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Reform of Compulsory Licensing of Non-Medicinal Technologies in Indonesian Patent Law

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Abstract: This article highlights the need for reforming the regulation of compulsory licensing for non-pharmaceutical technologies in Indonesia by reviewing Law No. 13 of 2016 on Patents. This research employs a normative juridical approach, focusing on normative challenges and the rationale behind the urgency for reform. The findings indicate that current regulation remains limited to the pharmaceutical sector and lacks a clear operational definition of "public interest" in non-pharmaceutical contexts. Moreover, the absence of a Government Regulation outlining technical procedures, as well as the complexity of patent thickets in modern technologies, presents significant challenges. Such reform is essential to broaden access to strategic technologies, promote technology transfer, and reduce the dominance of foreign patents in key sectors of national development.

Keywords: compulsory licensing, non-pharmaceutical technology, Indonesian Patent Law

1. Introduction

Amid globalisation and intensifying technological competition, mastery of advanced technologies has become a crucial driver of national development.[1] Foreign companies from the United States, Japan, South Korea, and China dominate technology patent registrations, according to

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[1] Marinko Skare and Domingo Riberio Soriano, "How Globalization Is Changing Digital Technology Adoption: An International Perspective," *Journal of Innovation and Knowledge* 6, no. 4 (2021): 222 – 233, https://doi.org/10.1016/j.jik.2021.04.001.

the World Intellectual Property Organisation (WIPO) 2024 report. Of the 3.55 million global patent applications in 2023, China accounted for approximately 1.64 million, followed by the US (518,364), Japan (414,413), and South Korea (287,954).[2]

Companies such as Samsung from South Korea, International Business Machines Corp (IBM) from the US, Huawei from China, and Qualcomm from the US are among the most active in filing patents, particularly in the fields of information technology, digital communications, and artificial intelligence.[3] Like Samsung, in 2023 it obtained 6,165 patents in the US.[4] Recent data indicate that more than 50% of patents issued by the U.S. Patent and Trademark Office (USPTO) are owned by foreign entities. In 2016, for example, 152,000 of approximately 300,000 patents were granted to foreign entities.[5]

Unlike in Indonesia, where the majority of registered technology patents are held by foreign companies, primarily from developed countries such as Japan, the United States, and China.[6] In the context of dependence on foreign innovation, it is crucial to understand the dynamics of patent applications in Indonesia. Exact references from the Directorate General of Intellectual Property (DJKI) are pretty difficult to find online; however, data from the World Bank and the World Intellectual Property Organisation (WIPO) provide a comprehensive overview.

According to World Bank data from Trading Economics, the indicators "Patent applications, non-residents" and "Patent applications, residents" are

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2 Patents Highlights, "World Intellectual Property Indicators 2024: Highlights," www.wipo.int, 2024, https://www.wipo.int/web-publications/world-intellectual-property-indicators-2024-highlights/en/index.html.

3 Endri Setiawan, Yuniarti, and Tendy, "Pelarangan Penggunaan Produk Huawei Di Amerika Serikat Berdasarkan National Defense Authorization Act (NDAA) 2019," *Interdependence Journal Of International Studies* 4, no. 1 (2023).

4 Thomas Alsop, "Companies with the Most United States Patents Granted to Them in 2023," www.statista.com, 2024.

5 National Science Foundation, "Chapter 8: Invention, Knowledge Transfer, and Innovation" (2018).

6 Sutarman Yodo, Fakultas Hukum, and Universitas Tadulako, "Perlindungan Hak Paten (Studi Komparatif Lingkup Perlindungan Di Berbagai Negara)," *Fiat Justisia: Jurnal Ilmu Hukum* 10, no. 4 (2016): 697–714.

used to distinguish between applications from foreign and domestic applicants. In 2021, the World Bank reported 7,403 patent applications from non-residents in Indonesia, with resident applications estimated at approximately 1,400, for a total of approximately 8,803 applications. Of these, 84% (7,403/8,803) were from foreign applicants. Patent applications originating from foreign applicants, especially in strategic technology sectors such as communications, manufacturing, and energy. For example, companies such as Toyota (Japan), Siemens (Germany), and Qualcomm (United States).[7] This reflects the imbalance in technological mastery and serious challenges in the process of technology transfer to national industries.

One legal mechanism to bridge this gap is compulsory licensing, as stipulated in Article 82 of Law Number 13 of 2016 concerning Patents.[8] This mechanism allows the government to permit third parties to use patents without the patent holder's consent, in the public interest, and with appropriate compensation.[9] However, the implementation of compulsory licensing in Indonesia has so far been almost exclusively limited to the pharmaceutical sector, particularly in the context of public health crises such as the provision of COVID-19 vaccines and drugs for HIV/AIDS and hepatitis.[10]

Conversely, for non-drug technologies, compulsory licensing is rarely applied, despite the urgent need for access to strategic technologies such as solar panels and battery technologies in renewable energy, agricultural technologies, and digital transformation, such as 5G.[11] The absence of government regulations governing the application of compulsory licensing in the non-pharmaceutical sector, as well as limited political will and law enforcement capacity, are the

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7 "Indonesia - Patent Applications, Nonresidents," tradingeconomics.com, 2025.

8 Fakhry Amin and Dkk, *Hukum Kekayaan Intelektual* (Serang: PT Sada Kurnia Pustaka, 2024).

9 Nikita Cinthya Mangulu, "Hak Pemegang Paten Memberikan Lisensi Menurut Undang-Undang Nomor 13 Tahun 2016 Tentang Paten," *Lex Privatum* VI, no. 8 (2018): 203–13.

10 Putu Ayu Sriasih Wesna, "Doha Declaration Sebagai Perlindungan Masyarakat Atas Akses Obat Esensial Di Negara Berkembang Pasca Trips Agreement," *Kertha Wicaksana.* 14, no. 1 (2020): 56–62.

11 Young-Myoung Kim et al., "Intelligent Micro Energy Grid in 5G Era: Platforms, Business Cases, Testbeds, and Next Generation Applications," *Electronics* 8, no. 4 (2019).

main obstacles to expanding this mechanism. The Patent Law itself does not provide a clear definition or operational guidelines for what is meant by "public interest" outside the health context.[12]

This situation highlights the need to reform compulsory licensing regulations to extend beyond the pharmaceutical sector and to encompass other strategic technologies that are directly related to national development and broader public interests. With appropriate reforms and effective legal instruments, compulsory licensing can become a strategic tool to promote technology transfer and reduce dependence on foreign patents, while supporting national industrial development.

Therefore, the question arises as to how the provisions in the current Patent Law can meet national needs in accessing and developing strategic non-drug technologies. On the other hand, the urgency of reforming these regulations is warranted, given the technological gap between Indonesia and developed countries and the dominance of multinational companies in key patent portfolios. Therefore, it is essential to critically review the compulsory licensing provisions in the Patent Law, particularly their application to the non-drug technology sector.

2. Methods

This paper employs a normative legal approach and a descriptive-analytical research design. Data collection was conducted through literature studies and document analysis, including Law Number 13 of 2016 concerning Patents, Minister of Law and Human Rights Regulation Number 39 of 2018, reports from the Directorate General of Intellectual Property (DJKI), as well as international regulations such as the TRIPS Agreement and reports from global institutions such as WIPO and WTO for comparison. The analysis was conducted qualitatively by interpreting relevant legal norms to identify regulatory weaknesses and formulate the urgency of reform.[13] This approach

[12] Sahlan et al., "Compulsory Licensing in Intellectual Property Rights (IPR): Current Application and Future Prospects in Indonesia," *Fiat Justisia: Jurnal Ilmu Hukum* 18, no. 2 (2024): 127–59.

[13] Kornelius Benuf and Muhamad Azhar, "Metodologi Penelitian Hukum Sebagai Instrumen Mengurai Permasalahan Hukum Kontemporer," *Gema Keadilan* 7, no. 1 (2020): 20–33, https://doi.org/10.14710/gk.2020.7504.

also includes an analysis of the need for compulsory licensing reform for non-drug technologies in Indonesia, taking into account the dominance of foreign patent holders.

3. Result and Discussions

3.1. Regulations on Compulsory Licensing in the Field of Non-Drug Technology in Indonesia

Compulsory licensing is a state-granted license to a third party to use a patent without the patent holder's consent, while still providing fair compensation or royalties.[14] This mechanism is set out in the TRIPS Agreement (Agreement on Trade-Related Aspects of Intellectual Property Rights), administered by the WTO, in Article 31, Other Use Without Authorisation of the Right Holder. This article provides a legal basis for WTO member countries to permit the use of patents without the explicit permission of the rights holder, provided certain conditions are met.[15] In the field of technology, this provision plays an essential role in balancing the protection of patent holders' exclusive rights with the public interest, particularly when patented technology has national strategic value or raises concerns about market monopolies and anti-competitive practices.

To prevent patent holders from abusing their rights, the implementation of Article 31 of the TRIPS Agreement is considered important, particularly when patents are used to impose onerous licensing conditions or to restrict further innovation (patent blocking). In the field of technology, Article 31(c) of the TRIPS Agreement:[16]

> "*(c) the scope and duration of such use shall be limited to the purpose for which it was authorised, and in the case of semiconductor technology shall*

[14] Nur Aisyah Thalib, Syafrinaldi, and Abd Thalib, "Compulsory Patent Implementation In Indonesia According to Law No. 6 of 2023 About Job Creation," *Journal.Uir.Ac.Id*, 2024, 1–16.

[15] Luqman Hakim, "Implementation Of Mandatory Trips Agreement License In Pharmaceutical Products In Sweden Implementasi Lisensi Wajib TRIPs Agreement Dalam Produk Farmasi Di Negara Swedia," *Rewang Rencang: Jurnal Hukum Lex Generalis* 4, no. 1 (2023): 28–58.

[16] A Handbook on the WTO TRIPS Agreement, "Declaration on the TRIPS Agreement and Public Health" (2020), https://doi.org/https://doi.org/10.1017/9781108883511.020.

> *only be for public non-commercial use or to remedy a practice determined after judicial or administrative process to be anti-competitive."*

The provisions on semiconductor technology in this article indicate that TRIPS itself recognises that this sector is treated differently and more strictly than other patent sectors. Under the provisions, unauthorised use of semiconductor technology patents is permitted only for non-commercial public use or to address practices that have been officially determined to be anti-competitive through judicial or administrative processes.[17]

The strategic position within the technology industry chain is the reason semiconductors are treated differently. As semiconductors are key components in almost all electronic devices, ranging from mobile phones and computers to vehicles, defence systems, and digital infrastructure such as 5G networks.[18] It can be interpreted that control over semiconductor technology determines a country's access to and sovereignty over technology. In addition, semiconductors have high economic and geopolitical value, as semiconductor patents are held by a small number of multinational companies that often wield market power.[19] If these patent rights are not regulated wisely, developing countries may become locked into technological dependence or even unable to create their own technology industries.[20]

In Indonesia, compulsory licensing is regulated in Law No. 13 of 2016 on Patents, specifically Article 82, as follows.

(1) A compulsory license is a license to implement a patent granted based on a ministerial decree upon request, with justification:
   a. "The Patent Holder does not fulfil the obligation to manufacture products or use processes in Indonesia as referred to in Article 20

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17 Joni Laksito and Dyah Listyarini, *Hukum Perizinan* (Semarang: Penerbit Yayasan PAT, 2024).

18 Stephen Ezell, "An Allied Approach to Semiconductor Leadership" (Whasingtoon DC, 2020).

19 Agus Wibowo, *Disrupsi Tata Kelola Global Ekonomi Digital: Era Perang Tarif Amerika - China 2025* (Semarang: Yayasan Prima Agus Teknik, 2025).

20 Mohsin Hingun and Rahamatthunnisa Mohamed Nizamuddin, "Amanding Section 84 Patents Act 1983 To Encompass the Health Flexibilities Leverage Accorded By Article 31bis Trips Agreement," *UUM Journal of Legal Studies* 11, no. 2 (2020): 1–26.

paragraph (1) within a period of 36 (thirty-six) months after the Patent is granted."

b. "The patent has been exercised by the patent holder or licensee in a manner that is detrimental to the interests of the public; or"
c. "Patents resulting from the development of previously granted patents cannot be implemented without using other patents that are still under protection."

(2) "The mandatory license application referred to in paragraph (1) is subject to a fee."

Under Article 82, paragraph (2), compulsory licensing must be accompanied by fair compensation to the patent holder, which, in this case, is determined by the Minister of Law and Human Rights based on the evaluation of the patent committee. However, this Law does not provide further guidance on the calculation of compensation, particularly for non-drug technologies with high commercial value.

The administrative procedure for compulsory licensing is set out in Regulation of the Minister of Law and Human Rights No. 39 of 2018 on Procedures for Granting Compulsory Licenses.[21] This regulation governs the submission of applications to the Directorate General of Intellectual Property (DJKI) by parties such as the government or third parties, on grounds including failure to implement patents or other public interests. Followed by the formation of an ad-hoc team involving experts to evaluate applications that meet the requirements for compulsory licensing, and a final decision by the Minister of Law and Human Rights requiring the payment of reasonable compensation to the patent holder.[22] This regulation places greater emphasis on procedural aspects and does not provide technical guidance for evaluating compulsory licensing in the field of non-drug technology.

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[21] Fahnizar Dandy Hediyanto, Kholis Roisah, and Anggita Doramia Lumbanraja, "Kendala Regulasi Kewajiban Pemegang Paten Oleh Investor Asing Di Indonesia," *Notarius* 14, no. 1 (2021): 616–27.

[22] "Permenkumham No. 39 Tahun 2018. Database Peraturan | JDIH BPK. (n.d.-A)." (n.d.).

3.2. Challenges in Regulating Compulsory Licensing of Non-Drug Technologies in Indonesia

Normative obstacles related to the weak legal and regulatory framework governing compulsory licensing are found in the criteria for public interest in Law No. 13 of 2016, particularly Article 82, which is considered unclear. This article states that compulsory licensing must be granted for the "public interest." Still, it provides no specific definition or guidance on what constitutes the public interest beyond the health context.[23]

For non-drug technologies such as green technologies or digital transformation, it remains challenging to determine whether a technology qualifies without clear criteria.[24] In the case of 5G technology or Artificial Intelligence, can it be considered a public interest if it is not implemented locally? This uncertainty can hinder decision-making by the competent government authorities or lead to legal uncertainty in determining which technologies should be subject to mandatory licensing.

The Patent Law has not yet been supported by a Government Regulation governing the technical procedures for compulsory licensing in the non-pharmaceutical technology sector. Without government regulation, there are no guidelines for the application process, patent evaluation, determination of reasonable compensation, or appeal mechanisms. This is in stark contrast to the pharmaceutical sector, where precedent and urgent needs have driven a more focused and structured implementation despite the absence of a specific Government Regulation.

In addition, there is a mismatch with modern technological needs, as the current Patent Law is better suited to single-patent applications with clear uses, such as medicines, than to technologies with complex patent ecosystems. As stated in Article 1, paragraph 1, of Patent Law Number 16 of 2016, the law is designed to regulate the patent system in general and to

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[23] "Pasal 82 Undang-Undang Nomor 13 Tahun 2016 Tentang Paten," n.d.

[24] A. Yunia Pratiwi, A., Amirulloh, M., & Afriana, "Harmonisasi Hukum Ketentuan Lisensi Wajib (Compulsory License) Perlindungan Varietas Tanaman Di Indonesia," *Jurnal Poros Hukum Padjadjaran* 2, no. 2 (2021).

protect new inventions, have inventive steps, and can be applied in industry. Still, it is more oriented toward traditional patent models, such as physical products or manufacturing processes, and does not fully account for the complexity of modern technology.

Modern technologies, such as software, AI, or data-based technologies, do have several characteristics that distinguish them from traditional patents or medicines. Among them are patent thickets, or patents with many components, which occur when a single product or technology is protected by multiple overlapping patents held by one or more patent holders.[25] A simple example is a smartphone, which involves thousands of patents covering hardware such as screens and chips, as well as software such as applications and communication technology, whether it uses 4G or 5G.

In the domain of artificial intelligence, which encompasses machine learning models, there is also potential to integrate patents on algorithms, training methodologies, and specific applications, such as image recognition.[26] In many cases, ownership of these patents is held by multiple entities, including prominent corporations such as Google and Microsoft.[27] These patent thickets create legal complexity because compulsory licensing for a single patent may not be sufficient to enable the production of the technology as a whole. Law No. 13 of 2016 also lacks a mechanism to address this situation, as its regulations focus on individual patents with clear applications, such as drug formulas.

Although Article 31(F) of the TRIPS Agreement (Trade-Related Aspects of Intellectual Property Rights) regulated by the WTO provides flexibility to member countries to implement compulsory licensing whereby the government allows third parties to use patents without the consent of the

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[25] Michael A. Carrier & S. Sean Tu, "Why Pharmaceutical Patent Thickets Are Unique," *SSRN Papers*, 2023.

[26] Anwar Sulaiman Nasution, Yessi Kurnia, and Arjani Manik, "Analisis Yuridis Terhadap Isu Hak Cipta Dalam Perkembangan Teknologi Virtual Reality (VR)," *Jurnal Pendidikan Tambusai* 9, no. 1 (2025): 6205–9.

[27] Joshua Welsh, *Rhetoric and Silence in Corporate AmericaEnding the Patent War between Google and Microsoft* (Routledge, 2023).

patent holder to balance public interests and the exclusive rights of patent holders, there are still restrictions such as the requirement to first attempt voluntary license negotiations with the rights holder, except in cases of emergency or urgent public interest. Then, there is the obligation to provide reasonable compensation to the patent holder in Article 31 letter H.[28]

Law No. 13 of 2016 on Patents reflects this limitation in Article 82. This article states that the government may grant compulsory licenses in situations such as when the patent holder fails to implement the patent in Indonesia within 36 months, when there is a state of national emergency, or when it is in the public interest. However, this law does not provide guidance on how to apply it to non-drug technologies, which often have high commercial value. Furthermore, the Patent Law does not regulate how to determine fair compensation for non-drug technologies or how to assess the economic impact of compulsory licensing on innovation in this sector. As with the application of compulsory licensing to 5G technology or advanced medical devices, different considerations are required than for generic drugs.

3.3. The Importance of Reforming Compulsory Licensing Regulations for Non-Drug Technologies in Indonesia

Based on World Bank data from Trading Economics, the dominance of foreign patent applicants appears to limit access to strategic technology, with more than 70% of applications coming from foreign applicants, particularly in some years, including 2021, which reached 84%.[29] This reflects a heavy dependence on foreign technology, particularly in strategic areas such as telecommunications, renewable energy, and AI. This dependence poses challenges in accessing such technologies, particularly if foreign patent holders demand high licensing fees or are unwilling to license their technologies for local use.

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[28] World Trade Organization (WTO), *Agreement on Trade-Related Aspects of Intellectual Property Rights (Trips Agreement) 1994*, 2012.

[29] "Indonesia - Patent Applications, Nonresidents, 2025 Data 2026 Forecast 1963-2021 Historical," n.d.

As part of the national technology transfer requirements, Indonesia has ambitious targets for digital transformation and the development of Industry 4.0.[30] However, without access to advanced and critical technologies, achieving this target will be challenging. National technology transfer, the transfer of knowledge and technical capabilities from foreign entities to local ones, is crucial.[31] Compulsory licensing is a legal instrument to ensure that these technologies are available to local industries, thereby supporting the development of national capabilities and reducing dependence on imported technology.[32]

Law No. 13 of 2016 on Patents permits compulsory licensing. Still, its regulations are more focused on pharmaceutical technology, such as the manufacture of medicines for human diseases or exports in response to demand from developing countries.[33] For non-drug technologies, such as telecommunications or renewable energy, there are no specific guidelines on how to apply compulsory licensing, particularly for determining "public interest" or "fair compensation" for patents with high commercial value.[34]

This reform is necessary to clarify the rules governing non-drug technologies, including by providing specific guidelines for evaluating complex technology patents and determining fair compensation, as suggested in the article titled "Updates on Patent Compulsory Licensing Provisions in Indonesia." 2021.[35] In addition, the reform of compulsory licensing regulations for non-drug technologies provides a strong legal basis for the aggressive utilisation of the

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30 "Indonesia 4.0: The Transformation Opportunity | Kearney," n.d.

31 Hayati Nufus, Lidya C. Sinaga, and Xue Song, *Refleksi Satu Dekade Belt and Road Initiative: Peluang Dan Tantangan Kerja Sama Indonesia-Tiongkok* (Jakarta: Yayasan Pustaka Obor Indonesia, 2024).

32 Hari Sutra Disemadi, *Mengenal Perlindungan Kekayaan Intelektual Di Indonesia* (Depok: Rajawali Pers, 2023).

33 Adam Afin Maulana and Suwarno Abadi, "Peran Hak Paten Dalam Melindungi Inovasi Obat Dan Meningkatkan Keberlanjutan Industri Farmasi," *Legal Standing: Jurnal Ilmu Hukum* 9, no. 1 (2025): 77–91.

34 Bouchra El Houda Lamhamedi and Walter Timo de Vries, "An Exploration of the Land–(Renewable) Energy Nexus," *MDPI Land* 11, no. 6 (2022).

35 "Updates on Patent Compulsory Licensing Provisions in Indonesia 2022," Lexology, 2021.

TRIPS Agreement's flexibility, enabling Indonesia to negotiate more effectively in international relations.

The reform can also help ensure that patent rights do not hinder national development by providing clear guidelines on when compulsory licensing may be applied, such as for patents that have not been implemented in Indonesia within three years. The Indonesian Ministry of Law and Human Rights issued Ministerial Regulation No. 39 of 2018 on Procedures for Granting Compulsory Licensing (CL). This regulation is an implementing regulation of Law No. 13 of 2016 on Patents. However, many companies were surprised by the issuance of this regulation because there was no prior consultation with the private sector during its drafting. An initial reading indicates that this regulation remains unclear, particularly regarding its scope, urgency, and technical guidelines, as some of its provisions employ overly general or vague language.[36]

4. Conclusions

Foreign dominance of patents in strategic technology sectors, such as digital communications, renewable energy, and artificial intelligence, has posed serious challenges to technology transfer and national industrial independence in Indonesia. Although Law No. 13 of 2016 on Patents regulates compulsory licensing mechanisms, its implementation has so far been limited to the pharmaceutical sector. It has not extended to non-pharmaceutical technologies that are also vital to national development. The normative challenges lie in the absence of a clear definition of "public interest" in the context of technology, the lack of a Government Regulation as a technical guideline for the implementation of compulsory licensing outside the pharmaceutical sector, and the absence of a mechanism capable of anticipating the complexity of modern patents, such as patent thickets in digital technology and AI. This has created a legal vacuum that undermines the effectiveness of compulsory licensing as a mechanism to ensure access to strategic technologies.

[36] Jacob Schindler, "@AmChamIndonesia, Government Releases Compulsory Licensing Regulation," IAM, 2020.

The urgency of reform lies in the need to design a legal framework that is more responsive to the dynamics of modern technology and national development challenges. This reform includes the formulation of public-interest criteria in the non-drug sector, the development of mechanisms to determine fair compensation, and the creation of additional legal instruments to regulate compulsory licensing for complex, cross-disciplinary technologies. Thus, compulsory licensing can be optimised as a legal instrument to overcome foreign patent dominance and strengthen the national technology transfer agenda.

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