

## Legal compliance of freshwater fishermen in Northeastern Thailand



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### ABSTRACT

This study examines the legal framework governing freshwater fisheries in the Lam Pao Dam area in northeastern Thailand, focusing on existing challenges and fishermen's attitudes toward legal compliance. The participants included 20 local fishermen and 3 officers from the Kalasin Freshwater Fisheries Prevention and Suppression Center. Data were collected through surveys, semi-structured interviews, and focus group discussions. The findings indicate that Thailand's freshwater fisheries legislation is comparable to laws in other countries aimed at protecting aquatic ecosystems. The law includes restrictions on fishing methods, equipment, as well as fishing locations and seasons. Most respondents had extensive fishing experience and a strong understanding of fisheries regulations. They did not express negative attitudes toward the law and did not consider it outdated. However, they emphasized the need for government support, particularly in providing fishing equipment and promoting alternative sources of income to offset losses resulting from legal restrictions. Such support could enhance compliance and contribute to more sustainable law enforcement. The study therefore recommends greater involvement of local fishermen in policy-making processes, including participation in monitoring and evaluation alongside relevant authorities, to support the sustainable development of fisheries in the Lam Pao Dam area.

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### 1. Introduction

Biodiversity of freshwater is fundamental for maintaining the livelihoods of human beings globally. In many deprived rural communities, fishing and collecting aquatic species are important sources of food and income (Mulokozi et al., 2020). Inland fisheries have a dual contribution to food and medicine, as well as culture in rural areas. Therefore, sound conservation and management of freshwater resources are critical for fisheries support and preservation of the multitude of ecosystem services rendered by freshwater bodies. Nevertheless, overexploitation of freshwater may ultimately result in critical situations for the biodiversity of the aquatic ecosystem. To protect freshwater resources and preserve biodiversity, the state must enact laws prohibiting the capture of aquatic animals. However,

such prohibitions alone are insufficient to resolve the crisis. It is therefore necessary to establish spatial boundaries and seasonal periods for fishing, as well as to implement comprehensive monitoring criteria that extend to projects or activities connected to aquatic ecosystems. Thailand has implemented a range of biodiversity protection measures, such as restrictions on fishing gear and seasonal bans during reproductive time, whose regulations vary according to the species in various waterbody types. It is however less straightforward how legal measures interact with livelihood pressures in rural freshwater fisheries, as these interactions depend on local economic conditions, resource availability, and community norms.

Little is known about how fishermen themselves understand or respond to fisheries laws in practice. Additionally, since fishery is a livelihood, it embraces the social and ecosystems with concern for environmental ethics. It is a reciprocal relationship between local communities and members of the ecosystem, reflecting cultural traditions and norms embedded in community-based management guided by ethical principles rooted in sharing. As a result, monitoring of fisheries should take into account the

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local ecological systems and fish population dynamics, but also local culture and history. Fishing is the main form of employment around Lam Pao Dam, where households rely heavily on natural resources. Seasonal income fluctuations, gear restriction, and debt burden create structural pressures that may hinder legal compliance.

There is a need for broader cooperation in the management of fish resources around Lam Pao Dam, as it can strengthen community-based development and support more sustainable law enforcement. Therefore, understanding these dynamics is essential for designing more realistic and community-centered enforcement strategies. This research is an operation to enhance and develop the quality of life of fishermen, as well as to preserve the environment in the Lam Pao Dam area for sustainability. The objectives are as follows:

- To understand legal measures regarding freshwater fishing in both Thailand and abroad.
- To understand the problems, obstacles, and challenges facing freshwater fishing operators in the Northeastern region of Thailand in complying with the law.
- To examine fishermen's attitudes, perceptions, and behavioral responses to freshwater fishing law enforcement.

The research area was Lam Pao Dam, a large earthen dam and a popular tourist destination. The dam covers several districts in two provinces: Kalasin and Udon Thani. Lampao Dam is located approximately 556 kilometers from Bangkok. The dam crest is in the Yang Talat District, Kalasin Province. The dam crest coordinates are 16°36'06.8"N, 103°26'26.5"E. Lam Pao Dam is one of the region's most important freshwater ecosystems, supporting fisheries, agriculture, and local food security.

## 2. Literature review

In the modern context, the ecological sustainability of ecosystems cannot be separated from economic and social challenges. Therefore, an integrated environmental policy and planning framework is required. Such a framework helps build adaptive capacity and expand livelihood opportunities for communities that depend on freshwater resources. Although fishermen's ecological knowledge (FEK) contributes to sustainability and the legitimacy of environmental management planning (Garavito-Bermúdez, 2020), the indigenous knowledge system alone may not be sufficient to address various changes (Yamin et al., 2025).

Therefore, after the aforementioned period of time, researchers suggested merging traditional wisdom with scientific methodology, which paved the way for developing certain legal criteria that could be applied in addressing complex practical complexities involving fisheries cyclical issues (Melo

et al., 2024). With this, the fisheries law had been made and has been one of weapons to measure success or failure in the fisheries resource management and combat threats to ecosystem productivity (Lapointe et al., 2014). Decline water quality and quantity, together with the spread of aquatic vegetation and invasive species, and the introduction of invasive species into large freshwater bodies, are partly driven by climate change (Reid et al., 2019). These processes are further intensified by human activities driven by economic expansion that serve economic purposes (Masese et al., 2025). Decreased water quality and quantity, the expansion of aquatic vegetation, multiplication of invasive species as well as transfer of alien species to large freshwater bodies are also driven at least in part by climate change (Reid et al., 2019). These actions are compounded due to anthropogenic activities resulting from economic growth with economic endowments (Masese et al., 2025).

Pollution of all forms, due to population growth, over-harvesting, and exploitation of fresh water resources (Ogutu-Ohwayo and Balirwa, 2006), has led to biodiversity loss. Additionally, water and wetland management issues, economic factors, food insecurity and poverty, exclusive dependence on subsistence fishing, lack of alternative livelihoods, low awareness creation campaigns among the community members, as well as contributions among stakeholders to monitoring performance were key factors that fuel illegal use. Law enforcement agencies are also under-financed (Mekonen et al., 2025). These interrelated pressures present challenges to the effective application of freshwater fisheries legislation.

To achieve true results in practice within freshwater fisheries, compliance with laws is tightly linked to questions of legal awareness, social acceptance, and state-community relations, which co-determine how far these regulations are indeed respected (Ryan et al., 2025). Moreover, the behavior of natural-resource users is shaped by economic and social constraints, particularly in rural areas where they rely on these resources for their livelihoods (Stacey et al., 2021). In other words, livelihood pressure/ poverty/ family burden and cost incurred from fishing push the fishermen to give primacy to survival over "abiding by the law" (Cepić and Nunan, 2017).

In response to these livelihood and regulatory pressures, which value local ecological knowledge, community rule (including customary rule and taboo), and collective social monitoring, the approach aims to reduce the gap between state policies and day-to-day practices within the communities. The alignment can paradoxically bolster compliance, particularly if the state promotes greater participation in and more parsimonious sharing of decision-making.

In addition, the livelihood–law framework can be employed to flesh out how law as rules intersects with daily survival efforts. This framework highlights

that laws operate within context rather than in isolation, and that context bears on people's means to make their livings (Nakamura et al., 2021) and the assets they can command and the possibilities open to them. Restrictive regulations (e.g., closure of seasons, gear-size limitations) in such an area with 90% rural communities largely depending on inland fisheries can have a direct bearing on revenue. Fishers tend to adopt coping strategies to sustain their households (Susilo et al., 2021). This conclusion serves to underline the observation that compliance is not capable of being considered in isolation from the socio-economic environment within which legal rules operate.

### 3. Methodology

This study employed a mixed-methods research design that combined quantitative and qualitative approaches. Quantitative data were collected through questionnaires, while qualitative data were obtained through in-depth interviews and focus group discussions. This approach aimed to explain the law-abiding behavior of freshwater fishermen in Lam Pao Dam from both statistical and sociocultural perspectives.

The population included approximately 350 freshwater fishermen registered with the Kalasin Provincial Fisheries Office, as well as government officials responsible for enforcing fisheries laws in the Lam Pao Dam area. The sample consisted of 20 fishermen and 3 government officials. The study focused on obtaining detailed information about compliance behavior and relationships between fishermen and government officials. Informants were selected based on their direct experience and relevant qualifications to ensure meaningful analysis. Purposive sampling was used because participants were required to have continuous and direct experience in freshwater fishing. The target group was relatively small and had specific characteristics related to compliance behavior; therefore, random sampling might not have reached individuals with relevant experience. In addition, participants needed to demonstrate the ability to reflect on structural issues, such as relationships with government officials, access to legal information, and law enforcement practices.

The selection criteria for fishermen included at least five years of fishing experience in Lam Pao Dam, primary reliance on freshwater fishing as their main source of income (including those who owned shops selling processed aquatic products), experience or knowledge gained from participation in knowledge exchange activities, and voluntary participation in the study.

The research instrument for fishermen was a questionnaire consisting of five parts. The first part collected general information from respondents (six items). The second part gathered information about work experience and training (two items). The third part assessed knowledge and understanding of freshwater fisheries laws through 20 items. Scores

between 14 and 20 indicated a high level of knowledge, scores between 7 and 13 indicated a moderate level, and scores between 1 and 6 indicated a low level of knowledge and understanding. The fourth part measured the level of problems and obstacles, as well as attitudes toward legal compliance, using a five-point Likert scale. A score of 5 indicated "most appropriate," 4 indicated "very appropriate," 3 indicated "appropriate," 2 indicated "slightly appropriate," and 1 indicated "least appropriate." Mean scores were interpreted as follows: 4.51–5.00 represented most appropriate; 3.51–4.50 represented very appropriate; 2.51–3.50 represented appropriate; 1.51–2.50 represented slightly appropriate; and 1.00–1.50 represented least appropriate. The fifth part included open-ended questions that invited respondents to provide additional recommendations regarding problems, obstacles, attitudes toward compliance with fisheries laws, and the type of support they required from the government or researchers.

The questionnaire for government officials consisted of an open-ended question that allowed free expression of opinions. The question asked about the major problems and obstacles to compliance with freshwater fisheries laws and requested suggestions for ensuring proper and effective implementation. To ensure content validity, the questionnaire was reviewed by three experts. A pilot test was conducted with 15 fishermen in a nearby area to assess reliability using Cronbach's alpha. After revision, the questionnaire was submitted for human research ethics approval before being administered to the target group.

Focus group discussions were conducted with eight fishermen. Semi-structured questions were prepared in advance. The discussions were held in a suitable and familiar location for the participants. Each session was facilitated by one moderator and one recorder, and a voice recorder was used to ensure data completeness. Each focus group discussion lasted between 60 and 90 minutes.

Quantitative data were analyzed using descriptive statistics. Frequencies and percentages were used to summarize general information and prior experience and training related to fishing activities. Knowledge and understanding of fisheries laws, as well as problems, obstacles, and attitudes toward legal measures, were analyzed using mean scores and standard deviations. Responses to open-ended questions were summarized descriptively to present additional suggestions from fishermen and the views of law enforcement officers.

Qualitative data from in-depth interviews and focus group discussions were analyzed using thematic content analysis. This process involved transcription, coding, and categorization of themes. To enhance reliability, two authors independently coded the data. The coding results were compared, and the level of agreement was calculated. The inter-coder agreement rate was 85 percent, indicating acceptable reliability and consistency of the qualitative findings.

## 4. Results

### 4.1. Freshwater fisheries law

The current effective freshwater fisheries law of Thailand is the Fisheries Act B.E. 2558 of 2015. This law stipulates penalties for those who use certain types of fishing equipment without permission. Violators will be fined up to 500,000 baht (Sections 31, 67, 146). In addition, the law prohibits the use of equipment that harms or obstructs the movement of aquatic animals (Sections 63, 143). It also prohibits the use of electricity and explosives in fishing (Section 60), as well as the pollution of fishing grounds, such as pouring chemicals into the water, whether intentionally or negligently (Section 59), because it has a severe impact on all aquatic species. Violators, including both perpetrators and supporters (Sections 60, 166), will be fined up to 1 million baht. For those who possess aquatic animals obtained through illegal activities for commercial purposes, there are also penalties (Section 61). The law also prohibits the breeding or possession of certain aquatic animals, such as black-chinned tilapia, piranha, and genetically modified aquatic animals (Sections 64-65). Violators are subject to both imprisonment and a fine of up to 1 million baht. Additional measures include a ban on catching aquatic animals during the spawning season (red water season), in accordance with the Fisheries Department's announcement on measures to determine areas and periods of the freshwater fish spawning or spawning season, raising young, and specifying fishing tools, methods, and conditions for fishing, B.E. 2568, dated May 2, 2568, which is divided into three periods in each area. In the Lam Pao Dam Reservoir area, Kalasin Province, the red water season will be in phase 1, from May 16 to August 15 of each year, to allow aquatic animals a chance to recover. It also specifies the types of tools that can be used, such as hooks, nets, swings, traps, and nets no larger than 3 meters. Anyone who violates the aforementioned Fisheries Department announcement will be fined between 5,000 and 50,000 baht, or a fine of five times the value of the aquatic animals obtained from fishing (Section 70).

The Thai freshwater fisheries law is similar to the laws of many other countries around the world, which focus on conserving the diversity of ecosystems. There are prohibitions on both fishing methods and fishing equipment, as well as limitations on location and time. For example, the Croatian Freshwater Fisheries Act, a country in Europe, prohibits fishing, keeping, transporting, selling, processing, displaying, or attempting to market immature fish. The use of explosives or chemicals capable of killing or desensitizing fish, and/or the sale of fish caught by such methods, is prohibited (Section 57). Violators are liable to a fine of between 15,000 and 80,000 kuna (Section 81). Fishing with underwater guns, spears or harpoons, or the use of electric current or other illegal methods

is prohibited. Violators are liable to a fine of between 5,000 and 25,000 kuna (Section 82).

Fisheries Conservation and Management Act, 1997, Malawi Section 42 (1) No person shall (a) use explosives, electrical equipment, poisons or dangerous substances to kill or capture fish or facilitate the capture of fish; (b) use illegal fishing methods or equipment; (c) possess or control illegal explosives, equipment, poisons, dangerous substances or equipment. Any person who contravenes this Act shall be liable to a fine not exceeding 30,000 Malawi kwa or to imprisonment for a term not exceeding six years. Section 43 (1) No person shall disturb or adversely affect the spawning or feeding grounds of fish in any water body by introducing any dangerous substance or material; (2) No person shall discharge or cause any such dangerous substance to enter natural water bodies; (5) Any person shall be liable to a fine of between 20,000 Malawi kwa and 1,000,000 Malawi kwa.

Freshwater Fisheries Laws Burma's Freshwater Fisheries Law in 1991 Section 34 prohibits any person from (a) catching or damaging fish with explosives, poisons, chemicals and similar dangerous substances; (b) catching fish using prohibited methods and fishing gear; (c) catching fish of prohibited species and sizes; (d) catching fish during prohibited hours and in prohibited places. Any violator shall be liable to a fine of 30,000 Kyat or to imprisonment for three years, or to both (Section 45).

### 4.2. Sociodemographic characteristics, problems, obstacles, and attitudes of fishermen

Data were collected by interview method using a questionnaire and involved (1) socio-demographic characteristics, (2) experience and legal training, (3) level of knowledge and understanding of freshwater fisheries laws, (4) problems, obstacles, and attitudes towards legal measures related to fisheries, including recommendations. The research results found that:

**Table 1** summarizes the socio-demographic characteristics of the fisherman, which help explain patterns of livelihood dependence, decision-making, and compliance. Most fishermen were aged 50 years and over (60%), followed by those aged 40–49 years (40%). All had lower education levels than a bachelor's degree (100%). Most were married and living together (75%), divorced/widowed and living together without marriage (10%), and married but separated (5%). All had dependents to care for and had a monthly income of more than 30,000 baht (100%). All had debt burdens (100%) (**Table 1**).

The finding implies that a large proportion of the fisherfolk are older individuals who have depended on fishing for their livelihood over the long term, as well as having high household debt. Those dynamics represent structural economic conditions that could affect their level of risk-taking and compliance with the law.

**Table 1:** Sociodemographic characteristics of fishermen

Variables	Frequency (n = 20)	Percentage
<b>Age</b>		
20-29	0	0.00
30-39	0	0.00
40-49	8	40.00
> 50	12	60.00
Total	20	100.00
<b>Education</b>		
Primary and secondary education	20	100
Undergraduate	0	0.00
Graduate	0	0.00
Total	20	100.00
<b>Marital status</b>		
Single	0	0.00
Married and living together	15	75.00
Married but separated	1	5.00
Divorced/widowed	2	10.00
Living together without marriage	2	10.00
Other	0	0.00
Total	20	100.00
<b>Income</b>		
< 20,000 THB	0	0.00
20,000 – 25,000 THB	0	0.00
25,000 – 30,000 THB	0	0.00
>30,000 THB	20	100.00
<b>Debts</b>		
Yes	20	100.00
No	0	0.00
Total	20	100.00

THB: Thia baht

Table 2 presents the fishermen’s experience and legal training backgrounds, which illustrate how

knowledge transmission and long-term fishing involvement shape familiarity with legal norms.

All fishermen had been engaged in fishing for more than 20 years (100%). In addition, all respondents reported receiving at least one form of legal or regulatory briefing from government agencies, including training or knowledge transfer related to compliance with freshwater fisheries laws on an ongoing annual basis (Table 2).

Table 3 presents the items used to measure fishermen's knowledge and understanding of freshwater fisheries laws. which consists of 20 true/false questions. Based on these items, most fishermen demonstrated a high level of knowledge (14–20 points) (65%), followed by a moderate level (7–13 points) (35%), as shown in Table 4.

**Table 2:** Working experience and training of fishermen

Variables	Frequency (n = 20)	Percentage
<b>Have you been fishing for a period of</b>		
< 5 (yrs)	0	0.00
5-10 (yrs)	0	0.00
10-20 (yrs)	0	0.00
> 20 (yrs)	20	100.00
Total	20	100.00
<b>Have you received training or knowledge transfer related to compliance with freshwater fisheries laws?</b>		
Yes	20	100.00
No	0	0.00
Total	20	100.00

**Table 3:** Questions used to measure the knowledge level of freshwater local fishermen

Questions
1. The current freshwater fisheries law is the Fisheries Act of 2015, amended by the Fisheries Act (No. 2) of 2017.
2. Pouring hazardous chemicals into water sources not only destroys the ecosystem but also carries criminal penalties.
3. Illegal use of electric current for fishing is a criminal offense.
4. Using explosives to catch aquatic animals carries a fine of 200,000 to 1 million baht, or a fine of five times the value of the aquatic animals caught, whichever is higher.
5. Piranhas, electric catfish, and electric eels are aquatic animals prohibited from being possessed by the general public.
6. Fishermen can use nets with a depth of no more than 6 sok (3 meters) to catch fish in the Lam Pao Dam year-round.
7. Butterfish are considered an economically valuable aquatic animal that can be cultivated by the public.
8. Those who provide equipment used to manufacture or assemble electric fishing equipment are considered accomplices in the crime and are subject to the same legal penalties as those who use electric fishing.
9. The general public may use collapsible traps/idiot traps to fish in the Lam Pao Dam.
10. From May 16 to August 15, 2024, fishing is prohibited in the Lam Pao Dam area due to the fish spawning season (red tide season).
11. During the red tide season, fishermen are prohibited from catching any aquatic animals, without exception.
12. The fish spawning season (red tide season) is the same throughout the country.
13. Those who use traps or jigs to catch fish or aquatic animals in areas with flowing water will be fined up to five times the value of the aquatic animals caught.
14. Fishery laws prohibit the breeding or release of certain tilapia, such as the black chin tilapia and the Mayan tilapia, into the water, as they pose a danger to aquatic animals and disrupt the balance of the original ecosystem.
15. Fishermen may use traps, spears, forks, and nets, including lifts or jigs, with a mouth width not exceeding two meters, to fish during the spawning season.
16. Fishermen may use longlines. Hooks are used for fishing by pulling fish during the spawning season.
17. The Provincial Fisheries Committee's announcement is a law that fishermen must strictly adhere to.
18. If you wish to engage in aquaculture in public fishing grounds, you may apply for a permit at the Provincial Fisheries Office.
19. The official authorized to permit aquaculture in public fishing grounds is the Provincial Fisheries Officer.
20. If you wish to engage in fishing in a marine conservation area, you may apply for a permit at the Provincial Fisheries Office.

**Table 4:** Knowledge level of freshwater fishermen

Level of knowledge and understanding	Frequency (n = 20)	Percentage
> 14-20 points	13	65.00
7-13 points	7	35.00
< 1-6 points	0	0.00
Total	20	100

**4.3. Problems, obstacles, and attitudes towards legal measures related to fisheries, including recommendations**

The questionnaire results showed that fishermen had overall high levels of agreement ( $\bar{x}$  = 3.84). When considering each item, it was found that the

respondents had the highest level of opinion in 1 item, a high level in 7 items, and a medium level in 2 items. The item with the highest level of opinion was that there must be other sources of income to replace the law compliance that negatively affects the source of income and livelihood ( $\bar{x}$  = 4.50). The next most important was that the state should give more importance to the development of the livelihood and quality of life of fishermen than strictly enforcing the law ( $\bar{x}$  = 4.20). Local people should be involved in determining fisheries policy together with officers with the authority to enforce the law. If the law is strictly followed, it will result in

the sustainability of the ecosystem ( $\bar{x} = 4.05$ ). There should be monitoring and evaluation of the results. Both before and after the enforcement of legal measures ( $\bar{x} = 3.95$ ), the state should be more open and accepting of opinions and reflections from people in the community than it is now ( $\bar{x} = 3.90$ ). There should be continuous training to provide knowledge on fisheries laws. And fisheries laws are

not consistent with the way of life of the villagers, equally ( $\bar{x} = 3.55$ ). At a moderate level, it is difficult to comply because fisheries laws are laws that are too restrictive ( $\bar{x} = 3.40$ ), and the laws are outdated and not consistent with the current economic and social conditions ( $\bar{x} = 3.35$ ) (Table 5). These results indicate that livelihood concerns strongly shape fishermen’s attitudes toward legal compliance.

**Table 5: Problems, obstacles, and attitudes towards law compliance among fishermen**

Variable	$\bar{x}$	SD	Level of opinion
The state should be more open and accepting of opinions and reflections from people in the community than it is now.	3.90	1.02	High
If the law is strictly followed, it will result in the sustainability of the ecosystem.	4.05	1.32	High
The fisheries law is not consistent with the way of life of the villagers.	3.55	1.60	High
The local people should be involved in determining the fisheries policy together with the officers who have the authority to enforce the law.	4.05	1.15	High
There must be other sources of income to replace the law that has negative effects on income and livelihood.	4.50	1.18	Most
There should be continuous training to provide knowledge on fisheries law.	3.55	1.23	High
The law is outdated and not consistent with the current economic and social conditions.	3.35	1.59	Average
It is difficult to comply with because the fisheries law is a law that is too restrictive.	3.40	1.60	Average
The state should prioritize the development of the livelihood and quality of life of fishermen more than strictly enforcing the law.	4.20	1.10	High
There should be monitoring and evaluation of the results both before and after the enforcement of legal measures.	3.95	1.23	High
Total	3.84	1.30	High

$\bar{x}$ : Mean; SD: Standard deviation

Local fishermen reported that the prohibitions and legal penalties were introduced only recently and differ from their traditional way of life. They emphasized that many of the current regulations conflict with long-established fishing practices. Therefore, they argued that law enforcement should be implemented with flexibility and that penalties, such as imprisonment or high fines, should not be excessively severe.

The fishermen also expressed the need for stronger communication and coordination between local communities and government agencies. They suggested that government authorities should provide information and guidance in clear and accessible language. In addition, they requested financial and technical support, particularly in the provision of appropriate fishing equipment, to help ensure legal compliance and reduce operational costs. They further recommended that government officials prioritize dialogue, consultation, and advance warnings rather than focusing primarily on strict legal enforcement.

From the perspective of fisheries law enforcement officers, several challenges hinder effective compliance with freshwater fisheries regulations. These include: (1) limited manpower and budget constraints; (2) the continued occurrence of illegal fishing activities in certain communities; (3) the persistence of traditional fishing methods, such as the use of trawl nets along riverbanks, which are deeply rooted in local culture and difficult to change; and (4) the growing number of fishermen from outside the area who do not rely on fishing as their primary occupation.

Law enforcement officers suggested several measures to address these challenges and promote proper and lawful practices. First, alternative livelihood opportunities, such as animal husbandry

and crop cultivation, should be promoted within local communities. Second, government agencies should collaborate more effectively in disseminating information about fisheries laws. Finally, public awareness campaigns should be expanded to ensure that fisheries regulations are clearly communicated and consistently enforced across all areas.

### 5. Discussion

Fishing is a critical component of the economy, generates jobs and income not only for fishers and their dependents but also for the wider business sector through associated industries such as processing and trade. Fishing settlements have distinct ways of life that are closely connected with water bodies and the seasonal cycle (Alieva et al., 2023). Household-based fishing serves as a case example of a livelihood diversification tactic articulated in the livelihood-law framework, which illuminates how economic constraints channel both livelihood decisions and regulatory behavior. Fishers meet economic pressure with livelihood diversification (fishing kin small-scale marketing, and processing) in combination, a central mechanism in this framework shaping how rules are interpreted and followed. Fishers internalize legal norms over time given their long history as fishers and continual interactions with the state, and gradually start to act more in normative than instrumental terms, such that they come to regard rules not just as external artefacts but also community-sanctioned behavior. This result is in line with findings of Bastari et al. (2022), who viewed that the experience of fishing passed down through generations not only provides knowledge and skills in catching aquatic animals but also fosters environmentally responsible community practices.

This is different from the research of [Andreu-Cazenave et al. \(2018\)](#), who viewed that legal compliance does not come from knowledge and experience, but from strict law enforcement by relevant government officials. This may be due to the close proximity between government officials and the community, coupled with continual knowledge transfer and shared traditional activities, which strengthen trust between officials and the community.

Fishermen strongly agree with the policy proposal that requires alternative sources of income to compensate for the losses from legal compliance. This aligns with the concept of livelihood diversification to reduce risk and provide livelihood flexibility for fishing households. These findings align with [Alam and Yousuf \(2024\)](#), who indicated that fishermen still face economic and social constraints. According to [Navarro et al. \(2025\)](#), they argue that close state-community relationships foster acceptance and long-term law enforcement effectiveness. They further emphasize that sustainable compliance emerges when legal norms become embedded in everyday routines, rather than depending solely on external enforcement. Furthermore, fishermen believed that the state should prioritize improving the quality of life over strict law enforcement and should provide space for local people to participate in the formulation of local fisheries regulations. These suggestions are consistent with [Pramitasari et al. \(2015\)](#), who considered community participation and livelihood security essential factors for engendering trust. This is an approach that encourages constructive adherence over the long term.

Local fishermen have a legal attitude or perspective that does not view the law as outdated. However, compliance with the law is still limited by economic and social pressures that may influence the decision to act or not act in accordance with the regulations. This reflects [He and Zhang's \(2022\)](#) argument that law must adapt to socio-economic realities and incorporate multidisciplinary knowledge; otherwise, positive attitudes will not translate into compliance.

When the law fails to respond to local structural constraints and changing contexts, sustainable law enforcement cannot be achieved, even if resource users hold favorable views toward the law.

Other answers from local fishermen were a call for looser enforcement of current regulations, specifically less time in jail or lower fines. The argument here is that strict sanctions are incompatible with the subsistence-based rural economy in which income is unstable, making it difficult for small-scale fishers to comply with heavy penalties imposed by the law. This idea corresponds to the fairness of procedures, which states that when practitioners think the law is unfair, their cooperation will lessen, although there might be a threat of punishment.

The results of this study are in disagreement with the belief by [Suuronen \(2022\)](#) that only rather mild

fines to pay after having been caught breaking the law and an appearance of "having nothing to lose" would lead fishermen to agree upon willfully violating fisheries regulations. One probable reason for the difference is the economy and social aspects of small-scale freshwater fisheries in Thailand, which are subsistence-based and have costs and expenditures but uncertain earnings that make the fishers anticipate a dimension of law that emphasizes equality before law, consistent application of rule laws, and a flexible approach rather than harsher lines.

Fishermen emphasized the need for government support in providing fishing equipment is the provision of fishing equipment, which is consistent with the research of [Bawa et al. \(2024\)](#), who hold that the state should take action to guarantee the supply of suitable quantities of fishing gear for fishermen so as to achieve economic and efficient sustainability in fishing. With the question of law enforcement, and this is a community-by-community thing, there are still plenty of areas in open violation. These violations presumably partly result from such spatial contexts, including back-of-the-beyond-ness, difficult access to the area at stake, and the presence of outsiders entering the area, which complicates monitoring, in turn making inspection and control less possible.

This also echoes [Amabel and Parlee \(2020\)](#), who perceived Thai freshwater fisheries to be an outcome of inequality in space, ecology, and socio-economy: All visible in Lam Pao Dam, of e.g., villages or communities close to the dam or tourist sites. And it is not the same level of law compliance amongst various peripheral communities, and this spatial inequality makes an opportunity for differential propensity to offend.

Officials have difficulty banning fishermen from using certain types of fishing gear because these tools are not merely fishing implements but cultural artefacts passed down through generations, and are also a form of wisdom and familiarity passed down from ancestors that predate the law. As a result, law enforcement on this issue conflicts with the cultural way of life, and fishermen in some areas still choose to use them even though they know the law prohibits it. This finding is consistent with research by [Lindley \(2023\)](#), who indicated that fishermen's failure to comply with the law is partly due to the facilitation of behavioral patterns stemming from cultural ways of life.

To address this issue, local law enforcement officials recommended that, in addition to educating villagers, they should also integrate that knowledge with incentives in a rewarding manner. Economically, this policy is consistent with the findings of [Gayo \(2021\)](#), which indicated that effective law enforcement and sustainable management of local fisheries resources require educating fishermen about the potential environmental impacts associated with continued violations of legal provisions. However, having knowledge alone does not guarantee proper

behavior, but rather, it must translate knowledge into a pro-law attitude, and that attitude must not be hindered by economic conditions and necessities.

## 6. Conclusion

Freshwater fisheries laws in many countries around the world share a common theme: the intention to protect the diversity and sustainability of ecosystems, reflected in the conservation and maintenance of the balance of freshwater resources, with prohibitions and penalties grounded in scientific principles and aligned with social norms and local conditions.

The results of the study indicate that, although fishermen report relatively high levels of knowledge about fishing laws and regulations, their compliance remains low. This gap is largely shaped by income instability, household debt, and constraints that limit livelihood options within the rural socio-economic setting. Under such conditions, household survival inevitably takes precedence over adherence to legal provisions. On the basis of these considerations, the authors suggest that authorities should encourage the development of alternative or supplementary livelihoods or supplement livelihoods during the off-season, enabling compliance with laws without imperiling subsistence. They should also provide opportunities for fishermen to participate in policy formulation as well as in monitoring and evaluating enforcement processes, leading to effective law enforcement and a genuine response to the needs of their communities. However, this study is limited by its scope and use of self-reported data. Therefore, further research in different areas and seasons is warranted, and behavioral data should be used to gain a deeper understanding of the factors influencing law compliance in the future.

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## Compliance with ethical standards

## Ethical considerations

The study was approved by the Human Research Ethics Committee of Mahasarakham University. The license number was 579-554/2024. Oral informed consent was obtained from all fishermen before commencement of the study. Participation was 100% voluntary, and no coercion or undue influence was applied.

## Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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