



# Vietnam's capture fisheries labor shortage explored: difficulties and responses

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## Manuscript history

Received 12 November 2024 | Accepted 16 May 2025 | Published online 3 June 2025

## Citation

Phuong TV, Pomeroy RS (2025) Vietnam's capture fisheries labor shortage explored: difficulties and responses. Journal of Fisheries 13(2): 132205. DOI: 10.17017/j.fish.821

## Abstract

The fishing industry plays an essential role in Vietnam's socioeconomic development, providing jobs to millions of workers. In recent years, fishing labor shortages have occurred on many fishing vessels in all capture fisheries, including small-scale and larger-scale fisheries in Vietnam. However, information pertaining to Vietnam's fishing laborers has been limited for many years. In this study, a combination of secondary data methods and analysis of survey interviews with fishers who are fishing vessels' owners and fisheries authorities in some key coastal provinces was used to answer the following questions: i) what are the difficulties in recruiting fishing labor in Vietnam's capture fisheries? ii) How do fishing vessel owners respond to fishing labor's shortages? Study results show many difficulties in crew labor issues in Vietnam in terms of finding crew members and maintaining minimum conditions for the number of workers on fishing vessels. Many reasons are found that cause the shortage of fishing laborers working on vessels. The owners of the fishing vessel have various ways to address this situation, including forcing fishing vessels to lie ashore or even go fishing in the case of labor shortage, switching to alternatives that require fewer human resources, actively seeking labor in other areas such as remote and mountainous areas, and increasing the share rate and deposit for fishing vessels fishing mates. Several solutions are proposed according to the results to overcome the labor shortage in Vietnam's capture fisheries.

**Keywords:** capture fisheries; fishing labor; shortages; Vietnam

## 1 | INTRODUCTION

In Vietnam, capture fisheries are essential to national economic development for employment, export earnings and food security, particularly in the 28 coastal provinces (Pomeroy *et al.* 2009; Phuong and Phu 2013; Phuong and Pomeroy 2022). In 2020, the fishing effort (number of fishing vessels) comprised over 95,000 vessels, of which only approximately 30% were eligible for offshore fishing activities (DoFi 2021; Phuong and Pomeroy 2022). Fishing vessels 15 to 24 m in size and utilizing  $\geq 90$  HP in engine power increased by 25 % between 2012 and 2020 (EJF

2019; DoFi 2022), up to 33,000 vessels in 2020 (DoFi 2020a). Vietnamese fishing vessels mainly target skipjack tuna, mackerel, squid and low human food value (trash) fish (Marschke and Betcherman 2016; World Bank 2021) and use a mix of trawls, hook and lines, purse seines and gill-net fishing gear (Alonso and Marschke 2023). Vietnam's seafood catch has maintained a continuous growth of 9.1 % annually, with marine landing at 6.4% per year over the past ten years, reaching 3.6 million tons in 2020 (DoFi 2021). In 2020, approximately 552,000 laborers were directly working on domestic fishing vessels, an

increase of 21.8% compared to that in 2014 (432,000), most of whom are men (DoFi 2020a, 2020b). The increase in fish workers is explained by the larger fishing vessel-oriented government policy direction to offshore fishing, necessitating more laborers (DoFi 2020a; DoFi 2020b). Although the number of fish workers has increased, it has not met the needs of the larger fishing vessels developed in recent years. Consequently, the fishing sector is facing a shortage of workers, negatively impacting capture fisheries in many coastal provinces (Vietnam News 2019, 2021). Hundreds of fishing vessels are anchored at the port due to insufficient fishing labor, especially professional labor, even though the first months of the year are considered the "golden season" for most coastal province's fishers (Vietnam News 2019, 2021). In each fishing trip, fishing vessel owners are facing a labor shortage of at least 20%, even reaching ~60% in some cases (Vietnam News 2019). The overfished marine resources in Vietnam's sea have caused low incomes due to poor fishing activities for many years (Pomeroy *et al.* 2009; Ha and van Dijk 2013; Phuong and Pomeroy 2022). As a result, this low income, along with long fishing trips, has reduced fish labor recruitment, causing fishing vessels to remain in port. As a result, labor has moved to other jobs with higher and more stable income than fisheries (Ha and van Dijk 2013; Phuong and Pomeroy 2022).

The shortage of fishers and its consequences in the Vietnam fishing sector are emerging issues to be addressed. However, the causes or impacts of this shortage in the sector remain unclear, and further research is necessary to fill this gap in the literature. In this paper, the status of fishing labor in Vietnam's capture fisheries is assessed by focusing on the shortage of fishers, difficulties in searching for fishing labor, and the causes of these difficulties. The objective of this study is to provide practical evidence of issues finding labor in Vietnam's fisheries and propose timely solutions to respond to these problems. This study contributes to the understanding of the critical fishing labor shortage in Vietnam's capture fisheries by analyzing its drivers and consequences, with the aim of informing immediate and long-term measures for the sector.

## 2 | METHODOLOGY

### 2.1 Data collection procedures

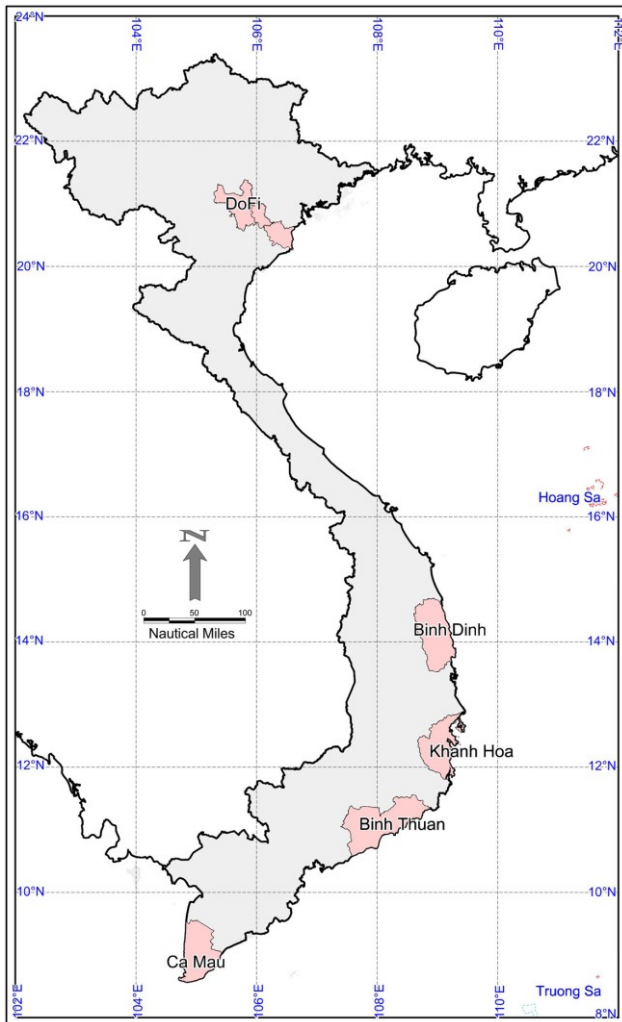
A mixed-method approach was used in this study to collect data and conduct analyses. First, a document analysis was used to examine how fishing labor issues are regulated in Vietnamese fisheries' legal frameworks. This method aimed to understand the status in term of quantity, distribution of age groups and education level within the Vietnamese fisheries labor, the requirements of labor at sea, the standards and conditions of crews, policies for fishing labor, and, in particular, subsidies used to encourage fishing vessels to leave the coastline. In Vietnam, the

Ministry of Agriculture and Rural Development (MARD) and the Ministry of Labor, War Invalids and Social Affairs (MOLISA) of the national government are responsible for developing and managing fisheries labor policies and regulations. Ratified international regulatory agreements and conventions, government documents, including fisheries law, decrees, circulars, directives, and guidelines related to fishing labor rules and regulations delivered from national to local government levels, were collected to obtain an understanding of fishing labor policies and regulations.

To comprehensively identify relevant literature on the difficulties and responses of labor shortage in capture fisheries, a systematic search was conducted across key academic databases, including Google Scholar, Scopus and Web of Science. The primary keywords "shortages on fishing labour", "capture fisheries workforce decline" and "consequences of lack of fishing labor" were used to search all recently published official documents. Within Google Scholar, the first 100 results sorted by relevance were screened, with a focus on official reports and publications from reputable governmental organizations, fisheries authority bodies, and academic institutions to ensure the reliability of the sources. Information extraction from the downloaded documents involved a structured approach, where key data and information points related to fishing labor shortages were systematically recorded and synthesized.

Second, semi-structured interviews with a total of 18 government officials, comprising 10 fisheries officials and 8 local administrative officials were conducted via the Zalo and Google Meet software tools. An interview guide, including open-ended questions, was used to determine the status of fishing labor shortage, labor policies for fishers going to sea, the causes of the shortage of fishing labor in local fisheries, and measures to support fishing vessel owners to find and recruit the crews for fishing trips. The interviewees include fisheries officials directly or closely related to managing fishing vessels and fisheries labor at the Department of Fisheries in Khanh Hoa, Binh Dinh, Binh Thuan and Ca Mau provinces. These provinces were selected because they each have extensive capture fisheries that contribute significantly to national and household food and income security. They represent geographic diversity, as they are in different coastal areas of Vietnam (Figure 1). The interview guide is provided in the Supplementary Section for full transparency regarding the questions asked and the scope of the data collected.

Third, interviews were implemented with 30 fishers, with a particular focus on fishing vessel owners from the above four provinces. The interviews were used to understand more clearly the status of labor shortages on fishing vessels, difficulties in finding and recruiting crew, fishing labor issues in recent times, how the vessels' owners respond to these problems and the consequences of the lack of fishing labor.



**FIGURE 1** Map of interviewed locations (coloured) investigated for Vietnam fishing labor shortage study.

Three discussion groups comprised an offline group of fishers in Khanh Hoa province and two online groups of fishers via the Google Meet app in Binh Dinh and Ca Mau provinces. Each group discussion included 3 – 5 participants and lasted for 30 minutes to 1 hour. The group discussions aimed to understand in depth the difficulties associated with labor shortages and the responses to such shortages in local capture fisheries from fishers' and authorities' points of view (Figure 1). While acknowledging the relatively small sample sizes, particularly in the focus group discussions, these were strategically targeted to key informants with direct knowledge of fisheries policies and the dynamics of fishing labor. The focus group discussions involved homogenous groups, specifically with fishing vessel owners, to gather in-depth insights into their perspectives on labor shortages and recruitment challenges. Data collection took place between September, 2023 and May, 2024. The summarization of the survey data is detailed in Table 1.

**TABLE 1** Methods used to obtain the information and data used in this study.

Locations	Group discussions	Interview		
		Fisheries officials	Local officials	Fishers
DoFi		1		
Binh Dinh	1	2	2	10
Khanh Hoa	1	3	2	10
Binh Thuan		2	2	5
Ca Mau	1	2	2	5

DoFi, Directorate of Fisheries.

## 2.2 Sources of information

The primary content within the results section integrates information gathered from various reference sources. Information on the status of fishing labor were extracted from a variety of sources, including reports and publications by the Research Institute for Marine Fisheries (RIMF 2019), the Directorate of Fisheries (DoFi 2020a), and the International Labour Organization (ILO 2022). Information concerning regulations related to fishing crew in Vietnam's fisheries was based on the analysis of several official documents. Specifically, details regarding working titles and minimum crew requirements on fishing vessels, as well as the classification of certification by fishing vessel groups, were extracted from the Ministry of Agriculture and Rural Development (MARD 2018). Insights into the role of women in Vietnam's fishing activities were synthesized from scholarly articles and reports by Siason *et al.* (2002), Hao (2012), and Harper *et al.* (2017). Furthermore, information on the engagement of young people in coastal areas was gathered from publications by the ILO (2011), Hau (2022a), and UNFPA (2019). Finally, data regarding the difficulties in looking for crew members were collected from a range of sources, including reports from the Ministry of Labour, Invalids and Social Affairs (Molisa 2017), news outlets such as Vietnam News (2019, 2021, 2023a), Vietnamnet (2021), The Guardian (2019), and Vinamex (2022), as well as research by Dang Khoa (2020), Thuan and Tuan (2021), Thung and Khanh (2022a) and Ndo (2022).

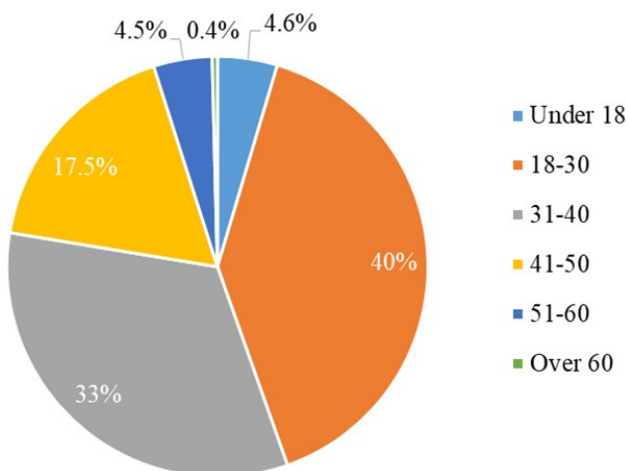
## 3 | RESULTS

### 3.1 Fishing labor

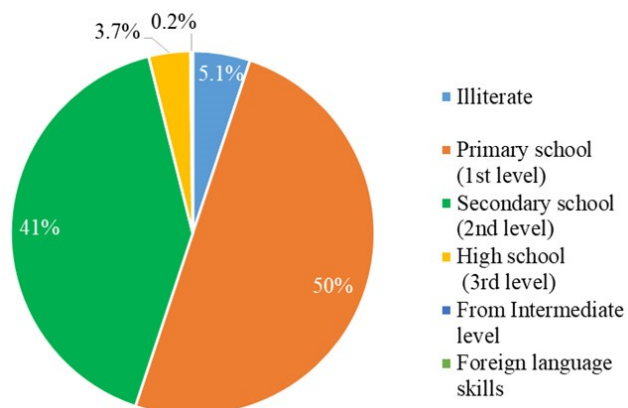
#### 3.1.1 The status of fishing labor

The seafaring profession comprises hundreds of thousands of workers involved in fishing activities and fisheries logistics, contributing to socioeconomic development, raising fishers' income and enhancing their livelihoods. According to the Directorate of Fisheries (DoFi) statistics, the number of fishing laborers differs significantly by province, varying from 315 to 69,915, with a mean value of 19,712, in which Ca Mau province, one of the areas selected for the survey, has the largest number of fishing laborers nationwide.

Vietnamese fisheries laborers are between 18 and 50 years old, accounting for 90.5% of the total labor force in this sector. The most significant demographic within this range is the 18 – 30 age group, comprising 40% of the total, followed by the 31 – 40 age group (33%) and the 41 – 50 age group (17.5%) (Figure 2). It can be said that workforce age suits the specific characteristics of working at sea. However, the education level of fishers is low compared to that of the Vietnamese general population. According to the results of a survey on developing high-quality fisheries labor practices conducted by the Research Institute of Marine Fisheries in 2019, fishers' education levels are mainly primary and secondary, accounting for 91%. Notably, illiterate workers and those with non-foreign language skills accounted for 5.1% and 100%, respectively (Figure 3). According to the DoFi, most fishing labor on fishing vessels is in the "hereditary" type based on family experience without formal and full-time training (DoFi 2020a).



**FIGURE 2** Distribution of age groups within the Vietnamese fisheries labor.



**FIGURE 3** Distribution of education level within the Vietnamese fisheries labor.

There are two main salary systems in the Vietnam capture fisheries sector: the flat wage and the share scheme. A flat wage is a fixed payment per pay period or fishing trip. In a share system agreement, fishers earn a percentage of the gross revenue or profit of the specific fishing trip. Occasionally, fishers may be paid a low minimum wage, with the rest of their income being based on a share of the catch or bonuses. In many countries, these arrangements place fishers in the "self-employed" category.

### 3.1.2 Regulations related to the fishing crew in Vietnam's fisheries

Vietnam has ratified and implemented critical international regulation agreements from the United Nations (UN), International Labor Organization (ILO), and International Maritime Organization (IMO) Conventions, which are fundamental for protecting fishing labor rights and securing working and living conditions on board fishing vessels. The Vietnamese government has issued various regulations under laws, decrees and circulars (Table 2).

Notably, the latest circular was promulgated in 2022 (Circular no. 01/2022/TT-BNNPTNT) to regulate various aspects of Vietnam's capture fisheries. The regulations state that fishing vessels going to sea must fully satisfy the following requirements in crew criteria: (i) being of working age as prescribed by law, starting from 15 years old, (ii) having a health certificate issued by a competent medical facility, and (iii) having personal documents as prescribed by law. Specifically, the required work titles and minimum crew quantity for vessels are specified in this regulation (Table 3).

In addition, depending on the characteristics of each fishery/fishing profession and fishing vessel, the owners and captain have an option of adding to the number of crew members on the fishing vessels by title to ensure safety and effectiveness at sea. The title and certification requirements of the crew (captain, chief officer, chief engineer, mechanic and seafarer) for different groups of fishing vessels are presented in Table 4.

Notably, a person with the captain or chief engineer class I certificate can hold the titles of captain or chief engineer for classes II and III, respectively. A person with the captain or chief engineer class II certificate is eligible to hold the captain or chief engineer class III title. Furthermore, a person who holds a captain class II certificate is eligible to hold the title of chief officer for class I.

### 3.1.3 Role of women in Vietnam's fishing activities

Participation in the fisheries and aquaculture sectors is estimated at 4.7 million, including approximately 825,000 women. Education levels among women are low, and they are required to work 12- to 14-hour days, three to four hours longer than men.

**TABLE 2** List of main international regulation agreements and national regulations related to fishing labor.

No.	Regulation agreements	Ratified year	Source
<b>I</b>	<b>International regulation agreements</b>		
1	Convention on the International Regulations for Preventing Collisions at Sea (COLREG 1972)	1990	NUS 2023
2	International Convention for the Safety of Life at Sea (SOLAS 1974) Convention	1991	Chokesanguan <i>et al.</i> 2010
3	Convention on the Law of the Sea (UNCLOS 1982)	1994	Vietnamlaw 2012; Beckman 2013
4	C100 - Equal Remuneration Convention	1997	ILO 2023b, 2023c
5	C111 - Discrimination (Employment and Occupation) Convention	1997	ILO 2023b, 2023c
6	C182 - Worst Forms of Child Labour Convention	2000	ILO 2023b, 2023c
7	C138 - Minimum Age Convention	2003	ILO 2023b, 2023c
8	C029 - Forced Labour Convention	2007	ILO 2023b, 2023c
9	International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW)	2013	Office of the Government 2013
10	Maritime Labour Convention (MLC 2006)	2013	ILO 2023b, 2023c
11	C098 - Right to Organise and Collective Bargaining Convention	2019	ILO 2023b, 2023c
12	C105 - Abolition of Forced Labour Convention	2020	ILO 2023b, 2023c
<b>II</b>	<b>National regulations</b>		
	Law no. 18/2017/QH14 on Fishery (Vietnam Fisheries Law)	2017	Office of the National Assembly 2017
	Decree no. 121/2014/ND-CP of the Government, dated 24 <sup>th</sup> December 2014, elaborating on the Maritime Labour Convention in 2006 for employment conditions of seafarers working on board a vessel	2014	Office of the Government 2014a
	Circular no. 22/2018/TT-BNNPTNT of the MARD, dated 15 November 2018, regulated that fishing vessels going to sea must fully satisfy the following requirements in crew criteria	2018	MARD 2018
	Decree no. 26/2019/ND-CP of the Government, dated 08 March 2019, guiding the implementation of the Fisheries Law	2019	Office of the Government 2019
	Circular no. 01/2022/TT-BNNPTNT of the MARD, dated 18 January 2022, regulating amendments to circulars in fisheries	2022	MARD 2022

**TABLE 3** The working titles and minimum crew numbers required on fishing vessels (source: MARD 2018).

No.	Title	Fishing vessels by maximum length (m)			
		Group IV from 06 -< 12 m	Group III from 12 -< 15 m	Group II from 15 - < 24 m	Group I from above 24 m
1	Captain	01	01	01	01
2	Chief officer	-	-	-	01
3	Chief engineer	-	01	01	01
4	Mechanic	-	-	01	01
5	Seafarer/worker/fisher	01	01	01	02
	Total	02	03	04	06

**TABLE 4** Classification of certification by a group of fishing vessels (source: MARD 2018).

No.	Title	Group IV from 06 -< 12 m	Group III from 12 -< 15 m	Group II from 15 - < 24 m	Group I from >24 m
1	Captain	Captain class III	Captain class III	Captain class II	Captain class I
2	Chief officer	-	-	-	Captain class II
3	Chief engineer	-	Chief Engineer class III	Chief Engineer class II	Chief Engineer class I
4	Mechanic	-	-	Fishing vessel mechanic	Fishing vessel mechanic

Vietnamese women rarely participate in fishing at sea; instead, they mainly perform logistical tasks including pre- and post-harvest operations for their husband's fishing vessels. Since fishing activities involve challenging physical work, men are responsible for these tasks per Vietnamese cultural traditions. Women have fewer opportunities than men except in trading and processing fish. The group discussion findings indicated that very few women are involved in small-scale fishing with gill nets and handlines in some coastal areas. These women perform fishing activities in the early morning and return to the shore in the afternoon, or they fish in the afternoon, stay out overnight and return to shore early in the next morning to sell their catch.

According to the fishery's official, state that *"Women mainly serve logistics and directly sell post-harvest products for the inshore fishing profession and small-scale fisheries. For off-shore fishing and large-scale fisheries, women will be responsible for calculating logistics costs, and working with traders and middlemen to get the loan and selling the fish"*. The Network of Vietnamese Women in Fisheries (VWIF) was established in 1999 and operates under the guidance of the Committee for the Advancement of Women in Fisheries. Women in the post-harvest sector account for 84% of the labor. The Vietnamese fisheries laws do not specifically mention women working in the fisheries sector.

### 3.1.4 Young people in coastal areas

Rural areas in general and coastal regions, in particular, are the residences of most of Vietnam's population. Labor in agriculture and fishing in rural areas has accounted for a large proportion (71.1%) of the total workforce in the country, which mainly comprises young people. Occupation in the agricultural sector has been declining both in supply and demand due to mechanization. Such a reduction in agricultural labor even becomes a partial labor shortage during harvests in several rural regions. Young people in Vietnam today, and in coastal areas, in particular, are oriented by their parents to work onshore and in non-fisheries-related jobs due to the low income in fisheries. The interviews revealed that young people with low education levels tend to apply to work in export garment factories and mechanics in industrial park zones in several large cities, such as Hanoi, Ho Chi Minh, and Da Nang.

Some young people work in the tourism sector as employees in resorts and tourist areas in Nha Trang and Da Nang city. Others have completed vocational training courses to work as electrical, mechanical, and mechanical repairers in their locality. Some even work as taxi drivers in the city.

According to the Fisheries Association of a coastal province: *"Young workers have been no longer interested in the marine profession. They tend to be [leave fisheries and leave hometown], working as manufacturing workers*

*to earn stable incomes"*.

Those who are able to study at a college or university can work as employees in agencies and businesses in both their localities and large cities. At present, young people in coastal areas are often directed by their parents to make an effort to study and learn a specific trade to work in some industrial zones; for example, sewing for women and mechanics for men.

## 3.2 Difficulties with fishing labor

### 3.2.1 Difficulty in meeting the minimum crew requirements:

The interviews revealed that Vietnamese fishing vessels' owners often cannot meet the minimum crew requirements as regulated by law. Because the labor status on fishing vessels is very erratic, the minimum crew regulation enforcement is limited, especially during the initial period after the regulations were introduced. Consequently, minimum crew requirements are a challenge for all groups of fishing vessels. For example, most fishing vessels >24 m in length lack at least one of the four types of crew members mentioned above, such as a chief officer or/and mechanic. The owners of coastal fishing vessels have not paid much attention to the regulations because their vessels are small-scale and can fish with 2 – 3 crew members, often their family members.

The interview results showed that fishing vessels' owners consistently worry about the lack of labor because a crew member could be on their vessel today but another vessel tomorrow. The authorities have not regularly provided training courses for fishing vessel crew member certifications. Although many owners facilitate the time and finances required for crew members to be trained to obtain certificates, they switch to another vessel to work or find an excuse to leave after studying. Interestingly, the owners and their crew members have only agreed to work together orally, not through a formal contract. As a result, it is challenging for the owners to take back the certificates they supported for crew members when they leave.

An owner in Binh Dinh province complained that: *"A few years ago, I supported crew members' training course fee to get the certificate. However, my crew and I have only agreed to work together orally. When our fishing vessel suffered some lost trips, they immediately abandoned us. They refused to contract because they intended to work on our vessel or leave it for another. While we try hard to find the minimum crew members to fish, adding the requirement of the certificate as prescribed is very stressful for us"*.

### 3.2.2 Difficulties in obtaining crew members

The interview results revealed that less strenuous jobs are increasingly available on land. These problems have been recognized in various areas of the country, such as



the north-central and central provinces. Eleven-year-old Vietnamese children have been discovered on illegal fishing vessels in foreign country waters. Notably, the ability of Vietnamese fishers to work on foreign vessels may detract them from working on domestic vessels. According to the Supply Board of Fishing Crews from the Vietnam Labor Export Association, 5,000 fishers were exported to work on fishing vessels in Taiwan, Korea and Japan in 2017. These crew members are paid approximately USD 1,600 monthly, 2 – 3 times higher than the compensation provided for working on domestic fishing vessels. However, these fishers have faced various problems. For example, (i) crew members have been abused and forced to work in unsafe conditions in terms of wages and unguaranteed living conditions according to the requirements of international law, and (ii) recruiting companies have lacked the responsibility to export crew, leading to many disputes and seriously harming the rights of these laborers.

The survey results also showed that due to a lack of professional and experienced fishing labor, owners must hire “farmers” and “non-fisheries professionals”. These workers lack seafaring experience, swimming skills and knowledge of fishing gear and are unfamiliar with the sea working environment. Consequently, they inadvertently increase the potential risk for themselves, other crew members and fishing vessel owners.

The owner of an offshore fishing vessel in Hon Ro port expressed the following concerns: *“We have invested many billions VND and got loans from banks to build vessels. Then although we have to do anything to recruit labour, it is impossible to recruit carelessly. On many fishing trips, only captains have professional fishing skills, the rest are new. The lack of labour largely happens in the main season, especially for skilled workers, so fishing vessels in various coastal provinces such as Khanh Hoa, Quang Nam and Quang Ngai must stay ashore. Although some fishing vessels attempt to go fishing under the context of a labour shortage that caused not to be as effective as expected”*.

In Vietnamese cultural tradition, fishers often choose auspicious days to start a new fishing year to increase luck. The interviews showed that fishing vessels' owners generally make a deposit and advance money to crew members, especially skilled workers, before the Tet holiday (lunar new year holiday). Then, when all the logistics and conditions are ready for fishing, the owner either cannot contact them by appointment, or they change their mind and switch to other vessels, causing the owner to lose both time and money. Therefore, the recruitment of freelance workers in other locations causes owners to “lose their appetite, lose sleep” and “bad cry, bad laugh”.

For example, a vessel owner built a large-capacity fishing vessel in 2018. Before the Tet holiday, he transferred VND180 million (about USD 8,100) to 10 workers in Khanh Hoa and Binh Dinh provinces. The workers all

wrote a letter of commitment to fishing after the holiday. The amount owed would be deducted gradually after each fishing trip. However, some workers could not be contacted when the fishing season began. Therefore, the fishing vessel went to sea with insufficient labor.

The group discussion showed that the lack of fishing labor was exacerbated after the COVID-19 pandemic, especially in 2022. After two years of a decreased volume of fishing, most fishing laborers had switched to other jobs on land and had no intention of returning to fishing. In addition, increasing gasoline prices make each fishing trip increasingly difficult and more costly. Some owners have doubled the salary yet still struggle to find crew members. The interview results revealed that unfamiliar crew workers negatively affect the operating procedure of fishing operations. For example, in purse-seine fishing, all operation processes of the workers on the vessel must be synchronized, from running the winch to pulling the net, putting fish in the basket, and marinating fish in the storage cellar. One mistake will impact the entire process. In some cases, new crew members become depressed, do not focus on their work, and request to return to shore while not catching anything, causing the fishing trip to suffer a severe loss.

A chairman of the Fisheries Union in Nha Trang city reported that fishing laborers had cheated owners regularly. *“A fishing worker cheats 2 – 3 owners, earning VND 5 – 7 million (USD 224 - 313). They borrowed the owners' money and promised to fish for it. When owners fully prepared the necessities to go to sea, the workers made various reasons for delaying the next trip, disappearing and disconnecting. In some cases, the worker reported being sick or having an accident. However, it is not such a situation when the owners come to inquire about them”*.

### 3.3. Causes of fishing labor shortage

The survey revealed several reasons underlying the long-term shortage of fishing labor in Vietnam's capture fisheries. First, fishing jobs are a challenging working environment. Indeed, many fishing crews are no longer enthusiastic and interested in fishing because of the challenging physical environment and risks to health and life. According to fishing vessel owners, fishing crews face many risks.

A Khanh Hoa province fisher stated, *“Fishing activities are hazardous to work including (i) aspects in the natural environment (extreme natural disasters, dangerous winds and big waves); (ii) aspects in the working environment (always facing danger, dirty, narrow working and living spaces); (iii) aspects in professional characteristics (long fishing trip with many days at sea, and strange vessels attack, etc.)”*.

Second, in the context of increasing socioeconomic development in Vietnam, there are many other opportunities due to urbanization. Several government policies for developing tourism services and industry are narrow-

ing fishing communities' space (Thanh *et al.* 2004; Tien *et al.* 2021). The interviews showed that the coastal communities' residents have many job opportunities to choose ashore, with "light work, high salary and proactive time". Many young people, who constitute the main fishing workforce, have chosen another job, such as going to cities to find a job or going abroad to work in foreign countries.

A fisher in a coastal province stated the following: *"Before becoming a worker's industrial factory, I had 15 years of fishing experience in offshore squid fishery. I only have about 2 months at home with my family annually. I was away from home for almost a year, facing storms, hard work, and an unstable income. Also, overfishing is contributing to diminishing catch volumes, while fish prices are fluctuated due to weather and other situation. So, I decided to take a break from the sea and apply to work in an industrial park. Currently, I have both a stable income and time to take care of my family"*.

Third, survey results showed that the next generation, who are the young labor force in fishing villages, are less interested in the fishing profession of their forefathers. They report a lack of access to vocational training courses on fishing activities. Consequently, fishing labor's income is insufficient to cover their living expenses; thus, they must switch to another profession.

According to Population Ordinance 2003, a Vietnamese family is allowed to have 1 or 2 children. Citizens must strictly follow family planning to reduce the birth rate (Goodkind 1995; Office of the National Assembly 2013). Families in coastal areas now tend to have approximately 2 children, whereas in the past 30 – 40 years, they would have 7 - 8 (Goodkind 1995). While the fishing profession is hard work, fishers have invested in their children's education and training to break away from fishing activities. The interviews revealed that the owners even have to hire a captain to operate their fishing vessels, a position their sons would previously have been responsi-

ble for. Meanwhile, due to offshore fishing development policies from the government, the number of large-scale fishing vessels has rapidly increased, requiring much more labor than in previous periods (Ha and van Dijk 2013; Pham *et al.* 2014; Duy and Flaaten 2015).

### 3.4 Response of owners to difficulties in the fishing labor shortage

#### 3.4.1 Fishing vessels ashore or going to sea without adequate labor

The interviews revealed that due to a lack of labor, several fishing vessels must stay in port and postpone fishing trips, and the fishing plan, which was tied to cultural beliefs about departing on an auspicious or 'lucky' day, could not be deployed. Owners must find a way to go to sea with labor levels below their requirements, regardless of the fishing trip potential to experience a decrease profit.

A resident of Khanh Hoa province said, *"I have three fishing vessels that are led by my sons; each vessel needs 12 to 14 laborers. Due to the difficulty of finding labour, we had to go to sea when lacking labour. However, these situations in long fishing trips caused reduced fishing productivity, leading to low income. Because the fishing gear is only partially used and cannot be exploited at full capacity"*.

Many owners must wait until they have sufficient labor for a specific vessel to go to sea. The gathering of labor occurs when different owners coordinate to supplement each vessel until enough crew members are obtained. Owners have recruited child laborers under 18 who have not completed high school. Child labor could include their sons and nephews. The group discussion results show that the quantity of laborers is just half or two-thirds that of the past five to seven years, as summarized in Table 5.

**TABLE 5** Comparison of the quantity of fishing laborers in the past five or seven years.

No.	Type of fishing vessel	Quantity of laborers		% decrease
		2017 – 2018	2022 – 2023	
1	Tuna handline	5 – 6	3 – 4	20 – 50
2	Gill - net	11 – 12	9 – 10	9 – 25
3	Trawl	8 – 9	6 – 7	13 – 33
4	Purse seine	6 – 8	4 – 5	17 – 50
5	Tuna line	7 – 8	4 – 5	29 – 50

#### 3.4.2 Switch to another profession/other jobs

Because of the labor shortage, vessel owners had to adapt by changing jobs. Some have upgraded and renovated their fishing vessels to switch to other fishing occupations with operations that require fewer crew members or experienced workers; for example, from diving to handline. Others have sold their fishing vessels ("fishing

rod to rice") and switched to non-fishing jobs, such as working in factories in industrial zones, logistics services, retail trade or renovating vessels for sea tourism services.

#### 3.4.3 Actively looking for labor in other regions

Facing the urgent need for fishing crews, many owners have had to actively look for laborers in neighboring, non-



coastal localities. The laborers could be from the mountain and remote areas, even including women, children, and the elderly who have no experience of the challenging fishing working environment. Consequently, a lack of labor inadvertently increases an already risky environment for all onboard the vessel.

A fisher from Hon Ro fishing port with 20 years of experience in offshore fishing shared that: *"Any fishing labour is required to have the skills to deal with strong waves, whirlpools or reversed winds. Significantly, swimming skills are compulsory when unfortunately falling into the sea. If owners recruit workers indiscriminately, without selectively training such necessary skills, it is challenging to respond to incidents"*.

For example, in 2020, after recruiting 10 workers from localities in the Central Highlands, a captain in Khanh Hoa province provided minimal training to the workers before going to sea. When the weather was terrible, these workers fell into the sea; consequently, the captain had to call for help from other vessels. This leads to negative consequences such as fatalities, lost fishing time and additional costs (Dao 2020).

#### 3.4.4 Salary advance payments and changes in profit distribution ratios

It is a common culture in Vietnam that owners often pay part of the crews' salary in advance, this custom is known as a "deposit". This aims to both retain labor by creating stable income for the fisher, thus leading to his want to continue to work with and for a stable employer while supporting their living expenses. However, due to the lack of labor, some owners had to make concessions recruiting labor by giving a higher deposit or salary.

The fishing vessel owner in Ca Mau province stated, *"To attract the labour, we have to deposit USD 100 - 200 and even cover living expenses for their family while they go to sea"*. A crew member from Binh Dinh stated, *"In general, I can get USD 200 – 300 per fishing trip. I was looking for higher pay from owners because the vessels must stay ashore if they are insufficient or without labor"*.

The interviews revealed that owners have increased the profit share ratio by committing to committing to share 50 : 50 or 40 : 60 (fisher : owner) profit share of each fishing trip's total value compared to approximately 40 : 60 or 30 : 70 in the past five years. A profit share ratio of 30 : 70 equates to the laborer receiving 30% of the profit, and the owner keeping 70% of the profit. The profit share ratio has tended to have a larger portion for labor because the owner knows that decreased fishing activities will directly impact their income and lives if they do not have the necessary labor. However, the lack of labor still persists. For example, according to the Chairman of the Fisheries Union in Khanh Hoa province, in 2022, over 300 fishing vessels could not go to sea due to labor shortages, accounting for 50% of the total fishing

vessels in this area.

## 4 | DISCUSSION

Vietnam's capture fisheries are crucial to national economic development, employment issues and export earnings. The labor shortage in capture fisheries activities has been an emerging issue in recent years. Although fishing vessel owners attempt to respond to labor difficulties, they still find it difficult to address this issue. Many challenges need to be overcome. Notably, Vietnam fisheries are not alone in facing labor shortages (Ducanes and Abella 2008; Hodal 2015). Other countries in Southeast Asia are facing the same issues. For example, Thailand's fishing industry has faced a labor shortage of approximately 50,000 crew. Many crews are recruited onto fishing vessels in an informal process by illegal brokers who work directly with Thai fishing vessels' captains (Hodal 2015). In Malaysia, although the government has a policy to encourage young people to participate in the capture fisheries industry, the 3D factors (difficult, dirty and dangerous) in fisheries and the harsh working environments have been decreased the local people's engagement in the fishery industry in recent years (Ducanes and Abella 2008). This industry issue has similarly occurred in Indonesia and two East Asian countries, Korea and Japan (Ducanes and Abella 2008).

Due to labor shortages, fishing vessel owners must accept numerous unskilled workers, even those from remote highland and mountain areas. Hence, the efficiency of fishing trips has been greatly affected (Thung and Khanh 2022b). It is clear that if two fishing vessels have the same operation (e.g., the number of crew members, fishing machinery and equipment), the one with more professional fishers will work better than the other and will be more productive. In addition, vessels with unskilled laborers have higher risks for various incidents at sea, such as operational accidents, falling into the sea, and seasickness.

According to the 2020 DoFi report, 4.6% of Vietnamese fishing vessel crew members are under 18 years of age (DoFi 2020a). Approximately 17% of surveyed vessels had at least one child on board; the youngest person found on board was 11 (The Guardian 2019), while the oldest was 69 (EJF 2019; The Guardian 2019). The children who work as crew members do not attend school and are illiterate. They mostly work on their parents' fishing vessels (EJF 2019). Notably, workers under 18 years old are classified as "minor employees" and prohibited from working in heavy and hazardous work environments, including fishing activities (Office of the National Assembly 2019). Vietnam's capture fisheries are facing not only a labor shortage but also challenges related to the employment of illiterate and non-foreign-language skilled workers that have negatively impacted Vietnam's offshore fishing support policies. For example, Decree No.

67 issued in 2014 by the Prime Minister regulated various development policies in capture fisheries, such as building new or upgrading fishing vessels for distant water fishing (Office of the Government 2014b). Another Decision of the Prime Minister (Decision No. 1047 issued in 2018) promulgated the policy to develop the ocean fishing industry and deliver fishers to operate in the waters of foreign countries (Office of the Government 2018). Under Decision 1047, a pilot implementation activity was supported by sending fishers and businesses abroad for fishing in foreign waters, including Brunei, Papua New Guinea, and Micronesia, from 2018 to 2020. However, the Decision has not yet been implemented for several reasons, including a shortage of fishers (Office of the Government 2018).

Our findings indicate that labor shortage is closely related to the high-risk working environment at sea. Capture fisheries have one of the highest occupational mortality rates in the world (ILO 2015). Laborers on board fishing vessels are often in remote sea locations for several days or months. Fishers must work long hours in an intense, hazardous and challenging working environment (ILO 2015). Severe abuses, such as modern slavery, forced labor and human trafficking, have been documented on fishing vessels (EJF 2014; Garcia *et al.* 2022). Human rights abuses in fisheries are often linked to other forms of marine resource crime, such as illegal fishing activities recorded by the United Nations Office on Drugs and Crime (Coning 2011; ILO 2015). Fishers attempt to fish as much as possible, sometimes illegally, trying to earn enough to pay for expenses, private debts, and bank loans.

New fishing and harvesting technology play a crucial role in Vietnam, filling gaps from labor shortages, enabling vessels to do more fishing with less crew. For example, an applied technology project in finding solutions to improve production efficiency for ocean tuna handline fishing in Binh Dinh Province involves applying line winches in the fishing process, reducing the number of crew members by 2 - 4, and saving fishing time costs in comparison with traditional fishing vessels, thereby increasing profits (Hao 2014; Liem 2015; Lam 2021). In another study on applying hydraulic purse seine winches in Vietnam's offshore fishing industry, each fishing vessel required 2 - 3 fewer crew members after applying the winch system. This improvement in technology has contributed to solving the shortage of fishing labor and ensuring safety in production at sea (Dang 2021).

The working relationship between fishing vessel owners and crew members is characterized by its simplicity and informality. They have only a verbal agreement, instead of a written contract. Many vessel owners have financially supported crew members to be trained to obtain various fishery-related certificates. However, crew members regularly switch to other vessels for work, or

find an excuse to leave after studying. Consequently, the owners cannot recoup their financial investments in crew members when they leave earlier than the agreed upon time. This leads to the fishing vessels' owners being challenged to meet minimum crew member regulations. The role of a formal and enforceable contract is vital to enhance fisher's commitment and professionalism.

Notably, labor shortages may be closely related to national fisheries policies. Specifically, according to policies for fisheries development in Vietnam in the last 10 years, fishers are encouraged to build larger fishing vessels. The number of small-scale fishing vessels decreased by approximately 13.2%, while the number of offshore vessels increased by 20.1% from 2015 to 2020. The hundreds of new steel fishing vessels receiving loans due to national fisheries policies for building new or upgrading fishing vessels for distant water fishing are falling into losses, in debt, even having to go to court over financial liabilities when disputes cannot be resolved through informal negotiation (Khoi 2022). The reason could be that they cannot obtain enough labor as required for these offshore fishing vessels, and as a result cannot go to sea to fish. While small-scale vessels require fewer laborers and do not suffer as greatly from a growing labor deficit. It is important to emphasize that the policy promoting the construction of new offshore fishing vessels is not only a response to the overfishing of Vietnam's marine fisheries resources—particularly in nearshore areas due to excessive fishing capacity—but also reflects a broader strategic objective of safeguarding national maritime security and sovereignty (Phuong and Pomeroy 2022).

Fishing vessels tend to be larger in size, use modern technology, are made of new materials (such as steel and composites), and require more technical and qualified laborers. The issue of lack of qualified workers, such as fishing engineers working on the vessel, has not been adequately addressed in training opportunities. Only one university in Vietnam trains most fishing engineers, but it has not been able to recruit students for this area of study for many years. Several fisheries colleges in Hai Phong, Ho Chi Minh, and Bac Ninh City have failed to attract students interested in fishing technology (Hau 2022b). However, Vietnam's labor force currently have more livelihood choices and choose employment opportunities with higher incomes and less dangerous working environments. This represents social progress in Vietnam's coastal areas and is also occurring in other various countries with well-developed fisheries, such as Thailand, Malaysia, Japan, Korea, and Taiwan (Ducanes and Abella 2008; Molisa 2017; Thuan and Tuan 2021; Vinamex 2022). These countries' fisheries are increasingly using migrant fishers from less developed countries to fill the labor deficit. Domestic workers only hold essential positions on fishing vessels, including captains and chief engineers, while heavy fishing work mostly involves migrant

workers.

## 5 | CONCLUSIONS

Capture fisheries play an important role in Vietnam's socioeconomic development. In recent years, the capture fisheries sector has faced various a labor supply shortage that creates challenges in meeting the legal minimum crew requirements. The study found that the shortage of fishing labor supply is due to high-risk and difficult working environment at sea deterring potential labor combined with an increase of employment opportunities for better-paying jobs ashore. As a result, fishing fishing vessels' owners to respond to the labor shortage difficulties, by (i) keeping fishing vessels in port, (ii) going to sea with a crew shortage, (iii) switching to another profession/other jobs, (iv) actively looking for labor in other regions, and (v) paying a part of the salary in advance and/or increasing the profit sharing ratio of the trip share.

Several recommendations are proposed to address this labor shortage: First, the owners of fishing vessels need to have a formal written contract with the fishers to ensure that the fishers work and stay with the vessels, meeting their agreed upon responsibilities as well as providing the fishers, enhanced stability, thereby increasing their comfort and peace of mind at work.

Second, the owners must implement technological advances and modernized fishing equipment to operate at sea. When new technology is applied, it is necessary to train the crew on all fishing methods and technological skills to be qualified crew members. The use of modern fishing technology can reduce the number of fishers needed on the vessel and address labor shortages. Training is also necessary to replace or support fishers' professional growth. To make training more accessible, the government needs to increase training opportunities, support technical school and university programs, and provide financial incentives to train effectively.

Third, implementing safety protocols to improve the working environment on vessels is crucial for protecting laborers onboard fishing vessels and meet international and national regulatory requirements. It is necessary to ensure that all crew members are adequately trained for their job and are certified. It is necessary to strengthen government policies' enforcement and implementation for labor on fishing vessels, such as safety-at-sea training. Such policies should include better monitoring and inspection of the fishing vessels to ensure they meet work and safety standards to reduce the inherent risks of working onboard the vessels.

Finally, the marine fisheries of Vietnam are overfished. There have been government policies to reduce the excess capacity of fishing vessels in the sector that have either not been implemented or implemented with limited success. The movement of coastal labor to other better-paying and less risky occupations on land is forcing

a reduction in fishing vessels operations operating in both near-shore and off-shore areas. This labor shortage is also forcing the remaining fishing vessels to become more efficient in their operation. Government policy to support occupations outside the fishing sector can serve to reduce overcapacity and overfishing. However, this must be conducted with improving efficiency in the remaining fleet, including well-trained crew. The government policy to support large-scale vessels over small-scale vessels is moving fishing further offshore and serving to address maritime security issues and protection of the sovereignty of Vietnam's Exclusive Economic Zone.

## ACKNOWLEDGEMENTS

We are grateful to the fisheries management officials, fishers, and authorities from several coastal provinces in Vietnam for supporting this research. Special thanks to Nguyen Van Hung and Nguyen Van Binh, fisheries management officers, Directorate of Fisheries of Vietnam, for their insightful critical comments and official reports on carrying out this study.

## Compliance with ethical standards

Nha Trang University approved the interviews and surveys related to fishing labor. Studies involving human participants and all interviews were conducted after obtaining the consent of the appropriate authorities or the person interviewed.

## CONFLICT OF INTEREST

The author declares no conflict of interest.

## AUTHORS' CONTRIBUTION

To Van Phuong: conceptualization, investigation, writing - original draft preparation; Robert S. Pomeroy: methodology, writing - review and editing, supervision. All authors read and approved the final manuscript.

## DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on a reasonable request from the corresponding author.

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