

Legal Certainty Regarding the Regulation of Shipping Lanes as an Effort to Prevent Vessel Accidents

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Abstract

As an archipelagic state, Indonesia experiences high-intensity maritime traffic, which requires effective shipping lane management to ensure navigational safety and prevent ship accidents. The expansion of the fleet and increasing route density have elevated the risk of incidents, which in practice is often triggered by non-compliance with safety provisions (including rules for narrow channels) and weak supervision and law enforcement. This study aims to analyze (1) the constraints and challenges of current shipping lane management in Indonesia, and (2) the role of legal regulation in improving maritime safety and enforcing violations of shipping lanes in order to achieve legal certainty. The research employs a normative juridical method using statutory and analytical approaches, through a literature review of primary and secondary legal materials, including the ratified UNCLOS 1982 regime, national maritime/Shipping regulations, and technical provisions on navigational safety. The normative analysis indicates critical issues in the form of potential regulatory overlap and inter-agency coordination gaps, limited surveillance capacity, and suboptimal user compliance; these conditions imply that accident prevention has not been maximized and that legal certainty in maritime traffic governance remains weak. This study recommends regulatory harmonization, strengthening supervisory mechanisms and consistent enforcement of sanctions, as well as improving compliance standards for navigational safety as key prerequisites for sustainable ship-accident prevention.¹

Keywords: *legal certainty; shipping lane management; maritime safety; law enforcement; ship accidents.*

A. Introduction

Indonesia is an archipelagic state whose status has been internationally recognized under the 1982 United Nations Convention on the Law of the Sea (UNCLOS) and incorporated into domestic law through Law No. 17 of 1985. This geographical reality

¹ ¹ For information on numbers for authors, the intention is to distinguish the origin of the institution (affiliation) of the authors, who sometimes collaborate with study programs or other agencies.

positions the sea not merely as a physical separator between islands but as the country's primary connective space supporting national logistics, mobility, economic integration, and maritime livelihoods. At the same time, Indonesia's maritime character also entails a growing exposure to navigational and environmental risks, particularly as sea space becomes increasingly crowded and is affected by various forms of human activity.

Over the past two decades, the expansion of Indonesia's national shipping industry has been accelerated, among others, by the cabotage principle introduced through Presidential Instruction No. 5 of 2005, which strengthened the role of Indonesian-flagged vessels in domestic carriage. The subsequent reinforcement of Indonesia's maritime vision, including the aspiration to become a global maritime fulcrum, further confirms that shipping and sea transport are strategic pillars of national development. However, the increase in fleet size and traffic density inevitably elevates safety risks especially in operationally demanding waters such as narrow channels, blind bends, and areas strongly influenced by tides and currents. In such contexts, technical navigational competence must be matched by effective bridge management, including task allocation, authority and responsibility arrangements, and reliable ship-to-ship communication.

Empirically, maritime accidents continue to occur and are frequently associated with human error, not only in the form of collisions but also groundings when vessels transit narrow channels. These risks persist despite the existence of clear international navigational rules. The International Regulations for Preventing Collisions at Sea (COLREG 1972), particularly Rule 9 on narrow channels, requires vessels to keep as near to the outer limit of the channel on their starboard side as is safe and practicable, prohibits vessels from impeding ships that can safely navigate only within the channel, regulates overtaking in narrow channels, demands heightened caution at bends with restricted visibility (including the use of sound signals), and discourages anchoring within narrow channels when circumstances allow. In practice, operational pressures, the complexity of maneuvering tasks, and weak procedural discipline often lead to inconsistent compliance, particularly during critical moments such as approaching bends or executing overtaking maneuvers. Inadequate pre-entry preparation such as ensuring machinery readiness, navigational equipment functionality, and accurate tidal calculations can further heighten the risk of grounding and amplify potential losses in human life and environmental harm.

Ultimately, these safety challenges are not solely technical. They are closely linked to the legal regulation and governance of shipping lanes. As a sovereign state and member of the international community, Indonesia bears flag state responsibilities, including the proper identification and registration of its vessels and the effective exercise of administrative, technical, and social jurisdiction and control. At the national level, Indonesia has developed a regulatory framework for shipping, including the latest amendments reflected in Law No. 66 of 2024 (as referenced in this manuscript) concerning revisions to the Shipping Law. Nevertheless, field realities indicate that serious accidents with substantial losses still occur, often triggered by violations of lane rules, improper lane usage, and weak oversight and law enforcement. Structural issues may also contribute to

these outcomes, such as overlapping institutional regulations, limited surveillance and enforcement capacity, and suboptimal dissemination and compliance, while technological development and increased traffic demand more adaptive and responsive regulatory arrangements.

A brief review of existing studies suggests three dominant approaches: technical-operational studies emphasizing COLREG compliance and navigational competence; institutional studies focusing on safety governance and organizational strengthening; and investigative approaches drawing on accident findings that highlight human factors, communication failures, and hydrographic conditions. However, these strands often remain fragmented. Many do not explicitly connect accidents in narrow channels with the problem of legal certainty in shipping lane regulation particularly the clarity and consistency of norms, institutional coordination, and the effectiveness of enforcement against lane violations. This limitation provides a clear space for the present research. The novelty of this study lies in placing legal certainty in shipping lane regulation at the center of accident prevention analysis, examining not only whether rules exist but whether they are coherent, enforceable, non-overlapping, and consistently implemented in ways that reduce collisions and groundings in narrow-channel operations.

Accordingly, this research aims to identify and analyze the constraints and challenges of shipping lane regulation in Indonesia today and to examine the role of legal regulation in enhancing shipping safety alongside law enforcement mechanisms against lane violations that ensure legal certainty. The study is expected to contribute theoretically by strengthening Indonesian maritime legal scholarship on legal certainty and legal utility in the context of safety, and practically by offering recommendations for regulatory improvement, enhanced oversight, and more effective enforcement strategies to reduce maritime accidents.

The theoretical foundation of this research relies primarily on legal certainty theory and utility (utilitarian) theory. Legal certainty theory emphasizes that laws must be clear, consistent, predictable, and enforceable to provide concrete guidance and protection for legal subjects. Within the classical framework of fundamental legal values, legal certainty stands alongside justice and utility. Utility theory views law as an instrument to maximize social benefit; thus, the success of regulation and enforcement should be measured not only by the formal existence of rules but by their tangible outcomes reducing accident risks, protecting lives, safeguarding the marine environment, and ensuring the continuity and efficiency of maritime traffic. By integrating these theoretical perspectives, this study positions legal certainty in shipping lane regulation as a key analytical lens to evaluate how regulation and enforcement can more effectively prevent ship accidents.

In conclusion, the significance of this research lies in bridging a practical safety problem collisions and groundings in narrow channels with the broader need for a coherent legal governance framework that delivers both certainty and demonstrable public benefit. Through this approach, the study seeks to strengthen the regulation and enforcement of

shipping lanes as a systemic instrument for preventing maritime accidents and supporting safer and more sustainable sea transportation in Indonesia.

B. Research Method

This study employs a normative juridical (doctrinal legal) research method, primarily based on library research, with an emphasis on analyzing the substance of legislation and regulations, legal doctrines, scholarly literature, and relevant jurisprudence. The normative approach is chosen because the research focuses on legal certainty in shipping lane (sea lane) regulation and the role of legal rules and enforcement in preventing ship accidents, which requires a systematic examination of applicable legal norms and underlying legal principles.

Two approaches are applied: the statute approach and the analytical approach. The statute approach is conducted by reviewing all laws and regulations related to shipping lanes, maritime safety, and the authority for supervision and law enforcement. The analytical approach is used to examine conceptual legal terms within the regulations, assess normative coherence and consistency, and evaluate how the rules operate in practice through relevant legal decisions or interpretive practices. This approach enables the identification of issues such as ambiguity, overlap among regulations, and gaps affecting legal certainty.

The research relies on secondary data, obtained through literature review and consisting of legal materials. The sources include primary, secondary, and tertiary legal materials. Primary legal materials comprise key statutes and regulations governing shipping and sea lanes, particularly Law of the Republic of Indonesia No. 66 of 2024 (amending the Shipping Law) and Minister of Transportation Regulation No. PM 129 of 2016 on Sea Lanes and Structures and/or Installations in Waters, including relevant amendments. Secondary legal materials include books, academic journals, articles, scholarly works, and expert opinions that support the analysis of primary sources. Tertiary legal materials serve as supplementary references, such as legal dictionaries and the Indonesian Dictionary (KBBI), to clarify terminology and definitions.

Data collection is carried out through library research, involving the identification, inventory, and review of relevant primary, secondary, and tertiary materials, complemented by credible online sources where appropriate. The collected materials are then analyzed using a qualitative descriptive-analytical method: organizing the data systematically, grouping it into themes and categories, linking norms and concepts across sources, and conducting legal interpretation based on applicable principles and doctrines. The analysis includes regulatory mapping, coherence and consistency assessment, and a normative evaluation aimed at producing legal arguments and prescriptive recommendations to address the research questions.

C. Results and Discussion

Indonesia's status as an archipelagic state frames the sea as a legal space that must be

governed to secure national connectivity while safeguarding navigational safety and the marine environment. Within this juridical configuration, shipping lanes are not merely technical navigational devices but public-law instruments that structure the lawful use of maritime space by prescribing standards of conduct, allocating responsibilities, and enabling accountability. As fleet growth and traffic density increase particularly in operationally demanding waters such as narrow channels and restricted-visibility bends the quality of shipping-lane regulation becomes a decisive factor in the capacity of law to prevent collisions and groundings.

At the level of international norms, vessel conduct in narrow channels is anchored in the COLREG 1972, especially Rule 9, which requires vessels to keep as near to the starboard outer limit of the channel as is safe and practicable, prohibits impeding vessels that can safely navigate only within the channel, regulates overtaking, mandates heightened caution at bends with restricted visibility, and discourages anchoring in narrow channels where circumstances allow. These duties are designed to generate behavioural predictability so that navigators can anticipate others' conduct under shared standards. From the standpoint of legal certainty theory, such predictability is foundational: law must be sufficiently clear and consistent to provide reliable guidance for legal subjects operating in time-critical, high-risk environments.

Yet international conduct rules require coherent domestic operationalisation if legal certainty is to move beyond formal existence and function as "law in action." This is where the normative issue becomes a legal-certainty problem. A normative-juridical (doctrinal) approach therefore evaluates the quality of the applicable norms: whether shipping-lane regulation is formulated with clarity (non-ambiguity), consistency (non-contradiction), coherence (non-overlap), and enforceability. The persistence of narrow-channel collisions and groundings often occurring at critical moments such as bend approaches or overtaking cannot be explained solely as individual failure. In legal analysis, "human error" frequently functions as an outward expression of a regulatory and enforcement environment that does not sufficiently structure standards of due care through determinative operational rules and predictable legal consequences.

Indonesia's domestic framework for shipping and safety comprises statutory norms and technical-administrative implementing regulations, including rules on shipping lanes. In principle, hierarchical layering can enhance regulatory effectiveness by enabling operational detail. However, legal certainty becomes vulnerable where these layers are not fully aligned through non-uniform definitions, overly general operational standards, excessive discretionary space, or overlapping provisions that allow a single lane-violation event to be framed under multiple regimes simultaneously. Such conditions generate both normative and practical uncertainty: regulated actors cannot reliably determine which rule is controlling in a given context, which procedures are mandatory, and which consequences are foreseeably and consistently applied when violations occur.

This legal-certainty problem directly implicates institutional design. Legal certainty requires clear allocation of supervisory and enforcement authority and coordination

mechanisms that prevent locality-dependent or agency-dependent variability. Where mandates intersect without effective coordination, enforcement tends to be non-uniform in both the classification of violations and the application of sanctions. Variability undermines deterrence and weakens law's preventive function. Enforcement inconsistency is therefore not a merely administrative concern; it constitutes a form of legal uncertainty with tangible safety consequences in narrow-channel operations.

From this point, the analysis turns to utility. Utility theory treats law as an instrument for maximising social benefit; accordingly, the success of shipping-lane regulation cannot be assessed merely by the presence or proliferation of legal instruments, but by measurable outcomes reducing collisions and groundings, protecting life, preventing pollution, and maintaining efficient maritime traffic. Legal certainty operates as an enabling condition for utility: clear norms and consistent enforcement stabilise compliance and transform violations from "tolerable operational risk" into "predictable legal consequences to be avoided." Strengthening legal certainty in shipping-lane governance thus constitutes a rational and utilitarian safety strategy.

This progression from the normative baseline, to the legal-certainty deficit, to the utilitarian implications also clarifies the research problem and aims. The research is positioned to identify and analyse the constraints and challenges in Indonesia's shipping-lane regulatory regime and to assess how regulation and enforcement against lane violations can enhance maritime safety by securing legal certainty. In line with a normative-juridical method, the study's objectives are directed at diagnosing normative obstacles (ambiguity, overlap, inconsistency, gaps) and institutional obstacles (coordination, supervisory capacity, enforcement consistency), and at formulating prescriptive recommendations aimed at improving normative coherence and enforcement effectiveness so that safety benefits can be realised in practice.

D. Conclusion and Recommendations

This study concludes that collisions and groundings in narrow channels are not caused solely by technical limitations or "human error," but are also closely linked to legal certainty in shipping-lane regulation. Although COLREG 1972 Rule 9 provides clear international conduct standards for narrow-channel navigation, its preventive value in Indonesia depends on coherent national operationalization rules that are clear, consistent, non-overlapping, and enforceable.

The main challenges identified are: (i) potential normative misalignment, including non-uniform definitions, overly general operational standards, wide discretionary space, and overlapping provisions; and (ii) institutional overlap, where intersecting supervisory and enforcement mandates without effective coordination lead to non-uniform enforcement. These conditions weaken predictability and deterrence, particularly at critical moments such as restricted-visibility bends and overtaking manoeuvres. Therefore, strengthening maritime safety requires reinforcing legal certainty so that lane violations produce predictable and consistent legal consequences, driving compliance and delivering

measurable public benefits reduced accident risk, protection of life, prevention of pollution, and efficient maritime traffic.

Accordingly, the study recommends a focused reform agenda: harmonising and mapping the regulatory framework to eliminate overlaps and unify definitions; strengthening operational standards for high-risk narrow-channel situations (bend approach procedures, overtaking protocols, and priority rules for vessels constrained to the channel), linked to pre-entry readiness obligations (machinery, navigational equipment, tidal/current calculations, and ship-to-ship communication); clarifying authority allocation and establishing inter-agency coordination mechanisms to ensure uniform oversight and enforcement; adopting standardised violation classification and consistent sanctions to reinforce deterrence; enhancing risk-area surveillance and traffic monitoring supported by technology and data; strengthening dissemination and compliance culture through bridge management and procedural discipline; and institutionalising outcome-based evaluation (accident trends, near-misses, pollution incidents, and traffic efficiency) to ensure that regulatory and enforcement improvements produce demonstrable safety gains.

E. References

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References

A. Legislation

Indonesia. *Law No. 66 of 2024 on the Third Amendment to Law No. 17 of 2008 on Shipping.*

B. Journal Articles

Johan, Y., P. P. Renta, A. Muqsit, D. Purnama, L. Maryani, P. Hiriman, and T. Yunisti. "Analysis of Marine Debris on Kualo Beach, Bengkulu City." *Jurnal Enggano* 5, no. 2 (2020): 273–289.

Mudana, I Ketut. "Enhancing Safety Supervision of Ferry Transportation on the Palembang–Muntok Route." *Jurnal Manajemen Transportasi dan Logistik (JMTransLog)* (2014).

Najmi, N., E. A. Rahma, M. Suriani, R. Hartati, F. Lubis, and G. Oktavinanda. "Socialization of the Dangers of Plastic Waste to Marine Ecosystems for Youth in Ujong Pulau Rayeuk Village, South Aceh." *J-Abdi: Jurnal Pengabdian kepada Masyarakat* 2, no. 2 (2022): 3855–3862.

Susetyorini, P. "Indonesia's Maritime Policy in the Perspective of UNCLOS 1982." *Masalah-Masalah Hukum* 48, no. 2 (2019): 164–177.

Widjaja, Gunawan. "Lon Fuller: Lawmaking and Legal Interpretation." *Law Review, Faculty of Law, Universitas Pelita Harapan* 6, no. 1 (2006).

C. Academic Thesis

Aminah, Siti. *Implementation of the Responsibilities of Parties in Sea Freight Transportation Agreements at PT Barwil Unitor Ships Service Semarang.* Master's thesis, Universitas Diponegoro, 2007.

Mulyata, Jaka. *Justice, Legal Certainty, and Legal Consequences of the Decision of the Mahkamah Konstitusi Republik Indonesia No. 100/PUU-X/2012 concerning Judicial Review of Article 96 of Law No. 13 of 2003 on Manpower.* Undergraduate thesis, Universitas Sebelas Maret, 2015.

D. Books

Ali, Zainuddin. *Philosophy of Law.* Jakarta: Sinar Grafika, 2010.

Amiruddin, and Zainuddin. *Introduction to Legal Research Methods.* Jakarta: RajaGrafindo Persada, 2004.

Asikin, Zainal. *Introduction to Indonesian Legal System.* Jakarta: Rajawali Press, 2012.

Darmodihardjo, Darji. *Philosophy of Law: Complete Edition (From Classical to Postmodernism).* Yogyakarta: Universitas Atma Jaya Yogyakarta, 2011.

Friedman, W. *Legal Theory and Philosophy of Law: Philosophical Idealism and the Problem of Justice.* Translated by Muhammad Arifin. Jakarta: Rajawali, 1990.

Kansil, C. S. T. *Dictionary of Legal Terms.* Jakarta: Gramedia Pustaka, 2009.

Manan, Abdul. *Aspects of Legal Reform.* Jakarta: Kencana, 2006.

Manullang, E. Fernando M. *Legism, Legality, and Legal Certainty.* Jakarta: Kencana, 2016.

Manullang, Fernando M. *Achieving Justice in Law: A Review of Natural Law and Value Antinomies.* Jakarta, 2007.

Marzuki, Peter Mahmud. *Legal Research.* Jakarta: Prenada, 2004.

Marzuki, Peter Mahmud. *Introduction to Legal Science.* Jakarta: Kencana, 2008.

Mertokusumo, Sudikno. *An Introduction to Legal Discovery.* Yogyakarta: Cahaya Atma Pustaka, 2014.

Sardar, Ziauddin. *Quantitative and Qualitative Research*. Bandung: Mizan, 1996.
Shidarta. *Legal Reasoning and Juridical Reasoning*. Yogyakarta: Genta Publishing, 2013.
Soekanto, Soerjono. *Introduction to Legal Research*. Jakarta: UI Press, 2008.
Utrecht, E. *Introduction to Indonesian Law*. Jakarta: Balai Buku Ichtiar, 1959.

E. Online Sources

Besar. "Utilitarianism and the Objectives of Multimedia Law Development in Indonesia." 2016. Accessed October 20, 2025. <https://business-law.binus.ac.id/2016/06/30/utilitarianisme-dan-tujuan-perkembangan-hukum-multimedia-di-indonesia/>