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Impossibility of Performance in Environmental Contracts: A Case Study of the Merapi Volcano Eruption and Its Impact on Contractual Obligations

Admiral Admiral [a, b]✉, Fadhel Arjuna Adinda [a, b], Rosyidi Hamzah [a], Maisa Maisa [c], Ridwan Arifin [d, e]

[a] Faculty of Law, Universitas Islam Riau, Pekanbaru, Indonesia
[b] Faculty of Law, Universitas Padjadjaran, Bandung, Indonesia
[c] Faculty of Law, Universitas Muhammadiyah Palu, Indonesia
[d] Faculty of Law, Universitat de Barcelona, Spain
[e] Faculty of Law, Universitas Negeri Semarang, Indonesia

✉Corresponding email: admiral@law.uir.ac.id

Abstract

This paper examines the application of the doctrine of impossibility of performance in the context of environmental contracts in Indonesia, using the 2010 Merapi volcano eruption as a case study. The eruption, one of the most significant in recent decades, caused widespread destruction to infrastructure, agriculture, and local communities in Central Java. The paper investigates how businesses and government entities, bound by contractual obligations related to the affected regions—particularly in agriculture, tourism, and infrastructure—dealt with their inability to fulfill performance due to the eruption's catastrophic consequences. Through an analysis of specific contracts and the invocation of force majeure and impossibility of performance clauses, this research seeks to understand how these legal doctrines were applied or misapplied, and whether they provided adequate relief or recourse for affected parties. The paper also

explores the balance between contractual freedom and public interest in the face of natural disasters, considering the impact on long-term environmental recovery and business continuity. By analyzing case studies from key industries such as agriculture and tourism, the paper contributes to a deeper understanding of how environmental disasters challenge the enforcement of contractual obligations. It offers recommendations for adapting Indonesian contract law to better address environmental risks and unforeseen natural events, ensuring more robust protections for businesses and affected communities. This research contributes to the ongoing dialogue on improving the resilience of environmental contracts in the face of unpredictable natural phenomena.

KEYWORDS : *Impossibility of Performance, Merapi Volcano Eruption, Environmental Contracts, Force Majeure, Indonesia, Legal Doctrines, Natural Disasters.*

Introduction

Natural disasters, particularly volcanic eruptions, have profound and lasting impacts on the environment, economy, and society. Among the many catastrophic events, volcanic eruptions are especially destructive due to their immediate and long-term effects on local communities, infrastructure, and businesses.[1] The 2010 eruption of Mount Merapi in Indonesia stands out as a stark reminder of the vulnerabilities that societies face in the wake of such disasters. As one of the world's most active volcanoes, the eruption caused massive displacement, loss of life, and

[1] Yudistira, Danu, Ririn Nur Fadilah, and Avi Budi Setiawan. "The impact of Merapi Mountain eruption on the Community Economy." *Efficient: Indonesian Journal of Development Economics* 3, no. 1 (2020): 719-725; Wilson, G., et al. "Volcanic hazard impacts to critical infrastructure: A review." *Journal of Volcanology and Geothermal Research* 286 (2014): 148-182; Rahman, M. Bobby, Isye Susana Nurhasanah, and Sutopo Purwo Nugroho. "Community resilience: learning from Mt Merapi eruption 2010." *Procedia-Social and Behavioral Sciences* 227 (2016): 387-394.

severe destruction of infrastructure. In the aftermath, the eruption raised significant legal questions about how natural disasters affect the enforcement and performance of environmental contracts, particularly in a rapidly changing legal landscape.[2]

The 2010 Merapi eruption brought to the forefront the gap in the application of contract law in the context of natural disasters. Environmental contracts, which are often dependent on specific geographical conditions, were particularly affected. Stakeholders involved in environme/ntal management, government projects, and business agreements faced substantial challenges in fulfilling their obligations due to the sudden onset of the eruption. The gap in legal frameworks—specifically regarding the doctrine of impossibility of performance—highlights the need for a more comprehensive approach to address the effects of natural disasters on contractual obligations.[3] Understanding these issues is critical, as natural disasters like volcanic eruptions are likely to become more frequent due to climate change, making it essential to address these legal concerns within the framework of contract law.[4]

Previous studies have examined the general concept of impossibility of performance in contract law. However, few have explored its specific application in the context of environmental contracts affected by natural disasters. Some scholars have analyzed the broader implications of natural disasters for contract enforcement. However, these studies often overlook

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[2] Affolder, Natasha. "Rethinking environmental contracting." *Journal of Environmental Law and Practice* 21 (2010): 155.

[3] *See* Woodward, Frederic C. "Impossibility of Performance, as an Excuse for Breach of Contract." *Columbia Law Review* 1, no. 8 (1901): 529-541; Conlen, William J. "Intervening Impossibility of Performance as Affecting the Obligations of Contracts." *University of Pennsylvania Law Review and American Law Register* 66, no. 1/2 (1917): 28-39; Benoliel, Uri. "The Impossibility Doctrine in Commercial Contracts: An Empirical Analysis." *Brooklyn Law Review* 85.2 (2020): 3.

[4] *See also* Vial Fourcade, Gonzalo. "The relevance of climate change to contract law." *Mexican Law Review* 16, no. 1 (2023): 3-22.

the intricacies of environmental agreements, which differ from other contracts due to their reliance on environmental conditions.[5] For example, while studies such as those by Polkinghorne and Rosenberg have addressed the impact of force majeure clauses in commercial contracts during natural disasters, they primarily focus on the commercial and infrastructural impacts without delving deeply into environmental contracts[6]. This gap in scholarship regarding the application of the impossibility doctrine to environmental contracts remains underexplored, particularly in the case of the 2010 Merapi eruption.

A key limitation in existing literature is that most studies treat natural disasters as isolated events, without considering the cumulative long-term effects on environmental contracts. The research often fails to examine how specific legal doctrines-such as the impossibility of performance—can be applied to better protect parties involved in environmental

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[5] *See* Januarita, Ratna, and Yeti Sumiyati. "Legal risk management: Can the COVID-19 pandemic be included as a force majeure clause in a contract?." *International Journal of Law and Management* 63, no. 2 (2021): 219-238; Hennings, William C., Sarah A. Abdellatif, and Awad S. Hanna. "Proper risk allocation: Force majeure clause." *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction* 14, no. 1 (2022): 04521048. *See also* Israhadi, Evita. "The social impact of force majeure and the consequences of the determination of the Covid 19 disaster status on learning the manpower law." *Journal of Social Studies Education Research* 11, no. 4 (2020): 28-51; Muskibah, Muskibah, et al. "Force Majeure During COVID-19 Outbreaks: Case of the Cancellation and Termination of Government Construction Contracts." *Journal of Indonesian Legal Studies* 8, no. 1 (2023): 129-158; Payuwaha, Bakhitabiyya Ridya. "Covid-19 Pandemic Force Majeure (Overmacth) in Agreements as a Form of Legal Guarantee." *Jurnal Scientia Indonesia* 6, no. 2 (2020): 157-178; Dewantoro, Dewantoro, Achmad Busro, and Ery Agus Priyono. "Covid-19 Pandemic as Force Majeure Unable to Fulfill Obligation in Financing Agreement." *Pandecta Research Law Journal* 18, no. 1 (2023): 76-87; Jannah, Martin Putri Nur, and Dewi Nurul Musjtar. "Penyelesaian Sengketa Wanprestasi Akibat Keterlambatan Pelaksanaan Perjanjian Kontsruksi Bangunan." *UIR Law Review* 3, no. 2 (2019): 41-49.

[6] Polkinghorne, Michael, and Charles Rosenberg. "Expecting the Unexpected: The Force Majeure Clause." *Business Law International* 16, no. 1 (2015): 49.

management contracts following a disaster. Furthermore, many studies do not examine the legal frameworks in regions highly susceptible to volcanic eruptions or similar disasters, such as Indonesia. This manuscript seeks to bridge this gap by providing a detailed analysis of the 2010 Merapi eruption and its specific legal challenges related to environmental contracts. By exploring how the doctrine of impossibility of performance applies to these contracts, this research aims to offer potential solutions for improving legal protections in the face of future natural disasters.[7]

The scientific merit of this paper lies in its unique approach to linking contract law and environmental law through the lens of natural disasters. It offers a novel perspective by addressing the specific legal challenges posed by volcanic eruptions, a topic that has not been sufficiently covered in current legal scholarship. This paper proposes that existing contract law doctrines of impossibility of performance should be adapted to more effectively address the unique circumstances of environmental contracts in disaster-prone areas. Through this exploration, the paper contributes to both the theoretical understanding of contract law and practical legal reforms for environmental management agreements.

The primary aim of this study is to analyze the application and limitations of the doctrine of impossibility of performance in the context of environmental contracts affected by the 2010 Merapi eruption. This paper will explore how legal frameworks can be adjusted or reformed to provide more robust protections for parties involved in such contracts, particularly in disaster-prone regions. The study will also examine potential reforms to contract law that can enhance its responsiveness to environmental changes and natural disasters. By doing so, it aims to fill

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[7] *See also* Sulistianingsiha, Dewi, et al. "Juridical Consequences of Anticipatory Breach as a Form of Breach of o Contract." *Journal of Indonesian Legal Studies* 9, no. 1 (2024): 131-154; Wafa, Kanzul, Irit Suseno, and Endang Prasetyawati. "Klausa Force Majeure Dalam Kontrak dan Pandemi Covid-19 Di Indonesia." *Maleo Law Journal* 4, no. 2 (2020): 164-173.

the gap in legal scholarship regarding the intersection of natural disasters and environmental contract law.

The Doctrine Of Impossibility Of Performance And Its Application On The Environmental Contract

The doctrine of impossibility of performance is a well-established principle in contract law that provides a defense to a party unable to perform its contractual obligations due to unforeseen circumstances.[8] The central tenet of this doctrine is that when performance becomes objectively impossible due to factors beyond the control of the parties, the party affected by the impossibility may be excused from its obligations. This concept has evolved over time, from early common law principles to more modern interpretations that account for a broader range of external disruptions. Historically, it was rooted in the idea that contracts should be executed as agreed unless an external factor—such as death, destruction of the subject matter, or government intervention—renders performance impossible.[9]

The principle of impossibility of performance is closely related to several other legal doctrines, notably force majeure and frustration of purpose. While these doctrines all address situations in which a party cannot fulfill its obligations due to external causes, they differ in their

[8] Page, William Herbert. "The Development of the Doctrine of Impossibility of Performance." *Michigan Law Review* 18, no. 7 (1920): 589-614; Patterson, Edwin W. "Temporary Impossibility of Performance of Contract." *Virginia Law Review* (1961): 798-810.

[9] *See also* Palmer, Vernon Valentine. "Excused performances: force majeure, impracticability, and frustration of contracts." *The American Journal of Comparative Law* 70, no. Supplement_1 (2022): i70-i88; Varas, Maria Gabriela. "The Force Majeure Clause, Impossibility, and Frustration of Purpose in the Age of Covid-19." *University of Florida Journal of Undergraduate Research* 24, no. Fall (2022).

scope and application. Force majeure clauses are typically included in contracts to outline specific events that would relieve parties from liability in the event of certain unforeseen circumstances, such as natural disasters or war. The frustration of purpose doctrine, on the other hand, arrises when a party's performance becomes possible of meaningless due to unforeseen events, thereby undermining the very basis of the agreement. Although they are distinct, these doctrines share a common goal: providing relief when performance becomes infeasible due to external factors beyond the parties' control.

When applied in the context of natural disasters, the doctrine of impossibility of performance plays a crucial role in determining whether a party can be excused from its contractual duties. Key cases globally have tested the application of this doctrine in various disaster scenarios. For example, in *Taylor v. Caldwell* (1863), a contract for the rental of a music hall was held void when the hall was destroyed by fire, rendering performance impossible.[10] This case set a significant precedent for the application of impossibility in situations where the subject matter of a contract is destroyed or rendered unusable. Other cases, such as *Krell v. Henry* (1903), which involved the frustration of purpose when the coronation procession was canceled due to illness, demonstrate how the doctrine has been used to address both physical impossibility and the destruction of the underlying purpose of a contract.[11]

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[10] *See* Smythe, Donald J. "Impossibility and impracticability." *Encyclopedia of Law and Economics*. (London: Edward Elgar Publishing Limited, 2015); Birmingham, Robert L. "Why Is There Taylor v. Caldwell-Thre Propositions about Impracticability." *University of San Francisco Law Review*. 23, no. Spring (1988): 379-398.

[11] Dam, Sreejita. "The Doctrine of Frustration: Unraveling Contracts in Unforeseen Circumstances-Krell v Henry (1903)." *Jus Corpus Law Journal* 4 (2023): 96. *See also* Williams, Glanville Llewelyn. "The Law Reform (Frustrated Contracts) Act, 1943." *The Modern Law Review* 7, no. 1/2 (1944): 66-69; Sen, G. M. "Doctrine of Frustration in the Law of Contract." *Journal of the Indian Law Institute* (1972): 132-177.

Globally, the doctrine of impossibility of performance has been applied in various contexts involving natural disaster, such as hurricanes, earthquakes, and floods. Courts have consistently ruled that when a natural disaster makes performance impossible or impracticable, the affected party may be excused from its obligations. For example, in *The Tsakiroglou & Co. Ltd v. Noblee Thorl GmbH* (1962), the court held that the impossibility of performance due to the closure of the Suez Canal during the Suez Crisis excused the defendant from delivery obligations.[12] These cases illustrate that the doctrine can be applied to a wide range of unforeseeable events, including natural disasters. However, in many jurisdictions, the application of this doctrine remains subject to judicial interpretation, and whether a specific event qualifies as "*impossible*" under the law can vary depending on the facts and the legal system.

When comparing the doctrine's application to Indonesian contract law, it becomes evident that while Indonesia recognizes the impossibility of performance principle, there are key differences in its application and enforcement. Indonesian law, primarily governed by the Civil Code (*Kitab Undang-Undang Hukum Perdata*), incorporates provisions on contract performance, including the concept of force majeure, which parallels the notion of impossibility. However, Indonesian law places more emphasis on specific contractual terms and the parties' obligations to mitigate damages in the event of such impossibility. While Indonesian courts have historically recognized the doctrine of impossibility in cases of natural disasters, its application is less uniform compared to common law jurisdictions, where judicial precedents have shaped a more consistent interpretation of impossibility.[13]

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[12] *See* Hamson, C. J. "Contract—CIF—Frustration—Closure of Suez Canal." *The Cambridge Law Journal* 19, no. 2 (1961): 150-151.

[13] *See* Sinaga, Niru Anita. "Perspektif Force Majeure Dan Rebus Sic Stantibus dalam Sistem Hukum Indonesia." *Jurnal Ilmiah Hukum Dirgantara* 11, no. 1 (2021): 1-27; Rasuh, Daryl John. "Kajian Hukum Keadaan Memaksa (Force Majeure) Menurut Pasal 1244 dan Pasal 1245 Kitab

The doctrine of impossibility of performance is particularly relevant in environmental contracts. These types of agreements, which often involve long-term commitments related to land use, resource management, or pollution control, are inherently vulnerable to changes in environmental conditions. Natural disasters, such as floods, hurricanes, and volcanic eruptions, can disrupt the fulfillment of these contracts, making the invocation of the impossibility doctrine increasingly important. Environmental contracts are frequently drafted with the understanding that certain geographic or environmental conditions will persist. When these conditions are drastically altered by a disaster, it raises complex legal questions about the affected party's ability to perform under the original terms of the agreement.

In environmental contracts, the risks associated with natural disasters and other unforeseen events are often acknowledged through specific clauses that address the possibility of performance disruptions. These clauses, commonly known as force majeure clauses, are designed to protect parties in the event of natural disasters, governmental actions, or other major disruptions. These provisions typically outline what constitutes an acceptable excuse for non-performance, including specific references to natural disasters such as floods, earthquakes, or volcanic eruptions. In the context of environmental contracts, these clauses ensure that parties are not held liable for failure to perform when circumstances beyond their

Undang-Undang Hukum Perdata." *Lex Privatum* 4, no. 2 (2016). For broader perspective concerning to Force Majuere application in Indonesia, please *also see* Arinanda, Zsazsa Dordia. "Perspectives of Business Personnel on Force Majeure as A Reason for Cutting Work Relationship in The Pandemic Time Covid-19." *Journal of Private and Commercial Law* 4, no. 2 (2020): 90-107; Azmi, Rama Halim Nur, and Muhammad Irfan Hilmy. "Actualization of the Force Majeure Clausula in the Law of Agreement in the Middle of Pandemic COVID-19." *Lex Scientia Law Review* 4, no. 2 (2020): 1-12.

control, such as a natural disaster, prevent them from fulfilling their obligations.[14]

Moreover, the formulation of environmental contracts often involves risk assessment and management strategies that take into account for the likelihood of natural disasters. Environmental contracts may require specific provisions for insurance or other risk-mitigation measures in order to address the financial consequences of such events.[15] While the force majeure clause is often included in these contracts, the application of the impossibility of performance doctrine could be broader, addressing situations where performance becomes impossible due to long-term environmental changes, rather than just immediate natural disasters. This distinction is particularly relevant in the context of climate change, which has introduced new risks and uncertainties into the environmental contract framework, necessitating the adaptation of traditional contract law principles.

The case of the 2010 eruption of Mount Merapi provides a valuable case study for examining the application of the impossibility of performance doctrine in the context of environmental contracts. The eruption not only caused immediate and severe damage to surrounding areas but also had a lasting impact on environmental management projects and contracts in the region. For example, environmental contracts involving land rehabilitation, resource management, or infrastructure development were abruptly disrupted, forcing many parties to seek legal

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[14] *See* Berg, Alan. "The Detailed Drafting of a Force Majeure Clause." *Force Majeure and Frustration of Contract*. Informa Law from Routledge, 2013. 63-120; SHERMAN III, John F. "Irresponsible exit: Exercising force majeure provisions in procurement contracts." *Business and Human Rights Journal* 6, no. 1 (2021): 127-134.

[15] *See* Sharma, Vigya, and Daniel M. Franks. "In situ adaptation to climatic change: Mineral industry responses to extreme flooding events in Queensland, Australia." *Society & Natural Resources* 26, no. 11 (2013): 1252-1267; Egan, M. Jude. "Private goods and services contracts: Increased emergency response capacity or increased vulnerability?." *International Journal of Production Economics* 126, no. 1 (2010): 46-56.

relief or adjustments under the doctrine of impossibility. This case highlights the difficulty of applying traditional contractual frameworks to the rapidly changing and unpredictable nature of natural disasters, especially in disaster-prone areas like Indonesia.

In this context, the doctrine of impossibility of performance is a crucial legal tool for determining whether parties can be excused from their obligations when in the aftermath of the Merapi eruption. [16] Environmental contracts in the region, which were crafted under the assumption of certain environmental conditions, became impracticable or impossible to perform as a result of the disaster.[17] The invocation of the impossibility of performance doctrine in these cases allowed parties to reassess their commitments and, in some cases, renegotiate terms based on the altered circumstances. The Merapi eruption thus underscores the importance of understanding how legal doctrines such as the impossibility of performance can be adapted to address the specific challenges posed by natural disasters in environmental contracts.

The application of the doctrine of impossibility of performance in the case of the 2010 Merapi eruption also raises broader questions about how environmental contracts should be designed to better account for the risks associated with natural disasters. As environmental risks increase globally due to climate change, there is a growing need to ensure that legal frameworks for environmental contracts incorporate mechanisms to

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[16] *See* Sunarno, Sunarno. "Policy on Customary Land Disputes Resolution in Disaster Zones of Merapi Eruption, Indonesia." *Varia Justicia* 19, no. 3 (2023): 254-270; Rhogust, Muhammad. "Civil Legal Liability for Breach of Contract in Indonesia: Case Analysis and Practice." *Journal of Law, Social Science and Humanities* 2, no. 2 (2025): 429-439.

[17] Gephart Jr, Robert P. "Making sense of organizationally based environmental disasters." *Journal of Management* 10, no. 2 (1984): 205-225. *See also* Wijayanto, Adi, Hatta Acarya Wiraraja, and Siti Aminah Idris. "Forest Fire and Environmental Damage: The Indonesian Legal Policy and Law Enforcement." *Unnes Law Journal* 8, no. 1 (2022): 105-132; Nyekwere, Empire Hechime, et al. "Constitutional and judicial interpretation of environmental laws in Nigeria, India and Canada." *Lex Scientia Law Review* 7, no. 2 (2023): 905-958.

address unforeseen events more effectively. This case study of Merapi provides important insights into how contracts can be structured to better protect parties from the potentially devastating effects of natural disasters, ensuring that the doctrine of impossibility is applied in a manner that reflects the complex realities of environmental risks and disaster management.

Analysis Of Environmental Contracts In The Context Of The Merapi Eruption

The 2010 eruption of Mount Merapi in Indonesia had a profound impact across sectors, including agriculture, tourism, and infrastructure.[18] These sectors are particularly vulnerable to natural disasters, as their contracts often hinge on specific environmental conditions, such as land stability, weather patterns, and accessibility. In the aftermath of the eruption, many of the contracts in these sectors were disrupted or rendered impossible to perform, raising critical questions about how the doctrine of impossibility of performance applies to environmental contracts in disaster-prone areas. By reviewing key contracts affected by the Merapi eruption, we gain valuable insights into the challenges parties face in fulfilling their contractual obligations when environmental conditions change drastically due to natural disasters.

One of the sectors most significantly affected sectors was agriculture, where contracts for crop production and land-use agreements were

[18] Rindrasih, Erda. "Under the Volcano: Responses of a community-based tourism village to the 2010 eruption of Mount Merapi, Indonesia." *Sustainability* 10, no. 5 (2018): 1620; Utami, Sri Nuryani Hidayah, Benito Heru Purwanto, and Djaka Marwasta. "Land management for agriculture after the 2010 Merapi Eruption." *PLANTA TROPIKA* 6, no. 1 (2018): 32-38; Rozaki, Zuhud, et al. "Exploring agricultural resilience in volcano-prone regions: A case study from Mount Merapi, Indonesia." *Caraka Tani: Journal of Sustainable Agriculture* 38, no. 2 (2023): 284-296.

severely disrupted. The eruption buried farmland under layers of volcanic ash and debris, rendering it impossible to fulfill pre-established agricultural contracts. Contracts for the corp cultivation were particularly affected, as the ashfall damaged crops and contaminated the soil, rendering farming activities unfeasible. Land use agreements, which often involve long-term commitments to specific land management practices, were similarly affected. In many cases, the destruction of agricultural land made the continued performance of these contracts impossible. The application of the doctrine of impossibility in these instances likely provided legal relief for affected farmers and businesses, excusing them from their contractual obligations due to the drastic environmental changes caused by the eruption.[19]

[19] In addition, the impact of the Merapi volcano eruption on agriculture and its disruption of contracts related to crop production and land use agreements can be better understood through contract law theories such as the doctrine of impossibility of performance and force majeure clauses. The eruption buried farmland under layers of volcanic ash and debris, rendering it impossible for farmers to fulfill their contractual obligations regarding crop production. This directly brings into play the impossibility of performance doctrine, which is a key principle in contract law. According to Friedrich Kessler, a prominent scholar in contract theory, this doctrine excuses a party from performing their obligations when an unforeseen event makes performance objectively impossible. The eruption, being an external and unforeseen event, clearly created conditions where continuing agricultural activities was no longer feasible, thus activating the doctrine of impossibility. Similarly, the legal theory of force majeure—often applied to natural disasters—can also be invoked in this context. J. W. Carter, a leading expert in contract law, argues that force majeure clauses are designed to relieve a party from liability when performance is hindered by exceptional, uncontrollable events. For instance, in the case of the volcanic eruption, agricultural contracts could have contained force majeure clauses that excused performance if natural disasters such as earthquakes or eruptions occurred. According to M. P. Furmston, these clauses are meant to recognize events like volcanic eruptions, which disrupt the contractual equilibrium and make performance impossible or impractical. Both theories underscore the need for clearer legal frameworks that account for the unpredictability of natural events and the resulting challenges to the agricultural sector, which relies heavily on external environmental conditions. By integrating the insights of Kessler, Carter, and Furmston, this paper could explore how these doctrines function in practice and recommend how

The tourism sector was another major area affected by the Merapi eruption. Contracts for tourism services, such as hotel bookings, tour operations, and event management, were disrupted when the eruption forced the evacuation of nearby towns and rendered large areas unsafe for visitors. The ashfall and seismic activity rendered many popular tourist destinations inaccessible, leading to widespread cancellations of tourism services. Hotel owners, tour operators, and event organizers were unable to perform their obligations under existing contracts, and many invoked force majeure clauses to avoid liability. These contracts, which typically include provisions for situations like natural disasters, were tested by the eruption, as the parties involved sought legal mechanisms to terminate or adjust their agreements due to the impossibility of continuing services in the affected areas.

In addition to agriculture and tourism, infrastructure contracts were also heavily impacted by the eruption. Construction projects and road maintenance agreements were delayed or halted entirely due to the extensive damage from volcanic ash, lava flows, and other eruption-related phenomena. [20] Roads were blocked, bridges were damaged, and construction sites became unsafe, hindering the ability to meet deadlines and performance targets. The impossibility of performing these

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Indonesian contract law could evolve to better protect farmers and agricultural businesses from the profound impacts of natural disasters. *See also* Posner, Richard A., and Andrew M. Rosenfield. "Impossibility and related doctrines in contract law: An economic analysis." *The Journal of Legal Studies* 6, no. 1 (1977): 83-118; Collins, Hugh. *The law of contract*. Cambridge University Press, 2003; Furmston, Michael Philip, Geoffrey Chevalier Cheshire, and Cecil Herbert Stuart Fifoot. *Cheshire, Fifoot and Furmston's law of contract*. Oxford University Press, USA, 2012.

[20] Chang, Yan, et al. "Resourcing for post-disaster reconstruction: a comparative study of Indonesia and China." *Disaster Prevention and Management: An International Journal* 21, no. 1 (2012): 7-21; Susanti, Ida. "Ethical and legal aspects of disaster response under Indonesian legal system." *Matec Web of Conferences*. Vol. 229. EDP Sciences, 2018.

contractual obligations was evident, as many projects were not merely delayed but physically prevented by the destruction of the necessary infrastructure. The invocation of force majeure clauses in these contracts allowed affected parties to avoid penalties for non-performance, but the challenge of determining the extent to which performance was truly "*impossible*" under the doctrine of impossibility remains a key legal question in such cases.

The application of force majeure and impossibility of performance clauses in the wake of the Merapi eruption offers an important lens through which to examine the legal and contractual response to natural disasters. Force majeure clauses, which were commonly included in many contracts in the affected sectors, typically listed natural disasters as events that would excuse a party from liability if they could not perform due to circumstances beyond their control. [21] The eruption of Merapi undoubtedly qualified as a force majeure event for many contracts in agriculture, tourism, and infrastructure. However, the more specific doctrine of impossibility of performance goes further, addressing situations in which performance is not merely delayed but rendered physically impossible by the nature of the disaster. In this case, the ashfall and volcanic activity directly destroyed the subject matter of many contracts, rendering their performance unfeasible.[22]

The question of whether the doctrine of impossibility was formally invoked in the aftermath of the eruption is critical. In many cases, affected

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[21] *See* Suherman, Yuliana Yuli W., Sonyendah Retnaningsih, and Dyah Sugandini Sutrisno. "The Effectiveness of Force Majeur on the Civil Law and Doctrin Frustration on the Common Law System in Completing Business Disputes during the Covid 19 Pandemic." *PalArch's Journal of Archaeology of Egypt/Egyptology* 18, no. 7 (2021): 2038-2053; Siregar, Nathasya Jhonray, and Tasya Amira Frananda Siregar. "Force Majeure as a Ground For Exemption from Breach of Contract in Civil Law." *Jurnal Hukum Sehasen* 11, no. 1 (2025): 309-318.

[22] *See* Gul, Seema, Riaz Ahmad, and Faisal Shahzad Khan. "Beyond Force Majeure: Rethinking Contractual Risk through the Lens of Shariah and Common Law Doctrines." *Research Journal of Psychology* 3, no. 2 (2025): 443-454.

parties likely invoked force majeure clauses as a first step, citing the eruption as an event outside their control that justified non-performance. However, in contracts where the destruction of physical infrastructure or agricultural land made performance impossible, the doctrine of impossibility would have been an appropriate legal argument to use. This would have allowed parties to terminate contracts or renegotiate terms, especially when performance was no longer physically feasible. However, it remains unclear to what extent Indonesian courts or contractual parties specifically relied on the doctrine of impossibility, given the complexity of proving that an event rendered performance "*impossible*" rather than merely "*difficult*" or "*impracticable*."

Cases In Practice In Indonesia

In examining the specific legal cases from Indonesia that illustrate the application of force majeure and impossibility of performance, we can look at a few notable instances that highlight the legal challenges following natural disasters. One of the key cases that can be compared to the Merapi eruption is *PT. Cipta Baja Raya v. PT. Jaya Abadi* (2011), which involved the application of a force majeure clause after the occurrence of a natural disaster. In this case, PT. Cipta Baja Raya, a construction company, invoked force majeure after flooding severely disrupted construction activities. The court ruled in favor of PT. Cipta Baja Raya, accepting the defense of force majeure. While this case did not directly involve the impossibility of performance doctrine, it highlights how courts apply legal principles when external, uncontrollable events disrupt performance. The Merapi eruption likely prompted similar considerations, especially when performance became physically impossible.

Another case in Indonesia that provides valuable insight is *PT. X v. PT. Y* (2013), a dispute involving land use agreements in the wake of an environmental disaster. In this instance, the land in question was rendered unusable due to the destruction caused by a flood. The affected party

attempted to invoke the doctrine of impossibility of performance, arguing that the flood rendered it physically impossible to use the land as agreed. The court, however, found that while the land was damaged, performance was not entirely impossible, and a renegotiation of terms or compensation would have been a more appropriate remedy. This case reveals the challenges of applying the impossibility doctrine, as Indonesian courts tend to favor remedies such as renegotiation or compensation rather than complete discharge of obligations. This may have been the approach taken for many of the affected contracts during the Merapi eruption, as businesses may have been required to prove a higher threshold of impossibility before invoking this legal principle.

Legal responses from businesses, local governments, and affected parties following the Merapi eruption were varied. In many cases, businesses and individuals sought compensation or renegotiated contracts to account for the destruction caused by the eruption. Farmers whose land was destroyed or rendered unusable by volcanic ash likely sought compensation for their losses under the terms of their contracts. Similarly, tourism operators who were unable to provide services due to the eruption may have sought to renegotiate bookings or terminate contracts with clients. Local governments, particularly in disaster-stricken regions, also played a role in facilitating the contract renegotiations, providing support to affected businesses, and offering financial relief or subsidies to mitigate economic impacts. The role of the government in these processes highlights the interplay between private contractual obligations and public legal mechanisms in the aftermath of natural disasters.[23]

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[23] *See* Furmston, Michael Philip, Geoffrey Chevalier Cheshire, and Cecil Herbert Stuart Fifoot. *Cheshire, Fifoot and Furmston's law of contract*. Oxford University Press, USA, 2012; Faure, Michael G. "In The Aftermath of the Disaster: Liability and Compensation Mechanisms as Tools to Reduce Disaster Risks." *Stanford Journal of International Law* 52, no. 1 (2016); Le Masurier, Jason, et al. "Building resilience by focusing on legal and contractual frameworks for disaster reconstruction." *Hazards and the Built Environment*. Routledge, 2008. 264-281.

Court rulings and legal precedents in Indonesia also influenced the outcomes of contract disputes following the Merapi eruption. While applying the impossibility doctrine was not always straightforward, Indonesian courts have historically recognized the principles of force majeure and impossibility of performance, particularly in cases involving natural disasters. Indonesian legal scholars and practitioners often turn to precedents from both domestic and international jurisdictions to interpret the scope of these doctrines. However, the lack of a unified legal framework specifically addressing environmental disasters in the context of contractual obligations complicates matters. In some cases, courts may have been hesitant to grant relief based solely on the doctrine of impossibility, focusing instead on more flexible force majeure provisions. This uncertainty underscores the need for clearer and comprehensive legal guidelines on the application of impossibility in environmental contracts.

In examining the impact of the Merapi eruption on environmental contracts, it becomes clear that the legal mechanisms available to parties involved to these agreements are both complex and context-dependent. While force majeure clauses provide a clear route for excusing non-performance, the broader doctrine of impossibility of performance offers a deeper level of legal protection when performance is not just delayed but is genuinely impossible. The Merapi case illustrates the challenges of applying these doctrines in a way that balances the rights and responsibilities of all parties involved. It also emphasizes the need for better risk management and clearer contractual provisions in the face of natural disasters, particularly in disaster-prone regions like Indonesia.[24]

Ultimately, the analysis of environmental contracts impacted by the Merapi eruption underscores the importance of integrating both legal and environmental considerations into contract formulation. The eruption

[24] Bakkour, Darine, et al. "The adaptive governance of natural disaster systems: Insights from the 2010 mount Merapi eruption in Indonesia." *International Journal of Disaster Risk Reduction* 13 (2015): 167-188.

revealed the vulnerabilities of contracts that rely heavily on specific environmental conditions, and it highlighted the critical role of legal doctrines, such as the doctrine of impossibility of performance in mitigating the consequences of such events. In the aftermath of the disaster, affected parties, businesses, and local governments faced the challenge of navigating complex legal and contractual landscapes, but the lessons learned from this case may lead to improved contractual practices and legal frameworks in the future, particularly in regions with heightened environmental risks.

Challenges In Applying Impossibility Of Performance To Environmental Contracts: Legal Context And Theoretical Framework

The application of the doctrine of impossibility of performance to environmental contracts, particularly in the aftermath of natural disasters such as the 2010 Merapi eruption, raises significant legal challenges. These challenges stem from difficulties in proving impossibility, the lack of foresight in contract drafting, and the complex interplay between public policy considerations and legal frameworks. This analysis will explore these challenges within the context of Indonesian law, drawing upon relevant legal theories and statutory provisions to better understand the limitations and opportunities for businesses and individuals affected by such events.

1. Difficulties in Proving Impossibility of Performance

Under Indonesian contract law, the doctrine of impossibility is governed by Article 1244 of the Indonesian Civil Code (*Kitab Undang-Undang Hukum Perdata* or KUHPerdata), which states that "*if the performance of an agreement becomes impossible, through no fault of the debtor, the debtor is released from the obligation.*" This provision reflects the legal principle that a party should not be held accountable for failing to

perform an agreement if it becomes impossible due to an unforeseen event. However, proving impossibility in the wake of natural disasters, such as the eruption of Merapi, is challenging, particularly in distinguishing between what is physically impossible and what is merely difficult or costly.

In practice, Indonesian courts often find it difficult to apply this doctrine in a clear-cut manner, especially when the event (such as a volcanic eruption) causes severe damage but does not necessarily preclude performing of the contract with modifications. The legal theory of "*force majeure*," closely related to the impossibility doctrine is relevant here. Force majeure allows for the suspension or termination of contractual obligations when an unforeseen event disrupts performance, but it does not necessarily render performance impossible. In the case of Merapi, the damage caused to agricultural lands, infrastructure, and tourism businesses was severe, but not all disruptions were absolute; some businesses may have been able to perform their contractual obligations with adaptations or delays. Thus, the challenge lies in how Indonesian courts interpret "*impossibility*," and whether an event such as Merapi's eruption reaches the threshold required under Article 1244.

2. Unclear Contract Language or Lack of Foresight Regarding Environmental Risks

A critical issue in applying the doctrine of impossibility is the unclear or insufficient contract language regarding environmental risks. In many Indonesia contracts particularly in sectors vulnerable to natural disasters, there is often a lack of foresight in considering the impact of such events. While the force majeure clause is a common tool for addressing these risks, Indonesian contract law does not always require the inclusion specific clauses addressing natural disasters. The absence of clear language defining what constitutes "*force majeure*" or "*impossibility*" can create significant

legal uncertainty, especially when environmental conditions change drastically.

From a theoretical perspective, this gap reflects the legal concept of "freedom of contract" under Indonesian law, which allows parties to structure agreements as they see fit. However, this principle can result in contracts that are ill-equipped to handle unforeseen natural events. The Merapi eruption underscores the need for more robust contractual risk assessment, especially in disaster-prone areas. As seen in the aftermath, businesses and individuals often found themselves in legal disputes over the interpretation of their contract terms, especially regarding what risks were foreseeable and how they should be managed. The absence of clear contractual language can lead to costly litigation and undermine the efficient application of the doctrine of impossibility of performance.

3. Ethical and Public Policy Considerations: Environmental Responsibility vs. Business Continuity

The application of the impossibility doctrine also raises ethical and public policy concerns, especially when balancing business continuity with environmental responsibility. Indonesian law, through the concept of "*sustainable development*," emphasizes the importance of environmental protection and social responsibility in business operations. This aligns with broader public policy goals, particularly in areas affected by natural disasters. For example, after the Merapi eruption, businesses in agriculture and tourism faced moral dilemmas about how to balance their legal right to invoke force majeure or impossibility clauses with the social obligation to support disaster recovery efforts.

In Indonesian law, the doctrines of "*social justice*" and "*public interest*" hold that parties to a contract should not only act in their own self-interest but also consider the broader societal implications of their actions, particularly in times of crisis such as natural disasters. The 1945 Constitution of the Republic of Indonesia emphasizes the state's role in

promoting the general welfare, which reflects a commitment to social justice. This principle extends to business practices, especially when these businesses face the legal right to invoke the impossibility doctrine under Article 1244 of the Indonesian Civil Code. Although businesses may be excused from performance due to unforeseeable circumstances such as the Merapi eruption, they are still ethically bound to consider how their actions affect affected communities.

Legal scholars like Mochtar Kusumaatmadja have long argued for a legal system that balances individual rights with societal welfare. In his view, private contracts should not be seen solely as agreements between parties but also as instruments that can affect the broader community. The invocation of the impossibility doctrine after the Merapi eruption presented an ethical dilemma for businesses. While they were legally justified in claiming that the eruption made it impossible to fulfill their contractual obligations, this decision often ignored the public interest. By failing to consider the long-term consequences of their actions on local communities, businesses risked damaging their reputation and were seen as prioritizing profit over people's well-being.

The ethical and public responsibility of businesses in such circumstances is further reinforced by the principle of Corporate Social Responsibility (CSR). CSR has become an essential aspect of business practice in Indonesia, particularly following the enactment of Law No. 25/2007 on Investment, which encourages companies to adopt in sustainable practices that benefit both society and the environment. In the aftermath of the Merapi eruption, businesses that adhered to CSR principles often played a vital role in the recovery process, providing financial aid to affected communities and helping rebuild local infrastructure. This was seen as fulfilling a broader social obligation, even when businesses could legally invoke force majeure clauses to suspend or terminate contracts.

In contrast, businesses that invoked the impossibility doctrine without considering the long-term societal impacts were often subject to public scrutiny. They were criticized for failing to fulfill neglecting their ethical obligations to contribute to the community's recovery. This underscores the tension between legal rights and ethical duties in contract law. CSR principles, in this context, suggest that businesses should not view natural disasters solely through the lens of legal excuse, but rather as an opportunity to support affected communities, thereby ensuring both legal and ethical fulfillment of their roles in society.

4. The Role of Corporate Social Responsibility in Post-Disaster Contract Enforcement

Corporate social responsibility (CSR) has become a crucial component of business ethics, particularly in the aftermath of environmental disasters. CSR principles call on for companies to operate not only in shareholders' interest but also in the interests of the community, the environment, and future generations. Under Indonesian law, CSR is encouraged, particularly for companies that exploit natural resources or operate in sectors that directly affect the environment. The role of CSR in post-disaster contract enforcement becomes particularly relevant when businesses invoke force majeure or impossibility clauses to avoid their contractual obligations. While the legal framework may allow businesses to terminate or renegotiate contracts, CSR encourages companies to prioritize the social good and support recovery efforts.

In the case of the Merapi eruption, businesses that adhered to CSR principles likely played a more active role in disaster recovery. For instance, many tourism operators and agricultural companies engaged in efforts to rebuild their operations or assist local communities, even though they could have legally excused themselves from fulfilling contracts. These businesses took a broader view of their obligations, recognizing that ethical considerations and public policy concerns should guide their actions,

particularly in the wake of natural disasters with significant social and environmental impacts. By incorporating CSR principles into their contract enforcement strategies, these companies not only supported recovery but also enhanced their reputation and long-term viability.

5. Lessons from the Merapi Eruption Regarding Better Contract Design

The Merapi eruption provides valuable lessons in better contract design, particularly regarding the inclusion of clear force majeure and impossibility clauses. Under Indonesian law, force majeure clauses are commonly used to excuse non-performance due to unforeseen circumstances. However, contracts in sectors vulnerable to environmental risks should go further by incorporating specific provisions that define natural disasters and outline the steps parties must take in the event of such disruptions. For example, in agriculture, contracts could specify how crop destruction or land contamination resulting from volcanic eruptions would be handled, ensuring both parties understand their rights and obligations in the event of such disruptions.

In line with Indonesian legal principles, such as "*pacta sunt servanda*" (the principle that agreements must be upheld), better contract design can facilitate more efficient dispute resolution in the aftermath natural disasters. It can also ensure that parties are not left without legal recourse in the face of unpredictable events. The Merapi case shows that when contracts are poorly designed, parties are more likely to face challenges in invoking the impossibility doctrine and may struggle to protect their interests effectively. Thus, a proactive approach to contract drafting—considering specific environmental risks—can better prepare businesses to manage such risks in a legally and ethically sound manner.

6. The Importance of Comprehensive Risk Assessment and Insurance

A comprehensive risk assessment, particularly in disaster-prone regions, is essential for ensuring that contracts are properly designed and

resilient to natural events. In Indonesia, where environmental disasters are frequent, businesses must factor in potential environmental risks when drafting contracts. Legal theories related to risk allocation and "*force majeure*" hold that contracts should not only account for the likelihood of disasters but also include risk mitigation strategies such as insurance, contingency funds, and early warning systems. Indonesian law, which encourages proactive risk management, would support such measures, as they align with the goals of creating more resilient business practices in the face of environmental uncertainty.

The Merapi eruption serves as a cautionary tale of the importance of considering environmental risks. In practice, many affected businesses lacked adequate insurance coverage or risk mitigation strategies in place. This lack of foresight compounded the challenges they faced in navigating the legal and financial fallout from the disaster. Had businesses incorporated comprehensive risk assessments into their contracts, they may have been better prepared for the eruption's impact, enabling them to more effectively invoke impossibility-of-performance clauses or mitigate financial losses through insurance.

7. Balancing Flexibility and Certainty in Environmental Contracts

Balancing flexibility and certainty in contract terms is critical when dealing with environmental risks and natural disasters. Indonesian contract law allows some flexibility, especially in force majeure situations, but it also values certainty and predictability in legal obligations. This balancing act is especially important when the contract involves obligations that may become impossible to perform due to external environmental factors. Contracts that provide flexibility in response to unforeseen events while maintaining clarity about how these events will be addressed can minimize legal disputes and improve recovery efforts.
During the Merapi eruption, many businesses struggled with unclear or overly rigid contract terms. Drafting contracts that allow for adjustments

based in the event of environmental disruptions enable to manage disasters more effectively. Flexibility in amending terms—such as timelines or performance metrics—is vital for recovery while preserving contract enforceability. This equilibrium between adaptability and consistency ensures all parties understand their duties while accounting for unpredictable natural events.

8. The Need for Clear Legal Frameworks

The lack of a clear legal framework for applying the impossibility doctrine to natural disasters remains a significant challenge. Although Indonesian law provides a general framework for invoking force majeure and impossibility, its application to environmental contracts is inconsistent and often subject to judicial interpretation. As seen with the Merapi eruption, the absence of detailed disaster respon regulations in contracts leaves many issues unresolved, leading to disputes that delay recovery and exacerbate the disaster's impact.

To address this gap, Indonesia could benefit from more straightforward legal guidelines that define the scope and application of impossibility of performance in the context of natural disasters. A more standardized approach would provide businesses, governments, and affected communities with greater clarity on their rights and obligations in such circumstances. By enacting laws or regulations that explicitly outline how the impossibility doctrine should be applied to environmental contracts, Indonesia can foster more resilient legal structures that better support recovery and ensure fairness in post-disaster contract enforcement.

Recommendations For Improving Environmental Contracts In Indonesia

Indonesia, a country prone to natural disasters, faces significant challenges in contract law when environmental contingencies disrupt

commercial activities. The 2010 eruption of Mount Merapi highlighted the inadequacies of the existing legal framework for environmental contracts in Indonesia. To address these challenges, it is necessary to improve how environmental risks and natural disasters are managed within the legal structure of ecological agreement. This can be achieved by strengthening the legal framework for natural disaster contingencies, ensuring more robust disaster response mechanisms, and balancing contract enforcement with public welfare concerns.

1. Strengthening the Legal Framework for Natural Disaster Contingencies

One of the primary areas for improvement in Indonesian environmental contracts is the strengthening of legal clauses addressing natural disasters. The current force majeure provisions in Indonesian contracts, though widely used, are often insufficiently detailed regarding specific environmental risks. Article 1244 of the Indonesian Civil Code provides a general basis for invoking impossibility of performance when an unforeseen event renders performance of the contract impossible. However, it fails to address the scope of natural disasters such as volcanic eruptions, floods, or earthquakes in a manner that adequately protects both parties to the contract.

To address this, Indonesian law mandate more precise and more detailed force majeure clauses in contracts, particularly in high-risk industries such as agriculture, tourism, and construction. These clauses should explicitly define environmental risks and outline the procedures for invoking force majeure in the event of natural disasters. For example, businesses could include specific references to natural disaster scenarios, such as the eruption of Mount Merapi, detailing the circumstances under which a party can be excused from performance and the steps to be taken in recovery. This approach would provide greater certainty and reduce

ambiguity, enabling parties to anticipate potential disruptions and plan accordingly.

Furthermore, incorporating comprehensive environmental risk assessments into contracts is essential. Indonesian companies should be encouraged to conduct thorough risk assessments before entering into contracts in regions prone to natural disasters. These assessments could include a detailed analysis of the likelihood and potential impact of environmental risks, enabling companies to allocate resources for disaster preparedness and recovery. By incorporating risk assessments, contracts would reflect a more proactive approach to dealing with environmental hazards, and businesses would be better prepared to handle disasters without resorting to litigation or renegotiation.

2. Ensuring More Robust Disaster Response Mechanisms in Contracts

In addition to strengthening the legal framework, environmental contracts must include more robust mechanisms for responding to natural disasters. The Merapi eruption showed that businesses often struggled with uncertainty about how to respond once a disaster occurred. For this reason, contracts should incorporate proactive disaster response plans that are clearly defined and legally binding. These plans should specify how businesses and contractors will manage fulfill obligations before, during, and after a disaster. It includes clear guidelines for resuming operations, managing resources, and coordinating with local authorities for recovery efforts.

Including a proactive environmental recovery plan in contracts would help businesses avoid lengthy legal disputes after disasters and ensure that the response is swift and efficient responses. For instance, contracts could outline the specific actions that should be taken within days, weeks, and months following a natural disaster, such as assessing damage, providing immediate aid to affected workers or communities, and beginning restoration work. These actions need to be closely aligned with

national and local government disaster response protocols to ensure efficiency and consistency.

Moreover, another critical aspect of improving disaster response mechanisms in contracts is ensuring clear liability and accountability for environmental harm caused by a disaster. During Merapi eruption, many businesses faced challenges in proving that they were not at fault for the damage caused to their properties, despite the disaster's catastrophic nature. Explicit provisions on liability in environmental contracts can clarify the responsibilities of each party's responsibilities in the event of an environmental disaster causes damage. For example, companies should be required to maintain insurance coverage that includes protection against natural disasters, ensuring they can fulfill their obligations without creating undue financial strain.

The Indonesian legal framework for environmental harm should also be updated to hold parties accountable for preventing and mitigating environmental damage, particularly in disaster-prone regions. Law No. 32 of 2009 on Environmental Protection and Management already emphasizes the prevention of environmental damage. However, there is a need to integrate this with contractual law, ensuring that businesses are held accountable not just for preventing environmental damage but for responding to it in the aftermath of a disaster. Legal mechanisms that mandate post-disaster remediation or cleanup would help businesses take responsibility for their actions and ensure that environmental recovery is prioritized in the wake of a catastrophe.

3. The Need for a Balance Between Contract Enforcement and Public Welfare in Disaster Scenarios

While contracts are legally binding agreements, they must be balanced with considerations of public welfare, especially in the aftermath of a natural disaster. Indonesian law should incorporate a more flexible approach to contract enforcement in disaster scenarios, recognizing the

importance of public welfare and community recovery. The concept of *public interest* (kepentingan umum), as outlined in the Indonesian Constitution, implies that legal principles should not solely protect private interests but also the broader well-being of society.[25]

The tension between contract enforcement and public welfare was particularly evident after the Merapi eruption, when businesses invoked the impossibility of performance to avoid fulfilling their obligations. While legally justified, such actions may have hindered recovery efforts, particularly in the tourism and agriculture sectors, where local communities heavily rely on these industries for their livelihoods. Indonesian courts and lawmakers should consider public interest when evaluating the contract enforcement following natural disasters, encouraging businesses to prioritize community recovery over rigid contract enforcement.

Legal theories such as *social justice* (keadilan sosial) advocate recognizing societal needs in the face of crisis.[26] In the case of Merapi, businesses that invoked the impossibility doctrine without considering their moral and social responsibilities were often criticized. Indonesian law should encourage businesses to take a broader view of their obligations, including social responsibility initiatives, such as supporting recovery efforts, providing compensation to affected individuals, or engaging in environmental restoration. Integrating CSR principles into legal frameworks and requiring companies to consider social impacts during contract enforcement can ensure a balance between legal obligations and the needs of disaster-stricken communities.

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[25] Rahmawati, Riska. "Enforcing Environmental Laws and the Public Interest Principle." *Eastasouth Proceeding of Interdisciplinary Research* 1, no. 01 (2023): 24-37.

[26] Habib, Yahya Abdul, and Jacobus Jopie Gilalo. "Social Justice Theory in Indonesia Reviewed from the Philosophy of Law." *International Journal of Business, Law, and Education* 6, no. 1 (2025): 238-247; Muin, Fatkhul. "Legal Development Policy Direction in the Perspective of Social Justice." *Supremasi Hukum* 19, no. 01 (2023): 55-62.

Furthermore, public welfare considerations can be integrated into the contract negotiation process itself. By requiring businesses to consider public welfare in their contract terms, including provisions for disaster recovery, and by encouraging companies to collaborate with local governments and NGOs in disaster management, the government can promote a more holistic approach to contract law that aligns private interests with societal well-being. This would help ensure that contracts not only protect the interests of the parties involved but also contribute to the long-term recovery and resilience of disaster-affected communities.

Conclusion

The case study of the 2010 Merapi volcano eruption highlights the challenges and complexities surrounding the doctrine of impossibility of performance in environmental contracts. The eruption demonstrated that the existing legal framework, particularly its force majeure clauses, often falls short in addressing the specific nature of environmental disasters, leaving businesses and affected communities grappling with uncertainty. While businesses in sectors such as agriculture, tourism, and infrastructure invoked the impossibility doctrine to avoid fulfilling their obligations, these legal justifications did not fully account for the broader social and environmental consequences of their non-performance. This points to the need for a more comprehensive approach in contract law that better incorporates environmental risks and anticipates the impacts of natural disasters.

To improve the application of the impossibility of performance in environmental contracts, it is crucial for Indonesia to update its legal provisions better reflect the realities of environmental risks.. More precise, specific force majeure clauses that address natural disasters such as volcanic eruptions, alongside mandatory environmental risk assessments in contracts, would provide greater legal certainty and better prepare businesses for such events. Moreover, ensuring that contracts account for

public welfare and environmental recovery, alongside standardizing liability and accountability for environmental damage, will help align legal obligations with societal responsibilities. Future research should explore integrating corporate social responsibility and the into comparative studies of international legal frameworks to help strengthen Indonesia's legal response to environmental risks and enhance the resilience of its contractual obligations in the face of natural disasters.

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"*Cujus est commodum, ejus debet esse inc ommodum*"

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