



## RESEARCH ARTICLE

# A CROSS-COUNTRY COMPARATIVE ANALYSIS OF WORKING HOURS AND REST PERIODS FOR SEA FISHERMEN: INSIGHTS AND POLICY IMPLICATIONS USING THE QUADRUPLE HELIX MULTI-CASE COMPARATIVE THEORY

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### ABSTRACT

This study analyzes the working time and rest period regulations of representative fishing countries in Europe and Asia for the International Labour Organization's (ILO) C188 - Work in Fishing Convention, 2007. The Quadruple Helix method is used to explore policy implications for the protection and representation of fishermen's working time and rest periods in each country. This study analyzes the potential for harmonization between international conventions and national laws on working hours and rest periods for fishermen, with a focus on the United Kingdom and Norway in Europe, and Japan and the Philippines in Asia. The aim is to identify policy improvements related to the Korean Seafarer's Act with confidence and authority. This study confidently addresses the fatigue and health problems of Korean fishermen who engage in long-term fishing activities on various types of vessels. The study is based on the results of a multi-case comparative empirical study. To achieve the study's objectives, we propose designating fishing vessels and clarifying working hours and rest period regulations under the Seafarers' Act. This proposal will provide compensation and protection for fishermen's labor. This study aims to improve the working conditions and rest periods of fishermen in accordance with the ILO standards. It also aims to contribute to the creation of an environment that enables sustainable fishing activities by harmonising domestic and international conventions.

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## INTRODUCTION

This is essential to maintain a healthy and productive workforce by allowing for recovery from fatigue and promoting a healthy lifestyle. Employers and employees are encouraged to manage working hours and rest periods through employment contracts that comply with the law. It is important to adhere to legal requirements for working hours and rest periods to ensure the well-being of all parties involved.(1) The regulation of working hours and rest periods is of great significance for fishermen, given the demanding nature of their work and the isolation they face while residing on ships, away from their loved ones and society. The regulation of working hours has been a topic of discussion for many years. It is worth noting that in 1919, the International Labor Organization (ILO) proposed limiting working hours to 8 hours per day and 48 hours per week. Since then, developed countries such as the United Kingdom, Norway, and Japan have explicitly codified regulations on working hours into law (2).

In Korea, there are different regulations for workers depending on the type of job they perform. While the Labour Standards Act guarantees basic living conditions for those who provide labour for wages on land, fishermen who enter into a seafarer labour contract to provide labour on a ship are subject to regulations on working conditions stipulated in the Seafarers' Act. This is due to the specificity of working on board.(3) The Seafarers Act applies to both merchant and fishing vessels, except in special cases. Article 60 and Article 68 of the Seafarers Act outline the legal basis and principles for seafarers' working hours and rest periods. There may be a question regarding the legal interpretation of whether rest periods for fishermen can be considered equivalent to waiting periods for onshore workers, given the nature of their duties. Based on the rulings of the Seoul High Court on February 13, 2018 (2013, No. 2025567) and the Incheon District Court on December 30, 2010 (No. 2010, No. 613), it has been determined that seafarers who remain on board a vessel to perform additional work under the command and supervision of the ship owner cannot be classified as having guaranteed rest time. As a result, this time is considered to be working hours. Fishermen are frequently required to work overtime due to the challenging working conditions and shared risks of their specific environment, in comparison to land-

based workers. It is worth noting that Article 68(2) of the Seafarers Act allows the Minister of Oceans and Fisheries to set separate working hour standards for seafarers engaged in special fishing activities, which may take into account the unique circumstances of their work. It is worth noting that Article 68 (Scope of Application) of the Seafarers Act has an existing exception that excludes the application of fishermen aboard small-scale fishing vessels of less than 20 tons. This exception applies to approximately 96% of all registered fishing vessels (4). However, due to the absence of a Ministry of Oceans and Fisheries ordinance for such vessels, there are no specific legal basis and principles regarding working hours and rest periods for fishermen aboard such vessels that have been institutionalized. Marine accidents can be caused by a variety of factors. Therefore, extensive research is being conducted in the technical and educational fields to prevent such accidents. Previous studies have confirmed that marine accidents are often caused by human factors, such as lax vigilance, negligence of duty, and violation of navigation regulations (5) (6). Efforts could be made to consider changing the attitudes of seafarers who operate ships (5) (6), studying the factors that cause fatigue, and implementing measures to reduce it (7) (8). Additionally, the introduction of intelligent systems such as RADAR, ECDIS, and Auto Pilot could be explored as potential measures to help prevent accidents (9). However, in order to ensure the safety of fishermen, it may be necessary to consider measures to address seafarers' fatigue. This could involve improving the seaworthiness of fishing vessels, promoting a culture of safety among fishermen, and creating a better working environment with appropriate rest periods (10). It is worth noting that working hours and rest periods can have a significant impact on the productivity, competitiveness, profits, safety, and health of fishermen (11). The regulation of working hours and rest periods for fishermen should be based on evidence and clear guidelines, while allowing for flexibility (12). The objective of this study was to establish the current working hours of fishermen.

This study examines the legislation concerning maritime labor and domestic fishermen to identify the criteria for applying the Quadruple Helix methodology based on comparative theory to the current working hours and rest periods of fishermen. The study conducted a comparison of the working hours and rest periods of domestic fishermen from the United Kingdom, Norway, Japan, and the Philippines, among the 2022-23 Council members (13) of the International Maritime Organization (IMO), which is composed of countries representing each region of the world. The study identified certain issues related to domestic fishermen. This study suggests legal bases and principles for working hours and rest periods for fishermen that are suitable for the purpose of the law. The objective is to safeguard the fundamental rights of fishermen by enhancing their working conditions and treatment on board, as well as to promote the quality of life of fishermen through sustainable fishing activities.

## THEORY AND METHOD

### Theory

**Philosophy for working hours and rest period:** Working hours refer to the time during which an employee is under the direction and supervision of an employer. This includes the time when the worker is at the employer's disposal, and the employer's direction and supervision is both explicit and implicit (14). The determination of whether rest periods or sleep periods stipulated in working hours belong to working hours or rest period cannot be uniformly decided based on a specific industry or type of work. Instead, it must be determined on a case-by-case basis, taking into account the contents of the employment contract, the provisions of the employment rules, and collective agreements. The text outlines the worker's duties and the level of employer involvement during rest periods. It also takes into account the availability of rest areas and any other factors that may impact the worker's rest or constitute employer supervision (15). According to Article 60 (Working Hours and Rest Periods) of the Seafarers' Act, the working hours and rest periods for fishing vessels of 20 tons or more are specified. However, limited additional work

may be allowed only if the ship owner's reasons are recognized as unavoidable. It is recommended that the conditions and characteristics of fishermen's work be reviewed.

Firstly, it is important to examine the working conditions experienced by fishermen. Fishing is known for its challenging characteristics, often referred to as the '4D's': Difficult, Dangerous, Dirty, and Distance, due to the harsh natural environment of the sea. Furthermore, it is concerning that these conditions are expanding into what is known as the '6D's', with the addition of Dreamless and Discrimination, particularly among young and foreign fishermen (16). The working conditions of fishermen differ significantly from those of land-based workers. Due to the nature of their work at sea, they face limitations in their ability to respond to sudden changes in sea conditions. These limitations are largely due to the space constraints of fishing vessels, which also contribute to the substandard living conditions of fishermen. It is worth noting that the majority of their living space is utilized for loading fishing gear. The working hours and rest periods of fishermen are often irregular due to the unpredictable nature of fishing activities. It is important to note that the output of fishing activities can be influenced by a variety of factors, including fish habits, climate, and sea conditions, in addition to the direct activities on board. Fishermen work in an environment that is unique and separates them from their homes both temporally and spatially. As a result, they are unable to separate work from rest, which is not the case for those on land (17).

Secondly, when examining the environmental conditions that affect fishermen's work, the following characteristics can be identified. It can be challenging to differentiate between the working and rest periods of fishermen from a direct perspective. This is due to the difficulty in accurately calculating the actual working hours of fishermen, as they engage in fishing activities and work after returning to port (18), unlike land-based workers. For instance, it is common for fishermen to enter into a lump sum contract with fishing companies that covers the entire duration of their work, from the departure of the fishing vessel to the end of fishing activities. It is worth noting that closed fishing employment practices may indirectly impact the working and rest periods of fishermen (19). The job market for fishermen is mainly concentrated on captains or fishing ports. It is customary for fishermen to enter the fishing industry through introductions or referrals from these sources. In recent years, there has been an increasing reliance on foreign fishermen. Additionally, the working conditions for fishermen are often based on manual labour. Although land-based workers often use automated machines and systems to provide labor services, it is important to note that the fishing industry still heavily relies on manual labour. The nature of the work varies depending on factors such as fish species and fishing season. While some pelagic fisheries have become more mechanized and automated, it is worth mentioning that many nearshore fisheries still operate under a manual labour system (20). This study provides an overview of the current status of Korea's fishing fleet and fishermen, as reported by the statistical system of the Ministry of Oceans and Fisheries.

It also highlights the challenges faced by fishermen in terms of working conditions. According to the latest data available from 2022, the total number of registered fishing vessels was 63,669, which represents a decline from the peak of 89,347 vessels in 2001 (4). According to <Table 1>, it can be observed that as of 2022, the majority of registered fishing vessels, approximately 95.8%, are small-scale vessels with a gross tonnage of less than 20 tons and are not subject to the Seafarers' Act. Conversely, only about 4% of registered fishing vessels are subject to the Seafarers' Act. As below <Table 2> presents the number of fishing vessel accidents in 2022, which was 758, compared to 649 in 2020, representing an increase of 117%. As indicated by reference 21, the number of fishing vessel accidents has been increasing annually. The causes of the accidents in 2022 were due to defective hulls (51.5%), operational negligence (46.8%), and severe weather conditions (1.7%), as reported in reference 21. It has been observed that fishing vessels are exposed to higher risks than merchant ships in marine

Table 1. Fishing fleet statistics as of 2022

Total (Unit: Number of vessel)	Steel fishing vessel		Wooden fishing vessel		F.R.P. vessel		Other vessel	
	Less than 20 tons	20 tons or more	Less than 20 tons	20 tons or more	Less than 20 tons	20 tons or more	Less than 20 tons	20 tons or more
63,669	55 (0.1%)	1,018 (1.6%)	461 (0.7%)	6 (0.0%)	60,250 (94.6%)	1,622 (2.5%)	242 (0.4%)	15 (0.0%)

Sourced :<https://www.mof.go.kr/statPortal/cate/statView.do> 17th Dec. 2023.

Table 2. Causes and casualties of fishing vessel accidents from 2020 to 2022

Year	Number of Accidents	Cause (Unit: EA)		
		Defective hull	Operational negligence	Severe weather conditions
2022	758	390	355	13
2021	718	398	314	6
2020	649	314	326	9

Source :<https://www.suhyup.co.kr/suhyup/313/subview.do> 25th Jan. 2024.

accidents, and these risks are equally relevant to fishermen. According to the statistical system of the Ministry of Oceans and Fisheries, as of 2022, there are a total of 31,867 employed seafarers, including 1,393 reserves. Out of these, 29,919 (93.9%) are employed on national vessels, while 1,948 (6.1%) work on overseas-employed vessels. Among the seafarers, 15,501 (51.8%) work on merchant ships, and 14,418 (48.2%) work on fishing vessels. It is worth noting that of the 14,418 fishermen, 1,157 (8.0%) work on pelagic fishing vessels, and 13,261 (92.0%) work on longline fishing vessels. The Ministry of Oceans and Fisheries' statistical system is currently limited to surveying the manpower status of vessels that are subject to the Seafarers' Act. As a result, it is challenging to obtain accurate statistics on the number of fishermen working on all fishing vessels. It is worth noting that fishing vessels of 20 tons or more, which are subject to the Seafarers' Act, account for only about 4% of all registered fishing vessels. However, it is worth noting that the National Federation of Fisheries Cooperatives has provided a supplementary estimate which compares the number of fishermen insured with the number of fishing vessels insured. This estimate suggests that as of 2019, there were 62,126 fishermen for vessels over 3 tons and 46,196 for vessels under 3 tons(22). This study explores the legal basis and principles of working hours and rest periods for fishermen, with a particular focus on the necessity and justification for a special exception for fishermen aboard small fishing vessels that are currently excluded from the application of the Seafarers' Act. This is in contrast to fishermen who are subject to the existing Seafarers' Act for vessels over 20 tons.

#### **Analyzing the legal basis for working hours and rest periods for fishermen at home and abroad:**

On June 15, 2007, the International Labour Organization adopted the Work in Fishing Convention (C188), which consolidated existing international conventions related to the working and living conditions of fishermen. The convention entered into force on November 16, 2017, and has been ratified by 21 countries (23). The Work in Fishing Convention outlines the rest period requirements for crew members in Part 4, Working Conditions (Crew Size and Rest Periods), Article 13(b) and Article 14(b). Article 13(b) states that 'regular rest periods of sufficient duration to ensure the health and safety of the crew shall be provided', while Article 14(b) requires fishing vessels engaged in navigation and fishing activities at sea for more than three days to meet the standards of not less than 10 hours in any 24-hour period and not more than 77 hours in any seven-day period (24). The Fishing Seafarers' Labor Convention allows for each Contracting Party to establish minimum rest periods, taking into account the fishing conditions in their respective countries, while adhering to the legislative intent and philosophy of the standards (25). The application of these acts in domestic law is explained in detail as below. The Seafarers' Act and the Labor Standards Act have played a crucial role in establishing legal principles that limit working hours and ensure rest periods for fishermen in Korea. Internationally, working time limits and rest period guarantees were established with working hours initially set at 48 hours per week and 8 hours per day, based on the International Labor Organization's (ILO) 1919 Versailles Peace Treaty (Article 13, Labor).

These limits were subsequently reduced to 44 hours per week and 40 hours per day through legislative amendments in 1989 and 2003 (26). As we aim to limit working hours and guarantee rest periods, it is important to consider the balance between the flexibility of the labour market and the protection of workers' rights and interests. This is particularly important in light of the hyper-personalisation of modern society, the MZ generation, and the development of digital technology (27). Article 59 of the Labor Standards Act provides special exceptions to working hours and rest periods for certain industries, including land and pipeline transportation, water transportation, air transportation, other transportation-related service industries, and the health industry. Additionally, the 2018 revision introduced a regulation that limits working hours to 52 hours per week for workplaces with 300 or more employees. The fishing activities of fishermen can be interpreted in various ways, including water transportation and other related services that fall under any of the subcategories of the medium or small classification of the standards for industries notified by the Korea Maritime and Fisheries Port Authority. It is possible to grant special exemptions based on this. The Seafarers' Act outlines the legal bases and principles for the working hours and rest periods of fishermen, as stated in Article 60 (Working Hours and Rest Periods) and Article 68 (Scope of Application). Secondly, the working hours and rest periods of fishing crews are basically regulated under the Seafarers' Act as follows. The Seafarers' Act, which regulates the duties, service, standards of working conditions, job security, welfare, education and training of seafarers, applies to all Korean vessels, including fishing vessels under the Fisheries Act, unless otherwise specified. However, it does not apply to (1) vessels with a gross tonnage of less than 5 tonnes that are not sailing vessels, (2) vessels that navigate only in lakes, rivers or harbours (except for regattas), (3) fishing vessels with a gross tonnage of less than 20 tonnes, and (4) auxiliary vessels (except auxiliary vessels registered for the purpose of carrying out maritime cargo transportation). In particular, Article 60 (Working Hours and Rest Periods) of the Seafarers' Act stipulates that the working hours of seafarers shall be 8 hours per day and 40 hours per week, but by agreement between the shipowner and the seafarer, the working hours may be extended (overtime) up to 16 hours per week. It also provides that the shipowner may order overtime work of up to 16 hours per week for seafarers working on voyages and of up to 4 hours per week for other seafarers.

In particular, a seafarer's rest period shall not be less than 10 hours in any 24-hour period and not more than 77 hours in any weekly period, and a rest period of 10 hours or more in any 24-hour period may be split into only one period. However, one of the split rest periods shall be at least six hours in duration and the interval between consecutive rest periods shall not exceed 14 hours in order to ensure the seafarer's right to rest. However, based on Article 68 (Scope) of the Seafarers' Act, there are exceptions to the above provisions for (1) sailing ships other than sailing vessels, (2) fishing vessels other than fishing vessels, (3) ships with a gross tonnage of less than 500 tonnes other than sailing vessels, and (4) ships whose area of navigation is a Contiguous Zone, and the Minister of Oceans and Fisheries may separately establish standards for the working hours and crew size of seafarers on board the listed exceptions. In addition, Article 60

(Working Hours and Rest Periods) of the Seafarers Act allows the Ministry of Oceans and Fisheries to approve a collective agreement that sets different standards for working hours, the distribution of rest periods and the intervals between rest periods for seafarers on duty or on vessels engaged in short-term voyages, if it deems it necessary, taking into account the frequency of ports of entry and departure and the nature of the fishermen's work. For example, the Large Vessel Bottom Trawl Fishermen's Cooperative and the Bottom Trawl Workers' Union have a collective agreement on working hours and rest periods for fishermen, which is divided into "Large Vessel Bottom Trawl Outer", "Pair" and "Pair-A" according to the type of fishing. The main contents of the agreement are production incentives, distribution rates by position, severance pay, bonuses, housewives' food expenses, salary settlement, fishing period, penalty system and termination of the seafarer's employment contract. The agreement on fishermen's working hours only covered the "pair A" type and the crew of the large trawler pair fishing vessel is required to be skilled in manoeuvring the fishing vessel as it is a joint operation of two fishing vessels dragging one fishing gear, and in view of the special nature of the fishing industry, especially in bad weather and frequent night fishing activities, the working hours are fixed by long-standing practice and holidays are to be negotiated with the shipowner when the captain deems it necessary in view of the fishing situation. Taking into account this situation, it can be concluded that there are no practical principles and rules on working hours and rest periods for fishermen of less than 20 tonnes.

## METHODS

Similar to statistical analysis research methods, a multi-case study refers to a logic that explains the design based on a 'sample'. The purpose of such a multi-case study is not to collect and analyse the quantified result, but to carry out an exploratory analysis based on generalisation theory, which examines commonalities and differences by extending the applied theory based on cases with qualitative aims (28). In this study, the multi-case theory based on the quadruple helix method was applied because it can derive convincing directions for improvement by comparatively analysing the multi-cases of Norway and the United Kingdom in Europe and Japan and the Philippines in Asia within a specified range of factual relationships. In the process of comparing multi-cases of working hours and rest periods for fishing vessel seafarers, it is useful to clarify the method of multi-case comparative analysis adopted, as the interpretation methods should consider various factors (29). The multi-case comparison of working time and rest periods for seafarers on fishing vessels is defined as the transfer of social system concepts or the ideas behind them from the national to the international level (30). This study proposes that the multi-case comparison of working hours and rest periods for seafarers on fishing vessels would be primarily concerned with 'distinguishing hierarchical levels', as it is beneficial to analyse national social systems to improve understanding of advanced countries in the fisheries sector. <Figure 1 illustrates the concept of the research method.

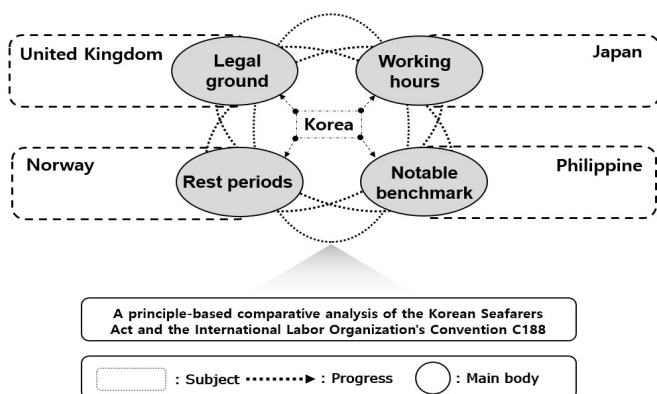


Figure 1. Multi-case theory based on Quadruple Helix method

The vertical method of analysing working time and rest periods for seafarers on fishing vessels in national systems is justified by the emergence of a "common area". A limitation of this method is that the subjectivity of the researcher can be projected. Nevertheless, this approach can categorise, differentiate and effectively explain actions that include the complexity and distinctive features of a particular case in a particular situation. As a result, multi-case studies make a decision to support the background material for the discussion of fishing vessel seafarers' fundamental rights to work and rest, are often used in situations where a precise solution is difficult to capture. This study used the Quadruple Helix model to contribute to the development of legal rationale and principles on working hours and rest periods to improve the working conditions and treatment of seafarers and addressed the following key research questions.

- No.1 Research question: What is the evidence and policy implications of working time and rest requirements for British and Norwegian seafarers in Europe?
- No.2 Research question: What is the evidence and policy implications of working hours and rest for Japanese and Filipino fishermen in Asia?

This study analysed the descriptive information as explanatory, descriptive and exploratory, centred on the key words of the RQs derived above: working hours, rest periods and benchmarking cases, and horizontally compared what domestic fishing companies should improve and how they should improve. As the research process and design below <Fig. 2> shows, we aim to contribute to the improvement of fishermen's working conditions and quality of life by proposing solutions and improvements to the problems identified.

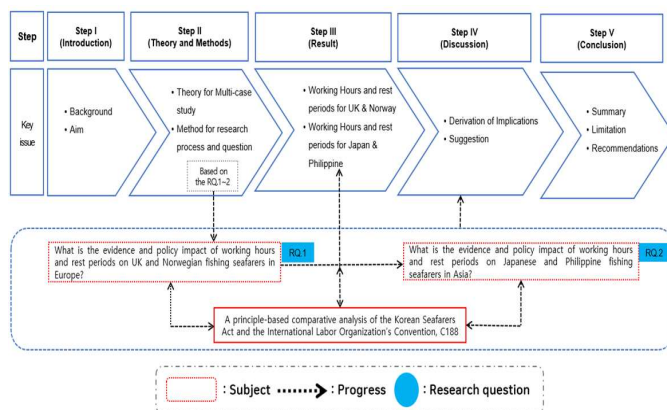


Figure 2. Research process and design

## RESULTS

### Quadruple Helix Comparative analysis of working hours and rest periods in major European fishing nations

The UK is a signatory to the International Labour Organisation's Seafarers' Labour Convention, and the working time and rest requirements for UK-flagged fishing vessels are set out in the Merchant Shipping (Working in Fishing Convention) Regulations 2018, some of which go further than the International Convention. The Fishing Vessels (Working Time: Sea-fishermen) Regulations 2004 PART 2 'RIGHTS AND OBLIGATIONS CONCERNING WORKING TIME' requires a UK shipowner to take all reasonable steps to ensure that the working time of a sea-fishermen does not exceed an average of 48 hours per week over an average period of 52 weeks, with rest periods of 10 hours per 24 hours, but not less than 77 hours per week (31). For example, UK fishermen are guaranteed a minimum of four weeks' annual leave, but additional working time is permitted in exceptional circumstances for a variety of technical or fishery-related reasons, such as emergencies. As a notable benchmarking example, the UK requires vessel owners to provide free medical examinations for fishermen working night shifts and to

establish their own systems and special compensation arrangements, such as separate shore-based support organisations for fishermen's rest, maintenance and upkeep of facilities on board the vessel, and record keeping of working hours and rest periods (32). Norway ratified the Seafarers' Labour Convention on 8 January 2016 and has developed and applied separate implementing legislation for Norwegian ships, fishing vessels, seafarers and fishermen (33). Regulations concerning seafarers' hours of work and rest in Norway include Regulation No. 787 of 25 June 2003 on hours of work and rest on fishing vessels (25 June 2003, No. 787. Regulations on working hours and rest periods on board fishing vessels) (34). According to section 3. Hours of work and rest, the normal working week for Norwegian fishermen is 48 hours, with rest periods of at least 10 hours in any 24-hour period. In particular, Norway is a party to Part IV of the Fishing Seafarers Labour Convention. Conditions of service (manning and hours of rest) Article 13 (b) (fishers shall be given regular rest periods of sufficient length to ensure their safety and health), Article 14 (b) (for fishing vessels, irrespective of their size, which remain at sea for more than three days, the minimum hours of rest to be given to fishers shall be determined after consultation and with a view to limiting fatigue. In accordance with paragraph 1 of this Article, a rest period of 10 hours or more may be divided into two periods, one of which shall be of at least 6 hours and the interval between the two periods shall not exceed 14 hours.

However, a shipowner may require a seafarer to perform work during working hours which is necessary for the immediate safety of the seafarer, the ship or cargo, or for the rescue of another ship or person in distress at sea, and the concept of compensatory rest is flexible enough to allow work beyond normal working hours in special circumstances. In addition, Norway allows collective agreements to regulate fishermen's working conditions in order to protect their rights and interests, but the exceptions provided for in collective agreements are supplemented to ensure that they do not contravene ILO Convention No. C188 - Work in Fishing Convention, 2007 (No. 188) or the EU Directive (35). A notable example of benchmarking is Norway's ratification of ILO C188, which harmonises international standards with national law. In addition, in 2016, the European Union institutionalised in the form of a directive, through an agreement between social partners approved by the Council, a system that sets minimum requirements for working hours, rest periods, working conditions, health and safety, procedures in the event of injury or death, medical care at sea, fishermen's wages, housing and food for fishermen in member states (36). These efforts can be interpreted as protecting the rights and safety of fishermen and minimising gaps. Regulations and guidelines related to the rights and safety of fishermen also aim to improve the working conditions and safety of fishermen and to maintain sustainable fishing activities by clarifying specific procedures in the event of accidents such as death or injury during fishing activities (37). Therefore, it can be interpreted that Norway is making efforts to protect the safety of the fishing industry and the rights of workers by actively incorporating international conventions such as ILO C188 into domestic law and actively enforcing them within the country.

#### ***Quadruple Helix Comparative analysis of working hours and rest periods in major Asian fishing nations***

According to Article 73 of the Seafarers' Act (Act no. 100 of 1947), Japan's Standards for Working Hours and Holidays of Seafarers Aboard Designated Fishing Vessels (指定漁船に乗り組む海員の労働時間及び休日に関) provide for the protection of working hours and rest periods for seafarers on board designated fishing vessels and compensation for overtime (38). It stipulates that the maximum working time for fishing crews during the fishing season is eight hours per day and 40 hours per week, and that fishing crews engaged in pelagic bottom trawling, etc., during the fishing season are entitled to at least 10 hours of rest per day (including at least six consecutive hours of rest). However, Japan allows the rest period to be reduced to 18 hours (including two consecutive four-hour breaks) for two days, depending on the temporary needs of the vessel owner. However, if the vessel owner shortens the fishing crew's rest period,

Japan must provide the crew with the time equivalent to the shortened rest period within two days, in addition to the normal rest period. The law also specifies the basis for financial compensation by requiring vessel owners to provide seafarers on board designated fishing vessels with at least one day off per week, except during fishing periods, and to pay an additional 30% or more in the case of extended working hours. A notable benchmarking example is Japan, an island nation with a long coastline and a variety of fishing activities suitable for different marine environments (39). Japan has designated vessels for trawling, whaling, inshore tuna fishing, inshore citron fishing and purse seine fishing, and has separately promulgated regulations on working hours and rest periods for fishermen that reflect the characteristics of these fishing activities (40). Japan has also adopted a number of measures to improve the safety and health of seafarers. Department Order No. 156-16, Series of 2016 Rules and Regulations Governing the Working and Living Conditions of Fishermen on Board Fishing Vessels Engaged in Commercial Fishing Operation, issued by the Department of Labor and Employment of the Philippines, under Section 5.

Rest Period and Rest Day of Fishermen, states that fishermen are guaranteed a total rest period of 10 hours per day and a minimum of 24 consecutive hours of rest after six consecutive days of work. The master may instruct the crew to perform tasks necessary to minimise the safety of the vessel, the fishermen and damage to the catch, and may instruct the fishermen to assist other fishing vessels in distress and other emergencies at sea. In addition, the master may instruct the fishermen to carry out urgent tasks and to provide sufficient rest for the fishermen until normal conditions have returned from an emergency. In addition, the master must provide adequate rest periods for fishermen who perform work during the rest period and ensure adequate compensation for any additional work performed (41). The Philippines, based on Department Order No. 156-16, Series of 2016 Rules and Regulations Governing the Working and Living Conditions of Fisher On Board Fishing Vessels Engaged in Commercial Fishing Operation, allows vessel owners to exercise discretion over fishermen's working hours, but strictly limits it to within the scope of prescribed rest periods. Similar to the Japanese case, the Philippines also allows vessel owners to extend or add to fishermen's work in the event of an emergency, such as work for the safety of the vessel or the rescue of a person in distress, but requires the vessel owner to provide fishermen with adequate rest at the end of the situation and fair compensation for the additional work. A notable benchmarking example is the Philippines, which recognises the important contribution of its fishermen to the Philippine economy and, as a matter of professionalism and due respect for their work, provides for meal breaks in section 4. Meal Breaks, which states that fishermen shall be entitled to a break/time off of not less than sixty (60) minutes for their regular meals (42). Furthermore, in relation to Section 4. Classification of Commercial Fishing, the Philippines classifies commercial fishing activities into three (3) categories based on gross tonnage for the purpose of applying the compensation scheme and occupational safety and health standards for fishing vessels. Small Scale Fishing Vessel means fishing by fishing vessels up to 20 tonnes gross tonnage using manual or automatic fishing gear. Medium-scale fishing vessel means fishing using manual or automatic fishing gear with a maximum gross tonnage of 150 gross tonnes. Large-scale fishing vessel means fishing with manual or automatic gear with a gross tonnage exceeding 150 gross tonnes (43). Eventually, the Philippines divided its fishing industry into three categories based on vessel size, and introduced compensation schemes and safety standards for each category to ensure that vessel size is related to the size of the fishery, the nature of the work and the safety risks (44). The implications are clear.

***Results and implications of the quadruple helix comparison:*** As shown in Table 3 below, the Korean Seafarers' Act establishes the principles of working hours and rest periods for seafarers, but there is a limitation in the scope of the Seafarers' Act, which does not apply to fishermen or workers on board small-scale fishing vessels of less than 20 tonnes. The International Labour Organisation allows contracting parties to determine the specific methods of implementation (means),

**Table 3. Quadruple Helix comparison between Korea and European and Asian countries based on legislation, working hours, rest periods and benchmarking cases for fishermen**

Division		Sea	Remark		
Korea	Legal ground of fishermen's	· Seafarer's Act for fishing vessels over 20 tons	· Lack of regulation of working hours and rest periods for fishermen on board small fishing vessels under 20 tonnes.		
	Working hour	· 8 hours per day, 40 hours per week (subject to the Seafarers' Act) · No separate regulations for fishing crews			
	Rest period	· 10 hours per day, 77 hours per week			
European region	Norway	Legal ground of fishermen's	· Norway, which has ratified ILO C188, is aligning international standards with its national legislation. In addition, in 2016, the European Union institutionalised guidelines through an agreement between the social partners, approved by the Council, setting minimum requirements for working hours, rest periods, working conditions, occupational health and safety, procedures in the event of injury or death, maritime medical services, seafarers' wages, residence and food on board fishing vessels. · The shipowner is obliged to provide free medical examinations for crew members who work at night and has established an internal system with special provisions for shore-based support organisations, which are responsible for crew rest, maintenance of on-board facilities, recording of working hours and rest periods, and additional compensation (benefits).		
		Working hour		· Based on a period not to exceed 12 months, · 48 hours per week on average	
		Rest time		· 10 hours a day, 77 hours a week	
	United Kingdom	Legal ground of fishermen's		· The Fishing Vessels (Working Time: Sea-fishermen) Regulations 2004 PART 2 RIGHTS AND OBLIGATIONS CONCERNING WORKING TIME	
		Working hour		· Within 48 hours per week	
		Rest period		· 10 hours a day, 77 hours a week	
Asian region	Japan	Legal ground of fishermen's	· Designated fishing vessels suitable for activities such as trolling, whaling, inshore tuna fishing, inshore purse seine fishing and inshore gillnet fishing have been identified, and rules on working hours and rest periods for fishermen, tailored to the characteristics of each fishing activity, have been separately established.		
		Working hour		· (Large ocean-going ships) 8 hours per day · (Smaller in-port vessels) · Underway: 8 hours per day, not to exceed 56 hours per week · Berthing: 8 hours per day, no more than 48 hours per week	
		Rest period		· During fishing activities: 10 hours rest per day	
	Philippines	Legal ground of fishermen's		· Department Order No.156-16, Series of 2016 Rules and Regulations Governing the Working and Living Conditions of Fisher On Board Fishing Vessels Engaged in Commercial Fishing Operation · Ensuring 60-minute meal breaks for fishermen · Diversified application criteria by dividing fisheries into three categories based on vessel size	
		Working hour			· No provision for working hours
		Rest period			· At least 60 minutes per meal · 10 hour breaks per day · At least 24 hours of uninterrupted rest every 6 days during normal operations

Source: Reorganize the authorship of United Kingdom, Norwegian, Japanese, and Philippine cases based on Seafarer's Act in Korea

**Table 4. Amendments to Article 68 (Scope of Application) of the Seafarer's Act**

Exist	Amendment
<p>Article 68 (Scope of Application) ① The provisions of this Chapter shall not apply to a ship (except for a preliminary examination pursuant to Article 24 of the Act on the Entry and Departure of Ships) falling under any of the following subparagraphs.</p> <ol style="list-style-type: none"> <li>1. a sailing ship that is not a sailing ship</li> <li>2. a fishing vessel other than a fish carrier</li> <li>3. a ship of less than 500 gross tons that is not a sailing ship</li> <li>4. other ships prescribed by the Ministry of Oceans and Fisheries Ordinance</li> </ol> <p>② The Minister of Oceans and Fisheries may, if deemed necessary, prescribe standards for seafarers' working hours and the number of crew members to be applied to vessels falling under any of the subparagraphs of paragraph (1).</p>	<p>Article 68 (Scope of application) &lt;add after the current provision ③ The Minister of Oceans and Fisheries may establish separate standards for working hours and rest periods for seafarers aboard designated fishing vessels of less than 20 tons.</p>

**Table 5. Standards for working hours and rest periods for seafarers aboard designated fishing vessels under 20 tons under the Seafarer's Act (draft)**

Recommendation code
<p>Article 1 (Purpose) The purpose of this standard is to establish working hours and rest periods for seafarers aboard designated fishing vessels to promote the efficient performance of seafaring administration.</p>
<p>Article 2 (Definition) In this guideline, the term "designated fishing vessel" refers to a pelagic fishing vessel of less than 20 gross tons engaged in direct fishing activities, excluding appurtenant vessels such as fish carriers, processing vessels, lightships, and fishing boats licensed to assist in the fishing activities of licensed fishing vessels other than Article 3 of the Seafarers Act.</p>
<p>Article 3 (Working Hours) The working hours of a crew member aboard a designated fishing vessel shall be as follows, except during periods of fishing activity.</p> <ol style="list-style-type: none"> <li>① Within 8 hours per day</li> <li>② No more than 40 hours per week</li> <li>③ However, this shall not apply if there is only one person on board.</li> </ol>
<p>Article 4 (Rest Periods) ① Seafarers aboard designated fishing vessels shall be granted a rest period of at least 10 hours for each day of fishing activities.</p> <p>The rest period under the provisions of the preceding paragraph shall include at least six consecutive hours of rest. However, the master may shorten the rest period from 24 hours to 18 hours notwithstanding the provisions of paragraph ① if there is a temporary need.</p> <ol style="list-style-type: none"> <li>② The rest period under the preceding paragraph shall include two consecutive rest periods of four hours.</li> <li>③ If the captain shortens the rest period in accordance with the provisions of Paragraph ② shall grant a rest period corresponding to the shortened rest period within two days in addition to the normal rest period.</li> </ol>
<p>Article 5 (Reduction of working hours during fishing activities, etc.) The master shall endeavor to reduce the working hours of seafarers aboard the designated fishing vessel during fishing activities, and shall provide sufficient rest periods for seafarers aboard the designated fishing vessel during periods other than fishing activities by reducing working hours, granting holidays, vacations or otherwise.</p>
<p>Article 6 (Overtime Work) In addition to the work excluded from the scope of Article 7, the master may extend the working hours of seafarers beyond the limits of working hours and rest periods stipulated in Articles 3 and 4 as necessary in the event of an emergency.</p>
<p>Article 7 (Excluded Work) The provisions of Articles 3 through 6 shall not apply to a seafarer engaged in any of the following work by order of the master.</p> <ol style="list-style-type: none"> <li>① Work that falls under an emergency situation in order to promote the safety of human life, the ship or cargo, or to rescue human life or another ship.</li> <li>② Firefighting, evacuation, fire prevention, abandonship drills, and other similar tasks.</li> <li>③ Work necessary for the normal rotation of the voyage on duty.</li> </ol>
<p>Article 8 (Excluded Persons) The provisions of Articles 3 through the preceding Article shall not apply to persons falling under any of the following subparagraphs.</p> <ol style="list-style-type: none"> <li>① Employees in the highest positions of the deck department, engine department or communications department who do not serve as navigational officers, and their directors</li> <li>② Doctors and persons engaged solely in the practice of nursing</li> <li>③ Persons directing fishing activities</li> </ol>

based on the principle of ensuring compliance with at least 10 hours of rest in a 24-hour period and 77 hours in a seven-day period, and the United Kingdom and Norway, which are representative countries in the European region, both guarantee fishermen rest periods equal to the ILO's minimum rest standards (10 hours per day and 77 hours per week). Of course, Japan and the Philippines, which are representative countries in the Asian region, have some differences from the ILO's minimum rest standards due to differences in the conditions and environment of their fishing activities, but they all guarantee at least 10 hours of rest per day. In particular, both Japan and the Philippines protect fishermen's right to healthy work by establishing institutional safeguards to prevent fishermen from working long hours by requiring overtime pay for overtime work.

## DISCUSSION

As there are different types of fishing vessels, there are differences in working forms, methods and hours of operation depending on the type of vessel (45), there may be limits to the uniformity of working hours and rest periods. However, given the reality that about 96% of fishermen are in the blind spot of the Seafarers' Act as they are on board small fishing vessels under 20 tonnes, this study has found that it is necessary to designate small fishing vessels under 20 tonnes that are in the blind spot of the Act as designated fishing vessels and to establish standards (draft) for working hours and rest periods for fishermen on board such designated vessels, taking into account the different characteristics of the fishing related industrial environment in each country. As we have seen, in addition to the legal basis for the working hours and rest periods of fishermen, the major overseas

fishing countries also establish special provisions in recognition of the fact that emergencies may occur for various reasons related to fishing activities. In addition, the working hours and rest periods stipulated in the Korea Seafarers' Act meet the conditions set out in the International Labour Organization's Seafarers' Labour Convention, and Article 68(2) of the Seafarers' Act allows for the establishment of separate standards for seafarers' working hours and crew size if necessary. It is therefore necessary to extend and apply the working hours and rest periods of the Seafarers' Act to fishermen on board small fishing vessels of less than 20 tonnes, as shown in <Table 4> below. In addition, as shown in <Table 5> below, it is desirable to protect the working hours and rest periods of fishermen while providing flexibility in the working conditions of fishermen on board small fishing vessels of less than 20 tonnes, which are in the blind sector of the Seafarers' Act, by establishing special provisions reflecting the working characteristics of fishing vessels through the Ministry of Oceans and Fisheries Ordinance.

## CONCLUSION

The Korean Seafarers' Act covers all seafarers working on merchant and fishing vessels, but unfortunately about 96% of registered fishing vessels are not covered by the Act because they work on small fishing vessels under 20 tonnes, and there is no legal system for small fishing vessels under 20 tonnes, which is mandated by the Seafarers' Act, so it is necessary to supplement the legislation. Therefore, this study carried out a comparative analysis of working hours and rest periods for fishermen in the United Kingdom, Norway, Japan and the Philippines, which are representative fishing countries in the

European and Asian regions, and examined their regulations and practices. The following is a summary of the study's findings on the extent of compliance with the ILO seafarers' labour conventions and the approaches to seafarers' protection in Europe and Asia. Firstly, the Republic of Korea, the United Kingdom, Norway, Japan and the Philippines have implemented measures to support fishermen's working hours and rest periods and other sustainable fishing activities through fishermen's legislation appropriate to their national circumstances. Secondly, the European countries of the United Kingdom and Norway have ratified the International Labour Organisation's Seafarers' Convention and have strict working hours and rest periods. The average working week for fishermen is no more than 48 hours, and they are guaranteed at least 10 hours rest per day. The UK has additional protections for fishermen who work at night, including medical checks and the provision of rest facilities. Thirdly, the Asian countries of Japan and the Philippines have regulations on working hours and rest periods for fishermen, but unlike Europe, they have not ratified the ILO conventions. Japan has a maximum working day of eight hours and a 40-hour week for fishermen, while the Philippines has clear rules on rest periods. By comparing each country's regulations on working hours and rest periods for fishermen, this study assesses compliance with the ILO's minimum rest standards and the effectiveness of each country's measures to protect fishermen. European countries have harmonised their national laws with international standards, and Asian countries also guarantee minimum rest periods. In South Korea, however, there are gaps in the protection of fishermen's working hours and rest periods due to the limited coverage of the Seafarers' Act. In order to ensure that fishermen are paid fairly for the long hours they spend on board and fishing, it is necessary to clearly define working conditions and rest periods. To this end, it is necessary to extend the working hours and rest periods of the Seafarers' Act to fishermen on small fishing vessels of less than 20 tonnes, and to provide flexibility in the working conditions of fishing vessels by establishing special provisions reflecting the working characteristics of fishing vessels through the draft "Standards for Working Hours and Rest Periods of Seafarers on Designated Fishing Vessels of Less than 20 Tonnes" under the Seafarers' Act. However, as this study focuses on the literature and suggests improvements, there is a limitation that the scope of the definition of designated fishing vessels should be further expanded through additional consultation with relevant stakeholders to ensure the acceptability of the legislation. Nevertheless, this study is significant in that it identifies problems in the current system through a comparison of national and international standards on working hours and rest periods for fishermen, and serves as a catalyst for discussion on how to improve the working environment for fishermen. However, as the working conditions of fishermen vary according to the type of vessel and working methods, it is not possible to prescribe uniform working hours and rest periods. Therefore, it is necessary to conduct a survey on the different working environments of domestic fishing vessels in the future and to organise a specialised meeting with stakeholders to further refine fishermen's working standards to increase their legal acceptability.

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