the sector's potential for contributing to national wealth, juxtaposed against the challenges of ensuring sustainable and legal fishing practices.

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

With over 58,000 individuals directly employed by the sector, fisheries represent a major source of employment in Ecuador (UNDP, 2023; World Bank, 2023). This is particularly significant in the context of the Southeast Pacific Ocean, where Ecuador's fleet is the largest for small-scale artisanal fishing. The sector's role as a key employer highlights its social importance, providing livelihoods for thousands of families and contributing to the country's socio-economic stability.

This employment is not just about numbers; it represents livelihoods for thousands of families, contributing to poverty alleviation and socio-economic stability in coastal communities. The sector's capacity to employ a large workforce underscores its importance beyond mere GDP contributions, highlighting its role in supporting community resilience and socio-economic development.

The fisheries sector is a substantial employment generator in Ecuador, with IUU fishing activities contributing to the complexity of this role. For every ton of fish caught, an estimated 0.20 jobs are created, split evenly between fishing activities and related sectors. This ratio underscores the sector's role in livelihood sustenance for thousands of Ecuadorians, splitting almost evenly between fishing and related activities. The job creation potential, however, is marred by the shadow of unsustainable practices, reflecting the need for regulatory oversight and sustainable management to protect these jobs in the long term.

With the total catch impacted by IUU fishing pegged at over 24,000 tons, the potential job impact is significant, with approximately 4,854 jobs potentially influenced by these firms' activities. This employment contribution is vital for coastal communities, where job opportunities may be scarce, and livelihoods heavily depend on the fisheries sector. However, the sustainability of these jobs is at risk if IUU fishing continues unchecked, threatening fish stocks and the long-term viability of the fisheries sector.

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

Despite the economic benefits brought by the fisheries sector, poverty remains a significant challenge, particularly among fishers in the artisanal and small-scale sector. The reliance on government and NGO assistance reflects the vulnerabilities within the sector, exacerbated by factors such as low educational attainment and the threat of illegal fishing activities. Addressing poverty in this context requires not only economic growth but also targeted social policies and support systems to improve the living conditions and opportunities for those within the sector.

The socio-economic fabric of Ecuador, particularly within fishing communities, is significantly affected by the practices of IUU fishing. With a poverty rate of 25% (WDI, 2023), the estimated economic contribution of IUU-impacted fishing activities has potential implications for poverty levels. The analysis suggests that the economic activities of companies with blacklisted vessels could potentially influence the poverty status of approximately 14,381 people, considering the

broader impact on GDP and employment. This figure highlights the interconnectedness of economic activities, sustainable resource management, and social well-being, emphasising the importance of combating IUU fishing to protect and potentially enhance the livelihoods of vulnerable populations.

The estimated impact of fishing activities by companies with blacklisted vessels, though contributing a minor percentage to the national GDP, has a more profound effect when considering the socio-economic fabric of coastal communities reliant on fishing. The potential for these activities to exacerbate poverty levels or, conversely, contribute to poverty alleviation, is a balancing act contingent on sustainable management and equitable distribution of resources.

Conclusion

Ecuador's fishing industry and EEZ include numerous domestic fishing vessels – in many cases multipurpose or artisanal – competing with foreign distant-water fishing fleets. These fleets' composition and ownership, and the environmental challenges posed by certain fishing practices, paint a complex picture. There is a need for better management and regulation of fishing activities to ensure sustainability and reduce the negative impact on marine ecosystems.

The impacts of IUU fishing on Ecuador's GDP, employment, and poverty levels are multifaceted, underscoring the need for robust regulatory frameworks, sustainable fishing practices, and international cooperation to combat illegal activities. While the economic contributions of the fisheries sector are significant, the sustainability of these benefits hinges on addressing the challenges posed by IUU fishing. Ensuring the long-term viability of fish stocks, protecting jobs in coastal communities, and mitigating poverty require concerted efforts from all stakeholders, including the government, the fishing industry, and global partners. The fight against IUU fishing is not just an environmental or economic issue but a crucial component of Ecuador's sustainable development and social equity goals.

Recommendations for policymakers

Enhance fleet management and sustainability practices

- **Enforce stricter regulation on FADs**: Given the environmental concerns associated with FADs, including their impact on non-target species and their contribution to marine litter, it is crucial to enforce strict regulations on the deployment, use, and retrieval of FADs. This includes setting limits on the number of FADs that can be deployed by each vessel and ensuring systematic retrieval to minimise ghost fishing and marine debris.
- **Promote sustainable fishing certifications**: Encourage more vessels and companies to obtain certifications from reputable organisations like the Marine Stewardship Council (MSC).

- **Increase transparency and accountability**: Address the discrepancies in fleet ownership and operation data by improving transparency in the fishing industry.

Address legal and ethical concerns

- **Strengthen legal frameworks**: Enforce existing laws and introduce new legislation to combat illegal, unreported, and unregulated (IUU) fishing practices. This includes penalising companies involved in illegal or unsustainable activities, such as tax evasion or selling illegally captured tuna, as highlighted in past controversies.
- **Engage in international cooperation**: Collaborate with neighbouring countries and international organisations to address cross-border fishing issues and promote regional fisheries management. This is particularly important for managing foreign vessels operating in the Ecuadorian EEZ and ensuring sustainable fishing practices across borders.

Promote community engagement and environmental protection

- **Support local communities**: Address the social, economic and environmental conflicts generated by industrial fishing operations, such as the case with Empresa Pesquera Polar in Salango. Engage with local communities to find mutually beneficial solutions that respect cultural heritage sites and minimise environmental impacts.
- **Invest in research and development**: Allocate resources to research and develop alternative fishing methods and gear that minimise bycatch and environmental damage.

Enhance marine litter management

- Implement comprehensive marine litter management programmes, including coastal cleanups and recycling initiatives, to address the accumulation of FAD residues and other fishing-related debris.
- Promote the use of biodegradable materials for FADs and other fishing gear to reduce the environmental footprint.

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