



Opportunity to Export Fish Directly From the Outermost Islands of Indonesia: Exploring Value Chain and Power Dynamics in Fisheries

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Abstract

The fishers in the outermost islands of Indonesia have an abundant fish catch but local markets have limited capacity to absorb large quantities of fish which limits the potential economic returns to the fishers. This research examines the current fishing value chain in the Sangihe and Talaud islands, which are considered the outermost locations in Indonesia. The study also investigates the roles and influence of each participant within the value chain and the potential for direct export of fishery goods from these islands, bypassing transit points. The contemporary fishing value chain, power dynamic, and fishery direct export issue were investigated through a series of interviews with relevant actors, field observations, and focus group discussions. The results show that the fishing value chain experiences congestion due to the absence of alternative channels for fishers to directly sell their catch, hence relying solely on intermediaries. It also found that fishers have a heightened vulnerability as they lack the capacity to negotiate seafood pricing. Sangihe and Talaud islands are favourable locations for the direct export of fishery goods to General Santos in the Philippines, which provides a potential viable solution for the expansion of the fisheries markets. Currently, the Sangihe local administration is taking steps to implement the direct export of fishing products. The General Santos Fish Port Complex authority and other fishing firms in General Santos have responded favourably to this initiative. These initiatives suggest that the outermost regions of Indonesia should be capable of influencing its geographical proximity to export destination countries for fostering economic development within the region.

Keywords: direct export, fisheries management, Sangihe Island, Talaud Island, fishers, middlemen, fish processing unit

Introduction

This paper focuses on Indonesia's outermost areas in the Sangihe Islands Regency and the Talaud Islands Regency, two districts situated in close proximity to the southern Philippine Sea (Fig. 1). The land area of the Sangihe Regency measures 736.98 km², with an additional water area of 11,126.61 km². In comparison, the Talaud Islands Regency is larger, comprising a total land area of 1,251.02 km² and a water area of 25,810.14 km². The Sangihe and Talaud water areas are encompassed within Indonesia's Fisheries Management Area 716, commonly referred to as FMA716. According to the Ministry of Marine Affairs and Fisheries order number 19 (2022), the utilisation rate of

fisheries resources in WPP716 is projected to fall within the fully exploited category. It is imperative that the government exercises caution in closely monitoring export circumstances to prevent overexploitation of the fisheries resources in this region.

Regardless of the proximity to the Philippines, Sangihe and Talaud regencies have yet to establish direct export channels for their fishery products. Fishery products from Indonesia's outermost areas must first be transported to major cities, serving as transit points, before being shipped to their destination country. Despite the closer proximity of the border area to the destination country, the current export



Fig. 1. Research location in Sangihe, Talaud, and Manado (North Sulawesi), Indonesia. Yellow line shows the northern boundary of Indonesia's exclusive economic zone. The port city of General Santos in the Philippines is also shown. The port city of Surabaya, Java is ~2,500 km southwest of Sangihe Island.

arrangements negate the advantage of proximity to international markets and result in additional expenses for export (Wardono et al., 2020; Mustakim et al., 2021). The current arrangements require that fisheries products are transported from Sangihe and Talaud islands to Bitung or Surabaya, prior to shipment to international destinations. This arrangement can be attributed to the inadequate infrastructure and transportation facilities available on the islands to facilitate export activities in border regions (Adam, 2018; Rizal et al., 2022; Wardono et al., 2022).

In 2016, Sangihe and Talaud regions each established an Integrated Marine and Fisheries Centre (IMFC), envisioned to serve as a comprehensive hub for marine and fisheries activities, including the entire value chain from upstream to downstream, in accordance with the geographical scope of the area. One of the primary goals of founding the IMFCs was to facilitate the generation of foreign exchange through the export of fishery products. Additionally, the IMFCs aimed to expedite local economic growth in the outermost regions. However, a field study by the border research team affiliated with the Indonesia National Research and Innovation Agency (BRIN) in 2021, as well as a study by Bataha (2018), on the development of the institutions and marine and fisheries businesses within the two identified IMFCs identified that they have encountered challenges and have not been effectively implemented yet. As yet, neither of the IMFCs has played a significant role in the fishery value chain that facilitates the direct export of fishery goods from the outermost areas (Bataha, 2018; BRIN, 2021).

The value chain concept includes issues of governance (rules that operate in value chains) and coordination (formal and informal arrangements between actors), and strategies for developing relationships and trust between actors in the chain (Pomeroy et al., 2017). Power represents a central subject in the examination

of global value chains and production networks (Dallas et al., 2019). Commonly, power refers to the dynamic between multiple actors, where the influence of one actor affects the behaviour of others (Tolbert and Hall, 2016). The value chain and power dynamics approach serves as an adjustable and descriptive tool used to analyse the interactions among various actors. In some studies, the value chain and power dynamics can also be used to analyse an economic system to identify areas for improvement.

The fishery business processes in the outermost areas of Indonesia face constraints in terms of market access, limited fish processing units, and limited involvement of fishers in determining fish prices (Solihin et al., 2011; Triyanti et al., 2021; Bintang et al., 2022). According to M4P (2008), it is crucial to enhance the value chain of fishing businesses in the outermost areas of Indonesia. The close geographical proximity of the Sangihe and Talaud regencies to the Philippines and other Pacific countries presents a significant opportunity for direct export activities from the islands. Additionally, this initiative has the potential to enhance the value chain of the fishing sector. Moreover, the export of fishery products has the potential to enhance the economic value of fisheries within a given region. These outcomes include establishing fresh markets for fishery products, promoting sustainable public infrastructure development, generating employment opportunities, and advancing fishing vessel technology (Eggert and Grecker, 2009; Saptanto and Soetjipto, 2010).

This paper analyses the present value chain of fishery activities in Sangihe and Talaud regencies as one of the outermost regions in Indonesia, as well as the role and power of each actor involved in the value chain. Furthermore, this study also investigates the potential for directly exporting fishery goods from Sangihe and Talaud regions, bypassing big cities (transit points) in Indonesia.

Materials and Methods

Ethical approval

Approval for the study was obtained from Social Humanities Research Ethics Commission, Indonesia National Research and Innovation Agency (Approval No. 006/KE.01/SK/3/2022).

Site selection

According to Setiawan et al. (2016), the regencies of Sangihe and Talaud are predominantly characterised by a significant water area, accounting for approximately 90 % of their total geographical coverage (Fig.1). These regencies also encompass a collection of outlying islands, with four located in Sangihe and eleven in Talaud. The main argument for selecting Sangihe and Talaud as research sites is their geographical location within the Fisheries Management Area (WPP) 716 (FMA716) of Indonesia, which is characterised by fully exploited conditions (Decree of the Minister of Marine Affairs and Fisheries Number 19 of 2022).

According to the Department of Fisheries in the Talaud Regency (2020), in 2019 the fishery catch production in Talaud was 13,556.92 tonnes, with skipjack tuna (*Katsuwonus pelamis*), and mackerel (*Decapterus* spp.) being the dominant species. Furthermore, according to the Central Bureau of Statistics Sangihe Regency (2020), Sangihe recorded a similar magnitude of total fish production 14,426.99 tonnes, with a significant dominance of the mackerel scad (*Decapterus russelli*). Moreover, Sangihe and Talaud are the outermost islands of Indonesia, situated in close proximity to the South Philippines Sea.

Data collection and analyses

The study was conducted over a period of 14 months, from May 2021 to July 2022. The study utilised interviews with open-ended and closed questions for primary data collection. A total of 50 interviews were conducted with a diverse group of actors, encompassing national, provincial, local government, and local actors, such as fishers, middlemen, and businessmen (Table 1). Prior to conducting the

interviews, the authors completed the necessary documentation to obtain ethical clearance approval from Social Humanities Research Ethics Commission – Indonesia National Research and Innovation Agency. The interviews were conducted using hybrid methods in response to the COVID-19 pandemic. Online interviews were conducted with actors in the national government based in Jakarta. Face-to-face interviews were conducted with local actors in Sangihe, Talaud, Bitung, and Manado.

This study utilised snowball sampling techniques to select the respondents. Respondents were selected based on specific criteria, including authorised experts and individuals with relevant expertise in the subject matter. Furthermore, the authors conducted focus group discussions and field observations in Sangihe and Talaud, specifically at the fishing port, local market, fish processing unit, and Integrated Marine and Fisheries Centre. These activities were valuable for analysing the daily fishery operations and assessing the potential for exporting fishery products directly to General Santos, Philippines. Secondary data were collected from various sources, including literature reviews, print and electronic media, as well as data provided by government and non-government stakeholders.

The primary objective of the interviews was to gain insight into the activities within the fishery value chain and the power dynamics present in the Sangihe-Talaud region. We conducted interviews to explore the roles of various stakeholders, programs pertaining to capture fisheries, the role of the Integrated Marine and Fisheries Commission (IMFC), as well as the facilities and challenges faced by government actors. We inquired about the daily transaction behaviour, fish trade regulations, relationships with other actors in the value chain, and opinions on the IMFC and direct export of fishery products to local actors (Supplementary Table 1). We examined the challenges and potential of the fishery business, both at the national and local levels, including the relevant regulations. Additionally, we identified the key actors who have the greatest influence in the fishery value chain. We employed Bush and Oosterveer's (2007) value chain analysis to examine the fishery value chain activities in the outermost islands and identify the key actors that facilitate the direct export of fishery commodities from the outermost islands. A focus group discussion was conducted in Sangihe, along with field observations of various locations in the islands such as the fishing port, local market, Fish Processing Unit, and Integrated Marine and Fisheries Centre in both Sangihe and Talaud. The purpose of these activities was to gain insight into the daily fishery activities and assess the potential for direct export of fishery products to General Santos, Philippines.

Table 1. List of key fisheries stakeholders interviewed in Jakarta, Sangihe, Talaud, Bitung, and Manado.

No	Informant	Total
1.	National Government	5
2.	North-Sulawesi Government	5
3.	Sangihe Government	10
4.	Talaud Government	7
5.	Local actors Sangihe	15
6.	Local actors Talaud	8
	Total	50

Results

Value chain in small outermost island in Indonesia

The fishery value chain in in Sangihe and Talaud comprises of fishers as primary producers, middlemen as intermediaries, and the Fish Processing Unit (FPU) or “Unit Pengolahan Ikan (UPI)” as companies responsible for distributing fishery products to consumers within Indonesia or internationally (Fig. 2). According to the fish production data in Sangihe for 2021, the total production was approximately 1,738.9 tonnes, with skipjack tuna (*Katsuwono pelamis*), and mackerel (*Decapterus russelli*) being the dominant species. In 2021, Talaud's total production amounted to approximately 2,653.3 tonnes, with a significant contribution from the same fish species (BKIPM Sangihe, 2022). The data from the interviews indicates that fish sourced from the Sangihe and Talaud regencies is transported to Manado and Surabaya i.e. the Sangihe and Talaud regions are contributing to the domestic supply of fishery products.

Fishers

Based on our assessment, which included interviews and field observations, fishers in both Sangihe and Talaud demonstrate notable similarities in their fisheries value chains and exhibit no significant differences in the types and activities of fishing (Fig. 2). The fisheries value chain begins with fishing activities, with fishers playing a central role in providing protein sources from fish (Fig. 2). There are

two types of fishers: (1) Independent fishers with their own vessels, fishing gear, and financial resources to capture fish. They sell their fish to collectors or “tibo-tibo” without being tied to any party. (2) Partnership fishers typically receive capital in the form of gasoline, ice, and fishing equipment and are obligated to sell their fish exclusively to collectors who provide this capital. They may, or may not, have a written agreement with collectors for this arrangement.

Typically, traditional fishing activities occur on Sangihe and Talaud Island from 5 PM to 6 AM. Fishers make between four and six trips per week, depending on the weather and sea conditions. Approximately 5 to 30 nautical miles separate the fish landing site from the fishing grounds. Fishers in Sangihe and Talaud used hand lines and purse seines (pajeko) as their primary fishing gear, with the average gross tonnage (GT) of their vessels ranging from 2 to 29. After fishing, fishers place their catch in a coolbox or ice-filled fish hold.

One significant issue faced by fishers, particularly independent fishers, is the insufficient availability of ice to preserve the freshness of fish. Based on information provided by our informant who is a fisher, the remote and outlying locations of Sangihe and Talaud islands result in restricted access to ice due to limited availability of electricity.

Middlemen

There are two types of middlemen: collectors and “tibo-tibo” (Fig. 2). The first type of middleman is the

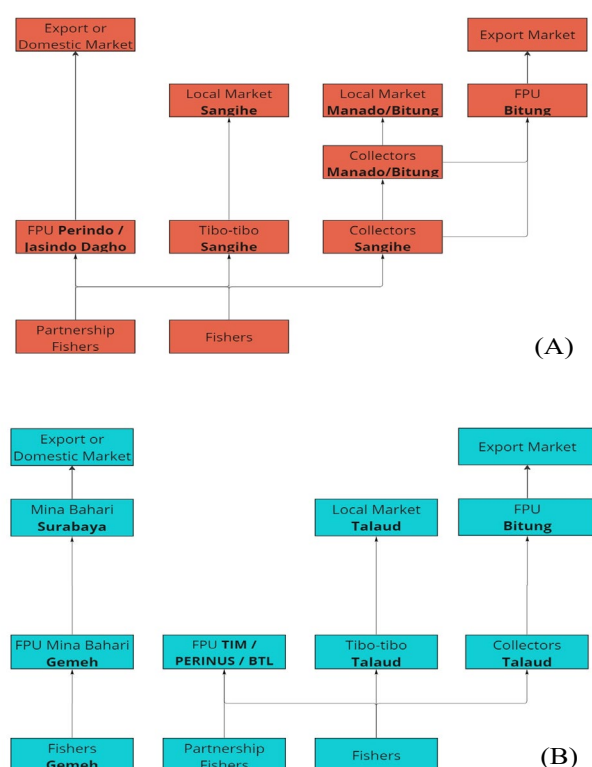


Fig. 2. Diagram of the Fishery Value Chain in (A) Sangihe and (B) Talaud determined from interviews and field observations. FPU = fish processing unit; “tibo-tibo” = fish collectors who buy fish from fisheries and sell to local markets either directly or through other processors.

collectors or “pengepul” in Bahasa Indonesia. Collectors played a pivotal role in this activity as they were responsible for purchasing fish from fishers and subsequently distributing it to other collectors in major cities such as Manado and Bitung, or to fishing processor units (FPUs). Furthermore, certain collectors also offer financial resources to support fishers in their fishing endeavours. According to our sources, collectors employ two mechanisms for their operations: (1) Selling fish to other collectors in Manado or Bitung. Fish are packed in styrofoam and transported through a conventional boat from Sangihe/Talaud to Manado/Bitung. Additionally, fish collectors in Manado or Bitung engage in reselling fish to local markets or FPUs in Bitung. (2) Selling fish directly to FPU in Bitung, bypassing other intermediaries. In this scenario, collectors are already linked to the FPU located in Bitung. Furthermore, the FPU in Bitung also provides funding for collectors. The system developed by the collectors and FPU in Bitung was an informal and unregulated personal trust system (Doddema et al., 2020).

The second type of middleman is the “tibo-tibo”, who buy fish from fishers and sell them to local markets, either selling it themselves or to collectors in the local market in Sangihe or Talaud (Fig. 2). “Tibo-tibo” buy fish in small quantities from fishers. The trade mechanisms of collectors and “tibo-tibo” were similar; they bought and then resold the fish as second parties. There were two kinds of “tibo-tibo”; the first one were those who bought fish directly from fishers and then sold it to the local market; and the second were those who sold fish directly to the community by going around the village or selling the fish in local markets. Furthermore, a fascinating case was discovered in Talaud, wherein the spouse of a fisher assumed the role of the “tibo-tibo”. The fisher transfers the fish to their spouse who sells it within the nearby market. Therefore, the distinction between collectors and “tibo-tibo” lies solely in the fish market where they sell their catch. “Tibo-tibo” exclusively engage in the sale of fish within the local market of Sangihe or Talaud Island, while collectors facilitate the trade of fish to other collectors or FPUs in Manado/Bitung. At present, the distribution of fish to the local market of Sangihe-Talaud or the FPU in Bitung represents the sole choices available to fisheries actors, as there is no means for directly exporting fish to the Philippines.

Fish processing unit (FPU)

The fish processing unit (FPU), commonly referred to as “Unit pengolahan ikan (UPI)” in Bahasa Indonesia, is a company engaged in the processing and distributing fish sourced from Sangihe and Talaud to various regions. The FPUs distributed their fish to larger FPUs and domestic markets in Indonesia, as well as exporting them indirectly through transporting fish to Surabaya or Jakarta (Fig. 2).

The primary distinction observed in the value chain between Talaud and Sangihe is the presence of FPU

Mina Bahari, situated in Gemeh village, Talaud (Fig. 2). FPU Mina Bahari was a regional fishing company that attracted external investors and has an air blast freezer (ABF) with a capacity of 32 tonnes, and a 400-tonnes cold storage room. They have established a collaborative partnership with local fishers from Gemeh village. Additionally, they distributed their fish to fishing companies located in Surabaya. Fish delivery was conducted using a reefer container named KM Jalasena, which had a capacity of 15 tonnes per container. A minimum of two fish containers are transported to Surabaya each week.

The fishing activities in remote areas, such as Sangihe and Talaud, encounter significant challenges, primarily related to infrastructure. The capacity of cold storage and ABFs owned by FPUs in the Integrated Marine and Fisheries Centre (Jasindo and Perindo) was limited. Cold storage and ABFs limit the fish procurement capacity from fishers. Jasindo has a capacity of 15 tonnes for ABF and a cold storage room with a capacity of 200 tonnes. Perindo's ABF capacity is 3 tonnes, while their cold storage room can hold up to 30 tonnes. The capacity of CV Mina Bahari's cold storage in Talaud is smaller than that of ABF.

According to the manager of the FPU Mina Bahari, ice is sold exclusively to partnership fishers. Until now, fishers had relied on homemade ice, which has lower quality than ice manufactured in the factory. Jasindo and Perindo in Sangihe have expressed the need for additional competitors due to capacity constraints. This will greatly assist in addressing the needs of fishers who seek to sell all their catch, particularly during the harvest season.

Power in the existing value chain

The current value chain in the region has not adequately supported the expansion of the fisheries industry in terms of equitable distribution of value among fishers. The current fishery export and domestic demand value chain includes distribution to Manado, Bitung, Surabaya, and Jakarta. The limited capacity of the FPU and the local market resulted in a decrease in fish prices. Exporting directly to General Santos in the Philippines has the potential to generate higher profits. Prior to implementing direct export, it is necessary for the fisheries stakeholders in Sangihe and Talaud to identify the current power process.

The fishers displayed the greatest degree of susceptibility among all actors in the value chain (Table 2). Fishers in Sangihe and Talaud, as well as those in other small-scale fisheries, face challenges due to their limited understanding of market dynamics and inability to negotiate favourable fish prices, particularly for partnership fishers (Roberts et al., 2022). “Tibo-tibo” and the collectors determine the price, while the FPU establishes the price based on their market price calculation (Table 2). The fishers are not able to agree on a price with the buyer. The welfare

Table 2. Power processes and obstacles for the actors in the fisheries value chain in Sangihe and Talaud islands of Indonesia.

Role	Actors	Power	Obstacle
Fishers	Independent fishers	Alternative to sell fish to collector or "tibo-tibo" depending on highest price.	Limited ice supply, bargaining power to set price.
	Partnership fishers	Certainty of ice supply from FPU.	Bargaining power to set price, lack of capital, only sell fish to collector who provides capitals.
Middlemen	"Tibo-tibo"	Accessible cash and carry.	Only sell fish to local market
	Collectors	Capable of performing direct export. Accessible cash and carry.	Competition with other collectors for getting cheaper price.
Fish processing unit (FPU)	FPU	FPU determines the fish price	FPUs in Sangihe have limited ABS and cold storage capacity. Usually do not have direct cash and carry.

ABS = air blast freezer; "tibo-tibo" = fish collectors who buy fish from fisheries and sell to local markets either directly or through other processors.

of fishers in border areas confronted increasing challenges in due to higher costs associated with handling and transportation compared to landing sites in strategic areas including Bitung, Surabaya, or Jakarta. This was predominantly due to the impact of local market conditions on the market price.

According to our analysis, those who have the capability of carrying out direct export activities to General Santos are the tuna collectors in Sangihe, with support from the local government (Table 2). The collectors possessed significant influence over the fish trading operations and were willing to collaborate with potential foreign buyers. Our findings indicate that collectors possess potential due to the significant level of personal trust placed in them by fishers, who expected that the buying price would also increase with direct export.

Regarding cash and carry for fishers, collectors and "tibo-tibo" were more accessible than FPU (Table 2). Typically, collectors and "tibo-tibo" directly remunerated fishers in cash upon the completion of fish landing. Fishers had to undergo a lengthy process when selling their fish to FPU. Fishers required immediate capital and rapid sales in order to fulfil their daily financial requirements.

The Indonesian government established the Integrated Marine and Fisheries Centers (IMFC) under the Ministry of Marine Affairs and Fisheries to address export-related challenges. The establishment of the IMFCs was aligned with the presidential vision and mission, acknowledged as *Nawacita*, particularly in point 3: "To develop rural areas and enhance their role within the unified state of Indonesia" (Setiawan, 2019). The establishment of the IMFCs was intended to address the development needs of the outermost region's islands and promote the export-oriented fish industry. The objective of the IMFCs was to provide assistance to the local economy by promoting a shorter value chain and improving the efficient utilisation of fisheries resources. According to our

interviews with IMFC authorities in Sangihe and Talaud, there have been no direct export activities since the establishment of the IMFC in 2017. It was not operating optimally and was not active in direct fisheries export.

Discussion

This study utilises the value chain framework to analyse the process of upgrading within the fisheries value chain in remote Indonesian waters. The fishery value chain activities in Sangihe and Talaud islands are comparable to those observed in other parts of Indonesia (Kusumawati et al., 2013). The fisheries business process in Sangihe and Talaud islands, as depicted in Figure 2 of the value chain scheme, remains limited to local and nearby Indonesia markets. Our findings indicate that implementing direct export is crucial for upgrading in the value chain. Fishery activities refer to the various actions and operations related to the harvesting, processing, and distribution of fish and other aquatic organisms for commercial purposes. Sangihe and Talaud islands were primarily inhabited by small-scale fishers. Pascual-Fernandez et al. (2019) identified several factors that influence the sustainability of small-scale fishers as a livelihood, including value addition to fish, the ability to sell fish, and obtaining fair prices.

In Sangihe and Talaud regencies, fishers have limited options for selling their fish, primarily relying on local markets and collectors. Currently, collectors have limited market options for distributing fish, with the choices being either to distribute fish to the FPU in Sangihe or to collectors in Bitung. The prevailing circumstances frequently result in fluctuating fish prices in Sangihe and Talaud. Additionally, a critical concern pertains to the limited availability of ice produced by factories, which fails to adequately support fishermen in their fishing endeavours. Fish is a highly perishable commodity that decomposes rapidly and necessitates prompt and meticulous handling. Without the use of ice, the fish will be

deemed unsuitable for consumption because ice quality affects fish quality. (Derma et al., 2017; Duarte et al., 2020).

The primary issue encountered in the fishing industry in Sangihe and Talaud arises at the start of the fish harvesting season when fishing effort is high and larger numbers of fish are caught, exceeding the market's capacity to accommodate the surplus, leading to a decline in fish price. The fish processing unit (FPU), "tibo-tibo", and collectors have limited purchasing and fish storage capacity. As a result, fishers are compelled to sell their fish at lower prices during the harvest season, resulting in lower profits than anticipated. Local actors in the Sangihe and Talaud regions have high expectations that direct exports would access a wider market and increase prices.

The possibility of exporting fishery products from Sangihe and Talaud has been available since the establishment of the Integrated Marine and Fisheries Center (IMFC) in 2017. According to Minister of Marine Affairs and Fisheries Regulation Number 48 of 2015 (MMAF Regulation 48 of 2015), the IMFC constitutes a comprehensive centre for marine and fisheries business operations spanning from the initial stages (capture of fish) to the final stages (distribution of fish). The establishment of the IMFC aims to promote foreign exchange earnings by directly exporting fishery products, while also stimulating economic growth in the outermost regions (MMAF Regulation 48 of 2015). Establishing the IMFC in Sangihe has encountered numerous challenges, hindering the realisation of direct export of fishery products from Sangihe.

Operational challenges were encountered during the implementation of the IMFC in Sangihe. Initially, the area was governed by three levels of authority: regency, provincial, and national, each with different responsibilities: the Sangihe Regency holds land ownership; the North Sulawesi Province holds infrastructure ownership; and the national government owns the fish port. This situation of different responsibilities among levels of authority disrupted the implementation of IMFC activities, such as the allocation of responsibility for repairing and enhancing the damaged facilities, roads, and buildings in the area. Fisheries management issues often stem from power dynamics among stakeholders. Power plays a crucial role in capture fisheries as it provides individuals with the opportunity to participate and exert influence over decision-making processes related to the management of fisheries resources (Mozumder et al., 2020). The distribution of power in planning and policy corresponds to the understanding of how stakeholders have been strategically positioned to utilise their diverse capabilities to influence the policy process, specifically in the case of developing the IMFC in Sangihe and Talaud regencies (Autzen and Hegland, 2021).

One concern regarding the IMFC in the Sangihe Regency, specifically in Dagho, was its distance from local fisheries operations. Local fisheries activities are conducted in Tahuna, with fish being transported to the IMFC in Dagho by car (~40 km), which takes approximately one and a half hours. Kennedy (2018) suggested that improving accessibility of the IMFC for local fisheries activities would be beneficial. The fish production and export authorities were centralised in Tahuna. During the time of this study on Talaud, the IMFC, which had intentions of facilitating local ownership of private assets, was not operational.

Indonesia's border islands, including Sangihe and Talaud, possess significant potential for exporting fishery products such as tuna and mackerel. Small-scale fishing faces challenges in accessing export markets and obtaining pricing information, resulting in limited bargaining power and a lower share of market value for fishers (Adhuri et al., 2016). According to Bellman et al. (2016), approximately 40 % of global fishery products are traded through exports, with a particular in developing countries. Exporting fishery products can generate higher revenue compared to other commodities. Currently, the Sangihe and Talaud regions do not directly export fishery products. Instead, their fishery products are first sold to the fish processing unit in Bitung before being exported. This adversely affects the selling price of fish for fishers, as it ties them to the domestic fish price. The disparity between domestic and export fish market prices, particularly for tuna between the fish processing facilities in Bitung and General Santos, Philippines, is very significant. Thus, the market price of one kilogram of tuna sold in Bitung ranged from IDR45–70 thousand (~USD2.80–4.40) compared with that of IDR125 to 145 thousand per kilogram (~USD 7.80–9.05) in General Santos.

Multiple interviews revealed that the Sangihe local government has initiated the direct export of fishery products from Sangihe to General Santos. This started in 2019 when the Regent of Sangihe visited General Santos for a working visit to meet with the local government officials and businessmen in General Santos. The meeting focused on exploring potential business collaboration, specifically in the fisheries industry. General Santos is home to the General Santos Fish Port Complex (GSFPC), one of the largest fishing ports in the Philippines that serves as a major landing site for tuna commodities (USAID Oceans, 2017; Pechon et al., 2022).

Sangihe and Talaud regencies possess significant potential for exporting fishery products directly to General Santos. The potential of the situation was enhanced by the near collapse of the fishing industry at General Santos Fish Port and the resulting shortage of tuna supply following the implementation of much stricter fishing regulations in Indonesia in 2015 by the Minister of MMAF, Minister Susi. These regulations include the prohibition of foreign fishing vessels from

capturing fish in the Indonesian Sea and the prohibition of fish transshipment at-sea (Hanifan, 2017; Macusi et al., 2017).

The Sangihe government's plan to directly export goods from Sangihe to General Santos was postponed as a result of the Covid-19 pandemic. However, the GSFPC authority and the Bureau of Fisheries and Aquatic Resource region XII, Philippines, have responded positively to the initiative. The Consulate General of Indonesia in Davao City, Philippines sent a letter (1032/EK/10/2021/03) on October 11, 2021, to the Regent of Sangihe regarding the progress of the fishery direct export plan from Sangihe to General Santos, stipulating "The GSFPC Authority is prepared to receive fresh and frozen tuna imports from Indonesia for distribution to fish canning factories; thus it is required that all administrative documents pertaining to fishery exports from the originating country are completed".

According to the Indonesian Consulate General in Davao City, the local tuna supply in General Santos is inadequate to meet the demands of the fishing industry. The text also provides the names and requirements of General Santos fishing companies willing to accept tuna imports from Sangihe. Gentun Corporation required a daily supply of 300 metric tonnes, while Philbest and Ten Point Canning each required 250 metric tonnes per day.

Maritime connectivity, specifically marine transportation, is the primary focus in considering of export markets. According to Ksatrya (2018), the presence of strong connectivity and accessibility will create a new economic landscape for the outermost regions of Indonesia. There was no direct transportation available from the Sangihe and Talaud regions to General Santos. Despite this, the Sangihe local government is preparing for alternative methods of exporting fish to General Santos. One option is the utilisation of traditional methods for shipping, which involves the use of small fish transport vessels, ranging from 3 to 6 GT, which would travel from Sangihe to General Santos. Government Regulation number 20 of 2010 supports this option, which regulates cross-border marine transportation activities. One of the authorised cross-border marine transportation activities involves the route from Tahuna Port in Sangihe to General Santos Port in the Philippines. Additionally, the realisation of the proposed direct export from Sangihe Island to General Santos would also enable the export of fish from Talaud Island to General Santos through the Sangihe route.

The Sangihe local Government is currently in discussions with various stakeholders, including the fish quarantine and inspection agency, Directorate General of Surveillance and Control of Marine and Fisheries Resources, fisheries port authority, immigration office, customs office, sea police,

Indonesian Navy, local fishery business, and other agencies. The purpose of these discussions is to plan for the direct export of fishery commodities. Exporters of fishery commodities are required to comply with regulations set by government agencies to legally export their products.

There are various challenges in implementing the direct export initiative for Sangihe fishery products. The primary concern involves the submission of passport requirements for the ship crew responsible for transporting fish using a small vessel of 3-6 GT. A passport issuance recommendation letter from the local Manpower Office is required. According to Circular Letter 3/4/PK.02.02/V/2021 issued by the Manpower Minister of Indonesia, crew members are required to possess a certificate of proficiency in Basic Safety Training and a seaman's book in order to obtain recommendation letters. Furthermore, the ship's captain is required to possess a certificate of proficiency, indicating a minimum range of 60 nautical miles. The issue lies in the lack of necessary documentation among the majority of local vessel crew members in Sangihe. The Sangihe local government can address this issue by partnering with the private sector to send crew members to a training centre for Basic Safety Training and Seaman's book certification.

Conclusion

The fishery value chain in the Sangihe and Talaud regions serves as a specific illustration of the constrained nature of the fishery value chain in Indonesia's outermost regions. The market was unable to accommodate the surplus of fish caught by fishers during the harvest season, resulting in a decline in fish prices. Fishers had limited market options for selling their fish, primarily relying on the "tibo-tibo" and collectors. Moreover, the number of fish processing units (FPUs) in the rural area was considerably lower than in the urban area. Fishers in Sangihe and Talaud faced vulnerability within the fishery activities value chain, as they lacked power in negotiating fish prices. Collectors have the authority to regulate the allocation of fish originating from the Sangihe and Talaud regions. Currently, fish collectors distribute their fish solely to the FPUs located in Sangihe, Talaud, Bitung, and Manado. In situations of restricted market conditions, collectors can enhance market expansion by directly exporting fish to General Santos, Philippines.

This study investigated the feasibility and potential benefits from directly exporting fishery products from Sangihe and Talaud to General Santos in the Philippines. The positive response from the FPUs and the authority of General Santos presents an opportunity for the local Sangihe Government to initiate a plan for directly exporting fishery products. Many FPUs in General Santos have expressed their willingness to receive imported fish from Sangihe. The

Sangihe Government intends to export fish to General Santos using a small fish transport vessel of 3–6 GT. Currently, this export plan is hindered by the necessary documentation that must be provided by the crew of the transporting vessel. Implementing a fishery direct export plan for Sangihe fishery products would also enable the transportation of fish commodities from Talaud to Tahuna port, facilitating their inclusion in the fishery export to General Santos, Philippines.

In conclusion, this paper suggests further research on the outermost region to explore market opportunities for direct exports of fishery commodities, bypassing major cities. The study highlights the significant potential of these regions, emphasising how their geographical proximity to export destination countries can positively impact economic development. Direct exports of fishery products from these regions would not only foster economic growth but also provide substantial benefits to local fishers.

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Supplementary Table 1. List of questions asked to a) local actors, b) local governments and c) the national government on the fisheries value chain in the Sangihe and Talaud Islands, Indonesia.

a) Questions for Local Actors

No	Question	Follow-up questions
a.	How long have you been working with the fishers/collectors?	-
b.	What difficulties do you experience as a fisherman/collector?	-
c.	What preparations do you make before catching or selling fish?	-
d.	What are the rules for catching or selling fish?	• What types of fish are caught? • Where/who does the capital for fishing come from? • Who determines the selling or buying price of fish? • What is the current price condition?
e.	Do you sell fish to multiple collectors?	• What kind of the purchase and payment system?
f.	Do you receive fish from multiple fishers?	-
g.	How often do you send fish to collectors?	-
h.	How many fishers do you work with?	-
i.	Where will the fish be sent after being sold to the collectors?	-
j.	Selling to General Santos, Philippines?	• Is selling seafood to General Santos a priority? (if yes why, if not where) • If yes, do you sell there often? What kind of purchasing system? • Who determines the price?
k.	Problems faced in running a fisheries business?	• What are the problems and how to solve them? • Who plays a role in problem solving? (which parties are involved)
l.	Evaluation before and after IMFC?	• How important is the SKPT? • How is the role of the SKPT perceived compared to before the SKPT? • Convenience in selling fish? • What price is offered? • What is the service like? • What should be improved / addressed from the SKPT? • What do you expect the SKPT to do for your business?
m.	Are there any regulations that hinder export to General Santos, Philippines?	-

b) Questions for Local Governments

No	Question	Follow up questions
a.	What is the condition of the capture fisheries sector in this area?	• The state of capture fisheries in this region (fleet and capabilities of this region)? • What kind of problems has been faced? • Who are the agencies involved in planning/developing the potential of capture fisheries here?

b. The role of agencies in the capture fisheries sector?	• Agency role in capture fisheries sector? • Is it important and profitable for the region to sell fish to General Santos, and why?
c. What are the current programs related to capture fisheries?	• Examples of what kind of activities and who is involved? • Is there cooperation with outside parties (companies or other agencies)?
d. What are the current activities of IMFC?	• Examples of what kind of activities and who is involved? • Is there cooperation with outside parties (companies or other agencies)?
e. What programs have been created to support IMFC activities?	• Role of other stakeholders (if not IMFC) in IMFC activities? • How important is IMFC (question for other stakeholders other than IMFC)? • Does it benefit the agency/region with the existence of IMFC (questions for other stakeholders besides IMFC)?
f. Are the supporting facilities sufficient to support IMFC activities?	• Supporting infrastructure? • Is it easily accessible by agencies? • How is it utilized?
g. What obstacles are still faced in order to run IMFC?	• IMFC's problems in carrying out its activities? • What strategies were used to deal with these problems? • Was it successful? If not, what should it be?
h. What needs to be improved in IMFC?	-
i. What is the validation method for vessels and fishing areas?	-
j. What are IMFC's plans for the future?	-

c) Questions for National Governments

No	Question	Follow up questions
a.	What is the biggest challenge in building the capacity of fishers?	-
b.	What are the biggest challenges in improving the efficiency of export activities in North Sulawesi?	-
c.	How would you respond to resolve these challenges?	-
d.	What kind of activities/programs have been carried out to support the fisheries value chain in North Sulawesi?	-
e.	What is the biggest challenge in improving the efficiency of export activities in North Sulawesi?	-
f.	How do you propose to resolve these challenges?	-

g.	What activities have been carried out to support the improvement of fisheries export capacity in North Sulawesi?	-
h.	What is the biggest challenge in improving the efficiency of export activities in North Sulawesi?	-
i.	How do you respond to resolve these challenges?	-
j.	Do all exporters comply with the requirements for good quality fisheries?	-
k.	What challenges must be met to streamline fisheries export activities from North Sulawesi?	-
l.	What activities/programs have been carried out to improve the quality of fisheries exports?	-
m.	What activities/programs have been undertaken to support the fisheries value chain in North Sulawesi?	-
n.	Is there any training for fishermen to improve their capacity?	-
o.	If yes, what are the activities and what is the technical/frequency of these activities?	-
p.	What challenges must be met to streamline fisheries export activities from North Sulawesi?	-