Supply Chain Study on Forced Labor and Child Labor in the Fish Industry in Peru

Report

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Abbreviations and Key Terms

FONDEPES	National Fisheries Development Fund
GDP	gross domestic product
ICLS	International Conference of Labour Statisticians
ILO	International Labour Organization
IMARPE	Instituto del Mar del Perú
KII	key informant interview
NGO	non-governmental organization
PRODUCE	Ministry of Production
SUNAFIL	National Superintendence of Labor Inspection

Artisanal Fishing: Small-scale fishing practices typically carried out by local communities using small boats and simple equipment.

Boliche: A fishing technique involving a group of fishers forming a circle with their nets to trap fish.

Chalana: A smaller rowboat used for nearshore fishing and transporting catch.

Chinchorro: A type of stationary fishing net used in shallow waters.

Fish Processing: The method of preparing, preserving, and packaging seafood products for distribution and consumption.

Industrial Fishing: Large-scale commercial fishing operations employing large vessels and more sophisticated equipment.

Lancha: A small fishing boat or skiff used by artisanal fishers.

Executive Summary

Purpose of the Study

This mixed-methods study aimed to examine the presence of forced labor and child labor in the supply chain of fish in Peru. The study sought to identify workers who experience forced labor in this supply chain, delving into the various forms of exploitation they experience and examining their socio-demographic characteristics. It also sought to describe the presence of child labor in the Peruvian fish supply chain, as well as the working conditions of children. Lastly, the study examined the processing and value chain of fish, with an emphasis on the processing of anchovies into downstream goods, particularly fishmeal and fish oil destined for domestic and international markets.

Context

Site selection for survey and interview participants was guided by a mapping analysis that examined the geographical distribution of fishing and processing activities in Peru, with a specific focus on the major port regions. Participants were chosen through a combination of convenience and purposive sampling methods, with data collection spanning from July to mid-September 2023. The survey encompassed 200 adult workers, including 58 industrial fishers, 116 artisanal fishers, 10 fish processing workers, and 16 workers who worked in more than 1 activity. The latter group stems from the dynamic nature of the fish sector in Peru, characterized by a combination of seasonal and daily tasks. Fishers and seafood workers may participate in various types of fishing and processing concurrently, seasonally, or in various capacities.

Data collection took place in the following key regions: Piura (Paita and Sechura ports), Ancash (Chimbote port), Lima/Callao, Ica (Pisco, San Andrés, Paracas, and Marcona ports), Arequipa (Islay and Matarani ports), and Moquegua (Ilo port). Survey respondents were adults who were asked about their perceptions of their working conditions in the fish industry in Peru. In addition, 51 qualitative interviews were conducted with 25 workers who completed the quantitative survey and with 26 key informants. It is important to note that the study exclusively explored child labor through key informant and adult worker interviews. The study findings are not representative of workers at the selected ports and processing sites, or the sector as a whole. The study also mapped the domestic fish supply chain, tracing the journey of fish from capture to export, and international shipping and trade data were used to identify export methods, destination markets, and potential end-use products. Key informant interviews further supplemented the supply chain tracing.

Key Findings

Working Conditions in the Peruvian Fish Industry

Among the 200 surveyed fishers and seafood workers, 83% (n=165) of workers had an employer. Among 165 fishers and seafood workers with an employer, 154 were male and 11 were female. Recognizing the informal labor dynamics of Peru's fishing industry, the term "employer" was translated to "*jefe*" or "*patron*" in Spanish to include a wider variety of employment relationships. A *jefe* or *patron* may wield authority and control payments in an informal dynamic, particularly in artisanal fishing. In addition, respondents who indicated that they were paid by the owner of the place or vessel, the boss/*patron* of their workplace, a subcontractor/company, or an employment agency, were also categorized as being in

an employer relationship.[1] Among the 165 fisher and seafood workers with an employer, 32% (n=52) were found to have experienced forced labor. More specifically, 23% (n=19) of 116 artisanal fishers with an employer, 40% (n=23) of 58 industrial fishers with an employer, 20% (n=2) of 10 workers at processing facilities, and 55% (n=8) of 15 workers in multiple activities have experienced forced labor. Of 52 fisher and seafood workers with an employer who experienced forced labor, 50 were male and 2 were female.

Of the 165 workers with an employer, a majority (80%, n=132) experienced at least one indicator of involuntariness. Among 82 artisanal fishers with an employer, 78% (n=64) experienced at least one indicator of involuntariness, and 81% (n=47) of the 58 industrial fishers with an employer experienced at least one indicator of involuntariness. Of the 10 fish processing workers with an employer, 80% (n=8) experienced at least one indicator of involuntariness. Of the 15 respondents who were working in multiple activities with an employer, 87% (n=13) experienced at least one indicator of involuntariness. The indicator of involuntariness most frequently found in the surveys was "very low or no wages." The issue of very low or no wages was also frequently mentioned among participants in qualitative interviews. Industrial workers who participated in qualitative interviews said that they are usually on payroll and receive their salaries on time, but artisanal fishers mentioned that employers consistently delay payments by approximately two weeks, offer lower compensation than initially agreed upon, or impose unagreed upon deductions. Eight workers who participated in qualitative interviews reported that they have experienced discrepancies between promised and actual earnings and unpaid overtime.

Among 165 workers with an employer, 36% (n=60) encountered at least one indicator of coercion. Among 57 industrial fishers with an employer, 45% (n=26) experienced at least one indicator of coercion, compared to 22% (n=27) of 82 artisanal fishers with an employer who experienced this indicator. In addition, 30% (n=3) of 10 fish processing workers and 60% (n=9) of 15 workers in multiple activities experienced at least one indicator of coercion. The indicator of coercion most frequently found in the surveys was "abuse of workers' vulnerability through the denial of rights or privileges, threats of dismissal or deportation." "Dismissal or threats of dismissal" was the most frequent form of this indicator (16%, n=27 of the 165 workers with an employer). Among workers who participated in qualitative interviews, the most commonly mentioned form of coercion was threats of job loss or exclusion from work.

Almost all (n=22) workers who participated in qualitative interviews mentioned that working in the fish industry, whether artisanal, industrial, or at a processing facility, involved working under conditions of high risk to life and health, and with insufficient training or personal protective equipment. The survey data support these claims: 87% (n=174) of fishers reported that they were required to fish at night; 67% (n=133) experienced excessive time at sea; 49% (n=98) were exposed to water-related hazards or worked in boats lacking adequate safety measures that could cause risks like drowning, hypothermia, and injuries from handling fishing gear; and 33% (n=67) worked in high-risk locations without proper consent or safety measures.

Challenges in Employment Informality

There is a significant lack of written contracts, with many workers operating based on verbal agreements. Among the 165 workers with an employer, only 19% (n=31) had a written contract, and 60% (n=99) had a verbal agreement. Notably, the absence of written contracts was more pronounced

[1] Workers whose source of payment suggested that they were in an employment relationship are grouped with those who reported having an employer for the purposes of this analysis, and jointly these workers are referred to "workers with an employer."

among artisanal fishers, with 70% (n=57) relying on verbal agreements, compared to 50% (n=29) of industrial fishers who had a verbal contract. Among 10 fish processing workers, 80% (n=8) had written contracts, compared to 20% (n=3) of 15 workers in multiple activities. It is important to note that the Fishing Labor Regime specifies that formality is not necessary for contract agreements due to the intermittent nature of the work, allowing contracts with fishing workers based on simple consent, indefinite contracts, or intermittent contracts.[2]

Similar to the survey participants, most workers (n=18) who participated in qualitative interviews had verbal agreements. Notably, the only artisanal fisher among participants in qualitative interviews who reported having a written contract said that they were instructed to provide only certain details, leaving the employer to complete the rest of the contract. Industrial fishers in follow-up interviews reported signing contracts, but only a few reported knowing in detail the contents of these documents. The high proportion of workers with verbal agreements highlights the informality that characterizes many employment arrangements in the fish industry. Given this informality, workers also noted issues such as being unable to refuse hazardous work, especially in the absence of clear legal limits on overtime and working conditions that risk their health and safety. Workers and key informants emphasized that migrants, particularly from Venezuela, faced heightened vulnerability to unfavorable labor conditions and informality in work arrangements. In qualitative interviews, four workers mentioned that many Venezuelans are employed in fishing, and some mentioned that Venezuelans worked without the required permits or eligibility for boarding, leading to lower wages and an inability to voice demands because they are not affiliated with any union or association.

Perceptions on Forced Labor

A significant portion of key informants claimed to be unaware of forced labor in the national fish industry. Three international and local non-governmental organization representatives, however, mentioned the potential for workers to face coercive conditions and involuntary labor due to the power dynamics and hierarchical nature of fishing vessels, in addition to the lack of opportunities and informality, especially in the artisanal sector. This might indicate that forced labor occurs discreetly or without being recognized as such. Two key informants also expressed concerns regarding the potential risks associated with the employment dynamics, particularly on large fishing vessels anchored off the coast. They mentioned that Asian vessels anchored off the coast of Peru operate differently from traditional Peruvian fishing practices, requiring individuals to stay onboard for extended periods. While two other key informants mentioned being aware of Peruvians and migrants working on these vessels, none of the workers who participated in qualitative interviews mentioned working on Chinese or foreign vessels; they all reported working exclusively on domestic vessels.

Child Labor Presence

The survey results showed that 20 workers, 18 in artisanal fishing and 2 in processing, had seen the presence of children working in their workplaces. According to workers who participated in qualitative interviews and key informants, child labor is more prevalent in artisanal fishing due to the stricter regulations of the industrial sector, and it typically involves minors related to boat owners. Workers who participated in qualitative interviews indicated that minors, aged 15 to 17 years,[3] engage in various

[2] Workers in the fishing sector are primarily governed by the Special Fishing Regime, the General Labor Law, and the Fishing Labor Regime—a referential framework based on Supreme Decree 014-2004-TR.

[3] Age 17 is the minimum age for minors to work in industrial fishing. See Appendix A and Valle, G. M. D. (n.d.). *Trabajo infantil en el Perú: Recorrido y afianzamiento de medidas destinadas a su eliminación*. Retrieved from https://www.estudiorodrigo.com/wp-content/uploads/2023/03/juriste_2022_03.pdf

fishing-related activities, including sorting, unloading, and cleaning fish. Poverty, cultural norms, and labor demand during peak seasons contributed to child labor, according to key informants.

Key informants also discussed the presence of child labor in Lake Titicaca. According to key informants, the predominant nature of fishing activity at Lake Titicaca is informal and has seen growth in recent years, mirroring artisanal fishing practices in various coastal areas, which are often family oriented. Key informants mentioned children actively participating in tasks such as feeding fish and rowing boats from ages 8 to 10, progressing to more demanding roles between ages 12 to 16. Some of these tasks include driving the boat, loading the fish, or assisting in capturing it with nets. Children's contributions evolve with age, encompassing both fishing tasks and household duties. Recent trends, however, according to informants, suggest a decrease in children's involvement, influenced by shifting family dynamics, enhanced child protection measures, and emerging alternative opportunities.

Advancements in Industrial Fishing Traceability Amid Environmental Challenges

Key informants emphasized that traceability was vital in the fishing industry, particularly in industrial fishing and for exporting fishery products. They said that developing a reliable traceability system has been crucial to prevent practices that jeopardize the sustainability of resources and marine ecosystems, such as overexploitation or illegal capture and sale of certain species, in addition to meeting international standards and satisfying buyer requirements. Respondents said that Peru has successfully regulated its industrial anchovy fishing industry through strict quotas on fish catch. Quotas have significantly benefited industrial fishing in Peru by establishing a regulatory framework ruled by the *Ley General de Pesca* (General Fishing Law). This framework includes the procedures for the implementation of fishing quotas, delineation of fishing rights zones, regulations on fishing tools and techniques, and best capture management practices.[4] Key informants emphasized that these measures have led to more organized and sustainable fishing practices, particularly in *anchoveta* fishing, highlighting improved practices, enhanced product quality, and sustained *anchoveta* biomass over the past two decades. Despite these advancements, the fishing sector remains vulnerable to climatic factors. For instance, phenomena like El Niño disrupt fishing activities by causing the warming of seas, pushing *anchoveta* to deeper waters, which resulted in the first anchovy season in Peru for 2023 being canceled, resulting in a deficit of approximately 2,660,000 tons of fish compared to previous years (Infopesca, 2023).

Formalization Process of Artisanal Fishing Faces Implementation Challenges

In the artisanal sector, improvements in traceability could enable more effective control over less regulated practices operating in legal gray areas, but the artisanal fishing sector lags significantly behind the industrial sector in terms of traceability, lacking technological integration and relying on manual data collection. Currently, the country has a fragmented data system, with artisanal and industrial sectors adhering to distinct reporting standards to various regional and national agencies, each employing unique data collection methods. Generally, this encompasses species information, catch location and date, gear type, vessel name, certification, and other pertinent details that must be associated with the fish upon harvest (Future of Fish, 2019). However, given that it is managed by various agencies, it poses challenges at various levels, from artisanal vessels required to submit information to different institutions, each with its own methodology, to obstacles in legal investigations due to a lack of access to these data. Similar factors are present in efforts to formalize the artisanal

[4] See Sociedad Nacional de Pesquería. (2018, August 1). *Ley de Cuotas para la extracción de anchoveta – SNP*. Sociedad Nacional de Pesquería. https://www.snp.org.pe/ley-de-cuotas-para-la-extraccion-de-anchoveta/ and Infopesca. (2023). *Economía Mundial Del Sector Pesquero – Nro 4 De 2023.* https://www.infopesca.org/content/econom%C3%ADa-mundial-del-sector-pesquero-%E2%80%93-nro-4-de-2023

sector. Desk research suggests that there are significant government resources allocated to support multiple initiatives to improve formalization in the sector, given the lack of permits to operate, outdated or inadequate documentation for fishing activities, and the absence of mandatory technology implementation (Peru Sostenible, 2023).[5] However, the lack of coordination and the presence of isolated systems has resulted in inefficiency, hindering the ability to cross-verify among systems and implement these efforts effectively. In 2016, a regime for cooperatives was introduced, and, in 2018, the SIFORPA II framework, a digital tool integrating administrative procedures for artisanal fishing permits, was introduced. These initiatives are aimed at formalizing artisanal fishing in the country and ensuring that artisanal fishers can access services and benefits, including technical assistance, training programs, and financial support from the government (Oceana, 2022),[6] but gaps persist in the enforcement of these laws and initiatives. Some of the existing mandatory and relevant systems for the formalization process lack a design and implementation process tailored to user realities, such as access to connectivity, purchasing capacity for equipment, or technological capabilities (Peru Sostenible, 2023).

Conclusion and Key Recommendations

Conclusion

It is evident that issues related to forced labor, poor working conditions, informality in the artisanal sector, and a lack of awareness of labor rights are present in the Peruvian fish industry. The prevalence of verbal agreements and the inability to refuse hazardous work, particularly in high-risk environments, underline the urgent need for policy changes and stricter regulations in the industry to protect labor rights and safety. Addressing informality in artisanal fishing is crucial for ensuring legal protections, social security benefits, labor standards, and accurate data for decision-making regarding resource management and conservation. Enhancing traceability of the number of vessels, fishing techniques, and catch quantities is also vital for accountability and sustainable resource management, and addressing environmental challenges is imperative for the long-term viability of artisanal and industrial fishing. These efforts are essential for improving the accuracy and transparency of catch reporting, formalizing small-scale and artisanal fishing, and eliminating illegal, unreported, and unregulated fishing.

Key Recommendations

- Addressing forced labor and child labor in the fishing industry requires a comprehensive approach involving government, industry unions, companies, workers' organizations, and civil society. In Peru, substantial resources support various efforts to formalize artisanal fishing, which would in turn increase oversight and control of labor conditions in the sector. However, the absence of coordination and the presence of isolated systems have led to redundancy and inefficiency, impeding cross-verification and implementation of various regulatory systems. The Government of Peru, through the Ministry of Production and other relevant agencies, should continue to address issues related to the incomplete formalization of artisanal fishers. This can be achieved through tailored resources to artisanal fishers, improved coordination among public institutions, and increased support from regional governments for registration and formalization

[5] See Perú Sostenible. (2023). *Hoja de Ruta de Sostenibilidad para el Sector Pesca*. https://perusostenible.org/wp-content/uploads/2023/06/Hojas-de-Ruta-Sectoriales-informe-pesca.pdf for more information.
[6] See Oceana. (2022, September 23). La crisis de la formalización de los pescadores artesanales. Oceana Peru. https://peru.oceana.org/blog/la-crisis-de-la-formalizacion-de-los-pescadores-artesanales/ for more information.

(Future of Fish, 2019).[7] It is also important to note that Peru does not have an updated national policy that allows for the monitoring of child labor in the country. Therefore, to address child labor in the fishing sector, it is a priority to have such tools and a concrete action plan.

- The high level of fragmentation in data systems is one of several barriers currently impeding traceability and data modernization efforts in Peru.[8] Traceability of fish products in Peru is done through a system known as SITRAPESCA, which is managed by the Peruvian government. However, key informants mentioned that SITRAPESCA, initially designed for industrial fishing, encounters challenges in adapting to the complexities of the artisanal sector. Various international organizations, including the World Wildlife Fund, have been working to improve traceability and modernize data collection in Peru's fishing industry to reach the artisanal sector, digitalize paper-based processes, and facilitate surveillance efforts by authorities to address unsustainable and illegal, unreported, and unregulated fishing (WWF, 2022).[9] One of these efforts is TrazApp, an electronic Catch Documentation and Traceability System developed by World Wildlife Fund-Peru that communicates with SITRAPESCA and other databases and allows generating, transmitting, and storing fishing activity information in real time.[10] However, efforts regarding its usage are still under development, and outcomes of this app are yet to be seen. Efforts should continue to integrate user-friendly tools like TrazApp with older systems like SITRAPESCA and establish interconnected systems to enhance traceability. Given that TrazApp requires users to have access to a smartphone, the Internet, and an enabled email address, as well as requiring comprehensive training, addressing these challenges becomes crucial, especially for users lacking these resources. Improving traceability is needed to enhance accuracy and transparency in catch reporting and processing, thereby fostering sustainable fisheries management and ensuring legal standards and effective regulatory oversight of artisanal and industrial fishing.
- Considering the prevalent job insecurity and safety risks faced by workers in artisanal and industrial fishing, it is imperative to advocate for the creation of tailored labor laws that account for the industry's distinct challenges and seasonal characteristics, along with the implementation of precise regulations and guidelines for the treatment of onboard personnel, with a focus on ensuring fair wages, employment stability, and safety standards. This is also imperative for workers in fishmeal factories, fish oil factories, canneries, etc. The labor laws for the fish sector in Peru are primarily governed by general labor regulations, with limited specific labor laws tailored to the fishing industry. One notable exception is the Special Registry for Fishing Workers, which falls under the umbrella of social protection, offering certain provisions for fish workers. This lack of specific labor regulations can present challenges in addressing the hazardous conditions faced by workers in the fishing sector, both in the artisanal and industrial sectors. Future research efforts could explore the informal nature of employment arrangements, emphasizing the implications of verbal contracts on safety and workers' rights.
- The fishing sector, being tied to the functioning of marine ecosystems and serving as a livelihood for communities dependent on this resource, is particularly susceptible to the impacts of climate

[7] Current efforts include the Por La Pesca Project, a collaborative initiative between the United States Aency for International Development, Sociedad Peruana de Derecho Ambiental, and the Walton Family Foundation. The project aims to empower artisanal fishing organizations and key actors contributing to the formalization of fishermen in Ecuador and Peru. See more: https://www.usaid.gov/sites/default/files/2023-02/PorLaPesca-FS-English-27sep22%20%282%29.pdf

[8] See Future of Fish. (2019). Recomendaciones de Trazabilidad para Pesquerías a Nivel Nacional de Perú. https://futureoffish.org/sites/default/files/docs/resources/Peru%20Recommendations-SPN_web_0.pdf for more information.

[9] See World Wildlife Fund, Inc. (2022). *Guidance and Tools for Traceability in Fishery Improvement Projects*. https://seafoodsustainability.org/wp-content/uploads/2022/01/FIP-Guidance-Paper.pdf for more information.

[10] See https://www.trazapp.org/conozca for more information.

change. According to the National Institute of Statistics and Informatics, the fishing sector experienced a 31.7% production decrease during January through June 2023, with June being the worst month, with a nearly 70% decrease due to the El Niño phenomenon. Fluctuations in catch volumes, driven by climate change, negatively affect workers in the marine fishing sector. The industrial sector saw a 70.8% decrease from January to June 2023 due to lower anchovy catch volumes, which play a vital role in the industry.[11] In Peru, where climate effects, especially those associated with the recurrent El Niño phenomenon, are prevalent, there is an urgent need for policy interventions to ensure resource and sector sustainability in the face of climatic challenges. The Ministry of Production has outlined a strategy to address the heightened vulnerability of the fishing sector to climate change by setting specific objectives to be achieved by 2030. These objectives encompass promoting responsible fishing practices that respect the sustainable use of hydrobiological resources, strengthening aquaculture activities to contribute to food security, diversifying and adding value to fishing activities, improving modeling and prediction capabilities for different climate change scenarios in the Peruvian sea, and enhancing ecological risk management (EY Peru, 2017). Although this strategy appears comprehensive, there is a need for enhanced reporting and tracking of its implementation progress because there is limited information on its development. It remains imperative and it is recommended that any fisheries assessment or policy should incorporate environmental variables into decision-making, coupled with intensive monitoring and management measures, to align resource sustainability with fishing activity. In addition, to address the socioeconomic impacts of El Niño, the Ministry of Production has allocated S/ 4.5 million ($1.2 million USD) to the National Fisheries Development Fund, aiming to provide credit access for artisanal fishermen and aquaculture producers to offer immediate support to activities that are vulnerable to climatic factors (Gob.Pe, 2023). Despite progress, the formalization of artisanal fishers is crucial to ensure that credits reach the entire sector.

[11] See Instituto Nacional de Estadística e Informática. (n.d.). *Produccion Nacional Junio 2023*. https://m.inei.gob.pe/media/MenuRecursivo/boletines/08-informe-tecnico-produccion-nacional-jun-2023.pdf for more information.

1. Purpose and Context

This mixed-methods study examined the presence of forced labor and child labor in the fish supply chain in Peru, with a primary focus on artisanal and industrial fishing and a supplementary focus on fish processing workers. The study sought to identify the presence of workers who experience forced labor, the forms of exploitation they endure, and their socio-demographic characteristics. It also sought to examine the extent of child labor in the seafood supply chain and the working conditions of children under age 18. Quantitative and qualitative methods were used to develop a clearer picture of the conditions of fishers and seafood workers in the fish industry in Peru.

The study also examined the processing and value chain of fish, particularly focusing on anchovies (*anchoveta*) processed into downstream products, such as fishmeal and fish oil intended for domestic and international markets. The study mapped the domestic fish supply chain, tracking the fish's journey from capture to export to better understand points at which fish obtained using forced labor becomes mixed with legally obtained fish. The survey and interviews took place from July to mid-September 2023 and included 200 adult surveys and 25 subsequent interviews with fishers and seafood workers in key regions, including Piura, Ancash, Lima/Callao, Ica, Arequipa, and Moquegua. In addition, 25 interviews with experts were conducted in person in Lima or online. The study was carried out by ICF and Ipsos Peru.

2. Literature Review

2.1 Evidence of Forced Labor and Child Labor

In 2012, Peru incorporated the National Strategy for the Prevention and Eradication of Child Labor 2012–2021 as an intersectoral public policy instrument that seeks to protect children and adolescents from early entry into the labor market, as well as to protect adolescents of working age from hazardous work. Since 2022, the Ministry of Labor and Employment Promotion has been collaborating with various sectors to incorporate actions, guidelines, and services into the updated National Multisectoral Policy for Girls, Boys, and Adolescents by 2030 (El Peruano (b), 2022). The Child Labor Risk Identification Model was adopted in 2021 as a tool within the framework of National Strategy for the Prevention and Eradication of Child Labor to identify, based on existing data in the country (surveys, censuses, and administrative records), the territories with the highest probability of child labor and the associated risk and protection factors. These risk factors include school dropout, ethnic origin, living in a rural region, and working in economic sectors like agriculture and trade. Although the Child Labor Risk Identification Model does not note any gender factors as part of the assessment, girls, in addition to the risk of child labor, may be affected by the increase in household chores and responsibilities for caring for younger brothers and sisters (Centro de Estudios Sociales y Publicaciones, 2017). The model was jointly designed by the International Labor Organization (ILO) and the Economic Commission for Latin America and the Caribbean, within the framework of the Child Labor Free Latin America and the Caribbean Regional Initiative (Ministerio de Trabajo y Promoción del Empleo, 2021).

Based on this model, at the national level, it was estimated in 2021 that the probability of children and adolescents being in child labor was 39%. The model includes the probability of child labor by region, including the coastal regions selected for this study. Among these regions, Ancash has a 70% probability of child labor, the highest among the regions observed, although in that region, the district of Chimbote has a lower risk level (between 4% and 45%). The region of Piura has a 20% probability of child labor (lower than the national average). The coastal districts of Sechura and Paita in Piura are at the low end

of this range (between 0% and 17%). The regions of Lima and Callao have a probability of 13% and 4%, respectively. However, the district of Ventanilla in Callao has a higher risk of child labor presence (between 4% and 40%). Finally, the regions of Arequipa (with Matarani port) and Moquegua (with Ilo port) have a lower risk of child labor, with a probability of 22% and 30%, respectively (Ministerio de Trabajo y Promoción del Empleo, 2021).

Forced labor remains a hidden issue in Peru. The Global Slavery Index estimates that about 80,000 people are in a situation of modern slavery in Peru (Walk Free Foundation, 2018), but the lack of concrete data makes it challenging to characterize the causes and prevalence in each industry. According to a study by Capital Humano y Social Alternativo, funded by the U.S. Department of Labor and conducted with the Institute of Peruvian Studies, 54% of the adult population in the country does not understand what forced labor is, although more than 3.4 million workers (14%) indicate that they have experienced forced labor at some point in their lives.[12] Despite these high figures, a lack of awareness among workers and government officials, high informality in certain labor sectors, and limited data availability contribute to significant underreporting, with only 25 cases of forced labor recorded by the Public Ministry between 2017 and 2020. Widespread labor informality affects the Peruvian fish sector considerably, with more than 75% of workers lacking formal contracts, and this number exceeds 90% in some regions (Capital Humano y Social Alternativo, n.d.). However, the Fishing Labor Regime specifies that formality is not necessary for contract agreements due to the intermittent nature of the work and allows contracts with fish workers based on simple consent and indefinite or intermittent contracts. [13]

2.2 Economic Overview

Peru is an upper-middle-income country with a gross domestic product (GDP) of $223.25 billion USD and a GDP per capita of $6,621 USD in 2021 (World Bank 2023a, 2023b, 2023c). The economy of Peru is based on services (34% of GDP), manufacturing (13% of GDP), mining (9% of GDP), and agriculture (6% of GDP), and it is heavily dependent on exports (WTO, 2019). Peru's major export partners are China (37%), the United States (11%), and South Korea (5%) (UN Comtrade, 2021). Peru's economy is largely characterized by informality, including an absence or lack of governmental regulation, observation, or taxation, which extends to the fishing sector, particularly the artisanal sector (CEPLAN, 2016; Flores, 2023). The fisheries sector encompasses the extraction and processing of marine and aquafarm fish, caught by both artisanal and industrial fishers. In 2022, the Fisheries and Aquaculture Sector employed 90,041 workers, with the majority (57,713) engaged in the maritime sector (Ministerio de la Producción, 2023).

Agricultural products accounted for approximately 25% of exports in 2020 (WTO, 2022). Major agriculture products include sugarcane, rice, potatoes, alfalfa, bananas, livestock, and fish (WTO, 2019). Exports of fish and downstream fish products specifically play a significant role in overall Peruvian exports, with seafood, fishmeal, and fish oil exports accounting for a combined 6% (2.3%, 2.9%, and 0.9% respectively) of total Peruvian exports in 2021 (UN Comtrade, 2021). The Peruvian coastal region benefits from an upwelling phenomenon, in which nutrient-rich waters from the deep ocean rise to the surface, fostering exceptional biological productivity. This nutrient abundance supports significant marine biodiversity, which has resulted in a robust fishing industry as one of the most significant

[12] See Capital Humano y Social Alternativo. (n.d.). *Trabajo Forzoso*. Retrieved January 8, 2024, from https://chsalternativo.org/trabajo-forzoso-2/.

[13] Workers in the fishing sector are primarily governed by the Special Fishing Regime, the General Labor Law, and the Fishing Labor Regime—a referential framework based on Supreme Decree 014-2004-TR.

industries for the country's economy, notably due the prominence of fishmeal and fish oil exports (UN Comtrade, 2021; Carr, 2003). Although the Peruvian fishing sector encompasses the extraction of both marine and inland (aquaculture and inland fishing) catch, the latter remains a relatively small part of the industry. In 2022, marine catch constituted 98% of total extraction, with aquafarms and inland fishing contributing only 2% (Ministerio de la Producción, 2023).

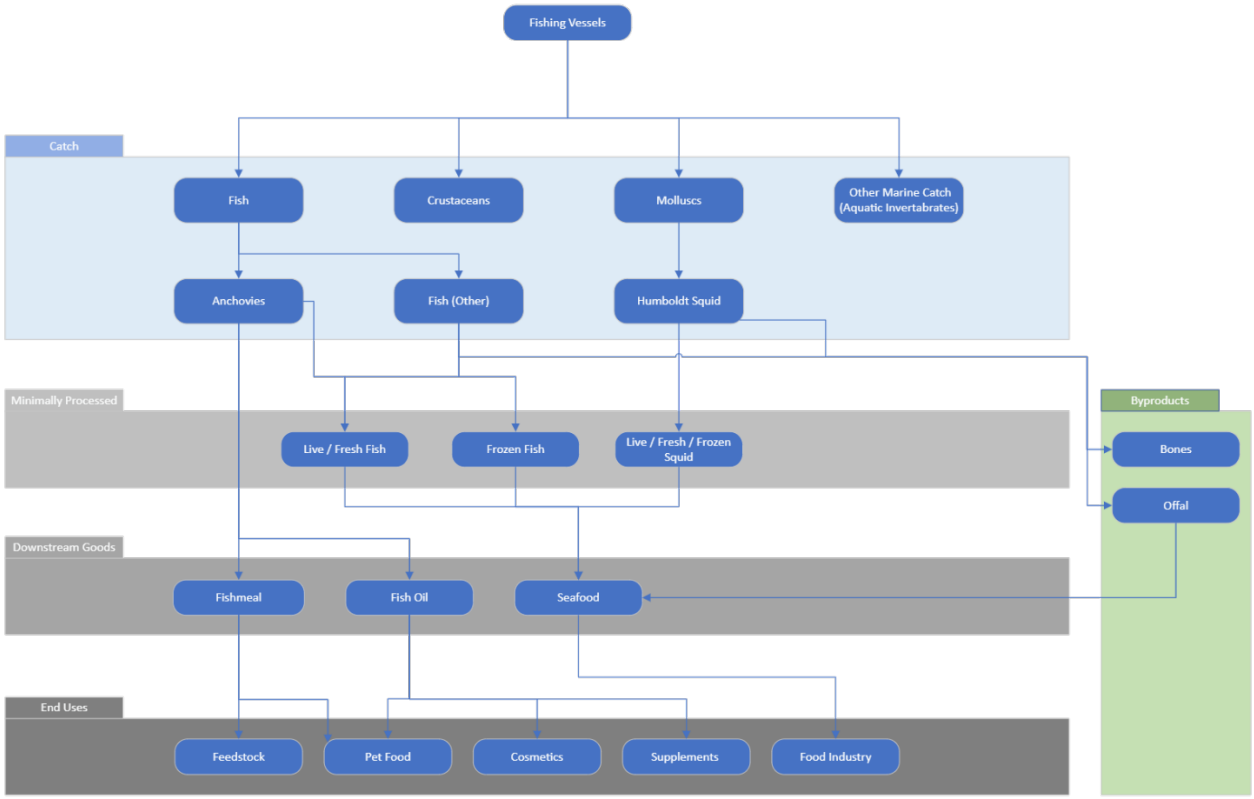
The main fishing products in Peru are fish and squid for consumption, fishmeal, and fish oil (WTO, 2019). Fishing is primarily centered around the catch of fish from the Pacific Ocean (WTO, 2019). Anchovies is the primary catch with approximately 77%, of the total sea fish catch in 2022 and serve as the main input in the production of fishmeal and fish oil production (Ministerio de la Producción, 2023).

Volatility in marine fishing catch has a dramatic impact on the financial health of the industry and jobs and income available to workers. From 2021 to 2022, the Peruvian fishing industry experienced lower catch rates, resulting in a significant decrease in fish production and, by association, a decrease in fish product exports. The primary downstream fish product, fish meal, in alignment with lower catch rates, saw exports decrease by approximately 2% in 2022 (Panjiva, 2023). In 2022, Peruvian catch experienced a 19% decrease, and the export of overall fishery products experienced a 13% decrease, compared to 2021. This is due to the lower production and sales abroad of fishery products for direct and indirect human consumption. In that same year, fishmeal was the most exported fishery product, accounting for 43.5% of total fishery exports.

2.3 Description of Fish

The primary catch of fish and crustaceans in Peru marine waters consists of anchovies, mackerel, tuna, mahi-mahi, hake, parrot fish, and Humboldt squid. This study examined the primary catches in Peru, namely fish (anchovies) and mollusks (Humboldt squid) and their associated downstream uses. Figure 1 outlines the processing, byproducts, downstream products, and end uses for the fishing industry in Peru and is followed by a more detailed definition of each product.

Figure 1. Product flowchart



2.4 Minimally Processed Fish Goods, Byproducts, Downstream Products, and End Uses

This section first outlines the types of fish and mollusks that constitute the majority of the marine catch in Peru, followed by an outline of the minimally processed goods; an overview of their byproducts; and the downstream goods of fishmeal, fish oil, and seafood and their associated end uses.

Catch

Anchovies: Anchovies are a type of schooling saltwater fish. Most species of anchovy live in tropical or warm temperate seas, where they often enter brackish waters (FAO, 2023). In Peru, the specific species of anchovy available for fishing is the Peruvian *anchoveta* (*Engraulis ringens*) (Stokstad, 2022; FAO, 2023). The Peruvian *anchoveta* is one of the world's most abundant fish species and has continuously yielded greater catches than any other wild fish species in the world (Stokstad, 2022; FAO, 2023). In Peru, the Peruvian *anchoveta* is almost exclusively used in the fishmeal and fish oil industry (FAO, 2023). The remaining anchovy catch not used in fishmeal and fish oil production is likely consumed as a foodstuff either domestically or abroad.

In anchovy fishing operations, large fishing boats, known as *bolicheras*, and smaller artisanal fishing boats called *vikingos* are commonly used. *Bolicheras* use a fishing method that involves dragging large nets primarily for anchovy fishing, acting as a type of fence or *boliche.* Artisanal fishing in Peru is small

scale and carried out with traditional practices by local communities using simple equipment and techniques (Sociedad Peruana de Derecho Ambiental, 2019).

Humboldt Squid: Humboldt squid (*Dosidicus gigas*), commonly referred to as "giant squid" or "*pota*" in Peru, are one of the largest species of predatory squid and are native to the eastern Pacific Ocean (Oceana, n.d.). In recent decades, the Humboldt squid has massively expanded its geographic range, stretching from Chile to Alaska (Oceana, n.d.). Despite having a lifespan of approximately one year, a female Humboldt squid can lay up to 20 million eggs during its lifetime, often more than a million at a time (Oceana, n.d.). This breeding pattern allows the population of Humboldt squid in a given area to expand very quickly, a quality that makes it easier to maintain a healthy biomass for fishing but that can pose a threat to smaller fish and squid populations (Oceana, n.d.).

Squid are the second most popular marine catch in Peru (Sociedad Peruana de Derecho Ambiental, 2019). Humbolt squid are predominantly caught at night by artisanal fishing operations through the use of a squid jig (*pinta poteral)* (Ministerio de la Producción, 2021). Smaller artisanal fishing boats are mainly employed in squid fishing using these methods, operating out of the ports of Paita and Sechura, which are home to approximately a third of Peru's artisanal fishers (Sociedad Peruana de Derecho Ambiental, 2019; Ministerio de la Producción, 2021).

Fish (Other): In addition to anchovies and Humboldt squid, various other fish make up the remainder of marine catch in Peru, predominately hake, mackerel, mahi-mahi, parrot fish, and tuna.

Minimally Processed Good

Live/Fresh Fish: Whole, unprocessed fish and fish that have been partially processed, or gutted, to remove the offal. Once caught, fish can be stored and transported to buyers live, or minimally processed and chilled to allow for longer periods of storage and transportation.

Frozen Fish: Once caught, fish can be frozen to preserve them for storage, transportation, and sale. Fish can be frozen in various forms; however, in the context of this definition, frozen fish refers to whole, frozen unprocessed fish and frozen fish that have been partially processed, or gutted, to remove the offal. The freezing of fish is crucial to preservation, allowing for long-term storage and transportation across large distances (FAO, n.d. b). Main freezing methods include blast freezing, plate freezing, immersion, and spray freezing (FAO, n.d. b).

Live/Fresh/Frozen Squid: Squid can be stored, sold, and consumed fresh, chilled, or frozen. After squid are caught, they are generally partially processed, a process that includes cleaning and gutting (removing the head, internal organs, and ink sac). Peruvian squid are either sold fresh or chilled for domestic consumption or are frozen for export to the global market (Ministerio de la Producción, 2023, p. 23).

Byproducts

Offal: Offal refers to the rejected or waste parts of fish, squid, and other aquatic catches, including the internal organs and entrails that are typically removed during the cleaning and initial minimal processing of whole fish or squid (Vinton, 2019). Offal is often discarded, but some specific pieces, such as eyeballs, fish heads, livers, and tongues, are used as edible seafood products in various parts of the global market (Vinton, 2019).

Bones: In the course of processing bony fish species, including hake, mackerel, mahi-mahi, parrot fish, and tuna, inedible bones are often removed in the production of end products like boneless fish fillets for human consumption. While not themselves edible, these bones can be used in the preparation of various seafood dishes and ingredients, such as seafood stock (Vinton, 2019).

Downstream Goods

Seafood: Seafood refers to the edible portions of aquatic animals intended for human consumption. This category includes various parts of fish, crustaceans, mollusks, and aquatic invertebrates such echinoderms, including sea cucumbers and sea urchins (Liesangthem et al., 2023). Although the flesh of aquatic animals is primarily sought as seafood, it is important to note that almost all parts can be used as a seafood product in the preparation of food for human consumption (Vinton, 2019).[14] Furthermore, seafood as a downstream good does not only include aquatic catch (fresh, chilled, or frozen), but also processed products, such as canned or tinned fish.

Fishmeal: Fishmeal is a brown powder produced by cooking, press drying, and squeezing raw fish or fish trimmings. Fishmeal typically contains 60–72% protein, with 10–20% ash and 5–12% fat (The Fish Site Limited, 2012). In Peru, fishmeal is generally made from anchovies, partly because of their high protein content. They are the only species that the Ministry of Production (PRODUCE) allows producers to use in the production of fishmeal (Sociedad Nacional de Pesqueria, n.d.; The Fish Site Limited, 2012). Anchovies are first cooked at 95 degrees Celsius to sterilize the fish and internally separate the proteins and oils. Once cooked, anchovies are then compressed and squeezed to extract any remaining liquid, including crude fish oil, from the body of the fish. Finally, the remaining fish material is dried and prepared for sale (The Fish Site Limited, 2012). The drying process used in the production of fishmeal is linked to the quality of fishmeal being produced. Flame-drying fishmeal produces a lower quality end product than steam-drying fishmeal (The Fish Site Limited, 2012). Fishmeal yield from processed fish ranges between 22% and 24% (The Fish Site Limited, 2012). Industry standards have established two grades of fishmeal: Fair Average Quality and Prime Quality fishmeal (Nolte, 2019). The latter is more valuable due to its higher protein content.

Fish Oil: Fish oil production is closely tied to the production of fishmeal because fish oil is extracted by squeezing cooked fish, a step in the production of fishmeal (The Fish Site Limited, 2012). Fish oil extracted through this process is known as “crude” fish oil, because it must undergo further processing before sale. Once collected, crude fish oil is put through a multistep distillation and filtration process in which the crude oil is refined through exposure to low heat, resulting in an omega-3 concentrate that is free of heavy metals and contaminants (Gardner, 2023). The resulting fish oil is then packaged, often either as a liquid or in dissolvable pill capsules, in preparation for sale. It is used largely for nutritional supplements and pharmaceutical products, predominantly exported to Norway, Denmark, Chile, Canada, Australia, Japan, and China (FAO, 2020; TASA, 2023).

End Uses

Feedstock: Fishmeal is often used as a feedstock in aquaculture, such as in shrimp and trout farms, as well as a feedstock for livestock, including poultry, pigs, cows, sheep, and goats (FAO, n.d. a; WWF, n.d.).

[14] Parts of aquatic animals seen as seafood differ widely on a regional and cultural basis, depending on intended usage as a foodstuff. What one region may see as waste; another may see as a key seafood ingredient to be used in the food industry. Within broad terminology, seafood may include the flesh, offal, and bones of aquatic animals (Vinton, 2019).

Fishmeal is sought after as a feedstock because it contains high-quality protein and amino acids that are highly digestible and easily absorbed by all animals (WWF, n.d.; The Editors of Encyclopaedia, 2021).

Pet Food: Fishmeal and fish oil are a common component used in the production of many pet foods due to their sustainable supply, low cost, and nutritional benefits (Future Market Insights, 2022).

Cosmetics: Fish oil is widely used as a component in the production of various cosmetic products, such as lotions, moisturizing oils, and topical creams, due to the cosmetic and therapeutic properties of fatty acids present in fish oil on human skin (Huang et al., 2018). The fatty acids present in fish oil, notably omega-3 polyunsaturated fatty acids, docosahexaenoic acid, and eicosatetraenoic acid, have been found to promote and protect healthy skin and alleviate the severity of skin disorders, such as photoaging and allergic reactions (Huang et al., 2018).

Supplements: Fish oil is used in the production of supplements and is sought after due to the high concentration of fatty acids in fish oil, specifically omega-3 fatty acids (Groth, 2023).

Food Industry: Live, fresh, and chilled seafood can be used in various forms and applications in the preparation of food for human consumption. Seafood can be consumed raw, semi-cooked, or fully cooked, based on the type of cuisine or desired consumable product.

3. Methodology and Study Implementation

3.1 Study Objectives and Research Questions

3.1.1 Study Objectives

The study had the following research objectives:

- Map the location of domestic processing facilities for the main marine catch, with a focus on anchovies and squid, as well as the infrastructure and transportation methods between points of sale.
- Identify domestic consumption of downstream goods and labor conditions in downstream good processing, with particular attention to fishmeal and fish oil. Identify export markets for fish, fishmeal, and fish oil, with particular attention to the growing export volume of fishmeal to China and the potential uses and processing of fishmeal and fish oil in China.

3.1.2 Research Questions

The study was guided by the following research questions.

- What evidence of forced labor is there in the Peruvian fishing and downstream fish product supply chain (fish and squid catch, fish processing, fish meal, and fish oil)? Where in the supply chain does forced labor occur?
- What indicators of child labor are found in Peruvian fish supply chains, and what are the demographic and job characteristics of those experiencing child labor? Additionally, how does child labor manifest in lake fishing communities such as Lake Titicaca?
- What domestic and international manufacturing processes occur to produce downstream goods, such as fishmeal and fish oil, produced using child labor or forced labor?

    - How does marine catch from Chinese distant water fleets enter international supply chains and processing?
- Who are the main stakeholders in Peru involved in the sale and processing of fish and squid caught using child labor or forced labor?
- What role do fish and downstream fish products exported from Peru play in international markets? How are fish, fishmeal, and fish oil further processed in international supply chains?

3.2 Research Methodology

The research design and methodology were shaped by ICF's experience with similar studies and by desk research and mapping conducted by ICF and Ipsos. ICF's global research instruments informed the development of data collection tools. The study conducted the following five research activities:

- Collection of background research and materials
- Research instrument development
- Training and data collection preparation
- Worksite visits, worker surveys, and interviews and observations
- Key informant interviews (KIIs)

3.2.1 Collection of Background Research and Materials

The secondary review of data and reports was guided by the thematic areas of focus, including child labor, forced labor, the fish supply chain, and working conditions. Reports and data available on child labor, forced labor, and the fish supply chain were sourced from the Internet and from organizations that work in relevant areas in the industry. ICF also conducted a scoping exercise in Lima, Peru, from March 27 to 31, 2023, engaging 10 fishing industry experts from various backgrounds, including artisanal fishers' associations, former government officials, businesses, environmental organizations, and international entities. This helped identify geographical areas of focus, specific fishing entities, and processing facilities, as well as domestically produced fish products.

3.2.2 Research Instrument Development

Three research instruments were developed to guide primary data collection: the workers' survey, the workers' interview guide, and a KII guide. The instruments were adapted from the ICF global version of the research instruments. With input from Ipsos, the instruments were adjusted to contextualize them to the realities of the fish industry in Peru. All instruments were translated into Spanish to standardize the administering of questions. The instruments were piloted among workers and stakeholders who were not targeted for the study, and adjustments were made, as necessary, based on piloting.

3.2.2.1 Defining Child Labor

Child Labor: "Child labor is defined by ILO Conventions 138 on the Minimum Age for Admission to Employment and 182 on the Worst Forms of Child Labor. It includes employment below the minimum age as established in national legislation, hazardous unpaid household services, and the worst forms of child labor: all forms of slavery or practices similar to slavery, such as the sale or trafficking of children, debt bondage and serfdom, or forced or compulsory labor; the use, procuring or offering of a child for prostitution, for the production of pornography or for pornographic purposes; the use, procuring or offering of a child for illicit activities; and work which, by its nature or the circumstances in which it is

carried out, is likely to harm the health, safety or morals of children" (United States Department of Labor, n.d.).

This definition does not apply to work specifically authorized by national laws, if such work is carried out in accordance with international standards under conditions prescribed by the competent authority and does not prejudice children's attendance in school or their capacity to benefit from the instruction received (ILO, 1999b). More information on the application of the definition of child labor in the Peruvian context can be found in Appendix 5.

3.2.2.2 Defining Forced Labor

The ILO Forced Labour Convention, 1930 (No. 29) defines, in its article 2, forced or compulsory labor for the purposes of the Convention as "all work or service which is exacted from any person under the menace of any penalty and for which the said person has not offered himself voluntarily." More information on the application of the definition of forced labor in the Peruvian context can be found in Appendix 5.

The survey included questions matched to the indicators of forced labor laid out in the 20th International Conference of Labour Statisticians (ICLS) Guidelines Concerning the Measurement of Forced Labour (2018).[15] According to the ICLS guidelines, "a person is classified as being in forced labor if engaged during a specified reference period in any work that is both under the threat of menace of a penalty and involuntary" (p. 2). The ICLS guidelines include definitions of both menace of penalty and involuntary work.

Indicators of menace of penalty included limited freedom of movement and coercion related to debt bondage, achieving daily quotas, overtime, hazardous work, having to work for other employers, and inability to quit the job. Forms of coercion included being arrested or prosecuted, threats of violence against the respondent or respondent's family, dismissal or threats of dismissal, denial or withholding of rights or privileges or wages, withholding of valuable documents, causing family to lose access to land or other resources, attempting to prevent other employers from hiring the respondent, and manipulation related to debt.

Indicators of involuntariness included work of a different nature than promised without consent, lower earnings than promised, degrading living conditions, insufficient wages defined as below minimum wage, inability to refuse to work in hazardous conditions, being required to work for other employers without consent, involuntary excessive overtime, and inability to quit the job without consequences imposed by the employer.

In alignment with the ICLS guidelines, for the purposes of this study, a person is classified as being in forced labor if he or she engaged in any work that is both under the threat of menace of a penalty and involuntary.

3.2.3 Workers' Survey

A quantitative survey aimed to collect data pertaining to fishers' experiences of forced labor, their demographic characteristics, and their living and working conditions. The survey was conducted with

[15] ILO. (2018). Guidelines concerning the measurement of forced labour. ICLS/20/2018/Guidelines. Geneva: ILO. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/meetingdocument/wcms_648619.pdf.

artisanal and industrial fishers and was administered in Spanish using a computer-assisted personal interviewing program (iField). Interviewers entered survey data using hand-held tablets.

3.2.4 Workers' Interview Guide and KII Guide

A workers' interview guide was developed in both English and Spanish to aid in the collection of qualitative data from workers. The guide was intended to gather additional insights on the topics covered in the survey with the addition of workers' perceptions of child labor in the fish industry. The guide was split into two interview guides, one for adult workers with children working in the fish industry and one for adult workers without children working in the fish industry.

A KII guide was developed in both English and Spanish to facilitate discussions with local fish supply chain experts and child and forced labor experts, including representatives from community-based organizations, government officers, and civil society representatives. The tool aimed at further developing the mapping of downstream uses of fish in the domestic and international supply chain, and the use of fish processed using forced labor or child labor in the production of those downstream goods. The guides also explored the possible existence of indicators of forced labor and child labor in the domestic processing of fish and fish products.

3.2.5 Site Selection, Recruitment, and Final Sample

The areas identified for surveys and qualitative interviews were the main port regions of Peru. According to the latest Census of Artisanal Fishing in the Maritime Environment (2012) developed by the Peruvian National Institute of Statistics and Informatics, the regions with the highest concentration of both artisanal and industrial fishing activity are Piura, Ancash, Lima/Callao, Ica, and Arequipa and Moquegua. To streamline these areas, the regions were categorized into northern, Lima, and southern regions.

Regions		Main ports/fishing zones
Northern	Piura	Paita/Sechura
	Ancash	Chimbote
Lima	Lima/Callao	Callao (Ventanilla)/Pucusana/Ancon
Southern	Ica	Paracas/San Andres (Pisco)/Marcona
	Arequipa and Moquegua	Matarani/Camaná/Ilo

Adults aged 18 or older who work in the fish industry were eligible to participate in the study. Eligible participants included artisanal and industrial fishers and fish processing workers. All participants were current workers; researchers recruited workers who were present at the selected sites on the day they visited. A subset of the surveyed workers was recruited for qualitative interviews. The research team ensured that participants were interviewed out of hearing distance from others. Qualitative interview participants received a shopping coupon (or gift card) for 100 soles (approximately $27 USD) to thank them for their time and as a form of incentive. Survey participants also received a gift card for 45 soles (approximately $12 USD).

A total of 51 qualitative interviews were completed with 25 workers and 26 key informants. Key informants were purposively selected based on their role, experience, and knowledge of the fish supply chain or child labor and forced labor practices. Interviews were conducted primarily online, with some interviews conducted in person at the Ipsos Lima location.

3.3 Training and Preparation

Training of data collectors in Lima, Peru

Research team members attended a three-day training from July 12 to 14, 2023, led by ICF and Ipsos staff. Supervised pilot surveys took place on July 17 and 18. The training with interviewers and surveyors in Lima was conducted in person, and the training with surveyors in the other provinces was conducted online through Microsoft Teams with the assistance of regional coordinators. The training covered a variety of topics, including the following: study design; definitions of child labor, forced labor, and supply chain tracing; data collection roles and ethics; and a full review of the qualitative and quantitative research instruments. Interviewers participated in role-play and mock interviews, and the research instruments were further checked for content and flow. The training also covered guidelines about obtaining informed consent, interview location, respondent selection, and data collection. The training also stressed the importance of collecting detailed information on every step in the supply chain, from the description of products to shipping information. Finally, the training included information on COVID-19 and how to ensure the safety of both the research team and the study participants. The team included a team leader, supervisors, and research assistants. ICF research staff oversaw the start of data collection and ensured that the methodology was well understood and that protocols were being followed.

3.4 Data Collection

All research designs and instruments were reviewed and approved by ICF's independent Institutional Review Board (Registration number: FWA00002349). At the beginning of each survey, the interviewer read the consent statement to the participant in Spanish, and the survey participant provided verbal consent, which the interviewer marked on the tablet. The tablets were programmed to end the interview if consent was not given. Verbal informed consent was also obtained before each qualitative interview, and respondents had the option to consent or not consent to audio recordings. All workers who participated in the research were provided with a resource sheet with details of agencies and offices that offer additional support and information about labor rights and psychosocial support. All personal identifying information of respondents was redacted from the data before the analysis.

Data collection began on June 27, 2023. A total of 200 worker surveys were completed, and 51 qualitative interviews were conducted with 25 workers and 26 key informants. The total sample was 200 workers from all 5 sites. Survey administration took approximately 30 to 45 minutes, and worker and expert interviews took 45 minutes to an hour.

Sample size achieved for surveys and interviews

	Workers	Local experts	Total
Surveys	Northern regions: 100 Piura: 60 Ancash: 40		200 participants 58 industrial fishers (58 male, 0 female) 116 artisanal fishers (112 male, 4 female)

	Lima: 30 Southern regions: 70 Ica: 30 Arequipa: 20 Moquegua: 20		10 workers in fish production or processing (3 male, 7 female) 16 workers in multiple activities (16 male, 0 female) - 14 artisanal and industrial - 1 artisanal and processing facility - 1 industrial and processing facility
Interviews	Northern regions: 10 Piura: 5 Ancash: 5 Lima: 5 Southern regions: 10 Ica: 5 Arequipa: 2 Moquegua: 3	International organizations/non-governmental organizations: 6 Peruvian government agencies: 7 Peruvian non-governmental organizations/community-based organizations: 3 Industry: 9 Artisanal fishers associations/unions: 1	51 participants 25 workers (21 male workers and 4 female workers) 26 local experts (conducted online or in person in Lima; 22 male and 4 female)

3.5 Limitations and Lessons Learned

3.5.1 Sampling Method

The study did not use probability sampling to select survey respondents. Instead, efforts were made to select a diverse range of respondents, primarily based on the site type or port, using purposive and convenience sampling methods. As such, the results from this study are not representative of the fish industry of Peru as a whole, or of workers experiencing forced labor in the industry.

Regarding child labor, adult workers provided information about the work of children. Children were not interviewed directly due to legal, ethical, and feasibility considerations. Therefore, this study provides only the perspectives of adults on child labor in the sector, and these perspectives may not fully represent the experiences, perspectives, and vulnerabilities of child laborers. Interview participants often referred to younger individuals, including those over age 18, with whom they work as “children,” even if they did not know the individual’s age. Therefore, the interviewers regularly reminded respondents that the study was considering children under age 18 only.

3.5.2 Key Informant Availability

Some government officials declined interview invitations, citing bureaucratic constraints in their respective workplaces. Other officials declined invitations due to their unavailability or time constraints. This led to an extended duration of fieldwork in comparison to that of the fishery workers. To address this issue, the research team used the snowball sampling method to recruit other potential and available stakeholders recommended by KII respondents. Although this research factored potential challenges into securing KII responses given the subject matter, future research can benefit by allocating additional time for this phase of the data collection process.

3.5.3 Environmental Challenges

The current environmental situation of the Peruvian sea caused by recent oil spills (El Peruano (a), 2022; Sociedad Peruana de Derecho Ambiental, 2022) and the El Niño phenomenon (Naciones Unidas, 2023; Montaño & Pinedo, 2023) has had a pronounced impact on fishing activities, subsequently affecting the employment status of fishery workers. This led to a reduced pool of workers available for contact, particularly in the industrial sector. To mitigate such challenges in future research, proactive measures might involve adjusting data collection timelines to account for potential environmental disruptions. For instance, while the El Niño phenomenon had already begun when data collection started in July, it typically has a greater impact in November and December and between January and March.

3.5.4 Supply Chain Tracing

Traceability within the Peruvian fishing supply chain is limited in the ability to trace both the activity of artisanal fishing operations at sea and artisanal catch numbers, as well as in the ability to trace the marine catch leaving ports to domestic downstream good processing facilities in both artisanal and industrial fishing operations. There were limitations in the domestic supply chain, mainly in informal, unregistered artisanal fishing operations, and the transportation of marine catch to domestic processing facilities. Qualitative interviews helped supplement shortcomings in current traceability systems in place.

4. Findings

4.1 Forced Labor

4.1.1 Characteristics of Respondents and Their Work

In general, background characteristics among respondents were similar among industrial and artisanal fishers. Of the 200 surveyed fishers and seafood workers, 95% (n=189) were male. This coincides with the data provided by the National Artisanal Fishing Census of 2012, which indicated that 97% of artisanal fishers are men (Galarza & Kámiche, 2015). Most workers (75%, n=150) were under age 55, especially among industrial fishers. Almost half had completed secondary education or higher, and all had completed some form of education. This also coincides with the data provided by National Artisanal Fishing Census of 2012, which indicated that 58% of artisanal fishers have attained secondary schooling. Most of the workers who participated in qualitative interviews reported having finished high school, although some mentioned that they did not finish school because they were engaged in fishing-related work, especially in artisanal fishing. Most survey respondents (99%, n=199) were from Peru, and 47% (n=94) had to relocate for their jobs, especially workers in southern (61%, n=43) and northern regions (44%, n=44) compared to Lima (23%, n=7). No worker relocated from outside Peru. Workers who participated in qualitative interviews noted that occupations associated with the fishing industry typically entail frequent travel to fishing locations or processing facilities.

In terms of age, 30% (n=39) of artisanal fishers were age 55 or older, compared to 15% (n=11) of industrial fishers. For fish processing workers, 7 out of the 10 were women.

Table 1. Respondent background characteristics by location

	Northern regions		Lima		Southern regions		Total	
	%	n	%	n	%	n	%	n
Age (years)								
18–24	8%	8	3%	1	7%	5	7%	14
25–39	38%	38	33%	10	17%	12	30%	60
40–54	38%	38	27%	8	43%	30	38%	76
55+	16%	16	37%	11	33%	23	25%	50
Gender								
Men	98%	98	87%	26	93%	65	95%	189
Women	2%	2	13%	4	7%	5	5%	11
[Prefer not to say]	-		-		-		-	
Origin								
Peru	99%	99	100%	30	100%	70	99%	199
Don't know	1%	1	-	-	-	-	1%	1
Relocated to take current job								
Yes	44%	44	23%	7	61%	43	47%	94
No	56%	56	77%	23	39%	27	53%	106
Educational attainment								
No formal schooling	-	-	-	-	-	-	-	-
Some primary	13%	13	7%	2	11%	8	12%	23
Completed primary	14%	14	-	-	4%	3	9%	17
Some secondary	31%	31	40%	12	27%	19	31%	62
Secondary or higher	41%	41	53%	16	57%	40	49%	97
Number of respondents (N)		100		30		70		200

Table 2 presents respondents' job characteristics. Fifty-eight percent (n=116) were involved in artisanal fishing, 29% (n=58) worked in industrial fishing, 5% (n=10) worked in activities related to fish production or processing, and 8% (n=16) worked in multiple activities. Of the 16 who worked in multiple activities, 14 were involved in both artisanal and industrial fishing, 1 was engaged in both artisanal and processing activities, and 1 worked in both industrial and processing activities. In Lima and in the southern regions of Peru, most respondents worked in artisanal fishing (100%, n=30 and 70%, n=49, respectively). In the northern regions, industrial fishers constituted a larger percentage, making up 47% (n=47) of 100 fishers and seafood workers, whereas in the southern region, industrial fishers comprised only 16% (n=11) of 70 fishers and seafood workers in that region. The significance of industrial fishing in the northern regions can be attributed to the presence of major ports, including Paita in Piura and Chimbote in Ancash. These ports are home to the largest industrial fishing fleets and are notable for the highest volume of landings and industrial marine fisheries production in the country (Ministerio de la Producción, 2023). In addition, 79% (n=157) of the 200 surveyed workers worked on fishing boats, especially in northern Peru, 20% (n=40) worked on the shore, and 6% (n=11) worked at a processing facility.

Among the 200 surveyed fishers and seafood workers, 83% (n=165) of workers had an employer. Of these 165 workers, 154 were male and 11 were female. Among the 11 female workers, 7 worked in fish processing and 4 in artisanal fishing. Recognizing the informal labor dynamics of Peru's fishing industry, the term "employer" was translated to "*jefe*" or "*patron*" in Spanish to include a wider variety of employment relationships. A *jefe* or *patron* may wield authority and control payments in an informal

dynamic, particularly in artisanal fishing. In addition, respondents who indicated that they were paid by the owner of the place or vessel, the boss/*patron* of their workplace, a subcontractor/company, or an employment agency, were also categorized as being in an employer relationship.[16] The high percentage of respondents who work for an employer does not necessarily indicate that all respondents had a formal employment contract or adhered to official employer-employee dynamics. Among the 165 workers with an employer, 82 exclusively worked in artisanal fishing, 58 in industrial activities, 10 in fish processing, and 15 were involved in multiple activities.

Among the 25 workers who participated in qualitative interviews, 14 were artisanal fishers, 3 worked in industrial fishing, 2 worked at a processing facility, and 6 worked in more than one activity.

Table 2. Job characteristics by location

	Northern regions		Lima		Southern regions		Total	
	%	n	%	n	%	n	%	n
Works for employer or self								
Employer	89%	89	83%	25	77%	54	83%	165
Self	11%	11	17%	5	23%	16	16%	32
Primary fishing activity								
Artisanal fishing	37%	37	100%	30	70%	49	58%	116
Industrial fishing	47%	47	-	-	16%	11	29%	58
Activities related to fishery plants, fish production, or fish processing	3%	3	-	-	10%	7	5%	10
Multiple activities	13%	13	-	-	4%	3	8%	16
Workplace[1]								
Fishing boat	88%	88	43%	13	80%	56	79%	157
Fishing on the shore	12%	12	63%	19	13%	9	20%	40
Fish processing facility	4%	4	-	0	10%	7	6%	11
Number of respondents (N)		100		30		70		200

[1] Due to the nature of the sector, the same fishery worker may mention more than more than one workplace (multiple response question).

4.1.2 Indicators of Forced Labor

Among the 165 surveyed fishers and seafood workers with an employer, the study found that 32% (n=52) have experienced forced labor. Among 82 artisanal fishers with an employer, 23% (n=19) have experienced forced labor. Moreover, 40% (n=23) of 58 industrial fishers with an employer, 20% (n=2) of 10 workers at processing facilities, and 55% (n=8) of 15 workers in multiple activities have experienced forced labor. Among the 52 workers who have experienced forced labor, 52% (n=27) relocated to take the job, 56% (n=29) are over age 40, and 77% (n=40) do not have a written contract.

Notably, the percentage of workers who have experienced forced labor without a written contract was higher among artisanal fishers (95%, n=18) than industrial fishers (60%, n=14). In addition, 88% (n=7) of workers involved in multiple activities who have experienced forced labor did not have a written contract; however, all analysis of multiple activity workers must be interpreted with caution due to the

[16] Workers whose source of payment suggested that they were in an employment relationship are grouped with those who reported having an employer for the purposes of this analysis, and jointly these workers are referred to "workers with an employer."

small sample of these workers. These findings align with what was mentioned by most workers in qualitative interviews, especially artisanal fishers, regarding contracts often being verbal, which leads to further informality in the sector. Further insights into the working conditions of workers are provided in this section.

Most key informants indicated that they were unaware of forced labor situations in the national fish industry. Experts did raise concerns about the potential risk of forced labor among workers on large Asian fishing vessels anchored off the country's coast, which is discussed further in later sections of this report. Overall, experts mentioned that the labor and cultural dynamics in the sector create an environment in which forced labor may potentially occur discreetly or remain unrecognized because the work is not perceived as being forced labor. This dynamic may lead to workers accepting abusive working conditions and low or no wages due to the lack of alternative opportunities. Further details on key informants' perceptions regarding working conditions in the fish industry are provided in later sections.

Table 3. Percentage experiencing forced labor among workers with an employer by worker characteristics

	Artisanal fishing		Industrial fishing		Fish processing[2]		Multiple activities[1,2]		Total	
	%	n	%	n	%	n	%	n	%	n
Age (years)										
18–24	5%	1	-	-	100%	2	13%	1	8%	4
25–39	53%	10	30%	7	-	-	25%	2	37%	19
40–54	26%	5	61%	14	-	-	50%	4	44%	23
55+	16%	3	9%	2	-	-	13%	1	12%	6
Gender										
Men	95%	18	100%	23	50%	1	100%	8	96%	50
Women	5%	1	-	-	50%	1	-	-	4%	2
Relocated to take current job										
Yes	47%	9	65%	15	-	-	38%	3	52%	27
No	52%	10	35%	8	100%	2	63%	5	48%	25
Does not have a contract	95%	18	60%	14	50%	1	88%	7	77%	40
Total	23%	19	40%	23	20%	2	55%	8	31%	52
Number of respondents (N)		82		58		10		15		165

[1] Due to the nature of the sector, the same fishery worker may mention more than one type of activity.
[2] Estimate should be interpreted with caution due to the small sample of fish processing and multiple activities workers.

4.1.2.1 Top Indicators of Coercion and Involuntariness

Of the 165 workers with an employer, 13% (n=21) experienced "abuse of worker vulnerability" and "very low or no wages" (Table 4). "Abuse of worker vulnerability" is the top indicator of coercion, and "very low or no wages" is the top indicator of involuntariness. Among the workers who experienced abuse of vulnerability, 13% (n=21) received low or no wages, 12% (n=20) worked overtime not

previously agreed upon, and 11% (n=18) could not refuse to do hazardous work, which are the 3 top combinations of both indicators.

This aligns with what was mentioned in the KIIs and worker interviews. Three international and local non-governmental organization (NGO) representatives mentioned the potential for workers to face coercive conditions and involuntary labor due to the power dynamics and hierarchical nature of fishing vessels, in addition to the lack of opportunities and informality, especially in the artisanal sector. Overall, artisanal fishers who participated in qualitative interviews said that it is common that employers are late in paying them (approximately by two weeks), pay them less than agreed or make deductions that were not agreed upon. Eight workers said that they have encountered discrepancies between promised and actual earnings, and unpaid overtime was particularly mentioned by respondents.

Table 4. Heatmap of top combinations of involuntariness and coercion indicators among workers with an employer

	Abuse of workers' vulnerability	Withholding of wages or other promised benefits	Debt bondage or manipulation of debt	Withholding of valuable documents	Threats or violence against workers or workers' families and relatives, or close associates	Restrictions on workers movement
Very low or no wages	13%	7%	5%	1%	5%	0.60%
Abusive overtime requirements not previously agreed	12%	6%	5%	2%	0.60%	0
Could not refuse to do hazardous work	11%	3%	3%	2%	2%	0
Work with no or limited freedom to terminate work contract	5%	2%	1%	1%	1%	0
Work of a different nature without consent	2%	1%	2%	0.60%	0	0
Required to work for longer period than agreed	1%	1%	0.60%	1%	0	0

4.1.2.2 Top indicators of Involuntariness

Of the 165 workers with an employer, 80% (n=132) experienced at least one indicator of involuntariness (Figure 2). Among 82 artisanal fishers with an employer, 78% (n=64) experienced at least one indicator of involuntariness, and of the 58 industrial fishers with an employer, 81% (n=47) experienced at least

one indicator of involuntariness. Of the 10 fish processing workers with an employer, 80% (n=8) experienced at least one indicator of involuntariness. Of the 15 respondents who were working in multiple activities with an employer, 87% (n=13) experienced at least one indicator of involuntariness.

The most common indicator of involuntariness, experienced by 52% (n=86) of 165 workers with an employer, was very low or no wages, defined in this study as receiving below the legal minimum wage. The rate of experiencing low wages was higher among artisanal fishers (55%, n=45) than industrial fishers (45%, n=26), processing workers (60%, n=6), and multiple activities workers (60%, n=9). However, these comparisons must be interpreted with caution due to the small sample of processing and multiple activity workers.

When asked if their salary was specifically below the minimum wage of $1025 PEN, a slightly higher percentage of artisanal fishers (60%, n=68) and processing workers (60%, n=6), compared to industrial fishers (45%, n=26), reported being paid below minimum wage ($1025 PEN). Eight workers who participated in qualitative interviews mentioned encountering discrepancies between promised and actual earnings, such as unpaid overtime, payment delays, unmet promises for increased remuneration, and issues with deceptive practices related to their salaries, including being misled about their earnings.

A seafood company staff member highlighted that workers feel compelled to work, even in not ideal working conditions or pay, given their urgent need for employment. The interviewee pointed out a concerning practice in certain companies, particularly labor service providers, in which they make commitments to pay a specific amount but often fail to fulfill the promised daily wages.

> *"I've seen informality, and more than forced labor, it appears as if labor is being coerced. I think it's due to the need for employment, and many workers go out to find work every day. However, in some companies, especially labor services, they might promise to pay a certain amount and then fail to provide the full daily wage."*
>
> *—Fish company staff member*

Moreover, 39% (n=64) of respondents with an employer worked abusive overtime hours, and this indicator was higher among artisanal fishers (43%, n=35) compared to industrial fishers (36%, n=21). Given that there is no legal overtime limit in Peruvian law, a 70-hour per week limit was used for this study to classify abusive overtime. This limit was based on the Hours of Work (Commerce and Offices) Convention, 1930 (No. 30), which restricts daily work hours to 10.

Among workers who participated in qualitative interviews, three artisanal fishers, one industrial fisher, and one artisanal and processing facility worker also reported having worked longer hours than agreed with former employers in the fish industry. One worker who had worked in both artisanal and processing facilities referred to the fishing industry as "slavery" due to the working hours. He mentioned that shifts of up to 12 hours, or even longer, are common.

> *"They [boat owners] don't tell you, but you always exceed the hours agreed upon verbally. You always go over, always."*
>
> *—Male artisanal fisher*

Depending on the type of catch, fishing trips could extend for days, or even weeks, with little time for rest. He said that in factory settings, official regulations limit work to an 8-hour day, but in practice, employees often find themselves working up to 12 hours, and overtime is not fully compensated.

> *"For anchoveta; you catch it, bring it in, and unload it. But for bonito [tuna] or white fish, you might be out for two or three days. In the case of fish roe, you might be at sea for a month, for 25 days. You sleep there, wake up, and keep working, sleep, wake up, and so on (…) [In the processing facilities], for overtime, you must calculate and add up how much they pay per hour, and they don't pay you the full amount. Out of three hours, they might pay you for two or one hour."*
>
> *—Male artisanal and processing facility worker*

A fish company staff member discussed the same situation mentioned by the artisanal and processing facility worker.

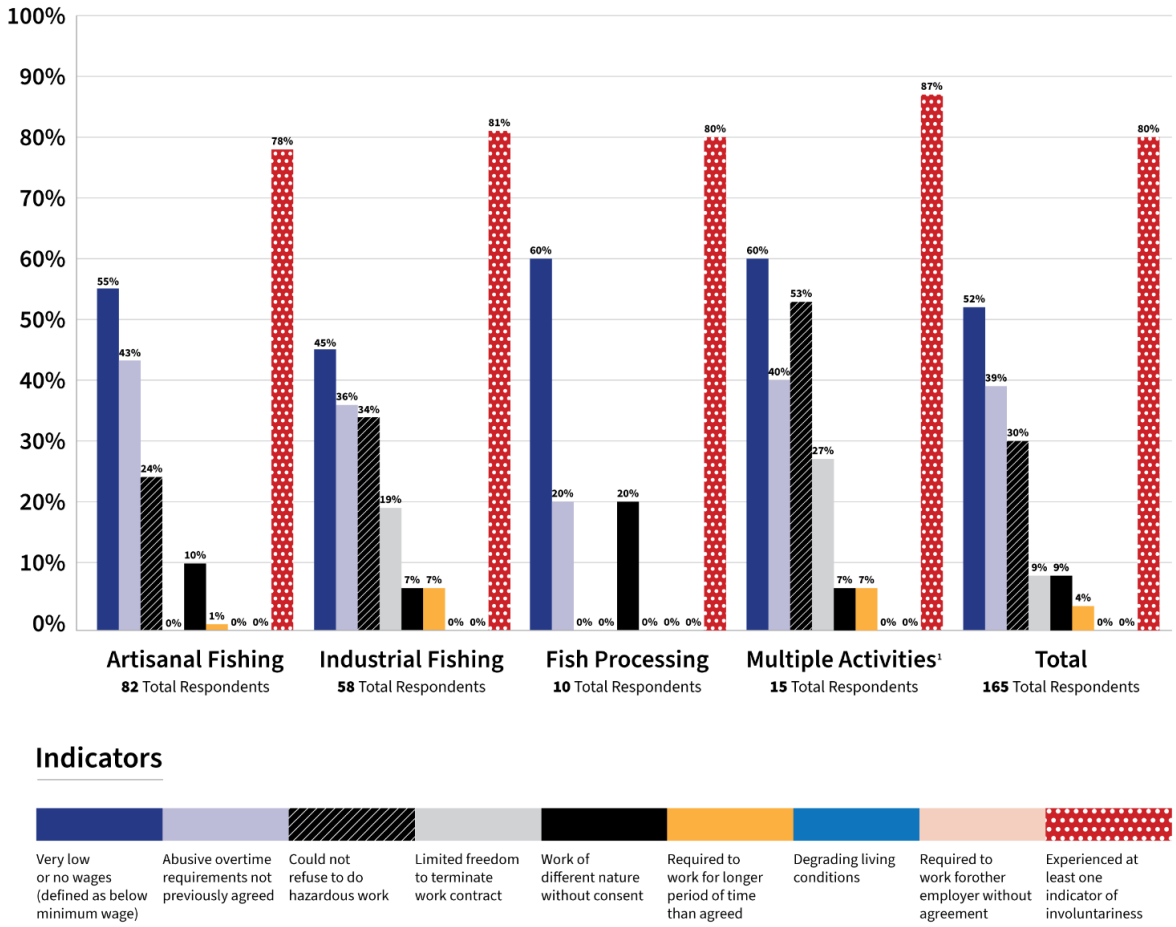
> *"For example, a day's work is eight hours, and any hours worked beyond that are considered overtime unless there's an agreement for different compensation. There have been cases where they extend the working hours and pay only part of the amount."*
>
> *—Fish company staff member*

In addition, 30% (n=48) of surveyed workers with an employer could not refuse to do hazardous work. Among workers who participated in qualitative interviews, one industrial fisher highlighted the challenges of being unable to refuse hazardous work. The worker mentioned instances in which employers, in a rush to complete tasks, failed to secure loads properly and rushed through lifting heavy nets with the winch. This resulted in numerous accidents, resulting in injuries and even crew members falling overboard. The interviewee noted that these issues were not isolated, because multiple employers had not only compromised safety but also used threats of dismissal to coerce workers into accepting unsafe working conditions.

> *"They want you to pull the net all the way up no matter what, they rush you, rush you, they make you hurry. Now, if you don't obey them, they threaten to kick you off."*
>
> *—Male industrial fisher*

Lastly, 9% (n=15) of surveyed fishers and seafood workers with an employer had a job of a different nature without their consent, and 9% (n=15) had limited freedom to terminate their work contract. The latter was only present among industrial fishers (19%, n=11) and workers in multiple activities (27%, n=4).

Figure 2. Respondents with an employer experiencing involuntariness, by indicator



[1] Estimates should be interpreted with caution due to the small sample of processing and multiple activities workers.

4.1.2.3 Top indicators of Coercion

Of the 165 workers with an employer, 36% (n=60) had encountered at least one indicator of coercion (Figure 3). Among 57 industrial fishers with an employer, 45% (n=26) experienced at least one indicator of coercion, compared to22% (n=27) of 82 artisanal fishers with an employer who experienced this indicator. In addition, 30% (n=3) of fish processing workers and 60% (n=9) of workers in multiple activities experienced at least one indicator of coercion.

The most common indicator, experienced by one-fourth (24%, n=40) of workers with an employer, was "abuse of workers vulnerability through the denial of rights or privileges, threats of dismissal or deportation." Being threatened with dismissal (16%, n=27) or threatened with exclusion from future work (10%, n=17) were the most frequent forms of abuse of vulnerability. Workers who participated in qualitative interviews also indicated that the most common threat received by workers in fishing and related activities is that of losing their jobs or not being hired again.

An NGO official said that in the industrial sector, companies must provide a way for workers to submit complaints, whether in writing or through a web form and that these complaints can go to the company or be escalated to the National Superintendence of Labor Inspection (SUNAFIL), a government agency.

Given that extensive evidence is often required, however, workers are hesitant to file complaints because they fear retaliation or job loss. Two artisanal fishers and one industrial fisher supported this statement, saying that they have faced threats of losing their jobs or not being hired again if they complain. They said that they run the risk of being "marked" and then fired or left out of subsequent hiring processes.

> *"The problem [if you complain about being unhappy with your job] is that they retaliate against you, and you're marked in red, and you never get to work there again. That's the punishment, and since jobs are scarce, it's better to say nothing and stay quiet."*
>
> *—Female artisanal and industrial fisher*

According to a fish company staff member, informal companies often evade visits from SUNAFIL or other regulatory agencies simply by not opening their doors. In contrast, formal companies with prominent visibility comply with SUNAFIL visits, and the agency conducts audits about overtime compensation, payments, and employee records. In the case of the fishing sector, informal fishing companies can be defined as those that carry out fishing activities but do not comply with all the regulations required by law or are in the process of complying with these regulatory requirements. Non-compliance with regulations may include non-compliance with labor rights of their workers, low quality standards in the handling of the catch, failure to send fishing reports to the inspection institutions, among others. Informal companies are generally much more associated with artisanal fishing because they are small scale.[17] In comparison, formal fishing companies are those that comply with all the requirements of the law for the development of fishing activities. Nonetheless, according to a fishers' association leader with experience in both the artisanal and industrial sectors, his contract was not renewed once the company became aware of his role as a leader of the association. He explained that companies generally tend to shy away from hiring individuals whom they perceive as "troublemakers."

In addition, 13% (n=22) of workers with an employer experienced "withholding of wages or other promised benefits" by their employers. A female artisanal fisher who participated in qualitative interviews noted that payments are frequently delayed, withheld, or reduced due to the absence of a formal contract.

> *"You have to endure it and wait until they decide to pay. There's no contract that you sign where that person is obligated to pay you. If they don't feel like paying you every day, they might pay you at the end of the week, and you have to plead for it."*
>
> *—Female artisanal fisher*

Among workers who participated in qualitative interviews, one artisanal fisher and one worker involved in both artisanal fishing and fish processing said that they had experienced unpaid overtime under the threat of job loss. Another worker at a processing facility said that he could not refuse overtime work out of fear of being replaced or facing explicit threats of replacement. He said that employees were required to stay until all the production tasks were completed during periods of high production. Although overtime hours were compensated, workers are told *"Either you stay and continue working, or someone else takes your place the next day."* Opting to leave work early often leads to contract termination, and another worker will be brought in to fill the position.

[17] Monteferri, B.; Zarbe, K.; Mitma, M.; Bandín, R.; Heck, C. y Guidino, C. (2021). Reglas de juego en el sector pesca. En: Sociedad Peruana de Derecho Ambiental, Wikipesca Perú. Plataforma colaborativa sobre la pesca en el Perú. Recuperado de: https://mardelperu.pe/articulos_wikipesca/reglas-de-juego/

"Well, sometimes you can't find another job, and sometimes you're forced to accept it. We've complained as a group, but they [the employers] don't listen. [They say:] "Let's see if it suits them because there are plenty of people who want to work," and this threat remains hanging, and the next day, we must go out."

—Male artisanal fisher

This was affirmed by a government official who explained a situation that happens often in processing facilities. The official said that processing workers typically fear being replaced. They work for eight hours in the canning operation, but peak seasons often require them to extend their hours. When additional fish arrive, those who do not want to stay beyond their initial eight hours have the choice to leave. Many workers choose to stay because they are aware of the high demand for these jobs and that the company will not hire them again if they choose to leave.

"So, they preferred to stay rather than leave... And most people chose to stay because they knew what they had. The next day, they wouldn't hire you again because the next person had shown more dedication to the company than you had."

—Government official

Although only 3% (n=5) of surveyed fishers and seafood workers with an employer experienced threats or violence against themselves or their families and relatives, violence was mentioned by some key informants and workers in qualitative interviews. According to an NGO official, larger fishing vessels have a clear hierarchical system, with the owner as the ultimate authority. This hierarchy can sometimes escalate as physical violence, which he believes is the primary means of coercion.

"There have been cases of physical violence during fishing operations where punishments are meted out. Within the vessel, the treatment is quite hierarchical, with the captain in charge. If the vessel is large, you also have an owner who is the boss, and everyone does what the owner says. It's quite hierarchical, and sometimes an excess of this command can manifest as physical violence. I would say this is primarily the means of coercion."

—International NGO official

Although workers reported not having suffered physical violence directly, some mentioned that they had witnessed situations in which other workers were mistreated.

"I've heard of a crew member being thrown into the water by the skipper while they were out at sea, just to see if they can swim or if they'll drown. That's how some skippers are."

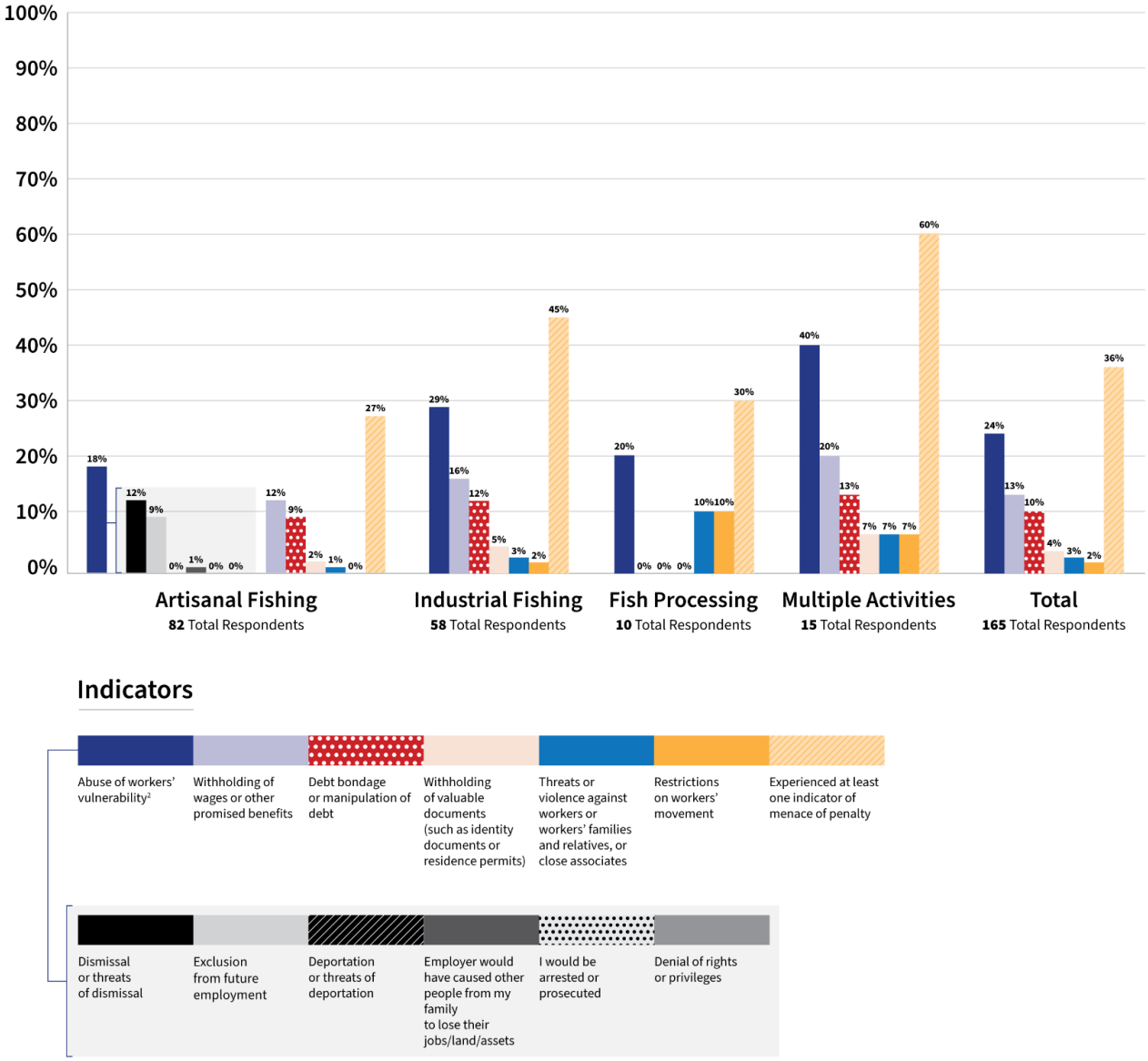
—Male artisanal fisher

Although only 2% (n=3) of surveyed fishers and seafood workers with an employer reported experiencing restriction of movement, three respondents, one artisanal fisher and two who worked in both artisanal and industrial fishing, mentioned being required to remain on the boat for extended hours, often not allowed to disembark until late in the evening or ignored when they requested to go ashore. This disregard for agreed-upon work hours and workers' requests to go ashore resulted in prolonged workdays.

"The mistreatment has occurred on the vessel, where we are practically trapped. They [the skippers] don't let us go ashore because there are many tasks to be done […]. All the other companies take their workers to a hotel, but we must stay on board."

—Male artisanal and industrial fisher

Figure 3. Respondents with an employer experiencing coercion, by indicator



[1] Estimates should be interpreted with caution due to the small sample of processing and multiple activities workers.

[2] Some workers experienced multiple types of abuse of vulnerability through denial of rights or privileges, threats of dismissal, or deportation (includes exclusion from future employment, financial penalties).

4.1.3 Nature of Working and Living Conditions

4.1.3.1 Employment Contracts and Recruitment

Among the 165 workers with an employer, 19% (n=31) had a written contract and 60% (n=99) had a verbal agreement. Notably, the absence of written contracts was more pronounced among artisanal fishers, with only 2% (n=2) of 82 artisanal fishers with an employer having a written contract and 70% (n=57) relying on verbal agreements, compared to 32% (n=18) of 57 industrial fishers with an employer

who had a contract and 50% (n=29) who had a verbal contract. In addition, 20% (n=3) of 10 fish processing workers, and 80% (n=8) of 15 workers in multiple activities had contracts.

Of the workers who participated in qualitative interviews, 14 of the respondents engaged in artisanal fishing did not have formal employment contracts and agreed to their working conditions through verbal agreements.

> *"So, he [the employer] told me, 'You know, during times when there's no catch, you're going to work for me.' There was no contract or insurance involved, but I would work for him on days without fishing, and he would pay me a monthly salary."*
>
> *—Male artisanal fisher*

Five of the six workers who worked in multiple activities (one involved in artisanal, industrial, and fish processing, one involved in artisanal and fish processing, and three in artisanal and industrial fishing) mentioned having no contracts. One of the artisanal workers who also worked in industrial fishing said that, while he did not have a contract, he was provided with social benefits. The only worker involved in artisanal and industrial fishing who said that they had a contract mentioned the following:

> *"I repair fishing nets. I get hired for both artisanal and industrial fishing. We sign contracts for services, work on land, and on the dock underwater. They take us out to sea, deep into the ocean, to repair the nets."*
>
> *—Female artisanal and industrial fisher*

Of the workers who participated in qualitative interviews, most of those employed in industrial fishing reported signing contracts, but only a few reported knowing in detail the contents of these documents. Two of the workers in canneries or canning factories signed short-term contracts, but the rest said that they only made verbal agreements with their employers.

> *"They make us sign a contract before starting the job. [It's renewed] every 6 months. [The actual work conditions match what is written in the contract. Overtime hours are adequately compensated and] it's worthwhile because if we were paid 14 soles for overtime at the other job, here they pay us 24, so it's better for us."*
>
> *—Female processing fisher*

According to key informants, most industrial workers, including both fishers and plant employees, are officially employed and have written contracts. During peak seasons, however, companies hire additional workers through outsourcing companies, mainly for processing plant duties.

According to a fish company CEO, fishers can also have temporary contracts, which means that they are employed for six months each year and are compensated based on the allocated quota and the volume of fish caught. He said that there are two payment systems in play: one for sea crewmembers based on a piece-rate system, and another for land-based laborers and plant employees, who receive monthly salaries but work overtime when production demands it.

> *"This payment system is established through agreements with fishermen's unions and usually has a validity of five years, at least in the case of our union. Of course, there are some individuals on board the ships who have a fixed monthly salary year-round, […] for example, the chief engineer or mechanics. […] On the land side, we have employees at the plant, and today, all of them receive monthly salaries. In the case of laborers, when there is production, they work*

overtime. There are intermittent workers who are only hired during the fishing season, […] like those involved in unloading raw materials or assembly lines for products."

—Fish company CEO

Regarding earnings, out of 165 workers with an employer, 9% (n=15) said that their income was lower than promised. Many workers in qualitative interviews had experienced earning less than what was agreed upon, either in verbal or written contracts. This was more common in artisanal fishing, but some industrial fishers also mentioned having experienced this.

According to an international NGO representative, there is a distinct payment system for onboard personnel, but there are no specific labor laws regulating this system. The NGO representative indicated that working conditions on vessels tend to be acceptable. This, however, was contradicted by an industrial fisher:

"The company does what it wants. When you sign your contract, they don't tell you how much you're going to earn. You only see how much you've earned when you get paid with the receipt. When you see your receipt and the amount of anchovy you've caught, you do the math, and you realize they're only paying you 2 or 3 soles. Sometimes you complain, 'Why me?' Because in another company, they pay 7 or 8, but no matter how much noise you make or protest to the company, they don't care."

—Male industrial fisher

Table 5. Contracts by fishing activity among workers with an employer

	Artisanal fishing		Industrial fishing		Fish processing[1]		Multiple activities[1]		Total	
	%	n	%	n	%	n	%	n	%	n[2]
Contract/agreement										
Written contract	2%	2	31%	18	80%	8	20%	3	19%	31
Verbal agreement	70%	57	50%	29	20%	2	75%	11	60%	99
Earnings lower than promised	7%	6	10%	6	20%	2	8%	1	9%	15
Number of respondents (N)		82		58		10		15		165

[1] Estimates should be interpreted with caution due to the small sample of processing and multiple activities workers.

[2] The total n column does not sum to 165 due to responses being specific to different questions; however, percentages are calculated based on the total 165 respondents with an employer.

4.1.3.2 Hazardous Work

Hazardous work was common in both artisanal and industrial fishing. Among fishers, fishing at night was the most mentioned hazardous activity, with 91% (n=105) of 116 artisanal fishers, 91% (n=53) of 56 industrial fishers, and 100% (n=16) of workers in multiple activities being exposed to this hazard. In addition, 74% (n=85) of artisanal fishers, 60% (n=35) of industrial fishers, and 81% (n=13) of multiple activities workers reported excessive time at sea.

Moreover, 58% (n=67) of artisanal fishers, 40% (n=23) of industrial fishers, and 50% (n=8) of multiple activities workers reported being exposed to water-related hazards or boats lacking adequate safety measures, which was also commonly mentioned by workers who participated in qualitative interviews. Most workers who participated in qualitative interviews (n=22) mentioned that working in the fish industry, including in artisanal and industrial fishing and at a processing facility, involved working under

conditions of high risk to life and health, and with insufficient training or personal protection equipment. One worker who had worked in both artisanal and industrial fishing said that a friend lost his leg while working on a boat at sea. Five workers mentioned the fear of falling into the sea and not being able to be rescued. Lastly, two workers lacked basic swimming skills and mentioned not taking minimum safety precautions such as wearing life jackets. One of the two workers mentioned that they only wear life jackets when passing through the harbor because it is mandatory; afterward, they remove them. In the case of those who worked in factories processing fish and other marine products, the most common hazardous risks are associated with cuts from tools such as knives, cans, and other containers.

> *"This job is unpredictable; you never know when you'll return, you never know when you'll come back, sometimes you don't come back. You know the day you leave, but not the day you'll return. You know you leave with seven [crewmembers], but you don't know if you'll come back with six [crewmembers]. You don't know if someone will fall into the water, an accident. It's a life-or-death job. If you survive this job, it's because you are prepared. Many people have lost their lives."*
>
> *—Male artisanal fisher*

Other situations described include working in unhygienic, unventilated places, with poor food, but the most significant concerns relate to insufficient or lack of personal protection equipment. An artisanal fisher mentioned that he was not given any protective equipment. The only equipment he was given was fishing gear, but he was told that he could not complain about his working conditions.

> *"The previous boss used to say that there's no need to complain, you get what you get, and you shouldn't complain; you should be content that you're still getting paid."*
>
> *—Male artisanal fisher*

According to an NGO official, for foreign vessels on extended trips, maintenance conditions deteriorate over time. Crew members endure harsh working conditions, often lacking access to drinking water and at times having to capture rainwater to secure water for consumption. The NGO official also said that crew members share meals on the same plates while working under the constant threat of physical punishment. It is important to note that these situations were described in the context of foreign vessels. However, although the NGO official did not specify whether Peruvians are part of the crew, two informants mentioned being aware of Peruvians and migrants working on these vessels.

Some workers indicated that working in unsafe, unhygienic, and hazardous conditions has a negative impact on their well-being. One artisanal fisher discussed the impact on physical health in the short, medium, and long term. He said that fishers often have the flu, cough due to the cold, and have constant bone pain, and he believed it was a consequence of spending so much time at sea.

Table 6. Exposure to hazards by fishing activity: Artisanal, industrial, or multiple activities[1]

	Artisanal fishing		Industrial fishing		Multiple Activities[2]		Total[1]	
	%	n	%	n	%	n	%	n
Fishing at night	91%	105	91%	53	100%	16	87%	174
Excessive time at sea	74%	85	60%	35	81%	13	67%	133
Water-related hazards or boats lacking adequate safety measures that could cause risks like drowning,	58%	67	40%	23	50%	8	49%	98

	Artisanal fishing		Industrial fishing		Multiple Activities[2]		Total[1]	
	%	n	%	n	%	n	%	n
hypothermia, and injuries from handling fishing gear								
High-risk locations without informed and voluntary consent and adequate safety measures	40%	45	27%	15	44%	7	33%	67
Number of respondents (N)		116		56		16		200

[1] Processing workers are not included in this table because these are fishing-related hazards.
[2] Estimates should be interpreted with caution due to the small sample of multiple activities workers.

4.1.3.3 Overtime

The maximum legal working day in Peru is 8 hours per day or 48 hours per week, without considering time for lunch (Ríos, 2023). All hours worked beyond this legal maximum are considered overtime, have no legal limit, and must be paid, according to the Supreme Decree 007-2002-TR (Rios, 2023). According to the Ministry of Labor in Peru, in fishing activities, a cumulative and rotating work schedule often surpasses 8 hours per day, but it must adhere to a legal maximum of 48 hours per week. Anything beyond 48 hours constitutes overtime without a defined limit. The average hours worked per week among all workers is 57, with industrial fishers working 60 hours, artisanal fishers working 58 hours, and processing workers working 47 hours. Among the 165 workers with an employer, 42% (n=69) said that they had worked overtime, and their average number of overtime hours per week was 21.

According to informants, all workers in the industry know that industrial fishing labor is both labor and time intensive, and as explained above, in peak seasons both fishers and plant workers are expected to work overtime. Key informants said that, in industrial companies, the first two extra hours are paid at a certain rate, and the following two at a higher rate. By law, it is optional to work overtime (Ríos, 2023), but as most respondents mentioned, due to workers' financial situations, most tend to take overtime as an opportunity to earn extra income, regardless of the conditions. According to a fish company CEO, overtime is perceived as a valuable opportunity in the fish sector given the typical work schedule—six months a year, three months at a time.

Table 7. Average overtime per week among workers with an employer

	Estimate	n
Works overtime (%)	42%	69
Average hours of overtime per week among those who work overtime	21	-
Number of respondents (N)	-	165

4.1.3.4 Earnings and Debt

More than half (55%) of all surveyed fisher and seafood workers said that their income is less than the minimum wage. The minimum wage in Peru is $1,025 PEN (approximately $277 USD) per month. Processing workers reported earning substantially less per day ($62 PEN, or approximately $17 USD), which translates to an average monthly income of $1,240 PEN (approximately $347 USD) based on a 20-day work month. In contrast, industrial fishers earned $362 PEN per day (approximately $101 USD), equating to a monthly income of $7,240 PEN (approximately $2,024 USD) based on a similar 20-day work month. Artisanal workers earned $125 PEN (approximately $35 USD) per day, leading to a monthly income of $2,500 PEN (approximately $694 USD) based on the same workdays. Multiple activity workers

reported earning $334 PEN (approximately $94 USD), resulting in a monthly income of $6,680 PEN (approximately $1,876 USD) based on the 20-day work month standard.

Of the 200 surveyed fisher and seafood workers, 65% (n=130) are paid by the site or boat owners, and 18% (n=35) are paid by a subcontractor. Sixteen percent (n=32) responded "nobody, I work by myself" when asked by whom they are paid. The proportion of workers who are paid by subcontractors is higher in industrial fishing (38%) than in artisanal fishing (1%), and the proportion of self-employed workers is higher in artisanal fishing (24%) than in industrial fishing (1%).

Table 8. Form of payment and amount of earnings by fishing activity: Artisanal, industrial, or processing facility

	Artisanal fishing		Industrial fishing		Fish processing[1]		Multiple activities[1]		Total	
	Estimate	n	Estimate	n	Estimate	n	Estimate	n	Estimate	n
Earnings in soles on a typical day (average)	$125	126	$362	72	$62	10	$334	16	$210	192
Reported earnings below minimum wage (%) ($1,025 soles)	60%	68	45%	26	60%	6	63%	10	55%	110
Who provides payment (%)[2]										
Site or boat owner	71%	81	64%	37	20%	2	63%	10	65%	130
Subcontractor	1%	1	38%	22	80%	8	25%	4	18%	35
Nobody, I work for myself	24%	32	1%	1	-	-	8%	1	16%	32
Recruitment and placement service agency	-	-	-	-	-	-	-	-	-	-
Other	3%	4	3%	2	10%	1	8%	1	3%	5
Number of respondents (N)		114		58		10		16		200

[1] Estimates should be interpreted with caution due to the small sample of processing and multiple activities workers.
[2] The same worker could select more than one type of payment option (multiple response question).

Of the 165 workers with an employer, 27% (n=45) have had some debt with their employer. During qualitative interviews, some of the workers also reported having debts with their employers because the amount earned had not been enough to cover the expenses generated by fishing trips, such as expenses for fuel, ice, or food.

Of the 45 respondents who had been in debt with an employer, 96% (n=43) said that the terms of the debt were reasonable, and, on average, it took them 1 month to repay the debt. During qualitative interviews, respondents said that these debts are paid little by little with subsequent earnings, and they also did not perceive these debts as a problem because they consider them to be part of the accepted employment conditions. Some respondents mentioned that if a fishing trip did not yield any catch, they incur a debt to cover expenses. However, this debt is shared among the crew members, and those who

leave the crew are not held responsible for their share of the debt. When they eventually catch fish, the revenue generated is used to offset the debt accumulated from previous unsuccessful trips.

> *"[If we go out to sea and don't catch any fish] Well, we lose that trip, but it gets gradually reimbursed as we go out again. Once we catch fish, we deduct it. If we owe 1000 soles, we pay 2000 soles. […] It becomes a debt. […] [If you go to another boat] They won't collect it [the debt]. The owner or the remaining three of us will be left with debt. We'll work, and it will be paid off, but one person who left won't have to pay."*
>
> *—Male artisanal fisher*

4.1.3.5 Living Conditions

Among 165 surveyed workers with an employer, almost a third (32%, n=52) live in employer-provided housing. Of this group, 45% (n=24) were provided housing by their employer exclusively while on the boat, 26% (n=14) had housing provided both on the boat and onshore, 15% (n=8) were accommodated solely while on shore, and 6% (n=3) had other housing arrangements. Among the workers who live in employer-provided housing, most consider the quality of the accommodation to be good or very good (88%, n=46), have access to clean water (98%, n=51), report that the housing has no major damage (92%, n=48), feel safe in it (96%, n=50), and have a safe place to store belongings (92%, n=48). Notably, all four individuals who lacked a safe place to store belongings, all four who reported housing damage, the two respondents who expressed feeling unsafe, and the one respondent who lacked access to clean water were male. Given that none of the workers who participated in qualitative interviews mentioned working on Chinese or foreign vessels, the living conditions presented in this section pertain only to Peruvian vessels.

According to an international NGO representative, however, the artisanal boats do not have appropriate conditions for a person to live decently.

> *"There are recommendations for how much space a person should have to live in dignity, and this isn't met on these boats. Some of these boats are quite old, and there are situations where sleeping spaces are very cramped."*
>
> *—International NGO representative*

A fish company staff also described the living conditions of industrial vessels. He said that there are 18 to 20 people living on the boat, in cabins with 6 to 12 people, noting that fishing vessels are not only a workplace but also serve as a home for crew members with facilities such as restrooms, rest areas, and kitchens. Crew members are given supplies for two to three days, with additional provisions available for potential overnight stays at sea. Since they spend the entire fishing season on board, they have the flexibility to go ashore and buy supplies as needed. The fish company staff also said that the cook plays a crucial role in preparing meals for the crew, which can be challenging due to early working hours. However, he did not mention instances of mistreatment or poor living conditions, highlighting that crew members understand they need to be "prepared for anything."

Although only one surveyed worker mentioned lacking access to water, an artisanal and industrial worker who participated in qualitative interviews highlighted the poor quality of the water provided to the crew.

"It comes from a well, and even trash falls into it. That water is pumped to us, and we use it for cooking and bathing. Sometimes we've had illnesses, and they gave us a pill, but it didn't make the water safe to drink."

—Male artisanal and industrial fisher

Table 9. Living conditions among workers with an employer who live in employer-provided housing, while on the boat, on shore or both

	%	n
Quality of accommodations		
Very good	23%	12
Good	65%	34
Neutral	12%	6
Bad	-	-
Very bad	-	-
Does not have safe place to store belongings	8%	4
Housing has major damage	8%	4
Does not feel safe in housing	4%	2
Lacks access to clean water	2%	1
Number of respondents (N)		52

4.2 Other Evidence of Labor Exploitation

4.2.1 Underlying Factors

In terms of demographic variables that could represent risk factors for forced labor, some respondents identified that women and less educated people could be more vulnerable to work in negative working conditions. One of the female workers said that there is a lot of *machismo* (sexism), and her employers said things like, *"You're already in a man's job, so hurry up."* Other workers said the following:

"There's no special treatment just because you're a woman. […] You have to endure it because, unfortunately, we live off this work."

—Male artisanal fisher

"I'll be straightforward, some people are a bit ignorant because most fishermen aren't educated. For example, I completed the second year of high school, I didn't finish my secondary education, and there are others who didn't even complete primary school. They've dedicated themselves to fishing, and sometimes they only receive what they're given."

—Male industrial fisher

Migrants were also identified to be more vulnerable to poor labor conditions. Four workers in qualitative interviews mentioned that many Venezuelans are currently working in fishing; however, there are docks where they have not been able to gain access. They mentioned that a significant majority do not have a fishing permit and do not meet the requirements for boarding. This results in them working for lower wages without being able to voice their demands since they do not belong to any union or association.

In addition, an international NGO representative highlighted instances in which undocumented migrants were employed without contracts at processing plants. The key informant said that an inspector at a fish

processing plant told him that workers who did not have documents would enter and leave the plant through another door. The inspector was left waiting before entering the plant, presumably to allow workers who did not meet the requirements to leave through another door and avoid inspection.

Furthermore, a Peruvian NGO director said that fishing is "an opportunistic employment option," attracting numerous individuals, especially unemployed Venezuelan migrants. The director emphasized the need to differentiate between the issues faced by artisanal fleets and the Asian vessels stationed off the Peruvian coast.

> *"Entry conditions are very precarious [in Peruvian vessels], and almost anyone can get on board. The rate of crew turnover is high, and everyone has the choice to get on and off the boat whenever they want. It's not like those vessels that go far out to sea, and if you misbehave, they'll throw you overboard."*
>
> *—Peruvian NGO director*

Overall, workers stated that poverty and limited job options were reasons for accepting poor working conditions. The primary efforts mentioned by respondents to remedy the negative working conditions to which they are exposed are initiatives of workers' associations or unions. It is important to mention that few of those interviewed are part of a union, but they recognize the value of organizing to demand labor reforms and improvements in a formal manner, even if these initiatives are not always achieved.

> *"We organize fundraisers, spending over 50,000 soles, 40,000 soles just for the process [union claims form] because it takes time, […] to try to get the company to increase our wages, and in the end, it amounts to nothing because they raise it by just 0.20 cents more, and the big companies have connections […] with congressmen, prosecutors in Lima, they're connected to all of them."*
>
> *—Male industrial fisher*

4.2.2 Chinese Distant-Water Fishing Fleet

China is a prominent global player in the fishing industry and has a significant presence in various regions, including Latin America, especially in countries like Peru. It is the largest buyer of Peruvian fishmeal exports and one of the top buyers of Humboldt squid and other marine produce. China has a Free Trade Agreement with Peru, which benefits its trading activity (Ministerio de la Producción, 2021).

It is apparent that Chinese-owned or operated vessels are involved in fishing activities in waters outside of China. The decline of China's own coastal fisheries has prompted a shift toward aquaculture and the expansion of distant-water fleets, exacerbating conflicts with other nations concerning overfishing and marine conservation efforts (Vaughn et al., 2022). The country has a considerable presence in South American squid and other catches and has been implicated in illegal, unreported, and unregulated fishing activities. Estimates of the total number of vessels vary, with the International Trade Commission suggesting a range of 2,900 to 3,400 vessels for China's distant-water fleet. Another estimate identified a total of 16,966 vessels, with 12,490 observed outside internationally recognized Chinese waters between 2017 and 2018. However, not all of these vessels are actively operating in other countries or international waters (Vaughn et al., 2022). Peru's efforts to combat illegal fishing by implementing port regulations for foreign vessels, particularly targeting Chinese squid fleets, seem to have unintended consequences. The regulations, requiring real-time tracking through a vessel monitoring system, were designed to enhance oversight, but new research suggests that they have driven Chinese ships away from Peruvian ports (Goodman, 2023). Only 3 out of 671 authorized Chinese vessels have installed the

required equipment, and port visits have drastically decreased. Instead of offloading crew and restocking in Peru, the vessels now stay longer at sea, raising concerns about potential abuse of the approximately 16,000 crew members, largely composed of impoverished Filipinos and Indonesians (Goodman, 2023).

According to five key informants, Chinese fishing vessels can be found in international waters bordering the Peruvian 200-mile limit, the exclusive economic zone of Peru from its coastline. It seems that there may be gaps in monitoring and regulating fishing activities in international waters where Chinese vessels operate, because the key informants mentioned that despite implemented controls, these vessels have entered Peruvian domain to catch Humboldt squid.

> *"Chinese fleets are generally outside the 200-mile limit, although sometimes they do enter. But they're primarily looking for squid, which is another issue that needs attention because there's a massive squid biomass, but they're taking away opportunities […] Chinese vessels are competing with them (Peruvian artisanal fleet), and they're not very formal, to say the least; they play many tricks. They say they're outside the miles, but sometimes they turn off their satellite positioning, enter, and then go back out. There are many tricks we've seen from this squid fishing fleet."*
>
> *—Fish company CEO*

In addition to fishing vessels, China's fleet includes factory ships for catch processing and tankers to refuel without returning to land, as mentioned by a member of a fish company staff. These vessels raise concerns about overfishing and illegal, unreported, and unregulated fishing across various regions, particularly in the South Pacific. Illicit activities extend to the trafficking of shark fins, exported to China, where criminal networks are implicated, according to an international NGO representative.

> *"There is… a lot of illegal activity. We monitor issues related to the trafficking of certain species that are exported, for example, shark fins, which are exported heavily to China. There are criminal networks involved in this."*
>
> *—International NGO representative*

In addition, two NGO representatives raised concerns about forced labor on Asian vessels,[18] particularly in the case of restriction of movement, corroborating worldwide reports. A government official noted that crew turnover in the Peruvian fishing industry is frequent, and individuals have the freedom to come and go from the boats as they please. However, unlike Peruvian vessels, Asian vessels remain at sea for up to three years. The informant emphasized that the situation is different between Asian and Peruvian vessels, stating that *"[Peruvian vessels are not] comparable to those vessels that travel far out to sea, where misbehavior can lead to being thrown overboard."* As mentioned previously, although the nationality of the fishers who work on these Asian vessels is unclear, two key informants mentioned being aware of Peruvians and migrants working on these vessels. However, none of the workers who participated in qualitative interviews mentioned working on Chinese or foreign vessels.

Lastly, the key informants also mentioned that the expansion of the Chinese fishing industry bears implications for local communities and traditional, smaller-scale fishing operations. These vessels follow the migration of giant squid from north to south, coinciding with the same squid caught by artisanal fishers. Despite the requirement for satellite monitoring, many vessels deactivate their systems for two to three days, potentially entering and leaving Peruvian jurisdiction for fishing. Artisanal fishers have reported encountering Chinese vessels in the area. According to the key informant, their fishing activity

[18] While the majority of experts and related news sources identify these vessels as Chinese, key informants interviewed for this study commonly referred to them as "Asian."

negatively impacts artisanal fishers because they target the same catch and, being subsidized by the Chinese government, can sell their catch at lower prices, affecting the earnings of Peruvian fishers. With their ability to catch significant quantities due to subsidies and advanced technology, these vessels often deplete Peruvian marine resources.

> *"They catch such large quantities, and with such strong subsidies, it puts Peruvian fishermen at a significant disadvantage (…) These vessels, although not very large, have mother ships that are very large vessels in the area. These mother ships fish, attach to the smaller vessels, and provide them with their catch, fuel, and supplies."*
>
> *—Former government official*

4.3 Child Labor

4.3.1 Child Labor in the Fishing Industry

The legal framework regarding the protection of minors against child labor includes the ratification of ILO Convention 138, Supreme Decree No. 009-2022-MIMP, "List of works and activities that are hazardous or harmful to the physical or moral health of adolescents," and the Child and Adolescent Code. The latter establishes minimum requirements for adolescent work based on age, type of activity, work schedule, and length of the workday, among other factors (Monge, 2022). For example, age 17 is the minimum age for minors to work in industrial fishing, age 15 for non-industrial agricultural work, and age 14 for other types of work. [19] However, children aged 12 or older may work in if the job does not harm their health and development, if they are allowed to participate in orientation or professional training programs, and if school attendance is not affected. For adolescents aged 12 to 14, work shall not exceed 4 hours per day or 24 hours per week. For adolescents aged 15 to 17, working hours shall not exceed 6 hours per day or 30 hours per week.[20] However, as mentioned by some key informants, children involved in fishing activities may go against this regulation because the economic reality for many families often compels them to miss school for work.

Notably, 10% of the fisher and seafood workers surveyed said that people under age 18 work at their workplace. Of this group, 18 were artisanal fishers and 2 worked at processing facilities. Most respondents who participated in qualitative interviews mentioned having seen minors working in activities related to the fishing sector. Those interviewees indicated that the minors working in artisanal fishing are boys between ages 12 and 17 and are generally children or relatives of the boat owners.

Table 10. Working children present at workplace according to respondent reports

	Artisanal fishing		Fish processing[1]		Total	Total
	%	n	%	n	n	%
Respondent indicates that children under age 18 work at his or her workplace	14%	18	17%	2	20	10%
Number of respondents (N)		131		12		200

[1] Estimates should be interpreted with caution due to the small sample of processing workers.

[19] See Apendix A and Valle, G. M. D. (n.d.). *Trabajo infantil en el Perú: Recorrido y afianzamiento de medidas destinadas a su eliminación*. Retrieved from https://www.estudiorodrigo.com/wp-content/uploads/2023/03/juriste_2022_03.pdf.

[20] Ministry of Women and Vulnerable Populations. (2022). Regulation approving the list of jobs and activities dangerous or harmful to the physical or moral health of adolescents. Supreme Decree No. 009-2022-MiMP. Retrieved from https://www.gob.pe/institucion/mimp/normas-legales/3299174-009-2022-mimp.

4.3.1.1 Work Activities and Differences Between Artisanal, Industrial, and Processing Facilities

Workers who participated in qualitative interviews reported that child labor is more likely to occur in artisanal fishing than industrial fishing because the industrial sector is much more strictly regulated. According to most key informants, industrial fishing companies do not allow children on boats or in fish processing facilities. This aligns with the survey data, given that no industrial workers reported that children work at their workplaces. However, two respondents who work at processing facilities reported that they had seen children working at their workplaces. Experts interviewed for this study echoed this point, noting that child labor is more prevalent in the artisanal fishing sector due to the lack of formal regulation and oversight, the informality of the sector, and the prevalence of small-scale, traditional, and family-based operations.

> *"The children hide on the boats. Since I'm at sea, I pass by and see them, boys who are 13 or 14 years old. Nearly all boats have a young boy aboard who is a relative, like a brother or a son. They're accustomed to going fishing from a very young age. […] There's no formal contract in fishing; it's more of a friendship agreement. They need to bring along the young boys, or sometimes, the boys themselves or their brothers or relatives want to go."*
>
> *—Male artisanal fisher*

Most experts interviewed for this study also reported that child labor is unlikely to take place in industrial fishing or fish processing operations, not only because these operations are subject to more formal oversight, but also because the advanced technology and automation employed in industrial fishing operations has reduced the need for manual labor. Workers also mentioned that children do not work in industrial fishing because they would need an ID to do so.

> *"No, that's something we're very clear about. It [child labor in industrial fishing and processing operations] is impossible. I haven't seen it in the sector, and I haven't seen it in the companies I've worked for either. I've never seen anyone under 18 working in this context. I couldn't say if it happens somewhere else, but I think you see that more in informal industries."*
>
> *—Fish company CEO*

Although workers also mentioned that children do not work in industrial fishing because they would need an ID, some mentioned that children still find a way to circumvent this requirement.

> *"Some minors as young as 14 work in the factories. They falsify their ID cards. They don't show their real ID, but someone else's, an adult's. They say they're that person and go in with a hoodie or a cap. As long as they see a blue ID card, there's no problem. Sometimes they have their older sibling's ID, and they show it."*
>
> *—Male artisanal fisher*

When asked about factors contributing to the continued presence of minors working in artisanal fishing, some workers and experts discussed the beliefs among parents and community members, particularly in northern Peru, that requiring minors to participate in artisanal fishing activities is permissible and important. The cultural perception comes from parents encouraging children to learn the traditional fishing trade while also contributing to their families' economic well-being.

> *"Many families have a tradition of involving children in fishing, and young people often start working in this industry as early as 14 or 15 years old."*
>
> *—NGO representative*

In addition, a female artisanal fisher mentioned that she became involved in fishing due to her family's influence, as her mother, a single parent, worked for a boat owner. She mentioned that she started working at age 14, and unlike roles with age restrictions, this job did not require compliance with legal age requirements.

> "*I would go with my mom at 4 in the morning and come back at 11, I would study in the evening. I finished high school, but I didn't finish my studies. I was studying nursing, but I didn't finish because I got pregnant, and I dedicated myself to that as well. But I was always with my mom. She would take me, bring me, tell me to go to school at 11. I didn't neglect school in that aspect."*
>
> *—Female artisanal fisher*

However, the worker pointed out changes in the legal landscape, noting increased protection for minors.

> *"The laws protect minors more now. If they [referring to the overseeing entities] arrive at the dock, If SANIPES [fishery sanitation authority] arrives and sees minors there, they [referring to the fisherman] would rather avoid it. You might see a minor accompanying their father, but it's very rare to see them working now."*
>
> *—Female artisanal fisher*

4.3.1.2 Working Conditions and Hazards

Workers who participated in qualitative interviews reported that work in the fishing sector tends to be physically difficult and demanding. Most indicated that it is not a safe place for minors. According to insights from four international and local NGO representatives, children perform tasks like net mending, catch sorting, and carrying cargo.

Workers who participated in qualitative interviews also reported witnessing minors engaging in dock work, putting fish into boxes, unloading fish from boats, filling containers with ice, cleaning fish, and washing boxes, among other activities. Workers reported that the children engaging in these tasks are primarily boys, but that girls also participate. The children who engage in these kinds of dockside support tasks—tasks that are perceived as less physically intensive—are, according to workers, generally younger than the minors who participate in primary fishing activities, with some as young as age 10.

Workers also reported seeing older minors participating in dock work. These minors, generally girls between ages 14 and 17, participate in dockside fishing tasks, such as washing, weighing, filleting, cleaning, and selling fish and sewing or mending fishing nets. Workers also reported having seen minors working in fish and seafood processing factories. These minors, girls and boys between ages 14 and 17, reportedly engaged in processing tasks like filleting, cleaning, packing, and canning fish. One respondent said:

> *"I've seen kids as young as 14, 15, 16 years old. You can tell, and I ask if they're underage, and they say yes. […] Because we work there with really cold water, and if they're underage, I don't think they should be there. The work involves handling raw, slippery, fresh fish. […] The fish that has just come out of the sea is slimy, and I've done this cutting work myself and I've been scared, so I wear my gloves."*
>
> *—Female processing worker*

4.3.1.3 Risk Factors

Poverty and the inability to meet basic family needs are among the main risk factors for child labor, according to workers. Experts indicated that child and adolescent labor is a culturally ingrained practice across various economic activities throughout the country. This practice is more prevalent in informal, family-centric industries, and children often support their parents or guardians in various fishing-related tasks.

Four workers said that they believe that minors work because their families need all members to earn an income to cover household expenses. They said that some minors experience food insecurity and are forced to work to eat or bring food home. Four workers mentioned that minors work with their parents or relatives but may also have other employers.

Parents and guardians are influenced by certain norms and cultural practices that encourage minors in their families to work. In some parts of Peru, it is encouraged, not only to support their parents financially, but also so that they can learn fishing trade.

> *"My uncle used to take me to help him work when I was very young. I've always been curious since I was little, I developed in that environment, and I liked it, […] at that time they would give you a tip."*
>
> *—Male artisanal fisher*

Moreover, the fishing sector employs more people during peak fishing season. There is a lack of workers of legal working age, so employers often resort to hiring minors to make up the number of employees needed. This has been observed by two workers in artisanal fishing and seafood processing factories.

> *"Minors are around 15 or 14. When the seasonal fishing comes, all sorts of people come in; there is no control. But [underage] girls don't go out on the boat; I think it might be different on the dock."*
>
> *—Male artisanal fisher*

> *"They are locals, they call when they need people, for a short while, and then it's over. All they care about is hiring people who can work, and they don't care if they're underage or not. They don't ask for ID or anything."*
>
> *—Female processing worker*

In addition, gender or geographic origin, among other demographic characteristics, may increase vulnerability to child labor. Workers indicated that girls are more vulnerable than boys to exploitation. Also, foreigners, specifically from Venezuela, are more vulnerable than locals or nationals, according to four workers.

> *"Here on the dock, ever since the Venezuelans came, there are mostly more Venezuelans than Peruvians. So, people are very upset because there are too many, and when you try to dismiss them, 40 Venezuelans show up. What can I do? (…) They say they don't have a boarding pass, they are underage, and they begged to be taken on board. Venezuelans don't complain."*
>
> *—Male artisanal fisher*

4.3.1.4 Lake Fishing, Lago Titicaca

According to various key informants, Lake Titicaca serves as a significant hub for fishing activities, holding both social and economic importance as a livelihood source for numerous families. Four

government officials emphasized the lake's diverse fish species, such as *pejerrey* (silverside), *orestia* (ispi), *carachi, suche, maure*, and especially the popular *trucha* (trout), in demand at local and regional markets. One government official detailed the trout production process, which involves several stages, beginning with the importation of fish eggs sourced from countries like the United States, Denmark, Chile, Colombia, and Spain. Subsequent steps encompass incubation, growth into *alevinos* (fingerlings), and eventual market distribution.

Although trout production shows an apparent increase, as highlighted by three government officials, concurrent government efforts are directed toward the repopulation of native fish species. One former government official mentioned the impact of overfishing, resulting in resource depletion and underlying concerns related to inadequate work, insufficient control, and surveillance by the Regional Directorate of Production. He attributed these issues to the lack of adherence to regulations regarding minimum sizes, breeding seasons, and specific species. In addition, government initiatives, as explained by the key informants, encounter challenges primarily stemming from limited knowledge about the biology of these species and the ecological consequences of ecosystem changes.

Furthermore, the predominant nature of fishing activity at Lake Titicaca is informal and has seen growth in recent years. A key informant pointed out that fishing activities in Lake Titicaca, mirroring artisanal fishing practices in various coastal areas, are often family oriented. According to three government officials, children actively participate and assist their parents in what they described as age-appropriate tasks such as feeding fish, rowing boats, and engaging in lighter activities. Their involvement begins at an early age, typically between ages 8 and 10. As they grow, they transition into more physically demanding roles, generally between ages 12 and 16. Some of these tasks include driving the boat, loading the fish, or assisting in capturing it with nets.

> *"For example, in setting up the cages, everyone participates – the father, mother, and young children […] From around 14 to 15 years old because they need to tie the ropes, set up the cylinders, carry them on the boat, and the feeding can be done by a woman, the wife. In terms of harvesting, cleaning, that's usually done by the woman or the son once they are trained for the task. It's an integrated effort; there are various communal efforts for harvesting. Everyone participates."*
>
> *—Government official*

Another government official said that men are primarily responsible for strenuous tasks like changing bags, fish selection (due to its physical demands), and fish care. As children get older, they gradually take on more challenging duties.

> *"As the kids grow, they start to feed the fish, while the men clean the bags, change the nets, and so on. It all depends on their needs and the children's ages.... They continue alongside school. The idea is to involve them, so they understand what their parents do."*
>
> *—Government official*

In recent years, key informants have observed a discernible decrease in children's participation in fishing activities. This shift can be attributed to evolving family dynamics. Key informants indicated that the decrease of child labor in fishing activities may be attributed to the fact that young people are now more interested in other pursuits and are not obligated to continue in the "family business." They also mentioned increased child protection measures, such as controls implemented by the fishing industry, and the emergence of alternative opportunities in the area because parents may prefer their children to pursue education rather than engage in this activity. One key informant mentioned that the extent of

children's involvement depends on both the family's needs and the children's ages, but these responsibilities coexist with their school attendance.

4.4 The Supply Chain

4.4.1 Child Labor and Forced Labor in Peru's Domestic Fishing Supply Chain

Throughout the domestic supply chain, respondents noted that minors are typically engaged in light tasks or play supporting roles. As mentioned previously, child labor is more commonly found in the domestic supply chain of artisanal fishing, rather than the more tightly regulated industrial fishing sector.

There is a shared acknowledgment among respondents regarding potential cases of forced labor and the distinct risks posed by Asian vessels anchored off the coast of Peru. These vessels essentially operate as factory ships, permitting individuals to remain onboard for extended periods, which is an unconventional practice in the Peruvian fishing industry. In Peru, traditional fishers usually embark on 1- to 3-day trips for anchovy fishing or longer journeys lasting 15 to 20 days when pursuing Humboldt squid. According to a Peruvian NGO director, in the case of Peruvian squid and parrotfish fishing, longer fishing trips are less frequent, with a more opportunistic employment pattern, lower entry requirements, and high crew turnover, offering individuals greater freedom to come and go as they want. The key informant emphasized that it is crucial to differentiate between the dynamics of artisanal fleets and the Asian vessels near Peru.

> *"There is a higher prevalence of forced labor on Asian vessels that have been anchored off the coast of Peru for several years. These vessels function as essentially floating factories, allowing people to stay onboard for up to three years."*
>
> *—Peruvian NGO director*

Although much of China's overseas fishing fleet operates legally within open seas, the recent move of upwards of 300 Chinese vessels to waters just outside of Peru's exclusive economic zone between 2019 and 2020 has raised considerable concerns regarding the legality of their fishing activity, labor practices aboard Chinese ships, and the environmental and economic impact of the fleet's operations to Peru and the region as a whole (Collyns, 2020; Lee Meyers et al., 2022).[21] These Chinese fishing vessels predominantly focus on the catch of Humboldt squid, although other species of fish are also caught (Goodman, 2023). The size of the Chinese fleet and the sheer volume of marine catch that the vessels extract has led to increasing concerns regarding the ecological and environmental impact of overfishing in the region (Collyns, 2020). In addition, clandestine operational practices of the Chinese fleet, such as reported instances of boats changing names and deactivating GPS trackers to avoid the monitoring of fishing activity, have contributed to considerable concerns that the fleet operates informally and illegally within Peru's exclusive economic zone in violation of international maritime law, and establish an environment for labor exploitation aboard vessels (Goodman, 2023; Lee Meyers et al., 2023).

Chinese fishing vessels had previously been able to dock at Peruvian ports for maintenance, crew changes, or to resupply without restrictions, but in response to growing international and domestic discontent with the Chinese fleet's activities, Peru introduced a port regulation in 2020 that required

[21] China's overseas fishing fleet predominantly operated just outside of the exclusive economic zones of Ecuador, Peru, and Argentina, with noticeable concerns over unauthorized and illegal Chinese fishing activity occurring within each country's exclusive waters (Lee Meyers et al., 2022).

any foreign fishing port entering its ports to use vessel monitoring systems that allow its activities to be tracked (Goodman, 2023). However, the adoption of this regulation has had little success in addressing the Chinese fleet's activity in the region, because vessels avoid Peruvian regulations by docking at ports in alternative countries, such as Chile, or travel the extensive distance back to China between fishing seasons (Goodman, 2023). Since the regulation's implementation, port visits by Chinese vessels in Peru have plummeted, from more than 300 in 2019 to 21 in 2021, meaning that vessels are staying longer at sea, consequently extending the unregulated environment for increased labor exploitation and abuses (Goodman, 2023). Given the avoidance of Chinese fishing vessels docking at Peruvian ports, it is unlikely that fish caught by Chinese vessels make their way into the domestic Peruvian fish supply chain.

The activities and impact of Chinese fishing vessels on the fishing industry of Peru, and additionally other South American nations, labor conditions and practices aboard such vessels, as well as current actions taken to monitor and regulate Chinese fishing activity, both legal and illegal, present as a pertinent topic for future investigation and study.

4.4.2 Fish Production, Processing, and Consumption in Peru

4.4.2.1 Anchovy, Squid, and Fish Production

Peru's coastal waters have a plentiful supply of fish, allowing its fishing industry to emerge as a leading global producer of fish and downstream fish products, with fishing activity generating approximately $644,251,400 USD in 2018 (WTO, 2019). The two main fishing seasons in Peru are between April and July off the north central coast, and between February and June along the southern coast (Nolte & Bryant, 2023). According to PRODUCE, Peruvian fishing operations produced approximately 6.64 million metric tons of fish in 2021, of which 6.56 million metric tons (98.8%) were marine catch caught in coastal waters, with the remining 80 thousand metric tons (1.2%) produced inland, either at aquafarms or caught in inland bodies of water (Ministerio de la Producción, 2021).

Anchovies and Humboldt squid are the primary marine catch, accounting for 80.3% and 7.9%, respectively, of the annual marine catch in 2021 (Ministerio de la Producción, 2021). Anchovies have historically been one the most predominantly caught fish in Peru, with the annual catch reaching 5,269,216 metric tons in 2021, and the annual catch of squid reached 517,710 metric tons in 2021 (Ministerio de la Producción, 2021).

Table 11. Domestic production

Domestic marine catch, 2020–2021			
Year	Anchovies	Squid	Total marine catch (metric tons)
2020	4,401,318	492,363	5,662,874
2021	5,269,216	517,710	6,563,359

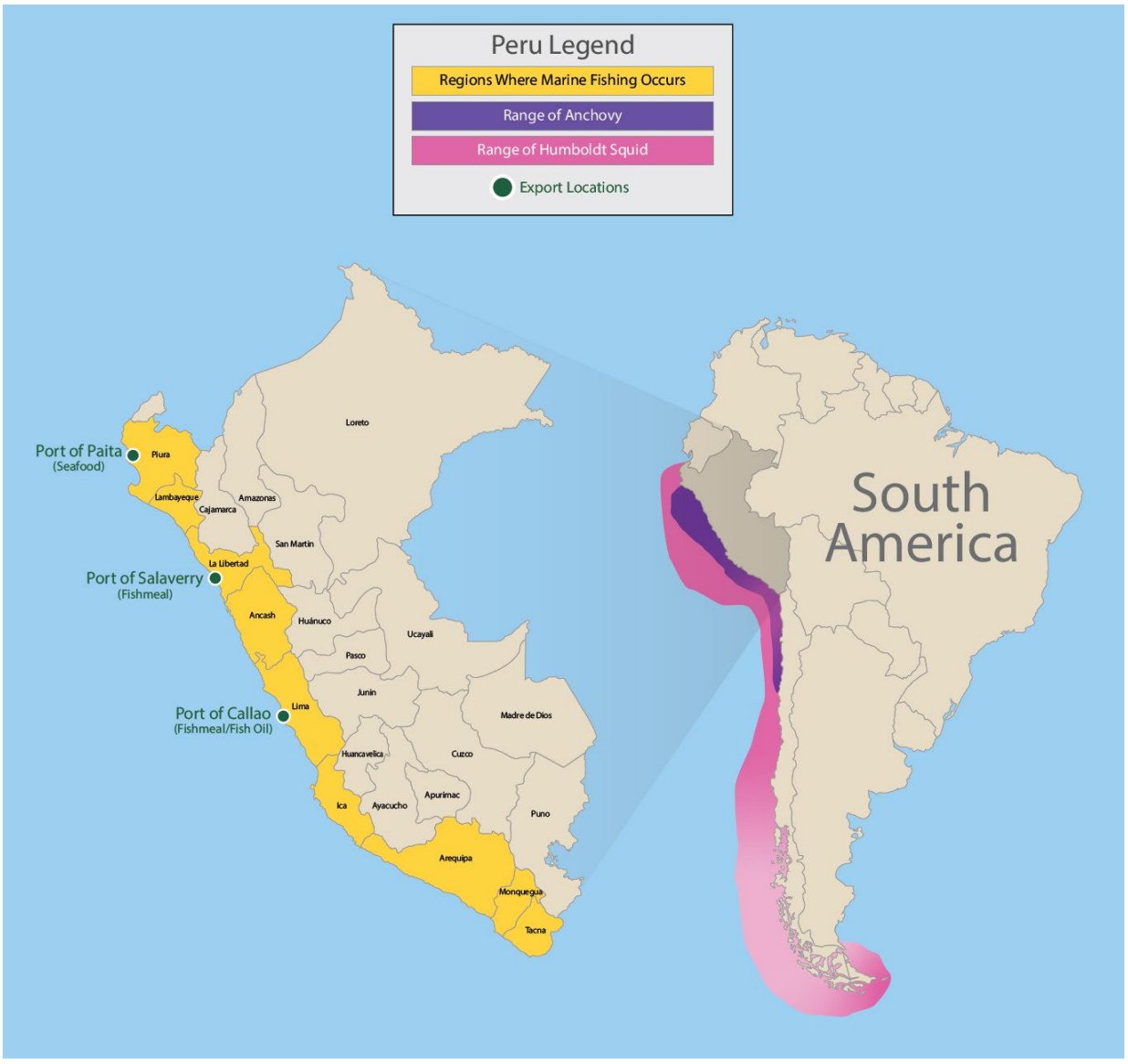
Source: Ministerio de la Producción, 2021 and 2022

It is important to note that Peru's annual catch totals fluctuate periodically, impacted by both the La Niña and El Niño weather phenomena. In the La Niña phenomenon, water temperatures are reduced, leading a more favorable environment and higher growth in biomass for many of Peru's fish species (Nolte & Bryant, 2023). In the El Niño phenomenon, water temperatures are increased, leading to a general reduction in biomass and catch (Nolte & Bryant, 2023). In 2023, it was anticipated that the current La Niña conditions would switch to the El Niño phenomenon, with expectations of total catch

and associated downstream products, such as fishmeal, and production to decrease significantly (Nolte & Bryant, 2023).

Fishing in Peru is concentrated along the coastal waters of the Southeast Pacific Ocean throughout the coastal regions of the country. Both artisanal fishing and industrial fishing occur in Peru, with major industrial fishing operations based in the ports of Chimbote, Chicama, Callao, Paita, and Pisco (Ministerio de la Producción, 2023). Unlike industrial fishing operations, artisanal fishing operations are widely dispersed throughout Peru's numerous coastal communities, although the ports of Paita and Sechura, which are home to approximately one-third of Peru's artisanal fishing communities, are centers of concentration for artisanal fishing in the country (Ministerio de la Producción, 2023).

Figure 4. Map of domestic production



Source: ICF

4.4.2.2 Artisanal and Industrial Fishing Operations

In artisanal fishing in Peru, fishers commonly use smaller fishing boats called *vikingas*, but occasionally they also use larger fishing boats, known as *bolicheras. Vikingas* are wooden boats with relatively smaller capacities compared to commercial vessels and are mainly employed in squid fishing using the squid jig (*pinta potera*) method (INEI, 2015; Mar del Perú, 2021).[22] In the industrial fishing industry in Peru, fleets employ *bolicheras,* which use trawl fishing, a method that involves dragging large nets along the ocean floor, with nets acting as a type of fence or *boliche* (INEI, 2015).

Due to high levels of informality and widespread lack of available funds generally need to finance artisanal fishing operations, a large portion of artisanal fishers are unable to fully fund their fishing operations and must turn to domestic intermediaries—seafood traders and buyers—who commit to the purchase of artisanal catch and in turn provide artisanal operations with funding, with funds likely used for fuel, and necessary equipment; however, qualitative interviews were unable to ascertain the details of the financing. These intermediaries play a fundamental role in artisanal fishing supply chains; after they purchase the fish and squid caught by artisanal fishers, they are often the entities that sell the catch to domestic processing facilities and traders for export (Ministerio de la Producción, 2021). Although most fish and squid caught and traded by artisanal fishers are done so in compliance with national monitoring efforts and regulations, many artisanal fishing operations, specifically in fleets focused on the catch of squid and mahi-mahi, operate in an informal capacity without required licensing or equipment. In squid and mahi-mahi operations, upwards of 60% of artisanal fishing vessels operate without proper licenses or registration, and the lack of documentation makes it a challenge for buyers and authorities to authenticate the origin of products caught (Aronson, 2018). In addition, as outlined by respondents, many artisanal fishing operations also lack the required equipment on their vessels, most notably GPS tracking devices that are used to verify the compliance of fishing vessels within authorized waters and to monitor vessel activity to ensure the biomass health of marine catch.

To assist artisanal fishing operations and drive formalization, modernization, and increased production, Peru created the National Fisheries Development Fund (FONDEPES) in 1992 (WTO, 2019). FONDEPES serves to provide technical, economic, and financial support for small-scale, artisanal fishers, with various credit modalities available based on the products produced (WTO, 2019). FONDEPES provides artisanal fishing operations with crucial resources necessary to their well-being and continuity, with a commitment of $36.86 million USD in 2018 alone (WTO, 2019). The program assists artisanal fishers with business consultancy, materials and equipment, worker training, and technical assistance activities aimed at the continued expansion and modernization of the industry (WTO, 2019).

4.4.2.3 Anchovy and Squid Fishing

This section provides an overview of the fishing process and techniques used in catching anchovies and squid in Peru, looking at the types of fishing operations and the techniques used.

[22] Squid jigging is a simple fishing technique using specialized lures called squid jigs. Squid jigs are designed with thin, sharp, barbless wire hooks that snag the tentacles of squid as they approach the lures. Often, the process of squid jigging occurs at night, and bright lights are used to attract squid to the water's surface. Fishers lower their jigs to their desired depth (30 to 100 meters) and use quick, jerking movements to imitate prey, which entices squid to strike and subsequently become caught by the jig. The act of squid jigging can be performed manually by fishers or mechanically through the use of jigging machines (Australian Fisheries Management Authority, n.d.; Stowe, 2018; SkyAboveUs, 2023).

Anchovy Fishing

Anchovies are the primary marine catch of Peru, accounting for 80.3% of the total annual marine catch in 2021 (Ministerio de la Producción, 2022). In anchovy fishing operations, *bolicheras* and *vikingas* are commonly used. *Bolicheras* use trawl fishing. Artisanal anchovy fishing in Peru is characterized by small-scale operations using traditional practices in local communities, such as using simple equipment and traditional techniques (Sociedad Peruana de Derecho Ambiental, 2019). Although both artisanal and industrial fishing operations catch anchovies in Peru, as outlined by an NGO representative, industrial fishing operations account for the majority of anchovy fishing activity, with industry experts estimating that industrial fishing accounts for 80% of the nation's annual anchovy catch. The ports of Chimbote, Chicama, Callao, Paita, and Pisco serve as the country's primary fishing ports for anchovies and other fish predominantly caught by industrial fishing operations (Ministerio de la Producción, 2023).

In anchovy fishing specifically, Peruvian regulatory legislation implemented through D.S. 005-2012-Produce and D. S. 011-2013-Produce establishes that non-industrial fishing operations be broken into two distinct fleets: the artisanal fleet, in which fishing vessels have a maximum capacity of 10 m^3, and the smaller-scale fleet, in which vessels have a capacity of between 10 to 32.5m^3. These regulations also establish areas of operation for both fleets, with the artisanal fleet restricted to fishing within 5 miles of the Peruvian coast and the smaller-scale fleet restricted to fishing between 5 to 10 miles from the coast (Galarza and Kámiche, 2015, p. 17).

As indicated by interview respondents, there have been reports of informal, illegal activity in the anchovy supply chain. Although Peruvian anchovy catch is monitored and verified through in-place traceability systems at offloading ports, where catches are inspected and cleared for transportation to buyers and domestic processing facilities, current traceability and regulatory systems lack the ability to verify the delivery of anchovies to their reported destination. As such, it has been reported that shipments of anchovies do not make it to their reported end destination for processing and are instead laundered to domestic food manufacturers, informal fishmeal and fish oil production facilities in Ecuador, and international export destinations.

Squid Fishing

Squid, specifically Humboldt squid, has emerged the Peru's second most popular marine catch, accounting for 7.9% of the total annual marine catch in 2021 (Sociedad Peruana de Derecho Ambiental, 2019; Ministerio de la Producción, 2022). Humboldt squid is predominantly caught at night by artisanal fishing operations through the use of the squid jig (*pinta poteral*) (Ministerio de la Producción, 2021). *Vikingos* are mainly employed in squid fishing using these methods, with the majority operating out of the ports of Paita and Sechura, located in the northern Paita and Sechura provinces, respectively (Sociedad Peruana de Derecho Ambiental, 2019; Ministerio de la Producción, 2021).

4.4.2.4 Traceability in Production

Traceability in the production of the marine catch in Peru is a significant component of the Peruvian fishing industry, particularly in the context of industrial fishing and the export of fishery products. The tracing of the marine catch is centered around verifying the origin of the catch to ensure that it is derived from legal and regulated sources that meet sustainability and quality standards. It also provides crucial data regarding the ecological status of the marine biomass and compliance of fishing operations with legal regulations regarding the quantity of fish they are allowed to catch. According to interviewees, officials from agencies such as PRODUCE and Instituto del Mar del Perú (IMARPE) collect information about catches, fishing zones, and the destination of marine catch at landing sites for both

industrial and artisanal fishing operations. Officials are present at ports throughout the country and manually record information to verify fishing operation compliance with domestic regulations. If verified, officials are then able to authorize the product to leave the port to the intended buyer or processor; however, it is important to note that after the product leaves the port, there is currently no process in place to verify that it was transported to the reported destination, according to an artisanal fishermen's association leader).

> *"At each landing site, there is a PRODUCE official who should create a guide. Until the PRODUCE official is there, the truck cannot leave. ... we also always see an IMARPE guy who collects information. They come and ask what you've brought, what area you've been in. It means that at each landing site, there are two entities: IMARPE and PRODUCE collecting information.... The destination is included in the guide attached to the isothermal chamber."*
>
> *—Artisanal fishermen's association leader*

It is also important to note that traceability considerations and practices, although generally universal in their approach, differ dramatically between artisanal and industrial fishing sectors. Unlike in industrial fishing operations, traceability in artisanal operations is much less developed and involves little to no technology, which is crucial for the accurate tracking of marine catch origin and areas of activity for artisanal fishing operations.

According to a Peruvian NGO director, traceability in Peru, particularly for artisanal fleets, is identified as an area needing significant improvement. Notably, initiatives such as TrazApp and a recent mandate for satellite monitoring for the high-seas fleet have been introduced, which are needed to ensure transparency in vessel activities. Despite advancements, the Peruvian NGO director said that challenges persist in government systems' interoperability for efficient information sharing. The key informant emphasized the disparity between user-friendly tools like TrazApp and the official SITRAPESCA.

According to an international organization representative, TrazApp offers traceability throughout the entire supply chain, extending from refrigeration facilities to specific cities and markets. However, the tracking concludes at the fish markets, and the subsequent trajectory beyond the terminal remains unknown.

According to a government official, SITRAPESCA, established by Supreme Decree No. 024-2021-PRODUCE, serves to gather comprehensive information on fishing and aquaculture activities across the entire production chain. It ensures the legal origin of hydrobiological resources by real-time recording of various data such as volumes, geolocation, species, sizes, and landing information. The system has been fully implemented in industrial anchovy fishing and fishmeal production since January 2022, with ongoing analysis for progressive adaptation in smaller-scale and artisanal fisheries, as well as in processing plants for direct human consumption, marketing, and aquaculture.

An expert in the TrazApp system said that the app intends to prioritize the digitization of vulnerable paper processes and digitalize databases. The informant said that the ongoing formalization processes in the artisanal fishing sector also need to establish digital traceability systems to address challenges related to paper-based documentation. But concurrently, the state uses SITRAPESCA, which was designed for the industrial fishing sector. While SITRAPESCA effectively serves the structured environment of the industrial fishing sector, its adaptation to the complexities of the artisanal fishing sector presents a unique challenge, which includes a substantial fleet of boats, numerous crew members, engagement with various Regional Directorate of Production offices, limited resources for inspection and monitoring, and notable corruption at the docks, according to the TrazApp expert. The

integration of TrazApp with SITRAPESCA and the process of interconnected systems throughout the value chain is ongoing.

4.4.3 Domestic Processing

After fish and squid have been caught by either industrial or artisanal fishers, they are brought into port for sale and processing. This section outlines how fish and squid from both industrial and artisanal fishing operations are purchased and processed into edible meat for human consumption, as well as fishmeal and fish oil.

In industrial fishing operations, boats transport their catch directly to fishing terminals that are set up at the ports. The catch is sorted according to the species of fish and transported, often through the use of automated pipes and tubes, directly from storage facilities on the boats to processing facilities located at the ports. At the processing facilities, fish are cleaned and stored for further processing, export, or sale for domestic consumption. Most of the anchovy catch is used in the production of both fishmeal and fish oil.

> *"There's a process: cooking, separating solids from liquids, drying, grinding, and that's how fishmeal is produced, to simplify it. It's a continuous process, and, of course, it's a race against the decomposition of the fish. The fresher the fish arrives at the plant, and the faster it's processed, the better the product quality will be."*
>
> *—Fishery company CEO*

In artisanal fishing operations, fishing vessels transport their catch to terminals located at ports and in the coastal waters off ports, where they generally sell their catch to intermediaries. Intermediaries can either be independent or representatives of industrial fisheries and production facilities and set the price of the fish being purchased. At this point, artisanal catch has the potential to be mixed with non-anchovy industrial catch and subjected to inspection and traceability mechanisms in place at ports of landing. From here, intermediaries then sell the catch directly to processing facilities for cleaning and processing. Fish caught through artisanal fishing operations are generally cleaned and prepared for sale to domestic buyers for human consumption or refrigerated and frozen for export as seafood abroad. One of the key informants said the following when comparing the fish transformation process in Peru with other countries:

> *"If you compare it to something like smoked salmon produced in the United States and sold at high prices, the transformation process in the seafood industry here is still relatively basic and doesn't add extremely high value. Except for jumbo squid, which may undergo some additional processing and freezing."*
>
> *—Peruvian NGO director*

Both fishmeal and fish oil are produced domestically in Peru, with anchovies being the main ingredient in the production of both products. At processing facilities, anchovies are cooked and pressed to separate the liquid (fish oil) from the solid (fishmeal) components of the fish. The liquid is then produced into fish oil through a decanting and refining process, and the solid portion of the anchovy is dried and ground to produce fishmeal (Cuéllar, 2021; Sociedad Nacional de Pesquería, n.d.).

Peru has emerged as the largest fishmeal producer in the world, with annual production of fishmeal reaching 1.25 million metric tons in 2021 (Nolte & Bryant, 2023; Ministerio de la Producción, 2022). At the time of data collection, there were currently 90 licensed fishmeal processing plants in Peru (Global

Fishing Watch, 2023). Fishmeal processing plants in Peru are predominantly located along the country's extensive coast due to the relative proximity to anchovy fishing operations throughout the country (Nolte, 2019). Although fishmeal processing plants are spread across various coastal regions, there is a significant concentration of plants in the northern regions of the country, especially around the cities of Chimbote and Paita, due to the proximity of fishing grounds and accessibility of port facilities for export (Collyns, 2022). It is important to note, however, that Peru's central and southern coastal areas also host a significant number of fishmeal processing facilities, although they are more dispersed in these areas (Nolte, 2019). Peru is also a leading producer of fish oil, with annual production reaching 155 thousand metric tons in 2021 (Ministerio de la Producción, 2022).

Table 12. Domestic production of fish oil and fishmeal, 2020–2021

Year	Fish oil (metric tons)	Fishmeal (metric tons)
2020	169,408	1,048,514
2021	155,298	1,252,414

Source: Ministerio de la Producción, 2021 and 2022

4.4.4 Domestic Consumption

In Peru, the rate and form of domestic consumption of seafood varies, depending on the type of seafood product being consumed. A little more than half (53.4%) of Peruvian marine catch, excluding anchovies, is consumed domestically through human consumption and is purchased by markets, retailers, hotels, and restaurants, providing a significant source of food to many communities throughout the country (UN Comtrade, 2021; Ministerio de la Producción, 2022). Peruvian catch used for domestic human consumption comprises Humbolt squid and non-anchovy marine catch, including hake, mackerel, mahi-mahi, parrot fish, and tuna. As noted, the domestic consumption of anchovies as a seafood product for human consumption is extremely small, to the point that anchovies are omitted from data on the income of marine resource sales to wholesale markets throughout the country (Ministerio de la Producción, 2023). Almost all anchovies caught in Peru are used in the production of fishmeal and fish oil, and by law, anchovies are the only fish species permitted by PRODUCE to be used in fishmeal (Sociedad Nacional de Pesqueria, n.d.; The Fish Site Limited, 2012).

> *"If you go to a supermarket, you'll hardly find anchovy. So, the question is, where does that fish go? Supposedly, it's fished in the bay, and it's intended for consumption by the population. But Peruvians don't like anchovies, either due to ignorance, studies, taste, or appearance."*
>
> *—Fishery company staff*

The majority of fishmeal and fish oil is exported. Domestic consumption of fishmeal is concentrated around its use as a feedstock in fisheries (shrimp and fish) and for livestock (pigs, sheep, cattle, and chickens) (Cuéllar, 2021). Domestic consumption of fish oil is spread across limited, domestic end-use industries, such as in the domestic production of dietary and nutritional supplements and in the production of pet food. Information obtained through data collection revealed that fish oil is also used in Peruvian biomedicine and pharmaceutical industries due to its high concentration of omega-3 fatty acids, which are sought after in the production of prescriptions targeting the cardiovascular system and in the production of baby formulas (Fishery company CEO).

> *"The jewel in the crown in this sector is anchovy oil, which naturally has a 30% concentration of Omega 3… the supplement market, as well as biomedicine, pharmaceuticals, and even pet food, use a lot of this oil, and it's highly valued. The market is such that as soon as you start producing the oil, customers start coming to ask for it. You don't have to make much effort to sell it. There*

are several markets; in terms of oil, there are three levels. The lowest is supplements, these are the omega-3 capsules people take every day. Then comes the pet food sector, which is a medium-level market with good value. The highest level is pharmaceuticals, which use high concentrations of omega-3 directly for prescription sales targeting the cardiovascular system. This is because of one of the omega-3s, EPA and DHA, which is widely used in baby formula or in formulas for other animal foods."

—*Fishery company* CEO

4.4.5 Exports

4.4.5.1 Global Market for Seafood, Fishmeal, and Fish Oil

In 2021, Norway and China accounted for 18.2% of global seafood exports (Norway at 10.2% and China at 8%) (Panjiva, 2021). Other major exporters include Vietnam (5.1%), Canada (4.8%), and India (4.8%). Peru ranked as the 25th largest global exporter of seafood in 2021, accounting for 0.9% of global exports (Panjiva, 2021).

In 2021, Peru emerged as the top global exporter of fishmeal, accounting for 34.1% of global exports (Panjiva, 2021). Other major exporters include Chile (7.3%), Denmark (6.6%), Vietnam (5%), and the United States (4.4%) (Paniva, 2021). Also in 2021, Peru established itself as the top global exporter of fish oil, accounting for 25.2% of global exports (Panjiva, 2021). Other major exporters include Norway (10%), Chile (7.6%), the United States (7.6%), and Denmark (6%) (Panjiva, 2021).

Regarding the possible reasons for the prevalence of Peruvian-produced fishmeal in the international market, one of the interviewees said the following:

"During the current El Niño phenomenon when there hasn't been a fishing season, the countries that usually buy fishmeal, mainly China, are looking at other sources. […] Peruvian fishmeal stands out for several factors related to its quality. The protein content, digestibility, omega-3 content, as well as amino acids and other components. The issue is that other countries enter the market and compensate for some of the volume, but not the effectiveness. Fishmeal is used as part of balanced animal feed, so what you measure when formulating animal feed is nutritional efficiency. It's not the same to use Peruvian fishmeal as it is to use fishmeal from Mauritania, Morocco, Vietnam, or other countries. This is where the issue mostly lies. It's a product that's difficult to replace in terms of nutrition."

—*Fishery company CEO*

Peru's status as the leading global exporter of fishmeal and fish oil, as opposed to seafood, is a logical reflection of its fishery product composition when analyzing the makeup of Peruvian catch. As 80.3% of total Peruvian marine catch is comprised of anchovy, which is almost wholly used in the production of fishmeal and fish oil, only the residual 20% of marine catch is made available for domestic processing, consumption, and export. In this way, Peru's trade of seafood, fishmeal, and fish oil accurately reflects the composition of overall Peruvian catch.

4.4.5.2 Country's Role in Seafood, Fishmeal, and Fish Oil Exports

Although Peru plays a relatively small role in the global seafood export market, its abundance of anchovies and subsequent production of vast amounts of both fishmeal and fish oil have led the country to become the world's leading exporter of both goods. As outlined in the previous section, Peru's fishmeal and fish oil sectors are almost entirely oriented toward exporting to the international market.

In 2021, Peru exported approximately 1.2 million metric tons of fishmeal and 225 thousand metric tons of fish oil to the international market (Panjiva, 2021).

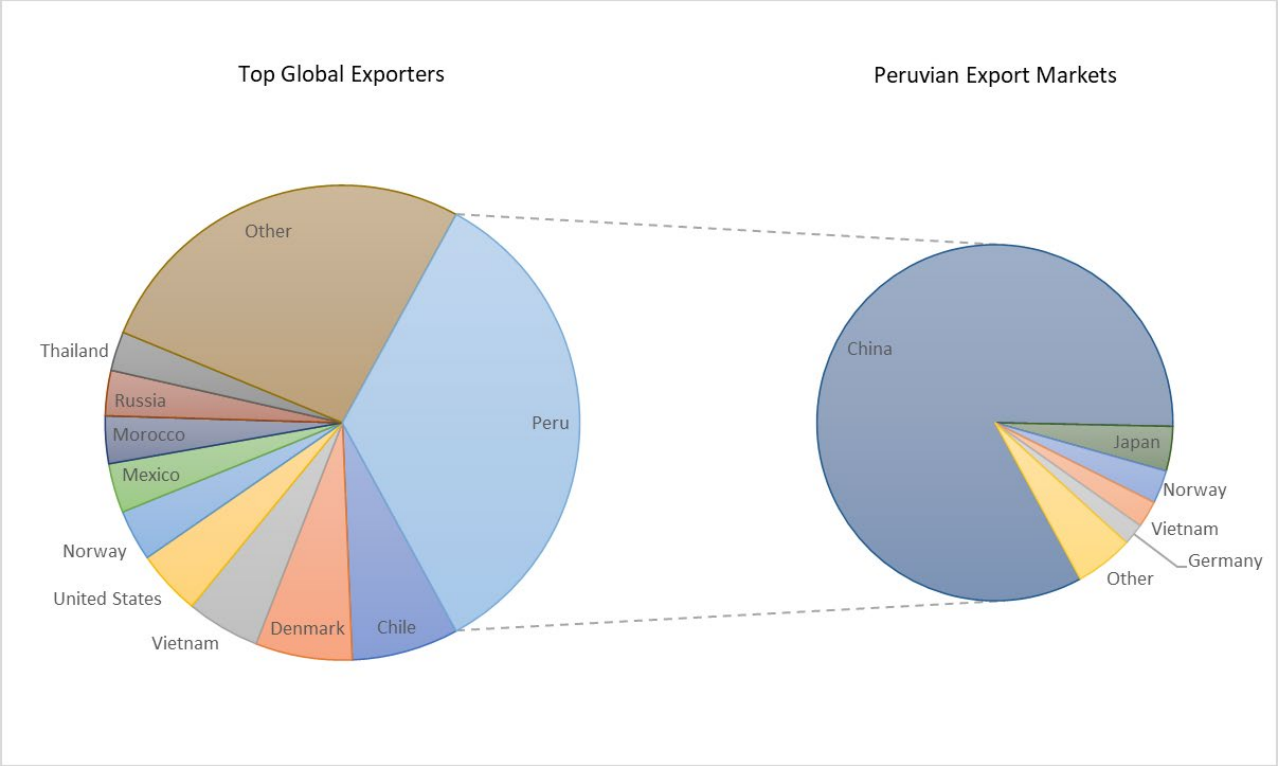
Peru exports approximately 44.6% of the seafood it produces (Panjiva, 2021; Ministerio de la Producción, 2022). Between 2011 and 2021, exports of seafood increased by 48.5%, with 21.1% of seafood exports sent to China in 2021 (UN Comtrade, 2021). Peru's next largest export market included the United States (16.7%), Spain (13.5%), South Korea (9.9%), and Japan (6.2%) (UN Comtrade, 2021). Of Peru's seafood exports in 2021, exports of mollusks, which are predominantly made up of the catch of Humboldt squid, emerged as the largest seafood export by value, accounting for $658.8 million USD or 43.1% of total Peruvian seafood exports by value (UN Comtrade, 2021).[23] In 2021, Spain emerged as the largest export market for Peruvian mollusks, accounting for 21.1% of total mollusk exports (UN Comtrade, 2021).

As stated previously, Peru exports a majority of its fishmeal, with approximately 95.8% of Peruvian fishmeal being exported (Panjiva, 2021; Ministerio de la Producción, 2022). Despite being the largest exporter of fishmeal globally, however, Peruvian exports of fishmeal decreased by 3.5% between 2011 and 2021 (UN Comtrade, 2021). In 2021, the majority of Peruvian fishmeal exports (83.3%) were sent to China (UN Comtrade, 2021). Other export markets for Peruvian fishmeal in 2021 included Japan (4.1%), Norway (3%), Vietnam (2.4%), and Germany (2%) (UN Comtrade, 2021). It is important to note that Peruvian fishmeal exports have been subject to sizable fluctuations between 2011 and 2021, with fishmeal exports in 2011 standing as the highest, by value, in this timeframe. The extent of these fluctuations can be seen explicitly when comparing fishmeal exports, by value, between 2020 and 2021, which saw an increase in fishmeal exports by 34.4%, from approximately $1.25 billion USD in 2020 to $1.91 billion USD in 2021 (UN Comtrade, 2021). One explanation for the fluctuations in Peru's export of fishmeal would be the impact of El Niño and La Niña on the domestic anchovy populations, as described previously in the report. Throughout 2019 and 2021, Peru experienced the El Niño weather phenomenon, likely leading to a reduction in anchovy biomass and, by association, a reduction of fishmeal produced (NOAA, 2023). Between the end of 2020 and the start of 2023, Peru experienced the El Niña phenomenon, allowing for the recovery and expansion of Peru's anchovy production and, by association, the production and export of fishmeal, leading to the staggering year-over-year increase in fishmeal exports between 2020 and 2021 (NOAA, 2023; UN Comtrade, 2021).

Peru also exports the majority of domestically produced fish oil, with fish oil exports in 2021 reaching 144.9% times the production volume for the same year (Panjiva, 2021; Ministerio de la Producción, 2022). Between 2011 and 2021, exports of fish oil increased by 48%, with Norway emerging as Peru's leading export market (24% of total fish oil exports) (UN Comtrade, 2021). Other major export markets included China (15.3%), Canada (13.2%), Denmark (11%), and the United States (6.9%) (UN Comtrade, 2021).

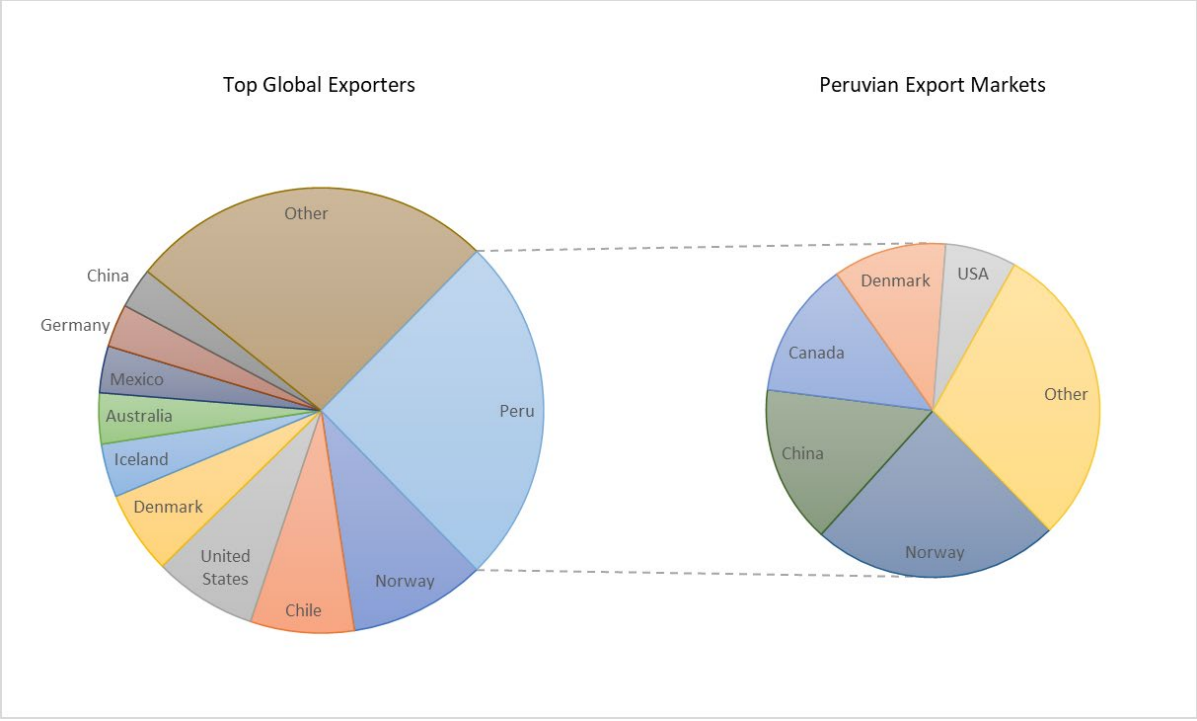
[23] Within the context of this report, seafood, as defined in Section 2.4, does not include fishmeal.

Figure 5. Top export markets by percentage for fishmeal in 2021



Source: UN Comtrade, 2021. HS Code: 2301.20

Figure 6. Top export markets by percentage for fish oil in 2021



Source: UN Comtrade, 2021. HS Code: 1504

As outlined by various NGO and industry respondents, fishmeal is packaged into sacks and fish oil into tanks, and then they are transported to nearby ports for exportation to the international market. Before transport, fishmeal and fish oil exports are inspected through a system of government-implemented controls, checks, and traceability efforts that confirm and verify product quality, integrity, and proof of destination. After they are cleared, information on fishmeal and fish oil destinations is recorded and uploaded to a database maintained by Peru's National Superintendence of Customs and Tax Administration (International Organization Official; International NGO Staff; Fishery Company CEO).

The system of manual verification and data collection employed at the production and exportation levels of the Peruvian fishery product supply chain has come under criticism from international buyers, particularly in markets with strict regulations and import requirements. Buyers have noted the shortcomings of the system, and its informal nature has led to concerns regarding its accuracy, susceptibility to corruption, and efficacy. In some cases, buyers of Peruvian seafood, fishmeal, and fish oil have requested improvements to Peru's traceability system to continue their purchase of Peruvian fishery products (International Organization Official; International NGO Staff).

Given Peru's extensive coastline, the country has numerous ports that are capable of facilitating international shipping. The location of the port determines the type of goods it exports into the international market. The port of Callao, located 12 kilometers from Lima and close to other important ports, serves as a major commercial seaport in Peru, facilitating the export of fishmeal and fish oil (Singh, 2022). The port of Salaverry, located nearby to Peru's second largest city of Trujillo in the La Libertad Region of the country, also serves as an export location for fishmeal (Singh, 2022). Finally, the port of Paita, located in the in Piura province, serves as the major port of the northern part of Peru and facilitates the export of seafood products (Singh, 2022).

4.4.6 International Downstream Supply Chain Tracing

Although shipping data are limited, due to limited national and business disclosures, a review of available shipping data is consistent with trends identified through more comprehensive import export data. This section overviews major suppliers and buyers of seafood, fishmeal, and fish oil exported from Peru to the international market based on available shipping data.

It is important to highlight that available trade data are noticeably lacking shipping data reported by China, which has ceased its reporting of shipping data since mid-2018. As China is a major importer of Peruvian seafood, fishmeal, and fishmeal, accounting for 21.1%, 81.1%, and 15.3% of total Peruvian exports of each product, respectively, the downstream shipping data provided in the following sections lack significant information pertaining to one of Peru's major end destinations for these products (UN Comtrade, 2021; Panjiva, 2023). As such, it is important to note that the downstream shipping data regarding the number of shipments and buyers do not accurately reflect the reality of the situation due to the lack of available Chinese shipping data, particularly within the context of Peruvian fishmeal.

4.4.6.1 Seafood

Available shipping records from between January 2019 and January 2023 indicate that there were 822 Peruvian suppliers involved in the export of seafood to international buyers (Panjiva, 2023). Out of these suppliers, the top Peruvian suppliers of seafood included Seafrost S.A.C., Inversiones Prisco S.A.C, Altamar Foods Peru Sac, Marinasol S.A., and Productora Andina De Congelados (Panjiva, 2023). Upon examining the various destinations for seafood exported by these five entities, shipping records reveal that the leading end destinations included the United States, Canada, Vietnam, Spain, South Korea, and

Mexico (Panjiva, 2023). Although these end destinations included 3 of the 5 major importers of Peruvian seafood, specifically the United States, Spain, and South Korea, which account for 16.7%, 13.5%, and 9.9% of Peruvian exports, respectively, it is important to note that shipping data do not outline significant shipments of seafood to either China or Japan, which account for 21.1% and 6.2% of Peruvian exports, respectively, by these top 5 Peruvian suppliers (Panjiva, 2023). This serves to reiterate the limitations of available shipping data and highlights how available data are not wholistically reflective of shipping trends outlined by macro trade data. Furthermore, the major customers of these suppliers are almost exclusively composed of buyers involved in seafood processing and production, or distributors of seafood products to downstream processing facilities (Panjiva, 2023). These findings are consistent with data collection findings on the destination markets for Peruvian seafood, but it is important to note that specific shipping data analysis is based on only the top 5 of the total 822 Peruvian suppliers of seafood and is not necessarily wholistically indicative of overall trends within the industry. Furthermore, it is also important to note that available shipping data are provided by a limited number of reporting markets, most notably the United States and Canada, and do not wholistically represent shipments of Peruvian seafood throughout the international market.

Within the same timeframe, available shipping records indicate that Peruvian seafood attracted a total of 641 foreign buyers (Panjiva, 2023). Among these buyers, the leading international entities included Dole Fresh Fruit Co., Pacific Coral Seafood, Alfa International Seafood Inc., and Altamar Food Corp (Panjiva, 2023). These companies represent the top tier of a diverse group of buyers in terms of volume and frequency of purchases (Panjiva, 2023). A closer look at shipping records shows that the primary seafood products procured by these top-tier buyers were crustaceans (HS Code 0306), fish fillets (HS Code 0304), mollusks (HS Code 0307), and prepared or preserved fish caviar or caviar substitutes (HS Code 1604) (Panjiva, 2023).[24] Although these top-tier buyers are based in the United States, it is important to recognize that this does not fully represent the geographical diversity of the international buyer base. Numerous smaller buyers are located in other countries, contributing to the global network of the Peruvian seafood trade (Panjiva, 2023). To this end, shipping records indicate that out of the 14,000 shipments of Peruvian seafood during this timeframe, leading end destinations included China, the United States, and Spain, which is consistent with macro trade data findings outlined in Section 4.4.5.2 (Panjiva, 2023). In addition, available shipping records corroborate research and data collection findings, suggesting that most buyers use imported seafood in the production of seafood-based food products intended for human consumption abroad. However, it is important to highlight that some of these entities, such as Pacific Coral Seafood, also function as regional and international distributors and traders of seafood products (Panjiva, 2023). These entities play a key role in supplying imported seafood to downstream processing companies, both within the United States and internationally (Panjiva, 2023).

4.4.6.2 Fishmeal

Available shipping records from between January 2019 and January 2023 indicate that there were 130 Peruvian suppliers involved in the export of fishmeal to international buyers (Panjiva, 2023). Out of these suppliers, top Peruvian suppliers of fishmeal included Tecnologica De Alimentos S.A., Pesquera Exalmar S.A.A, Corporacion Pesquera Inca S.A.C. Cope Inc., Pesquera Diamante S.A., and Pesquera

[24] These data provide a snapshot of the types of seafood that are in high demand among these major buyers; however, they are not indicative of the wide variety of seafood products purchased in smaller volumes by these entities or smaller importing entities.

Hayduk S.A. (Panjiva, 2023).[25] Upon examining the various destinations for fishmeal exported by these five entities, shipping records reveal that the leading end destinations included China, Japan, Taiwan, Ecuador, Germany, Vietnam, and Spain (Panjiva, 2023). Although these end destinations include four of the five major importers of Peruvian fishmeal, specifically China, Japan, Vietnam, and Germany, it is important to note that shipping data do not outline significant shipments of fishmeal to Norway, which accounts for 3% of Peruvian exports by these top five Peruvian suppliers (Panjiva, 2023). This serves to reiterate the limitations of available shipping data and highlights how available data are not wholistically reflective of shipping tends outlined by macro trade data. Furthermore, the major customers of these suppliers were composed of international traders and distributers; however, upon investigating further downstream, the majority of end-use entities were involved in aquaculture, fertilizer production, and livestock feed (Panjiva, 2023). These findings are consistent with data collection findings on the destination markets and end uses for Peruvian fishmeal, but it is important to note that this analysis is based on 5 of the 130 total Peruvian suppliers of fishmeal and is not necessarily indicative of the industry as a whole. Furthermore, it is also important to note that available shipping data are provided by a limited number of reporting markets, most notably the United States and Canada, and do not wholistically represent shipments of Peruvian fishmeal throughout the international market. Within the same timeframe, available shipping records indicate that Peruvian fishmeal attracted a total of 82 foreign buyers (Panjiva, 2023). Among these buyers, the leading international entities included Mosaic Fertilizer LLC, Skretting Canada, Compadia Scoular De Mexicos De Rl De Cv, Xiamen C and D Commodity Trading, and Inproquisa S.A. (Panjiva, 2023).[26] These companies represent the top tier of a diverse group of buyers in terms of volume and frequency of purchases (Panjiva, 2023). Corporate records indicate that these top-tier buyers are based in the United States, Canada, Mexico, China, and Spain, respectively (Panjiva, 2023). However, it is important to recognize that this does not fully represent the geographical diversity of the international buyer base. Numerous smaller buyers are located in other countries, contributing to the global network of the Peruvian fishmeal trade (Panjiva, 2023). To this end, shipping records indicate that the leading end destinations included China, Vietnam, Mexico, Norway, Pakistan, and the United States, which is consistent with macro trade data findings outlined in Section 4.4.5.2 (Panjiva, 2023). In addition, available shipping records corroborate research and data collection findings, suggesting that most buyers use imported fishmeal in the production of fertilizers, aquiculture, livestock feed, and pet food (Panjiva, 2023).[27] However, it is important to highlight that some of these entities, such as Xiamen C And D Commodity Trading, also function as regional and international distributors and traders of fishmeal (Panjiva, 2023). These entities play a key role in supplying imported fishmeal to downstream processing companies, both domestically and internationally (Panjiva, 2023).

[25] According to available shipping records during this time period, these 5 entities accounted for 8,473 shipments of Peruvian fishmeal, for a total volume of 3.13 million metric tons valued at approximately $4.65 billion USD (Panjiva, 2023). It is important to note, however, that shipping data on the number of shipments, volume, and value are not entirely representative of trade in fishmeal specifically, as shipments can also contain other non-fishmeal products, therefore inflating the total volume and value outlined.

[26] According to available shipping records during this time period, these 5 entities accounted for 1,456 shipments of Peruvian fishmeal, for a total volume of 490 thousand metric tons valued at approximately $733 million USD (Panjiva, 2023). It is important to note, however, that shipping data on the number of shipments, volume, and value are not entirely representative of trade in fishmeal specifically, as shipments can also contain other non-fishmeal products, therefore inflating the total volume and value outlined.

[27] Shipping records indicate that a downstream buyer of fishmeal initially purchased by Skretting Canada subsequently made its way through intermediary entities to pet food manufacturers Farmina Pet Foods Brasil Ltds. and Champion Petfoods Lp (Panjiva, 2023).

4.4.6.3 Fish Oil

Available shipping records from between January 2019 and January 2023 indicate that there were 61 Peruvian suppliers involved in the export of fish oil to international buyers (Panjiva, 2023).[28] Out of these suppliers, the top Peruvian suppliers of fish oil included Dsm Marine Lipids Peru S.A.C, Tecnologica De Alimentos S.A., Coplex International S.A.C, and Pesquera Exalmar (Panjiva, 2023). Upon examining the various destinations for fish oil exported by these four entities, shipping records reveal that the leading end destinations included Canada, the Netherlands, the United States, China, Norway, and Denmark (Panjiva, 2023). Although these end destinations cover all five major importers of Peruvian fish oil, it is important to keep in mind the general limitations of available shipping data, and that such data are not wholistically reflective of shipping trends outlined by macro trade data. Furthermore, the major customers of these suppliers were composed of international traders and distributers; however, upon investigating further downstream, the majority of end-use entities were involved in cosmetics and supplements and the food industry (Panjiva, 2023). These findings are consistent with data collection findings on the destination markets and end uses for Peruvian fish oil, but it is important to note that specific shipping data analysis is based on only the top 5 of the total 61 Peruvian suppliers of fish oil and is not necessarily wholistically indicative of overall trends within the industry. Furthermore, it is important to note that available shipping data are provided by a limited number of reporting markets, most notably the United States and Canada, and do not wholistically represent shipments of Peruvian fish oil throughout the international market.

Within the same timeframe, available shipping records indicate that Peruvian fish oil attracted a total of 73 foreign buyers (Panjiva, 2023). Among these buyers, the leading international entities included Talsa USA Inc., Dsm Produtos Nutricionais Brasil SA, C I Naturmega SA, Bioriginal Food & Science Corp, and Industrias De Nutraceuticos SA De Cv (Panjiva, 2023).[29] These companies represent the top tier of a diverse group of buyers in terms of volume and frequency of purchases (Panjiva, 2023). Corporate records indicate that these top-tier buyers are based in the United States, Brazil, Colombia, and Mexico, respectively (Panjiva, 2023). However, it is important to recognize that this does not fully represent the geographical diversity of the international buyer base. Numerous smaller buyers are located in other countries, contributing to the global network of the Peruvian fish oil trade (Panjiva, 2023). To this end, shipping records indicate that the leading end destinations included Denmark, the United States, Canada, and India, which is generally consistent with macro trade data findings outlined in Section 4.4.5.2 (Panjiva, 2023). In addition, available shipping records corroborate research and data collection findings, suggesting that most buyers use imported fish oil in the production of pet food and nutritional supplements, as well as in the preparation of foodstuffs for human consumption (Panjiva, 2023). However, it is important to highlight that some of these entities, such as C I Naturmega SA, also function as regional and international distributors and traders of fish oil (Panjiva, 2023). These entities play a key role in supplying imported fish oil to downstream processing companies, both domestically and internationally (Panjiva, 2023).

[28] These data provide a snapshot of the types of seafood that are in high demand among these major buyers; however, they are not indicative of the wide variety of seafood products purchased in smaller volumes by these entities or smaller importing entities.

[29] According to available shipping records during this time period, these five entities accounted for 428 shipments of Peruvian fish oil, for a total volume of 17.5 thousand metric tons valued at approximately $61.1 million USD (Panjiva, 2023). It is important to note, however, that shipping data on the number of shipments, volume, and value are not entirely representative of trade in fish oil specifically, because shipments can also contain other non-fish oil products, therefore inflating the total volume and value outlined.

5 Examining the Impact of Policy and Other Factors Affecting the Fish Industry in Peru

Despite Peru's predominantly informal economy, the country has effectively regulated its industrial anchovy fishing industry (Flores, 2023). This industrial sector operates within a well-structured and regulated framework, largely governed by the General Fisheries Law (1992), often referred to as the Law of Quotas. Under this law, each company is allocated a fishing quota for each anchovy fishing season, of which there are two per year, each lasting approximately three months. Several other regulatory entities, including PRODUCE, the Environmental Evaluation and Enforcement Agency, the National Water Authority, and harbor captaincies under the Ministry of Defense, contribute to organizing and overseeing various aspects of the industry.

As mentioned by one of the informants, these regulatory changes have led to significant improvements in the industry's performance. The shift toward a more organized operation with controlled costs has enhanced product quality and, crucially, has contributed to maintaining sustainable fish populations.

> *"Over the last 15–20 years, the biomass has remained relatively constant at around 9 million tons, and this is largely due to this regulatory change."*
>
> *—Fish company CEO*

Experts further emphasized that the Peruvian anchovy industry operates with stringent quotas to ensure sustainability. These quotas are determined based on scientific assessments of anchovy stocks. However, environmental factors, notably the El Niño phenomenon, have a significant impact on anchovy populations. During El Niño events, such as the one in 2023, increased sea temperatures lead to changes in anchovy behavior. Anchovy populations often migrate from deep waters closer to the coast in search of cooler, nutrient-rich waters where they can find their preferred food sources. Consequently, the industrial sector was unable to fish throughout 2023, significantly affecting industrial fishing and related industries (ComexPerú, 2023; Arias, 2023; RPP, 2023).

> *"Due to climate change and the global El Niño phenomenon, there hasn't been a first fishing season. The fishing fleet has been idle for nearly three and a half to four months because the anchovy resource hasn't been available for fishing. […] Anchovies are there; the problem is that due to climate change, they've moved to deeper waters where they can't be caught."*
>
> *—Local organization leader*

The Law of Quotas also dictates that artisanal fishing is permitted exclusively within the first five miles of Peru's coastal waters, including artisanal anchovy fishing, and industrial vessels must operate from mile six onward (Sociedad Peruana de Derecho Ambiental, 2023). Anchovy artisanal fishing is intended for direct human consumption and is allowed to operate year-round. However, a government official and a fish company staff member said that due to limited domestic demand for anchovy consumption and a scarcity of processing facilities for end-use anchovy products in the country, anchovies caught by artisanal fishers are illicitly channeled into informal processing plants. These plants produce some fishmeal for domestic use but primarily for export. In some cases, the fish is frozen and sent to Ecuador for further processing into fishmeal.

In terms of labor regulations, respondents noted that the labor force in the fishing sector operates under the Labor General Law, without specific labor laws for the sector. This situation poses significant challenges for companies due to the seasonal nature of their operations. Key informants expressed

concerns about labor costs, work suspensions during low fishing seasons, and formal contracts for workers. As one interviewee pointed out, the industry's profitability is highly dependent on catch volumes. Therefore, the cost of maintaining fixed payrolls poses a considerable challenge. In addition, the labor-intense nature of the industry complicates the process of laying off employees when there is insufficient work due to low fishing.

> *"When the quotas for two seasons of the year don't reach 4 million tons, the industry can't generate profits. We always need more than 4 million tons to achieve positive results. So, for us, the cost of fixed payroll is around 40% of our annual fixed costs; it's a significant cost. And because it's a specialized field, it's not so easy to simply let people go and say: 'There's no fishing, so everyone go home.'"*
>
> *—Fish company CEO*

The artisanal sector also faces multiple challenges. Informality in this sector hinders the enforcement of labor standards and regulations. Furthermore, child labor and potentially forced labor are more likely to occur in artisanal fishing due to its informal nature and the absence of effective enforcement mechanisms.

> *"The level of control they [the government] have over the industrial fleet is enormous, but nobody regulates the artisanal fleet. There's no satellite tracking, no control of landings, no control of departures or arrivals. […] The artisanal fleet, which is supposedly for human consumption only, is not inspected at all. That's why I say that's where all the regulation is failing because they should demand the best conditions from them because that's what we consume."*
>
> *—Fish company CEO*

According to an international NGO representative, a local organization leader, and two fish company CEOs, traceability has a vital role in the industry for reporting fishery products, particularly in industrial fishing. Traceability helps confirm the catch's legal and regulated origin, meeting sustainability and quality standards. Although the industrial sector invests in implementing technology and measures to guarantee traceability, the artisanal sector lacks a reliable traceability system due to their informal nature and the lack of Global Positioning System monitoring equipment, making it difficult to enforce regulations related to catch limits and sustainable fishing practices. The limited oversight in the artisanal sector results in a lack of control and regulation, which complicates the enforcement of labor standards and the prevention of illegal labor practices. According to eight informants, artisanal fleets almost never carry a Global Positioning System, and certificates are produced by manual data collection, which is prone to inaccuracy.

The investigation into the Peruvian fish supply chain yielded numerous insights across key phases of the industry, including marine fishing operations, transportation, sale, processing, and trade. The marine fishing of Peruvian catch includes a diversity of operations, spanning various small-scale fishing operations focused on squid and non-anchovy marine catch and large-scale industrial fishing operations focused on the catch of anchovy. Evidence from data collection revealed that the fishing phase of the Peruvian fish supply chain was most at risk for the use of either child or forced labor. After the fishing (harvesting) phase, marine catch follows two distinct trajectories. Peruvian anchovy catch is almost entirely transported to domestic fishmeal and fish oil processing facilities, while other Peruvian marine catch is directed to domestic buyers and processors for the production of seafood. Traceability is limited at the transportation phase of marine catch from offloading ports to domestic processing facilities as a result of suboptimal monitoring systems in place. Upon processing, the majority of both fishmeal and fish oil produced domestically in Peru is exported to major destination markets, with leading fishmeal

importers being China, Japan, and Norway, while major fish oil importers include Norway, China, and Canada. Peruvian seafood is split between domestic consumption and export, with just under half (44.6%) of seafood being exported to major importers, including China, the United States, and Spain. Future research could benefit from a more focused investigation into marine artisanal fishing operations in Peru to better understand the nature of such operations and the impact that governmental efforts have had on the formalization of the sector. Furthermore, the Peruvian fish supply chain as a whole could benefit significantly from increased attention paid to traceability systems, particularly through the increased implementation of monitoring equipment among artisanal fishing operations and, in addition, increased governmental oversight of the domestic transportation of marine catch to inland processing facilities.

6. Conclusion and Recommendations

6.1 Conclusion

It is evident that issues related to forced labor, poor working conditions, informality in the artisanal sector, and a lack of awareness of labor rights are present in the Peruvian fish industry. The prevalence of verbal agreements and the inability to refuse hazardous work, particularly in high-risk environments, underline the urgent need for policy changes and stricter regulations in the industry to protect labor rights and safety. Addressing informality in artisanal fishing is crucial for ensuring legal protections, social security benefits, labor standards, and accurate data for decision-making regarding resource management and conservation. Enhancing traceability of the number of vessels, fishing techniques, and catch quantities is also vital for accountability and sustainable resource management, and addressing environmental challenges is imperative for the long-term viability of artisanal and industrial fishing. These efforts are essential for improving the accuracy and transparency of catch reporting, formalizing small-scale and artisanal fishing, and eliminating illegal, unreported, and unregulated fishing.

6.2 Key Recommendations

- Addressing forced labor and child labor in the fishing industry requires a comprehensive approach involving government, industry unions, companies, workers' organizations, and civil society. In Peru, substantial resources support various efforts to formalize artisanal fishing, which would in turn increase oversight and control of labor conditions in the sector. However, the absence of coordination and the presence of isolated systems have led to redundancy and inefficiency, impeding cross-verification and implementation of various regulatory systems. The Government of Peru, through PRODUCE and other relevant agencies, should continue to address issues related to the incomplete formalization of artisanal fishers. This can be achieved through tailored resources to artisanal fishers, improved coordination among public institutions, and increased support from regional governments for registration and formalization (Future of Fish, 2019).[30] It is also important to note that Peru does not have an updated national policy that allows for the monitoring of child labor in the country. Therefore, to address child labor in the fishing sector, it is a priority to have such tools and a concrete action plan.

[30] Current efforts include the Por La Pesca Project, a collaborative initiative between the United States Agency for International Development, Sociedad Peruana de Derecho Ambiental, and the Walton Family Foundation. The project aims to empower artisanal fishing organizations and key actors contributing to the formalization of fishermen in Ecuador and Peru. See https://www.usaid.gov/sites/default/files/2023-02/PorLaPesca-FS-English-27sep22%20%282%29.pdf for more information.

- The high level of fragmentation in data systems is one of several barriers currently impeding traceability and data modernization efforts in Peru.[31] Traceability of fish products in Peru is done through SITRAPESCA, which is managed by the Peruvian government. However, key informants mentioned that SITRAPESCA, initially designed for industrial fishing, encounters challenges in adapting to the complexities of the artisanal sector. Various international organizations, including the World Wildlife Fund, have been working to improve traceability and modernize data collection in Peru's fishing industry to reach the artisanal sector, digitalize paper-based processes, and facilitate surveillance efforts by authorities to address unsustainable and illegal, unreported, and unregulated fishing (WWF, 2022).[32] One of these efforts is TrazApp, an Electronic Catch Documentation and Traceability System developed by World Wildlife Fund-Peru that communicates with SITRAPESCA and other databases, and allows generating, transmitting, and storing fishing activity information in real time.[33] However, efforts regarding its usage are still under development, and outcomes of this app are yet to be seen. Efforts should continue to integrate user-friendly tools like TrazApp with older systems like SITRAPESCA and establish interconnected systems to enhance traceability. Given that TrazApp requires users to have access to a smartphone, the Internet, and an enabled email address, as well as requiring comprehensive training, addressing these challenges becomes crucial, especially for users lacking these resources. Improving traceability is needed to enhance accuracy and transparency in catch reporting and processing, thereby fostering sustainable fisheries management and ensuring legal standards and effective regulatory oversight of artisanal and industrial fishing.
- Considering the prevalent job insecurity and safety risks faced by workers in artisanal and industrial fishing, it is imperative to advocate for the creation of tailored labor laws that account for the industry's distinct challenges and seasonal characteristics, along with the implementation of precise regulations and guidelines for the treatment of onboard personnel, with a focus on ensuring fair wages, employment stability, and safety standards. This is also imperative for workers in fishmeal factories, fish oil factories, canneries, etc. The labor laws for the fish sector in Peru are primarily governed by general labor regulations, with limited specific labor laws tailored to the fishing industry. One notable exception is the Special Registry for Fishing Workers, which falls under the umbrella of social protection, offering certain provisions for fish workers. This lack of specific labor regulations can present challenges in addressing the hazardous conditions faced by workers in the fishing sector, both in the artisanal and industrial sectors. Future research efforts could explore the informal nature of employment arrangements, emphasizing the implications of verbal contracts on safety and workers' rights.
- The fishing sector, being tied to the functioning of marine ecosystems and serving as a livelihood for communities dependent on this resource, is particularly susceptible to the impacts of climate change. According to the National Institute of Statistics and Informatics, the fishing sector experienced a 31.7% production decrease during January through June 2023, with June being the worst month, with a nearly 70% decrease due to the El Niño phenomenon. Fluctuations in catch volumes, driven by climate change, negatively affect workers in the marine fishing sector. The industrial sector saw a 70.8% decrease from January to June 2023 due to lower anchovy

[31] See Future of Fish. (20019). Recomendaciones de Trazabilidad para Pesquerías a Nivel Nacional de Perú. https://futureoffish.org/sites/default/files/docs/resources/Peru%20Recommendations-SPN_web_0.pdf for more information.
[32] See World Wildlife Fund, Inc. (2022). *Guidance and Tools for Traceability in Fishery Improvement Projects*. https://seafoodsustainability.org/wp-content/uploads/2022/01/FIP-Guidance-Paper.pdf for more information.
[33] See https://www.trazapp.org/conozca for more information.

catch volumes, which play a vital role in the industry.[34] In Peru, where climate effects, especially those associated with the recurrent El Niño phenomenon, are prevalent, there is an urgent need for policy interventions to ensure resource and sector sustainability in the face of climatic challenges. PRODUCE has outlined a strategy to address the heightened vulnerability of the fishing sector to climate change by setting specific objectives to be achieved by 2030. These objectives encompass promoting responsible fishing practices that respect the sustainable use of hydrobiological resources, strengthening aquaculture activities to contribute to food security, diversifying and adding value to fishing activities, improving modeling and prediction capabilities for different climate change scenarios in the Peruvian sea, and enhancing ecological risk management (EY Peru, 2017). Although this strategy appears comprehensive, there is a need for enhanced reporting and tracking of its implementation progress because there is limited information on its development. It remains imperative and it is recommended that any fisheries assessment or policy should incorporate environmental variables into decision-making, coupled with intensive monitoring and management measures, to align resource sustainability with fishing activity. In addition, to address the socioeconomic impacts of El Niño, PRODUCE has allocated S/ 4.5 million ($1.2 million USD) to FONDEPES, aiming to provide credit access for artisanal fishermen and aquaculture producers to offer immediate support to activities that are vulnerable to climatic factors (Gob.Pe, 2023). Despite progress, the formalization of artisanal fishers is crucial to ensure that credits reach the entire sector.

[34] See Instituto Nacional de Estadística e Informática. (n.d.). *Produccion Nacional Junio 2023*. https://m.inei.gob.pe/media/MenuRecursivo/boletines/08-informe-tecnico-produccion-nacional-jun-2023.pdf for more information.

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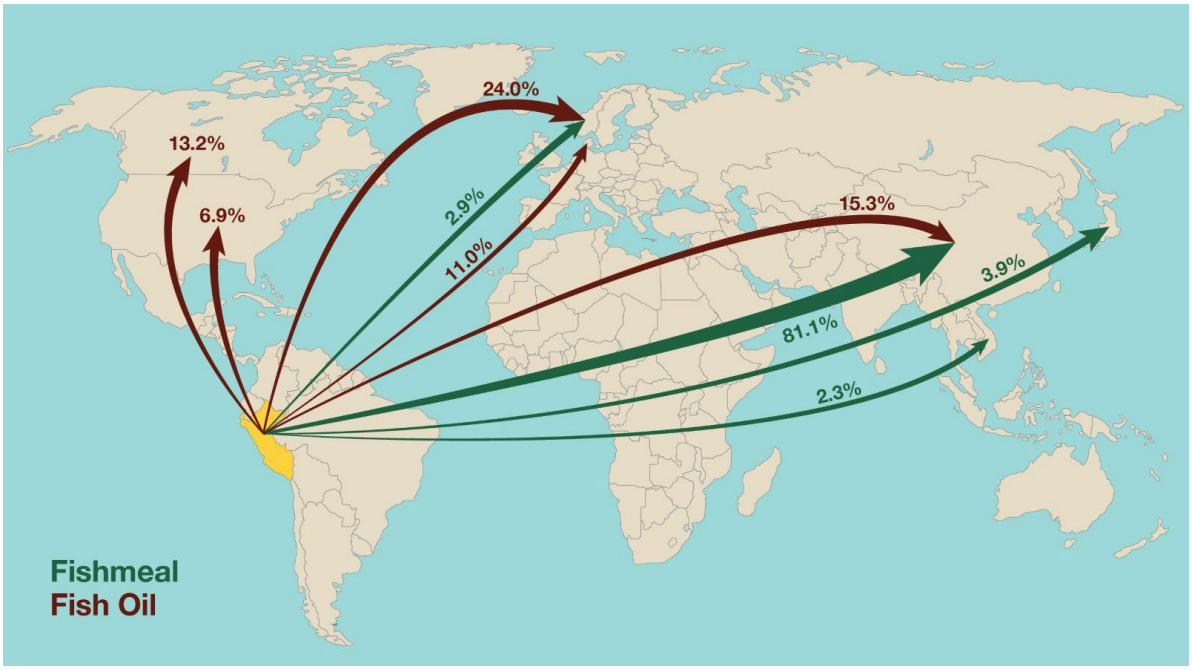
Appendix 2: Maps

Figure A1. Top downstream markets for the Peruvian fishmeal and fish oil supply chain



Major downstream markets for fishmeal and fish oil, and end uses

Downstream Market	End Uses
China	Feedstock, Pet Food, Cosmetics, Supplements, Food Industry
Norway	Feedstock, Pet Food, Cosmetics, Supplements, Food Industry
Canada	Feedstock, Pet Food, Cosmetics, Supplements, Food Industry
Japan	Feedstock, Pet Food, Cosmetics, Supplements, Food Industry
Denmark	Feedstock, Pet Food, Cosmetics, Supplements, Food Industry
Vietnam	Feedstock, Pet Food, Cosmetics, Supplements, Food Industry
USA	Feedstock, Pet Food, Cosmetics, Supplements, Food Industry

Appendix 3: HS Codes

HS Code Glossary

Product	HS Code	HS Definition
Seafood	0301	Live fish.
	0302	Fish, fresh or chilled, excluding fish fillets and other fish meat of heading 03.04.
	0303	Fish, frozen, excluding fish fillets and other fish meat of heading 03.04.
	0304	Fish fillets and other fish meat (whether or not minced), fresh, chilled or frozen.
	0305	Fish, dried, salted or in brine; smoked fish, whether or not cooked before or during the smoking process.
	0306	Crustaceans, whether in shell or not, live, fresh, chilled, frozen, dried, salted or in brine; smoked crustaceans, whether in shell or not, whether or not cooked before or during the smoking process; crustaceans, in shell, cooked by steaming or by boiling in water, whether or not chilled, frozen, dried, salted or in brine.
	0307	Molluscs, whether in shell or not, live, fresh, chilled, frozen, dried, salted or in brine; smoked molluscs, whether in shell or not, whether or not cooked before or during the smoking process.
	0308	Aquatic invertebrates other than crustaceans and molluscs, live, fresh, chilled, frozen, dried, salted or in brine; smoked aquatic invertebrates other than crustaceans and molluscs, whether or not cooked before or during the smoking process.
	1603	Extracts and juices of meat, fish or crustaceans, molluscs or other aquatic invertebrates.
	1604	Prepared or preserved fish; caviar and caviar substitutes prepared from fish eggs.
	1605	Crustaceans, molluscs and other aquatic invertebrates, prepared or preserved.
Fishmeal	2301.20	Flours, meals and pellets, of meat or meat offal, of fish or of crustaceans, molluscs or other aquatic invertebrates, unfit for human consumption; greaves.
Fish Oil	1504	Fats and oils and their fractions, of fish or marine mammals, whether or not refined, but not chemically modified.

Appendix 4: Export Values

Top Five Importers of Seafood from Peru, 2021

Destination country	Trade value (USD)	% of total fish export value from Peru
1. China	$ 322,366,736	21.1%
2. USA	$ 255,249,077	16.7%
3. Spain	$ 205,643,044	13.5%
4. South Korea	$ 150,989,184	9.9%
5. Japan	$ 94,181,898	6.2%

Source: UNCOMTRADE, 2021. HS Codes: 0301, 0302, 0303, 0304, 0305, 0306, 0307, 0308, 1603, 1604, 1605

Top Five Importers of Fishmeal from Peru, 2021

Destination country	Trade value (USD)	% of total fishmeal export value from Peru
1. China	$1,547,069,279	83.3%
2. Japan	$75,339,331	4.1%
3. Norway	$55,867,013	3.0%
4. Vietnam	$44,835,663	2.4%
5. Germany	$36,295,787	2.0%

Source: UNCOMTRADE, 2021. HS Codes: 2301.20

Top Five Importers of Fish Oil from Peru, 2021

Destination country	Trade value (USD)	% of total fish oil export value from Peru
1. Norway	$ 146,456,826	24.0%
2. China	$ 93,261,723	15.3%
3. Canada	$ 80,652,597	13.2%
4. Denmark	$ 67,146,595	11.0%
5. USA	$ 42,123,640	6.9%

Source: UNCOMTRADE, 2021. HS Codes: 1504

Top Global Exporters of Seafood, 2021

Country	Trade value (USD)	Percent of total global seafood exports
1. Norway	$15,946,007,620	10.2%
2. China	$12,452,233,158	8.0%
3. Vietnam	$7,884,654,019	5.1%
4. Canada	$7,427,557,872	4.8%
5. India	$7,411,051,586	4.8%
6. Russia	$7,150,447,499	4.6%

	Country	Trade value (USD)	Percent of total global seafood exports
7.	Chile	$6,963,306,486	4.5%
8.	Ecuador	$6,794,890,739	4.4%
9.	United States	$5,482,053,671	3.5%
10.	Spain	$5,322,021,915	3.4%

Source: UNCOMTRADE sourced through Panjiva, 2021. HS Codes: 0301, 0302, 0303, 0304, 0305, 0306, 0307, 0308, 1603, 1604, 1605

Top Global Exporters of Fishmeal, 2021

	Country	Trade value (USD)	Percent of total global fishmeal exports
1.	Peru	$1,857,456,449	34.1%
2.	Chile	$398,518,911	7.3%
3.	Denmark	$358,690,992	6.6%
4.	Vietnam	$273,411,288	5.0%
5.	United States	$242,042,658	4.4%
6.	Norway	$189,734,738	3.5%
7.	Mexico	$183,307,130	3.4%
8.	Morocco	$176,704,990	3.2%
9.	Russia	$168,154,115	3.1%
10.	Thailand	$145,467,426	2.7%

Source: UNCOMTRADE sourced through Panjiva, 2021. HS Codes: 2301.20

Top Global Exporters of Fish Oil, 2021

	Country	Trade value (USD)	Percent of total global fish oil exports
2.	Peru	$605,042,042	25.2%
3.	Norway	$239,262,606	10.0%
4.	Chile	$181,306,706	7.6%
5.	United States	$181,109,068	7.6%
6.	Denmark	$144,872,574	6.0%
7.	Iceland	$93,415,914	3.9%
8.	Australia	$88,804,484	3.7%
9.	Mexico	$82,047,760	3.4%
10.	Germany	$74,995,557	3.1%
11.	China	$70,693,282	3.0%

Source: UNCOMTRADE sourced through Panjiva, 2021. HS Codes: 1504

Export by HS Code, 2017-2021

Good	HS Code	EX value 2017	2018	2019	2020	2021	Top destination market for 2021 (percentage)
Seafood	0301	$3,420,247	$3,586,032	$3,620,504	$3,189,272	$4,219,295	2021: China (21.8%)
	0302	$8,667,113	$5,015,241	$12,436,005	$21,547,655	$6,702,313	2021: Ecuador (44.1%)
	0303	$72,525,363	$55,072,086	$85,396,760	$85,223,708	$120,838,839	2021: China (41.7%)
	0304	$157,287,277	$186,355,131	$133,132,364	$135,796,870	$178,940,796	2021: USA (62.3%)
	0305	$39,475,460	$46,089,529	$47,572,911	$42,046,665	$50,817,940	2021: Japan (33.5%)
	0306	$178,145,169	$176,391,698	$173,525,026	$185,536,531	$198,145,026	2021: China (31.4%)
	0307	$358,693,142	$505,663,618	$724,963,607	$543,139,194	$658,854,829	2021: Spain (21.1%)
	0308	$3,524,153	$7,267,612	$9,768,480	$4,943,007	$7,463,085	2021: South Korea (41.9%)
	1603	$25,443	$28,080	N/A	$27,420	N/A	N/A
	1604	$79,417,278	$109,557,347	$116,067,961	$104,777,915	$102,323,094	2021: Italy (19.4%)
	1605	$201,102,270	$275,622,356	$260,067,820	$185,459,998	$198,756,140	2021: China (40.9%)
Fishmeal	2301	$1,613,379,760	$1,553,247,668	$1,545,427,668	$1,251,731,451	$1,908,175,010	2021: China (81.1%)
Fish oil	1504	$384,537,150	$392,695,020	$433,484,383	$370,141,924	$609,591,877	2021: Norway (24%)

Source: UNCOMTRADE sourced through Panjiva, 2021. HS Codes: 0301, 0302, 0303, 0304, 0305, 0306, 0307, 0308, 1603, 1604, 1605, 2301, 1504

Peruvian Destination Markets' Top Five Sources of Imported Seafood, 2021

Destination market for Peruvian seafood	Destination markets' sources of seafood imports	Trade Value (USD)	Percent of total seafood import value by destination market
China	Ecuador	$2,186,533,426	15.5%
	Russia	$1,863,864,391	13.2%
	Canada	$1,077,618,434	7.6%
	USA	$978,210,477	6.9%
	India	$966,961,494	6.8%
USA	Canada	$4,886,438,753	16.5%
	India	$3,340,796,673	11.3%
	Chile	$3,002,809,558	10.1%
	Indonesia	$2,562,133,490	8.6%
	Vietnam	$1,964,552,837	6.6%

Destination market for Peruvian seafood	Destination markets' sources of seafood imports	Trade Value (USD)	Percent of total seafood import value by destination market
Spain	Morocco	$1,102,123,221	12.7%
	Ecuador	$622,283,495	7.1%
	Argentina	$521,933,496	6.0%
	Portugal	$513,726,507	5.9%
	France	$463,711,178	5.3%
South Korea	China	$1,225,586,045	21.2%
	Russia	$1,216,683,227	21.1%
	Vietnam	$798,992,707	13.9%
	Norway	$572,168,995	9.9%
	USA	$219,730,537	3.8%
Japan	China	$2,493,616,739	18.0%
	Chile	$1,271,295,965	9.2%
	Russia	$1,252,238,155	9.1%
	USA	$1,186,739,538	8.6%
	Norway	$1,012,292,320	7.3%

Source: UNCOMTRADE, 2021. HS Codes: 0301, 0302, 0303, 0304, 0305, 0306, 0307, 0308, 1603, 1604, 1605

Peruvian Destination Markets' Top Five Sources of Imported Fishmeal, 2021

Destination market for Peruvian fishmeal	Destination markets' sources of fishmeal imports	Trade value (USD)	Percent of total fishmeal import value by destination market
China	Peru	$1,547,069,279	51.4%
	USA	$350,627,831	11.7%
	Vietnam	$206,125,178	6.9%
	Russia	$156,865,568	5.2%
	Chile	$125,427,810	4.2%
Japan	Peru	$75,339,332	34.0%
	Chile	$37,870,628	17.1%
	USA	$20,546,406	9.3%
	Thailand	$15,483,740	7.0%
	New Zealand	$10,339,784	4.7%
Norway	Denmark	$132,345,791	40.2%
	Iceland	$72,674,344	22.1%
	Peru	$55,867,013	17.0%
	Uruguay	$22,142,451	6.7%
	Chile	$20,895,831	6.4%
Vietnam	Hungary	$280,248,028	41.7%
	USA	$122,567,910	18.2%
	India	$45,368,959	6.7%
	Peru	$44,835,663	6.7%
	Brazil	$37,483,908	5.6%

Destination market for Peruvian fishmeal	Destination markets' sources of fishmeal imports	Trade value (USD)	Percent of total fishmeal import value by destination market
Germany	Netherlands	$44,589,042	17.1%
	Peru	$36,295,787	13.9%
	Denmark	$25,556,973	9.8%
	Poland	$24,120,213	9.2%
	Spain	$17,369,238	6.6%

Source: UNCOMTRADE, 2021. HS Codes: 2301

Peruvian Destination Markets' Top 5 Sources of Imported Fish Oil, 2021

Destination market for Peruvian fish oil	Destination markets' sources of fish oil imports	Trade value (USD)	Percent of total fish oil import value by destination market
Norway	Peru	$146,456,826	31.6%
	Denmark	$105,839,676	22.8%
	Mauritania	$38,588,769	8.3%
	Mexico	$37,411,295	8.1%
	Chile	$35,488,080	7.6%
China	Peru	$93,261,723	29.6%
	Australia	$70,558,954	22.4%
	USA	$53,859,052	17.1%
	Vietnam	$20,919,665	6.6%
	Chile	$11,898,482	3.8%
Canada	Peru	$80,652,597	53.9%
	USA	$36,858,773	24.6%
	Mexico	$13,325,519	8.9%
	Denmark	$5,976,446	4.0%
	China	$2,749,660	1.8%
Denmark	Peru	$67,146,595	36.8%
	Norway	$35,320,556	19.3%
	Germany	$15,267,177	8.4%
	USA	$14,125,190	7.7%
	Chile	$12,892,710	7.1%
USA	Norway	$53,260,782	36.7%
	Peru	$42,123,640	29.0%
	Iceland	$18,851,720	13.0%
	Chile	$9,379,531	6.5%
	Canada	$7,927,870	5.5%

Source: UNCOMTRADE, 2021. HS Codes: 1504

Appendix 5: Forced Labor/Child Labor Definitions

Child Labor

Child Labor: "Child labor is defined by ILO Conventions 138 on the Minimum Age for Admission to Employment and 182 on the Worst Forms of Child Labor. It includes employment below the minimum age as established in national legislation, hazardous unpaid household services, and the worst forms of child labor: all forms of slavery or practices similar to slavery, such as the sale or trafficking of children, debt bondage and serfdom, or forced or compulsory labor; the use, procuring or offering of a child for prostitution, for the production of pornography or for pornographic purposes; the use, procuring or offering of a child for illicit activities; and work which, by its nature or the circumstances in which it is carried out, is likely to harm the health, safety or morals of children." (ILO, 1973; United States Department of Labor, n.d.)

Child Labor Conventions: The ILO Convention on Child Labor, 1973 (No. 138) aims to abolish child labor by requiring countries to establish a minimum age for work as well as employment (typically 14-15 years) of age while also allowing for light work for children under that age (ILO, 1973). The convention also requires nations to establish policies to eliminate child labor. In Article 3 the convention defines the "minimum age for admission to any type of employment or work which by its nature or the circumstances in which it is carried out is likely to jeopardize the health, safety or morals of young person" to be 18 years old. The ILO Worst Forms of Child Labour Convention, 1999 (No. 182) (ILO, 1999b) defines the worst forms of child labor as:

- all forms of slavery or practices similar to slavery, such as the sale and trafficking of children, debt bondage and serfdom and forced or compulsory labour, including forced or compulsory recruitment of children for use in armed conflict;
- the use, procuring or offering of a child for prostitution, for the production of pornography or for pornographic performances;
- the use, procuring or offering of a child for illicit activities, in particular for the production and trafficking of drugs as defined in the relevant international treaties;
- work which, by its nature or the circumstances in which it is carried out, is likely to harm the health, safety or morals of children (hazardous child labor)

Hazardous child labor is then further defined in Article 3 of the ILO Worst Forms of Child Labour Recommendations, 1999 (No 190) (ILO, 1999a) as:

- work which exposes children to physical, psychological or sexual abuse;
- work underground, under water, at dangerous heights or in confined spaces;
- work with dangerous machinery, equipment and tools, or which involves the manual handling or transport of heavy loads;
- work in an unhealthy environment which may, for example, expose children to hazardous substances, agents or processes, or to temperatures, noise levels, or vibrations damaging to their health;
- work under particularly difficult conditions such as working for long hours or during the night or work where the child is unreasonably confined to the premises of the employer.

Peruvian Child Labor Law: In 2002, Peru ratified ILO Convention 138 and Convention 182, which establish the conceptual framework for the delimitation of child labor, as well as its worst forms, and are

incorporated as part of Peruvian domestic legislation. In this sense, these national regulations establish five ages for the employment of children and adolescents in Peru, in addition to the three minimum ages established in international regulations.

According to the Code of the Child and Adolescent- Peru (2000)	
Age: 17 years old	Specific minimum age for industrial fishing labors
Age: 16 years old	Specific minimum age for industrial, commercial, or mining work.
Age: 15 years old	Specific minimum age for non-industrial agricultural work
Age: 14 years old	Generic minimum age (foreseen for other types of activities not mentioned)
Age: 12 years old	Exceptional minimum age for light works (not considered as a reference for the purposes of the National Strategy for the Prevention and Eradication of Child Labor 2012-2021 targets

The setting of this line implies that any work performed by a child or adolescent below these ages is considered child labor. Therefore, based on the above, the following items are considered child labor that must be prevented or eradicated:

- The work of children and adolescents who are engaged in economic production and who are under the minimum age allowed for work in accordance with national legislation and international standards.
- The work of adolescents who are engaged in economic production and who being the minimum age allowed for work, perform hazardous activities that jeopardize their health, safety, and moral development at risk.

Child and adolescent exploitation is also referred to as “worst forms of child labor not designated as hazardous work” of children and adolescents (Ministerio de Trabajo y Promoción del Empleo, 2012).

Forced Labor

According to ILO Convention No. 29 on Forced Labor (1930), ratified by the Peruvian State in 1960, forced labor is “any work or service which is exacted from any person under the menace of any penalty and for which the said person has not offered himself voluntarily.” In this sense, forced labor is an affectation of human dignity and violates the freedom to work. It implies an unlawful restriction of the individual’s ability to decide whether to work, for whom and under what conditions (Ministerio de Trabajo y Promoción del Empleo, 2019, p.10).

Likewise, forced labor is criminalized in Article 168-B of the Criminal Code, which establishes that this offense is committed when “another person is subjected or forced, by any means or against his will, to perform work or provide a service, whether paid or unpaid” (Ministerio de Trabajo y Promoción del Empleo, 2019, p.11).

Based on the above, three essential elements can be distinguished which, taken together, make up a situation of forced labor, constitute a situation of forced labor:

- “Any work or service”: Work or service is performed for the account of others or for the benefit of another (a case of forced labor for “oneself” is not possible), on a permanent or temporary basis. It does not matter whether the activity is legal or illegal (e.g., illegal logging or illegal mining) or whether it is paid or unpaid (e.g., debt bondage).

- “Under threat of any penalty”: The person performs the work under coercion, because there is the presence or credible threat of suffering-among others: direct physical violence, against his family or persons in his immediate environment; sexual violence; supernatural reprisals; imprisonment or other physical confinement; financial penalties; denunciation before the authorities (police, immigration, etc.); exclusion from community and social life; suppression of rights or privileges; deprivation of food, shelter or other necessities; loss of status social status, etc.
- “Does not volunteer”: The person executes the activity without having given consent for the initiation or continuation of the activity, i.e. without having volunteered, either because he/she acts under coercion or threat (Ministerio de Trabajo y Promoción del Empleo, 2019).

Appendix 6: Final Research Instruments

Supply Chain Quantitative Research Instrument Protocol: Peru Fish

[removed to improve document performance; will be added for final draft]

Supply Chain Qualitative Research Instrument Protocol: Peru Fish

Forced Labor

KII (Key Informant Interview) Interview Protocol Question Bank (2 opening questions, 16 supply chain questions, 4 out of country KII supply chain questions, 28 labor questions, and 2 closing questions)

Interviewer:	Date (DD/MM/YY)
Location of interview:	
Name (code, do not take respondent real name):	Sex:
Profession (if applicable):	
Position (if applicable):	
Employer/Affiliated Institution/Organization (if applicable):	
Contact information (office address, phone number, email):	
Time interview started:	
Time interview ended:	

Interviewer instructions:

Foster a dynamic conducive to gathering good data. The interview should have the relaxed feel of a conversation. Set the tone by using a slow pace in your speech.

Ask one question at a time. Give the respondent ample time to reflect and fully respond before moving to the next. Try not to interrupt, and do not answer on their behalf.

If the respondent agrees to be recorded, give them your full attention. Make note of any follow-up questions you want to remember to ask, but otherwise focus on the respondent rather than your paper.

Probe for more depth, particularly when responses are brief. Use phrases such as, “Tell me more about that” and “Can you give me an example?” Aim to get specific instances, in considerable detail, whenever possible.

You do not have to ask each question verbatim, but at least broach all the topics covered that are relevant to the key informant. Adapt the flow and questions to make them relevant to the respondent.

For each item, ask the general question first, and then probe the sub-items that have not been addressed spontaneously.

Introduction Questions (KIIs): (All KIIs)

1. Could you please tell me your role and what you focus on?
    a. Is there other experience you have in the fish industry?
2. Can you describe your organization's work directly in the fish industry?
    a. What kind of activities in this area do you and your organization undertake?
    b. (If the organization is not directly involved ask) If your work is not directly related, how are you familiar with issues regarding the fish industry?
    c. We are interested in learning more about the supply chains of squid and anchovies specifically within the overall fish industry of Peru. Could you please tell us if you are more knowledgeable about the squid supply chain or the anchovies supply chain or another type of fish supply chain? (INTERVIEWER: BASED ON THE RESPONSE HERE ASK THE FOLLOWING SUPPLY CHAIN QUESTIONS WITHIN THE CONTEXT OF EXPERTISE OF THE INTERVIEWEE)

(TO INTERVIEWER: FOR KIIS THAT ARE NOT SUPPLY CHAIN EXPERTS (MEDICAL PROFESSIONALS, EDUCATIONAL PROFESSIONALS, LABOR RIGHTS NGOs AND CSOs, ETC.) ASK QUESTIONS 1 AND 2 FROM THE SUPPLY CHAIN THEME GENERAL SECTION TO ASSESS SUPPLY CHAIN KNOWLEDGE. IF THE INDIVIDUAL HAS LIMITED INSIGHTS, MOVE TO THE SECTION ENTITLED "LABOR CONDITIONS QUESTIONS".

IF YOU HAVE TIME REMAINING AT THE END OF THE INTERVIEW YOU MAY RETURN TO THE SUPPLY CHAIN SECTION

FOR ORGANIZATIONS WORKING DIRECTLY IN THE SUPPLY CHAIN (TRADERS, PROCESSORS, FARMERS, UNIONS AND COLLECTIVES, ETC. PRIORITIZE THE SUPPLY CHAIN SECTION QUESTIONS AND NOT THE CHILD LABOR QUESTIONS)

Supply Chain Questions

Supply Chain Theme General: (2, 4, 6)

1. Can you give me a quick overview of how the fish industry works in Peru?
    a. What laws and regulations provide the foundation for the operations of the industry?
        i. (PROBE FOR SPECIFIC LABOR LAWS)
2. Who are the major stakeholders and influencers in the fish industry (ex: local and international NGOs, trade associations, informal business networks, owners, buyers, traders, and foreign investors)?
3. Please describe the process of the production of fish, from fishing to processing at fish facilities to final downstream products?
    a. How are these goods transported or traded?
4. Following the fish catch, what processing occurs within Peru?

a. What other goods, byproducts, or downstream goods are produced in-country? Are these consumed domestically or exported?

5. Is there any list or mapping of fishing vessels in Peru?
    a. How would someone access the list?
6. Is there any list or mapping of fish processing facilities in Peru?
    a. How would someone access the list?
7. What type of products does fish from Peru end up in? (PROBE FOR FISHMEAL AND FISH OIL)?
8. How have current or former trade policies impacted the fish industry?
    a. (PROBE FOR ANY TRADE POLICIES THAT MAY IMPACT/ADDRESS PERUVIAN-CHINESE TRADE IN FISH/ PRESENCE OF CHINESE FISHING VESSELS IN PERUVIAN WATERS)
9. Have there been any socio-political events that have impacted the fish supply chain?
    a. (PROBE FOR ANY IMPACT OF CHINESE FISHING VESSELS WITHIN PERUVIAN WATERS AND IF IT HAS LED TO NOTABLE EVENTS WITHIN THE FISH INDUSTRY / PERU IN GENERAL)
10. What can you tell us about the labor standards in the fish industry?
    a. What are the primary concerns across the industry when it comes to labor standards?
        i. (PROBE FOR FORCED LABOR AND CHILD LABOR AS CONCERNS)
    b. What are the different certifications available for companies in the supply chain?
        i. Is it common for companies to have these certifications (PROBE FOR SPECIFICS)
11. Are you aware of any ongoing supply chain traceability initiatives in the sector?
        i. (PROBE FOR SPECIFICS ON WHAT THE INITIATIVES ARE AND WHO IS PROMOTING THEM) (E.G. GOVERNMENT, INTERNATIONAL CORPORATIONS, DOMESTIC COMPANIES)

Domestic Use Theme Questions: (2, 3 4)

1. Can you tell me if fish and/or squid are used domestically? If so, in what domestic industries is fish and/or squid used in?
    a. What percentage of fish is utilized domestically?
    b. What are the major downstream goods produced domestically?
        i. (PROBE FOR VARIATION IN THE PRIMARY DESTINATION - DOMESTIC USE OR EXPORT - BASED ON SPECIFIC DOWNSTREAM GOODS IDENTIFIED PREVIOUSLY BY RESPONDENT)
        ii. Are any downstream fish products produced domestically exported?

Export Theme Questions: (3, 4)

1. What can you tell me about the export of fish? (PROBE FOR WHAT FISH-BASED PRODUCTS TEND TO BE EXPORTED)
    a. What percentage of processed fish is exported?
2. Who are the major trading partners for fish that are exported?
    a. (PROBE FOR WHAT MARKETS FOR FISH, FISHMEAL, AND FISH OIL EXIST, WITH PARTICULAR ATTENTION TO THE GROWING EXPORT VOLUME OF FISHMEAL TO CHINA).

Supply Chain Labor Exploitation Questions: (1, 2, 5)

1. How might one track fish caught at a particular vessel through the domestic supply chain?
    a. (PROBE FOR SPECIFICS BASED ON THE SUPPLY CHAIN OF A CORPORATE/ LARGE INDUSTRY PLAYERS VERSUS ARTISANAL AND SMALL-SCALE PRODUCERS.)
    b. Is there a point in the supply chain where you anticipate tracking would no longer be possible? (PROBE FOR SPECIFICS ON WHAT STAKEHOLDER THE TRACEABILITY ENDS WITH, EX: INTERMEDIARY BUYER, EXPORTER, ETC.)
    c. (Specific probe) When does the mixing of fish from different sites occur, and how does mixing occur? (PROBE: Are you aware of certain sites or regions more likely to use child labor – PROBE FOR SPECIFICS)
2. What is your overall impression of working conditions in the fish industry?
    a. What factors make a worker in this sector more vulnerable to forced labor?
        i. (PROBE FOR SPECIFICS ON DEMOGRAPHICS – AGE RANGE, GENDER, MIGRATORY STATUS)
        ii. (PROBE: Are you aware of any factors that lead to child labor?)
        iii. (IF SO, PROBE FOR: Who are the children most likely to perform work activities in the fish industry?
    b. Are you aware of any industries or occupations in which workers are working on an involuntary basis or are otherwise unable to leave their jobs?
        i. (PROBE: What about child workers specifically?)
3. During which stages of the fish supply chain are risks for forced labor most prevalent?
    a. What are the risk factors at each stage (particularly fishing and fish processing)
        i. PROBE FOR SIMILARITIES AND DIFFERENCES
    b. What about risks for child labor? (PROBE FOR RISK FACTORS AT EACH STAGE: Are children involved in fishing, processing, or sales of fish?)

c. If so, to what extent are children involved? (PROBE FOR SPECIFICS ON ARTISANAL OR INDUSTRIAL FISHING)

4. If there are concerns of forced labor, what types of downstream goods are being produced from fish obtained through forced labor
    a. Are any of these goods also made with fish obtained using child labor? - Please explain.
5. IF there are concerns of forced labor, who are the main stakeholders in the fish industry of Peru involved in the sale and processing of fish obtained using forced labor?
    a. Are these stakeholders also involved in the sale and processing of fish obtained using child labor? (PROBE FOR DETAILS)

(For applicable studies) Additional Questions for Interviews for Supply Chain KIIs Outside of Peru) (6)

1. Globally, which industries/companies in other countries import fish or downstream products from Peru?
    a. (PROBE FOR SPECIFIC COUNTRIES AND COMPANIES)
    b. (PROBE FOR WHAT TYPE OF DOWNSTREAM PRODUCTS ARE EXPORTED, WHAT ARE THE MOST COMMON TO EXPORT.)
2. At what stage of the supply chain do fish imports become mixed with domestically produced fish? Please explain.
3. Does the downstream use of fish from Peru differ from the downstream use of domestically produced fish?

Conclusion

1. Could you suggest any organizations or individuals that are well-informed about the fishing supply chain that we could interview?
2. Is there anything else you would like to add?

Labor Conditions KIIs (ALL KIIs)

Labor Conditions Questions: (CAN BE ASKED OF ALL KIIs, IF KIIs DO NOT NOTE ANY ISSUES IN LABOR IN QUESTIONS 1 AND 2 END THE INTERVIEW. ADDITIONALLY, PRIORITIZE QUESTIONS ON NEGATIVE LABOR CONDITIONS WITH NGOs AND CSOs, FISHER ASSOCIATIONS, FISHERY OWNERS, AND UNIONS).

1. (IF NOT ALREADY ASKED IN SUPPLY CHAIN QUESTIONS) What is your overall impression of working conditions in the fish industry?
    a. What are the main issue areas you are aware of?
        i. (PROBE FOR FORCED LABOR IF NOT MENTIONED)
    b. Have you noticed any changes in the working conditions of the fish industry over the last few years?
2. What do you think of worker-employer relations in the industry?
3. (IF FORCED LABOR HAS BEEN MENTIONED) What are the main risk factors associated with the use of forced labor in the fish industry?
4. Are you aware of the presence of child labor in the **fish industry**?
    a. If so: in your opinion, how prevalent is the use of child labor?
        i. Are certain sites, employers, or regions more likely to use child labor?
        ii. (PROBE FOR DIFFERENCES IN PRESENCE BETWEEN LAKE FISHING AND COSTAL FISHING)
        iii. (IF LAKE FISHING IS MENTIONED, PROBE FOR HOW DOES CHILD LABOR MANIFEST SPECIFICALLY IN LAKE TITICACA?
    b. If so: Are certain children more likely to be involved in child labor? (PROBE DEMOGRAPHICS)

(BASED ON THE RESPONDENT ANSWERS TO THESE FOUR QUESTIONS PROCEED TO EITHER THE CHILD LABOR OR FORCED LABOR SET OF QUESTIONS. DETERMINE BASED ON THE EXPERTISE / DEPTH OF KNOWLEDGE EXPRESSED BY THE INDIVIDUAL AND THEIR ROLE)

IF KIIs DO NOT NOTE ANY ISSUES IN LABOR IN QUESTIONS 1 OR 2 END THE INTERVIEW

Forced Labor Questions

FL Questions on Recruitment (2, 3, 4, 5, 6)

1. In your understanding, how do individuals become employed in the fish industry?
    a. (PROBE AS RELEVANT): How common is employment through a subcontractor or through an employment agency?
        i. If so, what is the relationship between the subcontractor/agency and the owner of the worksite?

b. What are the specific recruitment methods used and do they differ among types of employers?

(INTERVIEWER: IF THE RESPONDENT DOES NOT HAVE INSIGHTS INTO RECRUITMENT BASED ON THIS INITIAL QUESTION MOVE ONTO THE NEXT SECTION)

2. Are promises made to workers a part of the recruitment methods used? If so what kinds of promises?
    a. If so, who is the one making the promises?
    b. In your opinion/experience are those promises being met?
3. Based on your understanding/experience are third-party recruiters used in recruitment for the industry?
    a. If yes, please explain their role and relative importance (what percentage of positions are filled by or what percentage of employers use recruiters)?
    b. Are you aware of any fees / the typical amount associated with the use of recruiters in the fish industry?
4. Do workers in the fish industry typically have a contract?
5. Are contracts typically verbal or written?
    a. If written, do workers usually understand the contents of the contract? (PROBE FOR SPECIFICS: written in a language the worker can understand; the worker is literate or allowed to have someone read it; the worker is given sufficient time to examine the contract)
6. Are you aware of any reports of anyone being sold or taken by force to work in the fish industry?
    a. PROBE FOR SPECIFICS ON: (FISHING BOATS, PROCESSING FACILITIES)

Earnings, Hours, Benefits & Debt (2, 3, 5, 6)

1. In your experience, what are the key issues that workers face in terms of their wages and benefits in the fish industry?
    a. Do workers get paid regularly and on time? How and how often are they paid?
    b. Do workers encounter situations of withheld wages or wage deductions?
    c. Do workers typically receive more or less than the minimum wage?
        i. If less are you aware of coercive practices used to set a worker's wage?

Do workers receive additional benefits, and if yes what are those?

(INTERVIEWER: IF THE RESPONDENT DOES NOT HAVE INSIGHTS INTO WAGES AND PAY BASED ON THIS INITIAL QUESTION MOVE ONTO NEXT SECTION)

2. Are workers paid according to a piece rate / quota system? (PROBE FOR WHETHER THIS VARIES DEPENDING ON THE POSITION IN THE SUPPLY CHAIN)
    a. What are the typical targets that workers have?
    b. In your experience/opinion are those targets achievable/reasonable? (PROBE FOR STRATEGIES USED TO ACHIEVE TARGETS)
3. How many hours does a worker typically work? Are they paid for all hours worked?
    a. How often do employees work overtime or past their agreed hours?
    b. *What happens to a worker if they refuse to work overtime or past their agreed hours?*
    c. Are workers paid the legally required overtime rate? (If applicable)
4. Is it common for workers in the fish industry to be in debt to employers or recruiters?
    a. What kinds of borrowing and pay-back arrangements have you seen?
    b. How often are workers unable to leave their jobs because of debt to an employer or recruiter?
        i. Could you give me a sense of the percentage of workers who experience this?

Working Conditions, Hazardous Work & Coercion: (1, 2, 3, 5, 6)

1. (IF NOT ALREADY ASKED IN SUPPLY CHAIN QUESTIONS) What are the main risk factors for labor exploitation in the fish industry?
    a. In what segments of the industry and its supply chain is exploitation most visible?
    b. Are you aware of specific companies and/or production sites throughout the supply chain that are particularly exploitative?

2. What are the most common hazards workers tend to face in the **fish industry**?

3. In your understanding, are there sufficient health and safety standards in place in the **fish industry?**
    a. Please explain.
    b. PROBE FOR THE DIFFERENCE BETWEEN ARTISANAL AND SMALL-SCALE FISHING VERSUS LARGE-SCALE AND INDUSTRIAL FISHING?
4. Is it commonplace to hear of or witness coercion or threats from employers toward workers in the fish industry?
    a. PROBE FOR SPECIFICS ABOUT SITUATIONS WHEN THIS IS COMMON (EX. NOT MEETING QUOTA, WHEN A WORKER WANTS TO QUIT, ETC.) + FACTORS THAT MAKE A WORKER MORE LIKELY TO EXPERIENCE THIS (GENDER, MIGRATION STATUS, RACE, RELIGION, AGE, ETC.)
    b. Could you give me a sense of the percentage of workers who experience this?

5. Can workers in the fishing leave their jobs if they choose?
    a. If not, why / in what situations? (PROBE ABOUT WORKERS IN DEBT)
    b. Do workers who leave or attempt to leave their job face any consequences?

Surveillance & Living Conditions

1. What kind of involvement do employers have in workers' lives outside of work? (PROBE FOR WORKERS LIVING AT EMPLOYER-PROVIDED HOUSING, ON BOATS WHO SPEND EXTENDED PERIODS AT SEA).
2. How do workers access goods and services to meet their basic needs?
    a. Where do workers buy food and clothing?
        i. Are workers reliant on employers for these items? How often?
        ii. Are these items ever bought on credit? Under what conditions?

(INTERVIEWER: IF THE RESPONDENT HAS NOT SHOWN INSIGHTS INTO LIVING CONDITIONS BY THIS STAGE, MOVE ON TO THE NEXT SECTION)

3. Can you describe the living conditions of those living in (PROBE FOR WORKERS LIVING AT EMPLOYER-PROVIDED HOUSING, ON BOATS WHO SPEND EXTENDED PERIODS AT SEA)? PROBE FOR SPECIFICS ON ACCESS TO WATER, BUILDING MATERIAL OF HOMES, TYPICAL NUMBER OF PEOPLE TO A DWELLING OR THE NUMBER OF FAMILIES TO A DWELLING, ETC.
    a. FOR THOSE LIVING ON BOATS DURING EXTENDED PERIODS AT SEA, PROBE FOR SPECIFICS ON HOW LONG THEY ARE OUT AT SEA/LIVING ON BOATS.
    b. PROBE FOR SPECIFICS ON WHETHER HOUSING IS PROVIDED FREE OF CHARGE WITH A FEE? IF THERE IS A FEE HOW MUCH IS IT AND HOW/WHEN DOES THE WORKER PAY?
4. Do employers monitor or limit the communications of their workers? If so, how? (PROBE FOR DIFFERENCES BETWEEN FISHERS AT SEA AND WORKERS AT PROCESSING FACILITIES)
5. Are you aware of workers being locked in or under guard while they are working? (PROBE FOR SPECIFICS FOR WORKERS AT PROCESSING FACILITIES)
6. Who holds the workers' identity documents? (PROBE FOR DIFFERENCES BETWEEN FISHERS AT SEA AND WORKERS AT PROCESSING FACILITIES)
    a. How can workers access or regain possession of their documents?

Grievance Procedures & Industry/Government Initiatives:

1. In your experience, what understanding do workers in the fish industry typically have of their rights?
    a. What are the areas in which worker awareness is low?

(INTERVIEWER: IF THE RESPONDENT HAS NOT SHOWN INSIGHTS INTO WORKERS' RIGHTS BASED ON THE INITIAL QUESTION, MOVE ONTO THE NEXT SECTION)

2. What mechanisms are available for submitting grievances?
    a. Have you heard of or observed any retaliation for the submission of grievances?
3. Are you aware of any efforts by government entities or others to improve labor conditions in the fish industry?
    a. If so, please explain.
    b. In your opinion, are there key gaps in policy and practice from the government and/or industry in terms of workers' rights and working conditions?

CHILD LABOR QUESTIONS **(PRIORITIZE THOSE THAT SHOWED KNOWLEDGE OF CHILD LABOR PREVIOUSLY IN THE INTERVIEW)**

1) In your opinion, are there main drivers of child labor in the fish industry? If so what are they?
    a) What might incentivize an artisanal or industrial fishery to utilize child labor?
    b) (PROBE FOR DIFFERENCES BETWEEN LAKE FISHING AND COASTAL FISHING)
2) At what stages of production in the fish industry is child labor present?
    a) (PROBE FOR DIFFERENCES BETWEEN LAKE FISHING AND COASTAL FISHING)
    b) Are certain stages more likely to use child labor than others? Please explain.
    c) Are certain types of catch more likely to use child labor than others? (PROBE FOR SQUID OR ANCHOVIES)
    d) What types of activities do children engage in at each stage?
        i) (PROBE FOR DIFFERENCES BETWEEN LAKE FISHING AND COASTAL FISHING)
3) (IF NOT ALREADY ASKED IN SUPPLY CHAIN SECTION) At what point in the supply chain does fish potentially caught with child labor on artisanal and small-scale sites become integrated into the wider supply chain?
    a) (PROBE FOR SPECIFICS ON VARIATIONS BETWEEN SQUID OR ANCHOVIES CATCH)
    b) Can children leave their job if they chose to?
        i) If not, who or what prevents them from leaving?
4) Are children paid for their work?
    a) IF SO, in what form? (Hourly or piece-rate, cash, or another means)
    b) IF NOT, why?
5) When are child workers typically engaged in labor activities?
    a) (IF NOT ANSWERED PROBE)
        i) Number of hours a day/week?
        ii) Number of days a week?

iii) Seasonal or year-round?

iv) During or after school hours?

6) In your opinion/expertise what percentage of children engaged in child labor are able to attend school?
    a) If able, how often?
    b) If unable, why?
    c) Based on your expertise, at what age do children stop attending school to work?
7) What kinds of dangers or hazards are children working in the fish industry exposed to (PROBE BASED ON LAKE FISHING AND COASTAL FISHING)?
    a) Are children provided with protective gear? What kind?
    b) Are you aware of any reports of children being injured while working? Please explain.
    c) Have you heard of children working in the fish industry being mistreated in any way? Please explain.
8) Are you aware of any efforts by government or non-government entities to prevent or remove children from child labor in the fish industry?
    a) If so, please explain (WHO AND WHAT)
9) What industry initiatives are you aware of to address/prevent the use of child labor in the fish industry?
    a) (PROBE FOR OPINIONS ON EFFECTIVENESS AND HOW INITIATIVES ARE ENFORCED)
10) What are the relevant laws used to safeguard against the use of child labor in the fish industry?
    a) (PROBE FOR ANY ARTISANAL FISHING SPECIFIC LAWS)
    b) How are these laws enforced?
    c) In your opinion, how effective are these laws at preventing/addressing child labor?
        i) What factors limit their effectiveness?

Conclusion:

1. Could you suggest any organizations or individuals that are well informed about the fish supply chain or forced labor and child labor in the industry that we could interview?
    a. What about any publicly available industry reports/publications
2. Is there anything else you would like to add?

1. **(Target Good) Worker Interview Protocol Question Bank (26 Questions)**

Interviewer:	Date (DD/MM/YY)
Location of interview:	
Name (code, do not take respondent's real name):	Sex:
Profession (if applicable):	
Position (if applicable):	
Employer/Affiliated Institution/Organization (if applicable):	
Contact information (office address, phone number, email):	
Time interview started:	
Time interview ended:	

Interviewer instructions:

Foster a dynamic conducive to gathering good data. The interview should have the relaxed feel of a conversation. Set the tone by using a slow pace in your speech.

Ask one question at a time. Give the respondent ample time to reflect and fully respond before moving to the next. Try not to interrupt, and do not answer on their behalf.

If the respondent agrees to be recorded, give them your full attention. Make note of any follow-up questions you want to remember to ask, but otherwise focus on the respondent rather than your paper.

Probe for more depth, particularly when responses are brief. Use phrases such as, "Tell me more about that" and "Can you give me an example?" Aim to get specific instances, in considerable detail, whenever possible.

You do not have to ask each question verbatim, but at least broach all the topics covered that are relevant to the worker by the guide. If a respondent makes clear they have no knowledge of that topic, move on to the next. Adapt the flow and questions to make them relevant to the respondent.

For each item, ask the general question first, and then probe the sub-items that have not been addressed spontaneously.

Introduction:

1. Could you please tell me about your work?
    a. How long have you been doing it?
    b. Can you please explain how you got this job?
        i. (PROBE FOR RECRUITER INVOLVEMENT, FEES, DEBT FROM HIRING)
2. Do you have any children and if so, how old are they?
3. (IF RESPONDENT HAS CHILDREN, IF NOT SKIP) Do your children work in fishing? Why or why not?
    a. IF SO, what tasks do they perform?
        i. Are they assisting you or performing other tasks?
    b. IF SO, how often do they accompany you to the fishing location whether offshore or onshore?

(FOR INTERVIEWER: IF THE RESPONDENT DOES NOT HAVE CHILDREN OR DOES NOT HAVE CHILDREN THAT WORK IN FISHING SKIP TO SECTION: FOR RESPONDENTS WITHOUT CHILDREN WORKING IN FISHING)

1. "Is your child compensated for their work? If so, how?"
    a. Are they paid directly, if not how are they paid?
2. How many hours a day does your child work?
    a. What hours do they work?
    b. Is this the same each week?
    c. Are there certain times of the year they work more or less?
3. Are there certain tasks that your children do that adult workers do not?
    a. Please explain (PROBE FOR SPECIFIC LOCATION IF NOT MENTIONED ALREADY: BOATS, PROCESSING FACILITIES, HOME-BASED WORK)
    b. What activities are more suited to younger children? What about adolescents?
4. At what age did your children start working in fishing?
5. Who decided that your child would work?
    a. What led to this decision?
    b. Has your child ever refused to work? If so, how did you respond?
    c. What would happen if your child wanted to stop working?
6. What changes would need to happen in your household or community for your child to not work in fishing activities?

7. Have your children experienced any challenges accessing schooling in your community? If yes, please explain. Does your child attend school currently?
    a. Do any challenges relate to your children's participation in fishing activities?
    b. If your child works and attends school, do you think this affects their schools?
        i. If yes how does work affect their schooling?
8. Do you consider any of the work your child does/ has done while fishing to be dangerous?
    a. Why or why not?
    b. Have you seen your child(ren) being injured?
        i. If so, please explain.
    c. Have you seen any children being mistreated?
        i. If so, by whom? Please explain.
        ii. If so, did you feel that you could speak up about what you witnessed?
            1. If so, please explain.
            2. If not, what are your main concerns of what would happen if you did?
9. Have you witnessed other children than your own working in fishing locations?
    a. If so please explain (PROBE WHO THOSE CHILDREN ARE WITH, HOW OFTEN, COMMON AGE/GENDER)
10. Are your children performing activities on the worksite treated the same as adults such as yourself? If not, what is the difference?
    a. Who treats them differently?
11. In your opinion, at what age should people start working in fishing?
    a. (IF PEOPLE BEGIN WORKING EARLIER THAN THE RESPONDENT THINKS THEY SHOULD) Why do you think people begin working sooner? Any other reason?
12. How do people in your community feel about children working in fishing?
    a. How has this changed over the last few years?
13. In your perspective how does your child feel about their participation in the industry? Please explain.

((INTERVIEWER: THANK THE RESPONDENT FOR THEIR PARTICIPATION AND INSIGHTS SO FAR. INFORM THEM THAT YOU ARE DONE ASKING ABOUT WORKING CONDITIONS AND HAVE TWO FINAL QUESTIONS FOR THEM. INFORM THEM THAT ONE QUESTION WILL BE ABOUT FISH CAUGHT ON THEIR VESSEL OR PRODUCED IN THEIR FISH PROCESSING FACILITY AND THAT WHILE THEY MIGHT NOT HAVE A COMPETE ANSWER ANY INSIGHTS, THEY HAVE FOR US WILL BE VALUABLE.))

Supply Chain:

14. After the fish are caught and leave the vessel, do you know where they go? Who buys and sells the fish?

Conclusion:

15. Is there anything else you would like to add?

FOR RESPONDENTS WITHOUT CHILDREN WORKING IN FISHING

1. In the past year have you worked alongside children or seen children performing work-related activities at your worksite?
    a. IF YES: what activities (PROBE FISH CATCH, DEPLOYING FISHING EQUIPMENT, MONITORING CATCH QUANTITIES AND SPECIES, PROCESSING FISH ON BOARD OR AT COASTAL FACILITIES, PACKAGING FOR DISTRIBUTION, ETC)
    b. IF YES: Which type(s) of children? (PROBE THEIR APPROXIMATE AGE (TODDLER, ADOLESCENT, TEEN) GENDER?)
        i. Are there certain tasks that children do that adult workers do not?
    c. IF NO: (MOVE TO FORCED LABOR QUESTIONS OR END INTERVIEW IF 10 INTERVIEWS ON FORCED LABOR ONLY HAVE BEEN CONDUCTED)
2. (SKIP IF RESPONDENT ANSWERED NO TO QUESTION 1) Do you consider any of the work you have seen children doing on the fish industry to be dangerous?
    a. Why or why not?
    b. Have you seen your child(ren) being injured?
        i. If so, please explain.
    c. Have you seen any children being mistreated?
        i. If so, by whom? Please explain.

FORCED LABOR QUESTIONS

3. Do you have an employer, or do you work for yourself? (IF THEY WORK INDEPENDENTLY, PROBE FOR SPECIFICS ON WHETHER THEY WORK UNDER SOMEONE'S SUPERVISION/SOMEONE OVERSEEING THEIR WORK OR SOMEONE ELSE THAT COULD BE CONSIDERED AN "INFORMAL" EMPLOYER)

(INTERVIEWER: IF THE RESPONDENT ANSWERS THEY WORK INDEPENDENTLY, EVEN AFTER PROBE, THANK THE RESPONDENT FOR THEIR PARTICIPATION AND INSIGHTS SO FAR. INFORM THEM THAT YOU ARE DONE ASKING ABOUT WORKING CONDITIONS AND HAVE TWO FINAL QUESTIONS FOR THEM. INFORM THEM THAT ONE QUESTION WILL BE ABOUT FISH CAUGHT ON THEIR VESSEL OR PRODUCED IN THEIR FISH PROCESSING FACILITY AND THAT WHILE THEY MIGHT NOT HAVE A COMPLETE ANSWER, ANY INSIGHTS THEY HAVE FOR US WILL BE VALUABLE. SKIP TO THE SUPPLY CHAIN QUESTION))

4. Do you have a verbal or written contract or agreement with your current employer?

a. If you have a written contract, were you given a chance to review it? Did you understand the contents? (PROBE: WHETHER RESPONDENT IS LITERATE OR HAD THE CONTRACT READ TO THEM, WHETHER RESPONDENT SPEAKS THE LANGUAGE OF THE CONTRACT)

    i. (IF WRITTEN) Do you have a copy of your contract?

5. Do the actual terms of your work match what you were originally promised? (Example type of work, location, wages, etc.)

    a. If not, please explain.

6. Do you know what the conditions for ending your contract are if you wanted to leave?

7. Please describe your relationship with your employer

    a. Have you ever experienced any harassment or abuse by your employer? If so, how have you dealt with it? (PROBE TO UNDERSTAND HOW HARASSMENT/ABUSE MANIFESTS)

    b. Do you know or have you seen other workers experience any harassment or abuse? Can you describe an example? (GENTLY PROBE FOR DETAILS)

8. How do you assess your workload? Do you have enough time during your normal hours to do your work?

    a. Do you work daily, weekly, monthly, or seasonal? How many hours do you work? What is your workload or daily target for your tasks?

    b. Does your employer do anything to make you work harder or faster? If so explain

    c. What happens when workers do not meet their workload or target? PROBE FOR PENALTIES/THREATS.

9. Do you work overtime, if so how often/for how many hours (daily, a few times a week, etc.)? (PROBE FOR SPECIFIC DEPENDING IF INTERVIEWEE WORKS DAILY, WEEKLY, MONTHLY OR SEASONAL)

    a. If applicable, are you paid the legally mandated amount?

    b. Could you turn down overtime if you wanted or do you feel compelled to work overtime? How would your employer respond if you turned down overtime?

10. Can you tell me how and how much you are paid?

    a. How often are you paid? Is this always the same or does it change? Please explain.

        i. Who pays you?

        ii. Are your payments from your employer ever late or withheld? If yes, please explain.

    b. Are you paid by the hour or by piece-rate (production) or by workday (journey)? Is this the same pay you were promised before you started working?

11. If you are paid in piece-rate, do you think you are paid fairly for the work you do? Why or why not? Have you taken on any debts from your employment?
    a. If so, to whom?
    b. If so, in exchange for what?
    c. How long have you been in debt and how are you repaying it?
        i. What are the terms of your debt (interest, repayment date, etc.). Do these feel fair? If not, why?
12. What are the most hazardous (dangerous) parts of your job? How frequently are you performing those tasks?
    a. Were these tasks clear to you before you started the job?
    b. Are you provided the proper equipment to conduct these tasks safely?
    c. What effects have these tasks had on your health and safety?
        i. (IF NOT ANSWERED) Have you ever been injured on the job? If so. please elaborate.
13. If you are unhappy about your pay, working conditions, hours, etc., is there a way for you to report these complaints/grievances (workers association, union, industry co-operative, etc.)?
    a. How does your company react to worker complaints (such as complaints about: wages, quotas, etc.) and grievances?
14. Do you know or have you seen other workers experience any harassment or abuse? How did they deal with it?
    a. To your knowledge is this a common problem in this industry?
15. If you had to leave work for any reason, would you be able to do so?
    a. If not, why? (PROBE FOR SPECIFICS ON WORKERS AT PROCESSING FACILITIES OR FISHERS WORKING ON BOATS)?
    b. What about breaks for going to the bathroom or eating a meal? - Please explain (PROBE If you cannot take a break to use the bathroom or have a meal what prevents you from doing so?)
16. Please tell me a little about the place where you live (PROBE IF HOUSING IS EMPLOYER PROVIDED)
    a. Do you live in any form of employer provided housing? (PROBE FOR DIFFERENCES BETWEEN WORKERS LIVING AT EMPLOYER-PROVIDED HOUSING, OR ON BOATS WHO SPEND EXTENDED PERIODS AT SEA)?
        i. If you live in employer provided housing – did you choose to do so or was this required by your employer? Why? What are the advantages/disadvantages?
            1. (PROBE IF NOT MENTIONED) Are you required to pay for this housing?

2. (PROBE IF NOT MENTIONED) Do you have freedom to leave your housing during non-work hours, are there certain instances where you cannot?

b. Where do you buy food and clothing?

i. Do you ever buy these items with credit? Under what terms?

17. Do you know what the conditions for ending your contract or employment are if you wanted to leave?

a. Have you ever heard of your employer doing anything to prevent a worker from quitting? If so, please explain.

(INTERVIEWER: THANK THE RESPONDENT FOR THEIR PARTICIPATION AND INSIGHTS SO FAR. INFORM THEM THAT YOU ARE DONE ASKING ABOUT WORKING CONDITIONS AND HAVE TWO FINAL QUESTIONS FOR THEM. INFORM THEM THAT ONE QUESTION WILL BE ABOUT FISH CAUGHT ON THEIR VESSEL OR PRODUCED IN THEIR FISH PROCESSING FACILITY AND THAT WHILE THEY MIGHT NOT HAVE A COMPLETE ANSWER, ANY INSIGHTS THEY HAVE FOR US WILL BE VALUABLE.)

Supply Chain:

18. After the fish are caught and leave the vessel do you know where they go? Who buys and sells the fish?

Conclusion:

19. Is there anything else you would like to add?