



LEX PROGRESSIUM

Organized by Yayasan Pendidikan Dan Pelayanan Kesehatan Rahmat Husada
Email : lexprogressiumjurnal@gmail.com
Website : <https://jurnal.dokterlaw.com/index.php/lexprogressium/index>

ONE HEALTH LAW-BASED RECONSTRUCTION OF ANIMAL QUARANTINE LAW: FROM SECTORAL BIOSECURITY TO TRANSNATIONAL ZOOBOTIC RISK GOVERNANCE

Article	Abstract
<p>Author Umar Suryanaga¹, Hidayati²</p> <p>Borobudur University¹, Borobudur University²</p> <p>Email umarsuryanaga@gmail.com¹, hidayati@borobudur.ac.id²</p> <p>Data Submitted : 01-02-2026 Revised : 01-03-2026 Accepted : 01-04-2026</p>	<p><i>The increasing emergence of zoonotic diseases in the era of globalization has raised significant challenges for national health security, particularly in relation to cross-border transmission of animal-borne diseases. In Indonesia, the animal quarantine system plays a strategic role as a legal instrument to prevent the entry and spread of infectious animal diseases, however its current regulatory framework is still largely characterized by a sectoral biosecurity approach that focuses primarily on administrative control of animal traffic. This study aims to analyse the legal construction of the animal quarantine system in Indonesian positive law, identify the paradigmatic weaknesses of the sectoral biosecurity approach, and formulate a reconstruction of animal quarantine law based on the one health law perspective to strengthen transnational zoonotic risk governance. This study employs a normative legal methodology using legislative and conceptual approaches, supported by an analysis of relevant primary, secondary, and tertiary legal materials. The findings reveal that the existing legal framework still reflects fragmented regulation and limited institutional coordination between the sectors of human health, animal health, and environmental protection, which reduces the effectiveness of zoonotic disease control. To address this limitation, the study proposes a conceptual model called the one health animal quarantine governance framework, which integrates regulatory harmonization, cross-sectoral coordination, and strengthened national biosecurity within a unified legal framework. The study concludes that adopting a one health law approach can reposition animal quarantine as part of an integrated public health governance system for managing transnational zoonotic risks.</i></p> <p>Keywords: <i>Animal Quarantine Law; Biosecurity Governance; One Health Law; Transnational Zoonotic Risk; Zoonotic Risk Governance</i></p>

INTRODUCTION

The development of human mobility, international trade, and changes in the global ecosystem have increased the intensity of the spread of infectious diseases of animal origin

(zoonotic diseases). Zoonotic diseases such as avian influenza, rabies, and African swine fever not only have an impact on animal health, but also have the potential to cause a public health crisis, economic losses, and disruption to a country's food security. The World Health Organization even notes that most of the new infectious diseases in humans originate in animals, so the control of zoonotic diseases cannot be seen solely as an animal health issue, but also as a global public health and biosecurity governance issue. Overall, zoonotic diseases can damage various industries, both livestock and agricultural industries, causing large economic losses due to decreased production, business closures, and increased disease control costs (Balai Besar Laboratorium Kesehatan Lingkungan 2024).

The animal quarantine system has a strategic role as a legal instrument to prevent the entry and spread of animal diseases from outside the country's territory. Animal quarantine is basically a monitoring mechanism for animal traffic, animal products, and other disease-carrying media that have the potential to carry the threat of infectious diseases. Through the quarantine mechanism, the state, which in this case is carried out by the Deputy for Animal Quarantine, strives to be at the forefront of preventing the spread of animal diseases and zoonosis, protecting natural resources and community welfare from the potential threat of animal diseases, by committing to ensuring the safety and smooth flow of animals and animal products in Indonesia through various policies and strict supervision (Hewan 2024).

In the Indonesian legal system, the regulation of animal quarantine has been regulated through various laws and regulations that place quarantine as part of the national biosecurity policy. Biosecurity is a holistic term that encompasses a set of regulations, policies, and measures designed to protect agriculture, food, and the environment from biological hazards, as well as break the chain of entry of disease agents or reduce the risk of spreading diseases that have the potential to impact human, animal, and environmental health so that disease outbreaks can be controlled (Zahid 2023). However, in practice, the animal quarantine legal system in Indonesia still shows sectoral characteristics. Animal quarantine is more positioned as an administrative instrument in the agricultural sector that functions to supervise animal traffic in the country's border areas. Such approaches tend to place animal quarantine as a technical mechanism related to the surveillance of the trade in animals and animal products, so it has not yet been fully understood as part of a broader public health protection system.

This sectoral approach poses a number of problems in dealing with the increasingly complex threat of zoonotic diseases. Zoonotic diseases are not only related to animal health, but also involve interactions between human health, animal health, and environmental conditions. Climate change, environmental degradation, and increased human and animal

mobility have created conditions that allow the spread of zoonotic diseases across countries to become faster and more difficult to control. In such a situation, a sectoral approach to biosecurity is no longer adequate to deal with the complexity of the multidimensional zoonotic disease threat.

A number of academic studies show that a sectoral approach to zoonotic disease control can lead to policy fragmentation between the sectors of human health, animal health, and environmental protection. This fragmentation has the potential to hinder coordination between institutions and weaken the effectiveness of policies in preventing the spread of zoonotic diseases. In addition, regulatory fragmentation can also lead to a misalignment of norms between various laws and regulations that regulate human health, animal health, and environmental protection.

Global developments in recent decades have shown the emergence of a new paradigm in the control of zoonotic diseases known as the concept of one health. The concept of one health is one of the new concepts on how to prevent diseases in animals from transferring to humans, as one of the efforts to prevent future outbreaks (Biro Komunikasi dan Pelayanan Publik 2022). The concept of one health emphasizes that human health, animal health, and environmental sustainability are three interrelated and inseparable elements in an effort to protect public health. This approach emphasizes the importance of cross-sectoral collaboration between the fields of human health, animal health, and the environment in formulating zoonotic disease control policies. From a legal perspective, the one health approach then developed into the concept of one health law, which is a legal framework that integrates various legal regimes related to human health, animal health, and environmental protection.

One health law views that regulations regarding public health cannot be separated from regulations regarding animal health and environmental management, so a more integrative legal approach is needed in dealing with the threat of zoonotic diseases. Indonesia has adopted the one health approach in the form of regulations and several interventions spread across several ministries/institutions such as the Ministry of Health, Ministry of Agriculture, Ministry of Environment and Forestry (Sekretariat Kabinet Republik Indonesia 2023). Although the concept of one health has developed widely in public health studies and global policy, its application in legal studies in Indonesia is still relatively limited. Legal studies regarding animal quarantine in general still focus on aspects of regulatory implementation, the authority of quarantine institutions, and administrative supervision mechanisms for animal traffic. These studies make important contributions to understanding quarantine surveillance practices, but have not conceptually reconstructed the legal system of animal quarantine within the broader

zoonotic risk governance framework. As a result, the animal quarantine legal system in Indonesia still shows a tendency to maintain a sectoral biosecurity paradigm, which views animal quarantine as a technical supervision mechanism in the agricultural sector. This paradigm has not been fully able to answer the challenge of controlling zoonotic diseases, which are increasingly complex and cross-country. In the context of globalization and increasing human mobility and international trade, animal quarantine systems should be positioned as part of zoonotic risk governance integrated with public health protection systems.

Departing from these conditions, this study identifies conceptual gaps in the study of animal quarantine laws in Indonesia. Existing legal studies still place animal quarantine as a sectoral legal regime separate from the overall public health protection system. In fact, the threat of zoonotic diseases shows that the control of infectious diseases cannot be done sectorally, but requires an integrative approach that connects various policy and regulatory areas. Based on these gaps, this study aims to reconstruct the animal quarantine legal system in the perspective of one health law. The reconstruction is carried out by shifting the animal quarantine paradigm from a sectoral biosecurity approach to a more integrative zoonotic risk management approach. With this approach, animal quarantine is no longer understood solely as a mechanism for monitoring animal traffic across countries' borders, but also as part of a public health protection system in the face of the threat of cross-border zoonotic diseases.

METHODOLOGY

This research is normative legal research that focuses on the analysis of legal concepts, principles, and norms related to the animal quarantine legal system from the perspective of zoonotic disease risk management. The research approach used includes the statute approach, which is by examining various laws and regulations that regulate the animal quarantine system and public health protection, as well as the conceptual approach used to analyse theoretical concepts. The legal materials used in this study consist of primary legal materials in the form of related laws and regulations, secondary legal materials in the form of books and articles in scientific journals, and tertiary legal materials in the form of legal dictionaries and legal encyclopaedias. All of these legal materials are analysed qualitatively prescriptive through legal interpretation methods and conceptual analysis to reconstruct a more integrative animal quarantine legal framework in the perspective of one health law as the basis for strengthening transnational zoonotic risk governance.

RESULTS OF RESEARCH AND DISCUSSION

1. The Construction of the Animal Quarantine Legal System in Indonesia's Positive Law

Public health is all affairs related to animals and animal products that directly or indirectly affect human life (Aulia 2024). Zoonoses are diseases or infections that are transmitted naturally from animals to humans, can be from pathogens in the form of bacteria, viruses or parasites, or may involve unconventional agents and can be spread to humans through direct contact or through food, water, or the environment (Khanh 2024). Currently, zoonoses are a new threat to human health.

The animal quarantine legal system in Indonesia is an integral part of national policies aimed at protecting animal health, public health, and economic stability related to the livestock sector and trade in animal commodities. Within the framework of national law, animal quarantine functions as a preventive instrument that monitors the traffic of animals, animal products, and other disease-carrying media that have the potential to carry infectious disease agents from outside the country's territory. Animal quarantine not only has a technical function in trade supervision, but also has a strategic dimension in maintaining national health resilience.

Historically, arrangements regarding animal quarantine have evolved as awareness of the threat of infectious animal diseases that can have a wide impact on people's lives. Animal diseases not only impact the health of the animals themselves, but can also affect human health through zoonotic mechanisms, which are the transmission of diseases from animals to humans. Therefore, an animal quarantine system is designed to ensure that any animal or animal product that enters the territory of a country has met the health standards set by animal health authorities. The quarantine system is run by the Indonesian Quarantine Agency, which is one of the institutions that has the task and function of running the quarantine system in Indonesia by organizing a system to prevent the entry, exit and spread of quarantined animal pests and diseases, quarantine fish pests and diseases, and quarantine plant pest organisms; as well as supervision and/or control of food safety and food quality, feed safety and feed quality, genetically modified products, genetic resources, biological agents, invasive alien species, plants and wildlife, as well as endangered plants and animals that are put in, spread from one area to another, and/or removed from the territory of the Unitary State of the Republic of Indonesia (Badan Karantina Indonesia 2024). In practice, the main function of the animal quarantine system in Indonesia is still oriented towards administrative supervision in the country's border areas. The supervision is carried out through the examination of animal health documents, physical examinations of animals or animal products, and laboratory testing for the possibility of disease agents. In addition, animal quarantine also has the authority to detain, isolate, or even destroy animals that are proven to carry dangerous diseases.

Although the mechanism has an important role in preventing the entry of animal diseases, the orientation of administrative supervision shows that the animal quarantine system is still understood as a technical instrument in the agricultural sector. Animal quarantine is positioned more as a mechanism to control animal trafficking than as part of a broader public health protection system. In fact, the development of global zoonotic diseases shows that the threat of animal diseases can no longer be viewed sectorally, but must be understood as part of the dynamics of public health. The number of new diseases transmitted from animals continues to increase every year. According to the World Health Organization, at least six out of ten infectious diseases currently exist zoonotic, and even three out of four new infectious diseases in humans originate from animals (Nasional 2022).

In the current era of globalization, the increasing mobility of humans and animals has increased the potential for the spread of zoonotic diseases across countries. International trade in animal commodities as well as human mobility between countries create opportunities for disease agents to move quickly from one region to another. This condition shows that the animal quarantine system can no longer be understood only as a trade surveillance mechanism, but must instead be placed as part of a global health governance system. The animal quarantine legal system in Indonesia's positive law still shows the characteristics of sectoral biosecurity, which is an approach that places animal quarantine as a technical instrument in the agricultural sector. This approach has limitations in dealing with the increasing complexity of zoonotic disease threats in the era of globalization.

2. Paradigmatic Weaknesses of Sectoral Biosecurity in Animal Quarantine Systems

The sectoral biosecurity approach that is the basis of the animal quarantine system in Indonesia has a number of paradigmatic weaknesses that affect the effectiveness of zoonotic disease control. These weaknesses are related to regulatory fragmentation, sectoral approaches in health management, and limited cross-border zoonotic risk governance. One of the main problems in the animal quarantine legal system is the fragmentation of regulations between various sectors related to human health, animal health, and environmental protection. The regulations governing the three areas are often drafted separately, so policy coordination is limited. This condition can lead to insynchronization of legal norms as well as difficulties in formulating integrated policies to control zoonotic diseases.

The fragmentation of regulations also has an impact on zoonotic disease control institutions involving various ministries and government agencies. Without an integrative legal framework, coordination between institutions becomes less effective so that zoonotic disease control cannot be carried out optimally. In practice, policies related to human health are under

the authority of the health sector, while animal health is under the agricultural sector. These differences in authority often lead to overlapping policies. In addition, regulatory fragmentation can also cause ambiguity in the division of responsibilities between government agencies. When there is an outbreak of zoonotic diseases, questions often arise about which institution has the main authority to deal with the problem. This ambiguity can slow down the process of handling disease outbreaks and potentially increase the risk of spreading the disease more widely.

Another drawback of the animal quarantine system is the sectoral approach to health management. Animal quarantine has been positioned more as part of the agricultural sector that is responsible for animal health and the protection of livestock production. In fact, zoonotic diseases show that animal health is very closely related to human health. This sectoral approach has the potential to cause limitations in formulating cross-sectoral disease control policies. Without integration between the human health and animal health sectors, efforts to prevent zoonotic diseases become less effective. For example, animal disease control policies are not always integrated with public health policies related to the prevention of disease transmission to humans. In addition, sectoral approaches can also lead to limitations in the use of available resources. Zoonotic disease control requires collaboration between various disciplines, including veterinary medicine, public health, epidemiology, and environmental science. Without cross-sector coordination, the potential for collaboration cannot be utilized optimally.

The threat of zoonotic diseases that are transnational in nature requires a more comprehensive risk management approach. A quarantine system that focuses only on the surveillance of animal traffic at the border is not enough to deal with the dynamics of the spread of zoonotic diseases influenced by various factors such as human mobility, environmental changes, and international trade. In this context, the animal quarantine system needs to be seen as part of the zoonotic risk governance mechanism, which is risk governance that aims to identify, prevent, and control the spread of zoonotic diseases systematically. Without a comprehensive risk management approach, zoonotic disease control efforts will always be reactive and unable to effectively prevent the spread of disease.

3. Reconstruction of the One Health Law Based on the One Health Law

Global developments in zoonotic disease control show the importance of an integrative approach in the concept of one health. Zoonotic prevention and control requires strong cross-disciplinary cooperation, combining expertise from the animal health, human health, and environmental sectors, which is key to identifying new threats before they spread widely (Krisna, Dewantara and Mufa 2025). From a legal perspective, the concept of one health law

is developing, which is a legal framework that integrates various legal regimes related to human health, animal health, and environmental protection. One health law emphasizes the importance of regulatory harmonization and institutional coordination in formulating zoonotic disease control policies. This approach provides a new perspective in understanding the animal quarantine system. Quarantine is no longer understood solely as a mechanism of administrative oversight at the country's borders, but also as part of a broader public health governance system.

Based on an analysis of the paradigmatic weaknesses of the sectoral biosecurity system, this study proposes the reconstruction of the animal quarantine legal system through the one health law approach, which aims to integrate various policies related to human health, animal health, and environmental protection in a single zoonotic risk governance framework. This research offers a conceptual model called the one health animal quarantine governance framework, which is an integrative legal framework that places animal quarantine as part of the public health governance system.

Regulatory integration between quarantine law, health law, and environmental law is needed to create a more comprehensive legal framework in zoonotic disease control. Zoonotic disease control requires coordination between various government agencies related to human health, animal health, and the environment. The quarantine system must be strengthened through a more comprehensive biosecurity approach. Animal quarantine should be positioned as part of a zoonotic risk governance system that is able to systematically identify and control the risk of zoonotic diseases. The reconstruction of the animal quarantine law based on the one health law is expected to strengthen the public health protection system and increase the effectiveness of zoonotic disease control in Indonesia.

CONCLUSION

The construction of the animal quarantine legal system in Indonesia's current positive law is still dominated by the sectoral biosecurity paradigm that places animal quarantine primarily as an administrative instrument in the supervision of animal traffic and animal products in the country's border areas. This approach has not been able to fully answer the complexity of the threat of zoonotic diseases that are cross-border and multidimensional because there is still regulatory fragmentation between the sectors of human health, animal health, and environmental protection as well as limited institutional coordination in controlling the risk of zoonotic diseases. Theoretically, this research contributes to the development of health and biosecurity law studies, while practically emphasizing the importance of harmonizing regulations, strengthening coordination between institutions, and repositioning

animal quarantine as part of the public health protection system in the face of transnational zoonotic disease threats. This research has limitations only focusing on the analysis of national biosecurity governance concepts and legal norms, so further research is recommended to develop an empirical or socio-legal approach that examines the implementation of animal quarantine policies at the institutional and operational levels, as well as exploring the comparison of quarantine legal systems in different countries.

RECOMMENDATION

Recommends that the government and related stakeholders, especially the Indonesian Quarantine Agency and ministries dealing with the health, agriculture, and environment sectors, harmonize regulations and strengthen institutional coordination in the control of zoonotic diseases through the application of the one health. In addition, academics and researchers are encouraged to develop further research with empirical, socio-legal, and comparative approaches, in order to examine the implementation of the animal quarantine system in practice and compare it with policy models in various countries, so as to enrich the development of the concept of animal quarantine and strengthening national biosecurity policies in the face of the threat of cross-border zoonotic diseases.

THANK YOU

The author would like to express his gratitude especially to the Indonesian Quarantine Agency and comrades in law at the Doctoral Program in Law at Borobudur University, as well as all parties who have provided support in the process of compiling this article, as well as to the reviewers who have provided their criticism and input. The author also expresses his deep appreciation to the family for their continued support and motivation during the lectures and research until the completion of this article. Hopefully this work can make a real contribution to the development of the study of law and veterinary.

References

Book:

Animals, Quarantine. *Profile of the Deputy for Animal Quarantine*. Jakarta, 2024.

Aulia, Usma. "Basic Veterinary Public Health." In *Introduction to Veterinary and Zoonotic Public Health*, by Usma Aulia, et al., Padang: CV Gita Lentera, 2024.

Center for Environmental Health Laboratories, Directorate General of Primary and Community Health. *Perspektif One Health dalam Pencegahan dan Pengendalian Penyakit Tular Vektor, Reservoir, dan Zoonosis*. Jakarta, December 17, 2024.

Indonesian Quarantine Agency, Fish and Plant Animal Quarantine Standard Test Center. "Strategic Plan of the Indonesian Quarantine Agency in 2024." 2024.

Khanh, Varhano Khallifhatul. "Zoonotic Diseases: Introduction and Basic Concepts." In *Introduction to Veterinary Public Health and Zoonoses*, by Usma Aulia, et al., Padang: CV Gita Lentera, 2024.

Journal:

Krisna, I Kadek Bayu, Dewa Made Bagus Dewantara, and Romy Muhammad Dary Mufa. "One Health Approach in Zoonotic Control in Indonesia: An Analysis of Urgency, Pillars, Challenges, and Opportunities." *Journal of Interdisciplinary Scientific Studies* 9 (July, 2025).

Internet:

Bureau of Communication and Public Services, Ministry of Health of the Republic of Indonesia. *Ministry of Health*. June 8, 2022. <https://kemkes.go.id/eng/%20one-health-cegah-outbreak-di-masa-depan#:~:text=Lombok%2C%208%20Juni%202022%20Konsep%20One%20Health,mencegah%20penyakit%20pada%20hewan%20berpindah%20ke%20manusia>. (accessed March 13, 2026).

Nasional, Badan Riset dan Inovasi. <https://www.brin.go.id/>. August 3, 2022. <https://www.brin.go.id/news/109948/know-zoonoses-research-and-prevention-it> (accessed Maret 13, 2026).

Sekretariat Kabinet Republik Indonesia. May 21, 2023. <https://setkab.go.id/from-g20-to-42nd-summit-asean-advocacy-one-health-in-health-resilience/> (accessed Maret 13, 2026).

Zahid, Muhammad. "The application of biosecurity in livestock for the prevention of the transmission of foot and mouth disease (FMD)." *Bulletin No. 31 of 2022*, Juli 2023.