

# CHALLENGES IN THE IMPLEMENTATION OF LAW NUMBER 21 OF 2019 ON THE QUARANTINE OF ANIMALS, FISH, AND PLANTS IN PREVENTING THE ENTRY OF QUARANTINE FISH PESTS AND DISEASES IN NORTH SUMATRA

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Received : 22 May 2025

Published : 31 July 2025

Revised : 30 May 2025

DOI : <https://doi.org/10.54443/morfaiv5i2.3742>

Accepted : 17 June 2025

Link Publish : <https://radjapublika.com/index.php/MORFAI/article/view/3742>

## Abstract

Quarantine practices in Indonesia have evolved since the Dutch East Indies era and have undergone significant changes, particularly with the enactment of Law No. 21 of 2019. This law integrates animal, fish, and plant quarantine and aligns regulations with current issues. However, its implementation faces challenges, especially in preventing the entry of Quarantine Fish Pests and Diseases (HPIK), such as the case of Koi Herpes Virus in Lake Toba. This study aims to identify obstacles in preventing the entry of HPIK in North Sumatra Province. The research employs a normative legal approach with prescriptive methods and a statutory approach. Data were collected through literature studies and analyzed using a qualitative-descriptive method. The findings indicate that several direct and indirect factors hinder the implementation of Law No. 21 of 2019 in preventing the entry of HPIK in North Sumatra. These include suboptimal field implementation due to numerous unofficial entry points, insufficient human resources, inadequate facilities and infrastructure, ineffective education and outreach channels, and limited community involvement in regulatory formulation.

**Keywords:** *HPIK, Public Participation, Entry Points*

## INTRODUCTION

Quarantine in Indonesia began during the era of the Dutch East Indies. It commenced in response to the spread of coffee leaf rust, a disease caused by *Hemileia vastatrix*, which first appeared in Sri Lanka. Concerned about the threat to its coffee industry in the colony, the Dutch authorities enacted the Ordinance of December 19, 1877 (Staatsblad No. 262), prohibiting the importation of coffee plants and green coffee beans from Sri Lanka.<sup>1</sup> During the era of the Republic of Indonesia, the functions of quarantine were reaffirmed through a series of regulations issued by the Minister of Agriculture. It was not until 1992, however, that the President of the Republic of Indonesia formally enacted Law No. 16 of 1992 concerning the Quarantine of Animals, Fish, and Plants. Legislative developments continued with the issuance of Government Regulation (PP) No. 82 of 2000 on Animal Quarantine, followed by PP No. 14 of 2002 on Plant Quarantine, and PP No. 15 of 2002 on Fish Quarantine. In the reform era, the function of fish quarantine was separated from the structure of the Ministry of Agriculture. President Abdurrahman Wahid, by Presidential Decree No. 355/M of 1999 dated 26 October 1999, established the Ministry of Marine Affairs and Fisheries, under which the fish quarantine function was placed within an echelon-I unit of that ministry.<sup>2</sup> In 2019, Law Number 21 of 2019 concerning Animal, Fish, and Plant Quarantine was enacted, which repealed Law Number 16 of 1992. The spirit of this new legislation is to update the relevance of its provisions in accordance with current conditions, particularly in relation to issues such as genetically modified products, genetic resources, biological agents, and invasive alien species. Additionally, it aims to reintegrate the quarantine of animals, fish, and plants under a unified framework. The implementing regulation of Law Number 21 of 2019 is stipulated in Government Regulation Number 29 of 2023, which, under Article 340, mandates the establishment of a governmental agency responsible for executing quarantine-related duties within a maximum period of

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six (6) months from the date the Government Regulation was enacted, namely June 6, 2023.<sup>3</sup> To accommodate the newly established agency tasked with carrying out governmental duties in the field of quarantine, Presidential Regulation Number 45 of 2023 concerning the Indonesian Quarantine Agency (BARANTIN) was issued on July 20, 2023. This was subsequently followed by the issuance of Indonesian Quarantine Agency Regulation Number 1 of 2023 concerning the Organization and Work Procedures of the Indonesian Quarantine Agency on October 25, 2023, as well as the Regulation of the Indonesian Quarantine Agency concerning the Organization and Work Procedures of the Technical Implementation Units of the Indonesian Quarantine Agency on the same date.<sup>4</sup>

In carrying out its quarantine duties and functions, the Technical Implementation Units—which have recently undergone organizational restructuring—must act swiftly to safeguard national sovereignty against threats to public health, disease outbreaks, and food safety originating from abroad. One of the major potential threats to the public is the massive influx of imported goods, which necessitates strict government control to ensure public protection. This form of protection is manifested through the oversight exercised by the Indonesian Quarantine Agency over animals, fish, and plants, as well as their derivative products, entering the territory of the Republic of Indonesia.

An example of a past case is the outbreak of Koi Herpes Virus disease that occurred in Lake Toba, North Sumatra, at the end of October 2004. The outbreak spread throughout Lake Toba, resulting in losses amounting to hundreds of billions of rupiah.<sup>5</sup> In response to this incident, the government has implemented regular monitoring to anticipate potential outbreaks of Quarantine Fish Pests and Diseases (HPIK) through surveillance activities conducted twice a year. In addition, the enforcement of strict import controls has been carried out in accordance with the mandate of Law Number 21 of 2019, Article 33, Paragraph (1), which states that: "Any person who brings Carriers into the territory of the Unitary State of the Republic of Indonesia is required to: (a) provide a health certificate from the country of origin for animals, animal products, fish, fish products, plants, and/or plant products." Health certificates from the country of origin must be inspected regardless of whether the exporting country has a cooperation agreement with Indonesia or not.

A key challenge moving forward is the emergence of new diseases that may pose serious threats through the entry of fish from outside Indonesia. On the other hand, issues such as the readiness of infrastructure and facilities, human resources, and the availability of derivative regulations concerning technical implementation of surveillance remain pressing concerns. Furthermore, the government must enhance the capacity of state-owned testing laboratories and improve the competencies of human resources in detecting Quarantine Fish Pests and Diseases (HPIK) in carriers entering Indonesia. Achieving these objectives requires prioritization in policy-making, particularly in budget allocation for the procurement of testing equipment and the development of laboratory personnel competencies. In accordance with the mandate of Article 56, Paragraph (1) of Law Number 21 of 2019, it is necessary to promote the implementation of preventive measures against the threat of fish diseases through quarantine actions in the country of origin. This, of course, presents a challenge in terms of how to establish and strengthen bilateral cooperation in the field of fish health. The urgency of this research lies in understanding how the existing regulatory framework is implemented to prevent the entry of Quarantine Fish Pests and Diseases (HPIK) into North Sumatra. Furthermore, it aims to identify the challenges encountered in enforcing these regulations.

## FORMULATION OF THE PROBLEM

Based on the background of this research, the research problems can be formulated as follows:

1. How is the regulation implemented to prevent the entry of Quarantine Fish Pests and Diseases (HPIK) into North Sumatra?
2. What are the obstacles in preventing the entry of HPIK into North Sumatra?

## METHOD

Legal research is an activity aimed at discovering legal rules, legal norms, or legal doctrines, with the purpose of addressing specific legal issues. This aligns with the nature of legal research as prescriptive in character.<sup>6</sup> Therefore, in terms of its form, this study is a prescriptive legal research, which seeks to analyze the root causes of legal issues arising from a particular legal case or matter. The objective of this research is to gain a deeper understanding of the underlying factors contributing to the legal problem at hand and to identify the primary causes of the issue.<sup>7</sup>

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Based on its type, this research is a normative legal research, which is conducted by examining library materials or secondary data.<sup>8</sup> According to Peter Mahmud Marzuki, normative legal research is a process of identifying legal rules, legal principles, and legal doctrines in order to address the legal issues at hand.<sup>9</sup> The normative legal research approach employed in this study is the Statute Approach, which refers to Law Number 21 of 2019 concerning Animal, Fish, and Plant Quarantine. This research utilizes a secondary data collection technique sourced from library materials or literature related to the research object, namely:

a. Legal document study, conducted by collecting and reviewing various written legal materials for systematic analysis.

The types of legal materials collected include:

- Primary legal materials, which are legally binding sources such as: laws and statutes, government regulations, agency regulations, jurisprudence (court decisions), constitutions, and international treaties.
- Secondary legal materials, which serve as explanatory and supporting sources for primary legal materials, such as: books, scholarly journals, dissertations, undergraduate theses, master's theses, seminar proceedings, and academic articles.
- Tertiary legal materials, which are reference tools used to assist in understanding primary and secondary legal materials, such as: legal dictionaries, legal encyclopedias, indexes, or legal bibliographies.

b. Library research

This technique is carried out by searching for legal documents from libraries, legal archives, government institutions, or online legal databases.

c. Review of scholarly literature

This technique is conducted by collecting legal doctrines from experts, which can be used to construct legal arguments and interpret legal norms.

The data collection instruments used in this research are those commonly employed in normative legal research, namely:

- Document Review Instrument

This is a tool or working system used to organize, classify, and assess the collected legal materials, such as legal material identification lists, article or legal norm classification tables, and formats for systematic regulatory analysis.

- Library Research Checklist

This functions to guide the researcher in tracing legal sources, recording important information from books, journals, and articles, as well as compiling citation notes and references.

- Content Analysis Guide

This serves as a tool for interpreting legal articles or norms, categorizing norms based on themes or substance, and examining legal doctrines from the opinions of legal scholars.

- Digital Support Tools

Although not conventional data collection instruments, in the modern context, normative legal researchers also utilize digital tools such as:

JDIH (Legal Documentation and Information Network) to access regulations; Hukumonline, HeinOnline, and Google Scholar to access legal journals; and Mendeley or Zotero for citation management.

Data analysis is a systematic process of collecting, cleaning, transforming, and interpreting data to identify patterns, trends, or useful information for decision-making. In other words, it is a method of converting raw data into actionable insights. The data analysis process involves several steps, including data collection, data cleaning (removing errors and inconsistencies), data transformation (modifying data formats), and data interpretation. This study employs qualitative analysis using a descriptive analysis model. Descriptive analysis aims to provide an objective depiction or explanation of the research subject and object, presenting the findings as they are, without making any judgments or evaluations regarding the results.<sup>10</sup>

The data analysis technique in this study is conducted using a descriptive qualitative method, which involves the statutory approach, case approach, historical approach, and comparative approach. In drawing conclusions, a systematic interpretation method is applied—by interpreting a legal product and then establishing correlations with other legal

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instruments relevant to the research object. Subsequently, the collected data is analyzed, and conclusions are drawn accordingly.

The research was conducted from January 2025 to December 2025.

## RESULTS AND CLOSING

### A. Implementation of Regulations

Quarantine Fish Pests and Diseases (HPIK) pose a serious threat to the aquaculture sector, as they can cause mass mortality, reduced production, and disruptions to the trade of fish and fishery products within a region. To address this threat, the government has established a number of regulations, particularly through Law No. 21 of 2019 concerning Animal, Fish, and Plant Quarantine, along with its implementing regulations. However, the implementation of these regulations in the field continues to face various obstacles.

The implementing regulations that have been prepared to prevent the entry of Quarantine Fish Pests and Diseases (HPIK) into Indonesia, particularly in North Sumatra, include:

- Government Regulation Number 29 of 2019 on the Implementation of Law Number 21 of 2019 concerning Animal, Fish, and Plant Quarantine.
- Regulation of the Indonesian Quarantine Agency of the Republic of Indonesia Number 3 of 2024 concerning Points of Entry and Exit for Carriers of Quarantine Animal Diseases, Quarantine Fish Diseases, and Quarantine Plant Pests.
- Regulation of the Indonesian Quarantine Agency of the Republic of Indonesia Number 5 of 2025, amending Regulation Number 1 of 2024 concerning Types of Commodities Subject to Quarantine Inspection for Animals, Fish, and Plants.
- Regulation of the Indonesian Quarantine Agency of the Republic of Indonesia Number 14 of 2024 on Procedures for Quarantine Actions and Integrated Supervision.
- Regulation of the Indonesian Quarantine Agency of the Republic of Indonesia Number 12 of 2024 on Procedures for Monitoring Quarantine Animal Diseases, Quarantine Fish Diseases, and Quarantine Plant Pests.
- Decree of the Deputy for Fish Quarantine Affairs Number 7 of 2024 on Guidelines for Monitoring Quarantine Fish Pests and Diseases.

With the enactment of Government Regulation No. 29 of 2019, various technical implementing regulations were subsequently issued, particularly concerning the prevention of the entry of Quarantine Fish Pests and Diseases (HPIK). These technical regulations serve as clear guidelines for quarantine officers in carrying out their duties and functions, especially in the prevention of quarantine fish diseases. However, the implementation of these technical regulations in the field inevitably faces several challenges.

The designation of entry and exit points for Carriers of Quarantine Fish Pests and Diseases (HPIK) in North Sumatra, as stipulated in Indonesian Quarantine Agency Regulation (Perba) No. 3 of 2024, includes:

- Bandara Kuala Namu (Deli Serdang)
- Bandara Raja Sisingamangaraja XII (Tapanuli Utara)
- Pelabuhan Laut Belawan
- Pelabuhan Laut Nias
- Pelabuhan Laut Tanjung Balai Asahan
- Pelabuhan Kuala Tanjung (Batu Bara)
- Pelabuhan Teluk Nibung (Asahan)
- Pelabuhan Tanjung Sarang Elang (Labuhan Batu)
- Pelabuhan Panipahan (Rokan Hilir)
- Kantor Pos Medan.<sup>11</sup>

With a total of ten designated entry and exit points, a significant number of human resources is certainly required to monitor and control the movement of carriers being transported by the people of North Sumatra. In addition to human

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resources, adequate infrastructure and facilities are also needed at each of these designated locations. This undoubtedly presents a considerable challenge for the government, especially amid the ongoing global economic crisis, which also has an impact on Indonesia.

In reality, there are still many unofficial entry points used for the movement of carriers, such as the existence of traditional *tangkahan* ports throughout Indonesia, including along the eastern coastline of North Sumatra.<sup>12</sup> These unofficial *tangkahan* ports have the potential to become sites for the illegal shipment of fish.

In addition, inter-provincial land transportation routes pose a significant challenge for effective monitoring. There are three main overland transit routes in North Sumatra: the western route, the central route, and the eastern route. These land routes connect North Sumatra with West Sumatra Province and Aceh Province (Nanggroe Aceh Darussalam). In the case of the Koi Herpes Virus outbreak in North Sumatra in 2004, the transmission occurred through the transportation of fish by land from West Sumatra to Lake Toba.<sup>13</sup>

The implementation of Regulation of the Head of the Agency No. 14 of 2024 still requires a technical guideline to support the execution of quarantine actions and supervision. The absence of such technical instructions to date poses a risk of inconsistent quarantine practices across different regions.

Furthermore, the implementation of Regulation of the Head of the Agency No. 12 of 2024 and Decree of the Deputy for Fish Quarantine No. 7 of 2024 on Guidelines for Monitoring Quarantine Fish Pests and Diseases (HPIK) was carried out for the first time in 2024, following the official establishment of the Indonesian Quarantine Agency. However, according to the 2024 HPIK Monitoring Report from the North Sumatra Regional Center for Animal, Fish, and Plant Quarantine, only 12 regency/municipality locations were designated for monitoring activities.<sup>14</sup> This number does not adequately represent the full administrative scope of North Sumatra Province, which consists of 25 regencies and 8 cities.<sup>15</sup>

## B. Infrastructure and Facilities

The condition of infrastructure and facilities at the North Sumatra Regional Center for Animal, Fish, and Plant Quarantine is the result of asset transfers from the Ministry of Agriculture and the Ministry of Marine Affairs and Fisheries. On June 5, 2025, the Indonesian Quarantine Agency published a report regarding the receipt of assets valued at 4.3 trillion rupiah from the Ministry of Agriculture.<sup>16</sup> These acquired assets are expected to serve as critical support in the implementation of quarantine regulations.

According to a press release issued by the Ministry of Marine Affairs and Fisheries through the Agency for Supervision and Quality Control of Marine and Fishery Products (BPPMHKP), the transfer of human resources and assets to the Indonesian Quarantine Agency (Barantin) was completed as of July 2024. A total of 976 personnel had already been transferred to Barantin by January 2024, and the Ministry also reallocated a budget of IDR 172.74 billion to Barantin during the same month. The finalization of the asset transfer is currently underway.<sup>17</sup> However, with a total asset value of IDR 172.74 billion allocated for carrying out fish quarantine duties and functions across all of Indonesia, this amount is unlikely to be sufficient for the effective prevention of QFPD (Quarantine Fish Pests and Diseases)—particularly in North Sumatra.

## C. Quantity and Competence of Human Resources

The competence of human resources in fish quarantine is crucial to ensure the effective implementation of Law No. 21 of 2019, particularly in addressing the threat of Quarantine Fish Pests and Diseases (HPIK) in North Sumatra. According to 2024 data, the number of functional PHPI (Fish Quarantine Functional Officers) and TPHPI (Fish Quarantine Technical Officers) at the North Sumatra Regional Center for Animal, Fish, and Plant Quarantine is 28 personnel, distributed across five service units. This number is far from ideal for carrying out the duties and functions of fish quarantine effectively. Based on the 2024 position map, the ideal number of functional PHPI and TPHPI officers is 102 personnel, with detailed breakdowns as shown in the following table:

No.	Competence	Actual amount	Amount of Requirements	Gaps
1.	PHPI Ahli Madya	0	10	-10
2.	PHPI Ahli Muda	10	22	-12
3.	PHPI Ahli Pertama	0	39	-39
4.	TPHPI Penyelia	0	4	-4

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5.	TPHPI Mahir	8	5	3
6.	TPHPI Terampil	5	8	-3
7.	TPHPI Pemula	5	14	-9
	Amoount	28	102	-74

Source: Decree of the Head of the Indonesian Quarantine Agency (Barantin) No. 751 of 2024.<sup>18</sup>

Based on the 2025 Civil Servant Appointment Decree (SK CPNS) data at the North Sumatra Regional Center for Animal, Fish, and Plant Quarantine (BBKHIT Sumut), a total of 9 new civil servants were recruited in 2025. Given this projection, it would take approximately eight years to meet the ideal number of fish quarantine personnel. This data indicates that the current human resources must work with extra effort to fulfill the fish quarantine functions and to prevent the entry of quarantine fish pests and diseases (HPIK) into North Sumatra. To improve human resource competencies, every civil servant (ASN) is required to participate in at least 20 hours of training per year. This is in accordance with Government Regulation (PP) No. 11 of 2017, as amended by PP No. 17 of 2020. To monitor and evaluate compliance with the provisions of PP No. 17 of 2020, most government agencies utilize web-based data systems that can be updated by each civil servant. Therefore, this issue should receive particular attention from the Indonesian Quarantine Agency, especially the North Sumatra Regional Center for Animal, Fish, and Plant Quarantine, in developing a system to record and track the competency development of civil servants in meeting the required minimum annual training hours.

### D. Public Education

The government, in this case the Indonesian Quarantine Agency, particularly the North Sumatra Regional Center for Animal, Fish, and Plant Quarantine, has the obligation to provide public education regarding laws and regulations. This obligation encompasses various aspects, ranging from the provision of accessible legal information to the implementation of legal education and training programs. The goal is to ensure that the public understands and can exercise their rights and responsibilities in accordance with applicable regulations. The following are several key aspects of the government's obligations in legal education:

#### 1. Provision of Information:

##### a. Accessibility of Information

The government must ensure that laws and regulations are easily accessible to all members of society. This can be achieved through various media, such as official websites, legal libraries, and public information centers.

##### b. Public Outreach (Socialization)

The government needs to actively disseminate information regarding new regulations or those deemed important. This outreach can be conducted through various media, including public service announcements, educational activities, and—following current trends—social media platforms such as Instagram, Facebook, Twitter X, Telegram, TikTok, YouTube, and SnackVideo.

##### b. Use of Plain Language)

Information regarding regulations must be presented in language that is easily understood by the general public, not only by legal experts. However, as of a Google search conducted on July 16, 2025, the North Sumatra Regional Center for Animal, Fish, and Plant Quarantine (Balai Besar Karantina Hewan, Ikan dan Tumbuhan Sumatera Utara) does not yet have an official website as an information channel for the public. Nonetheless, the agency is quite active in disseminating information through social media platforms such as Instagram, Facebook, and Twitter-X.

The Indonesian Quarantine Agency (Badan Karantina Indonesia) itself already has an official website serving as a public information channel. Although still relatively new, the website is being managed properly. However, on the JDIH (Legal Documentation and Information Network) section of the site, some menus—such as monographs, articles, and court decisions—were found to be empty when accessed on July 16, 2025. Proper information management is crucial for effective communication with the public. Therefore, the success of public education efforts lies in the government's activeness in disseminating information and conducting outreach.

#### 2. Implementation of Education and Training

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The government, particularly the Regional Office of Animal, Fish, and Plant Quarantine in North Sumatra (Balai Besar Karantina Hewan, Ikan dan Tumbuhan Sumatera Utara), can conduct public education through the education sector by organizing public lectures at universities that offer fisheries faculties or study programs. Based on a Google search, in 2022 the quarantine office held a public lecture at the University of North Sumatra (Universitas Sumatera Utara) with the theme "The Strategic Role of the Fish Quarantine and Quality Control Agency (BKIPM)." This initiative is commendable in raising awareness among the academic community regarding the critical role of quarantine in North Sumatra in preventing the entry of Quarantine Fish Pests and Diseases (HPIK), thereby supporting the sustainability of fisheries activities.

In addition to education programs, the government can also organize specialized training for specific community groups requiring in-depth understanding of certain regulations. For instance, training may be provided for government officials, entrepreneurs, or vulnerable groups. Based on the 2024 annual activity report, the Regional Office of Animal, Fish, and Plant Quarantine in North Sumatra has provided internship and fieldwork opportunities (Praktek Kerja Lapangan) for university and senior high school students. These training programs are expected to equip participants with knowledge in the field of quarantine.

### 3. Public Involvement

The government has an obligation to involve the public in the drafting of laws and regulations. This involvement is essential to ensure that the regulations created align with the needs and aspirations of the people, and that they can be accepted and effectively implemented. Public involvement in the law-making process, or public participation, is a vital part of the democratic process and good governance. It is not merely a formality, but rather a reflection of the government's commitment to accommodating the aspirations of the public.

Law Number 12 of 2011 concerning the Formation of Legislation, Article 96, explicitly regulates the public's right to provide input, both orally and/or in writing, in the process of forming laws and regulations. Public participation mechanisms can include public hearings, working visits, socialization activities, and the submission of written input. Typically, public involvement by ministries or state institutions is carried out through activities such as Public Consultation Forums (Forum Konsultasi Publik/FKP). Based on available records, the Fish Quarantine and Quality Control Station Medan II (Stasiun Karantina Ikan dan Pengendalian Mutu Hasil Perikanan Medan II/SKIPM Medan II) held an FKP event in October 2022.<sup>19</sup> This was the last such activity conducted, and it has not been continued since the fish quarantine function was placed under the authority of a new institution, namely the North Sumatra Center for Animal, Fish, and Plant Quarantine (Balai Besar Karantina Hewan, Ikan, dan Tumbuhan Sumatera Utara).

The benefits of public participation in the formation of laws and regulations include the production of higher-quality regulations, increased public understanding and awareness of the regulation's substance and intended goals, stronger support for implementation, and the prevention of potential conflicts that may arise from the regulation—thus allowing for early anticipation.

### E. Inter-Agency Coordination

In carrying out inter-agency coordination, there are several challenges that may pose obstacles, such as:

#### 1. Differences in Authority and Regulations Between Agencies

Each agency operates under its own laws and regulations, which can lead to overlapping responsibilities or even conflicts when carrying out tasks in overlapping areas.

#### 2. Lack of Integrated Information Systems

Each agency has its own reporting system, resulting in fish disease data not being connected in real time. This can cause delays in early detection and in communicating outbreak information to other relevant agencies that need to respond promptly.

#### 3. Low Awareness Among Business Actors and the Public

Many business operators are still unaware of the importance of quarantine inspections, and some continue to engage in the smuggling of fish or fish seed without health certification. This allows diseases to enter and spread through unofficial channels, while supervisory agencies face difficulties in early detection.

Since its official establishment, the North Sumatra Center for Animal, Fish, and Plant Quarantine has conducted inter-agency coordination activities, such as a coordination meeting with Belawan Customs on May 27, 2025, which discussed business process adjustments in response to the implementation of new regulations.<sup>20</sup> Subsequently, on July 9, 2025,

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coordination was carried out with the Center for Natural Resources Conservation (Balai Besar Konservasi Sumber Daya Alam), specifically through the KSDA Region II office, aimed at strengthening supervision and ensuring the sustainable protection of Indonesia's natural resources.<sup>21</sup>

## CLOSING

### A. Conclusion

1. The implementation of Law Number 21 of 2019 concerning Animal, Fish, and Plant Quarantine still faces obstacles in preventing the spread of quarantined fish diseases in North Sumatra.
2. The implementation of regulations regarding the designation of official entry and exit points for carriers of Quarantined Fish Pests and Diseases (HPIK) in the North Sumatra region is still encountering challenges, as only 10 official locations have been designated so far. Meanwhile, there are still several unofficial entry points that pose a risk of introducing HPIK into the area.
3. One of the challenges faced is the limited number of functional human resources—specifically Fish Pest and Disease Control Officers (PHPI) and Fish Pest and Disease Control Technicians (TPHPI)—at the North Sumatra Center for Animal, Fish, and Plant Quarantine. There is currently a shortage of 74 personnel, which is projected to be addressed gradually over the next eight years.
4. In fulfilling the obligation for Civil Servants (ASN) to complete a minimum of 20 hours of training, as mandated by Government Regulation Number 11 of 2017, the North Sumatra Center for Animal, Fish, and Plant Quarantine has yet to develop a web-based platform to measure and monitor ASN's minimum training hours in an integrated manner.
5. The North Sumatra Center for Animal, Fish, and Plant Quarantine has not yet established an official website to serve as a platform for regulatory dissemination, information sharing, and public education.
6. Since its official establishment in 2023, the North Sumatra Center for Animal, Fish, and Plant Quarantine has not conducted any Public Consultation Forums as a means of facilitating public participation in the regulatory formulation process.

### B. Recommendations

1. To enhance surveillance against the threat of quarantined fish pests and diseases entering North Sumatra, inter-agency coordination must be strengthened to address the numerous unofficial entry and exit points and the shortage of human resources.
2. A Data-Driven Integrated Monitoring System should be developed to consolidate data from various sources, including the Indonesian Quarantine Agency, Fisheries Departments, Testing Laboratories, and Business Operators. This system would improve early detection and enable faster responses to potential fish disease outbreaks.
3. Risk mapping based on geospatial data (GIS) should be carried out to identify areas highly vulnerable to disease, using factors such as farming density, water quality, and outbreak history. This will support more effective decision-making for prioritizing surveillance and determining strategic quarantine post locations.

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