

Recht Vacuum of Arrangement for Digital Waste in Indonesia

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Abstract

The purpose of this study is to analyze the impact and solutions of the legal vacuum surrounding digital waste management in Indonesia. In this all-digital world, waste disposal can contribute 4% of carbon emissions, but there are no regulations that specifically regulate digital waste. This legal vacuum must be resolved immediately so that there is legal certainty for the independence of digital dignity in Indonesia. The method used is a type of normative legal research with a statutory approach (statute approach). The results showed that the legal vacuum (recht vacuum) in digital waste management caused impacts such as legal uncertainty, triggered legal chaos, and caused an increase in environmental pollution, so the solutions offered were: the government harmonized the law; the government issued the latest law on digital waste management; the community actively participated in the process of drafting laws on waste management digital; and the government and society must have legal awareness of the use of digital data.

Keywords: Carbon Emissions; Digital Garbage; Personal Data; Legal Vacuum

1. INTRODUCTION

Digital waste is a waste of data which is a long-term impact of storing a certain amount of information in digital format, whether in the form of raw data information, processed data, data that is no longer used, or data that is being used. Digital waste is also referred to the carbon emissions and energy consumption generated by data-driven infrastructure, for example on large database complexes, which can support cloud services offered by Microsoft, Google, and Amazon.¹

Nurhidayati said that digital waste is data stored in digital storage but is actually no longer used. Many do not know, that in reality "e-mails, images, audio documents, video and trace traces stored in electronic storage media can contribute to the formation of carbon dioxide in the environment."²

Data such as email, audio files, videos, images with various formats, even all browsing history through Chrome, Safari, and bookmarks, which are no longer used, but are still stored online, whether in the cloud or the like, have added CO₂ levels to the environment. If each email produces 4-50 grams of CO₂, then you can imagine the amount of CO₂ produced by the majority of the earth's population, as well as companies that are operationally email-based. At the same time, the emergence of online video-based platforms, which require usser to watch it, has

¹ Admin, "Getting to Know Digital Waste and How to Reduce It, Help Save the Environment," Merdeka.com, 2023, <https://www.merdeka.com/sumut/mengenal-sampah-digital-dan-cara-mengurangnya-untuk-selamatkan-lingkungan-kln.html>.

² Nurhidayati.

been shown to increase carbon emissions by 1%. Therefore, if you take into account the disposal obtained from this all-digital data, it can contribute 4% of carbon emissions.³

Carbon emissions can affect global warming⁴. Global warming is caused by increased emissions of harmful gases resulting from human activities, thus causing damage to the earth's ozone layer. The impact is that ultraviolet light cannot be filtered properly, potentially endangering people's lives and other ecosystems on earth.⁵

Such digital waste should be the government's concern. But unfortunately, normatively waste management regulations in Indonesia have not touched this digital waste area. Law Number 18 of 2008 concerning Waste Management along with its derivative regulations such as Government Regulation Number 81 of 2012 concerning Management of Household Waste and Similar Waste of Household Waste, only regulate conventional waste. Digital waste management has not been specifically regulated either within the scope of regulations governing conventional waste management, nor on digital waste management.

Previous digital waste research was rarely carried out, even after searching documentation, no research was found specifically discussing digital waste. Digital waste research is identical to electronic waste that comes from waste in the form of electronic goods, not from the use of electronic data bases⁶, whose management is regulated in Law Number 32 of 2009 concerning Environmental Protection and Management.⁷ Research on digital waste also still has no instrument in international law regarding electronic waste management, although there has begun to be a special discussion related to digital waste.⁸

As a comparison with previous research, the first study on the impact of carbon emissions in the context of the 4th Industrial Revolution (4IR). This research highlights the fact that digitalization is ingrained in all aspects of daily life and is an

³ Putri Isnur, "Knowing the Dangers of Digital Waste," *Indonesiabaik.id*, 2023, <https://indonesiabaik.id/videografis/mengenal-bahaya-sampah-digital>.

⁴ Andi Bintang et al., "Analysis of the Dynamics of Carbon Exchange Challenges and Opportunities in Efforts to Reduce Carbon Emissions in the World," in *Proceedings of the National Research Seminar of LPPM UMJ*, 2023, 1–6.

⁵ Pavita Ramadhani and Lintang Venusita, "Industry Type and Quality of Carbon Emission Disclosure in Indonesia (Empirical Study on Companies Participating in the Sustainability Report Award 2015-2017)," *Akunesa: Unesa Journal of Accounting* 8, no. 3 (2020): 1–8, <https://doi.org/10.26740/akunesa>.

⁶ Margarida Soares et al., "Challenges of Digital Waste Marketplace—The Upvalue Platform," *Sustainability (Switzerland)* 15, no. 14 (2023), <https://doi.org/10.3390/su151411235>.

⁷ Anggraini Y Djafar et al., "The Impact of Environmental Pollution Due to Electronic Waste in Environmental Law Perspective," *Journal of Comprehensive Science (JCS)* 2, no. 6 (2023): 1637–46, <https://doi.org/10.59188>.

⁸ Nadya Meta Puspita, "The Urgency of Electronic Waste Management Regulation in International and Regional (ASEAN) Law with Environmental Protection Approach," *Padjadjaran Journal of International Law* 3, no. 1 (2019): 84–104, <https://doi.org/https://doi.org/10.23920/pjil>.

important component in future development. The advantage of this study is that it reflects complete data on the emergence of carbon emissions, while the drawback is that it emphasizes more on pandemic conditions, so the results of the study may not necessarily be used in other conditions. The difference with the author's research is that because the scope is from abroad, this study does not discuss regulations in Indonesia.⁹

The second research is on digital carbon that threatens sustainability for the environment. The advantage of this study is that it is interesting because it is associated with environmental issues equipped with complete facts of factors that contribute to emissions, while the drawback is that it does not clearly show that there is a gap between environmental conditions due to carbon and the absence of regulations. Almost the same as the first study, the difference is that it does not discuss regulations in Indonesia, but regulations globally in each country.¹⁰

The third study on the impact of carbon emissions in Chinese City. The advantage of this research is that it provides solutions with green technology innovations that can reduce carbon emissions, but the drawback is that this technology may not necessarily be used in various countries because the conditions described are China, so the practice is not the same. The difference with the author's research is that this research is more on technological innovation, while the author's research is more on regulatory policies in Indonesia.¹¹

The government's lack of attention to the emergence of digital waste has led to a legal vacuum. In fact, the State of the Republic of Indonesia is a state of law in accordance with the provisions of Article 1 paragraph (3) of the 1945 Constitution. As a result, legal regulations are needed to ensure the creation of a harmonious and orderly society in all aspects of life. However, the reality is that not all situations or events that arise in the dynamics of a country's society are governed entirely by existing laws or regulations. Therefore, sometimes law enforcers face difficulties in solving such problems.

The problem of this study is the absence of rules at the level of laws and implementing regulations, causing each digital platform, to have its own internal policies (terms and conditions) to destroy digital waste, but these internal policies can be constrained by Article 26 of Law Number 19 of 2016 concerning Amendments to Law Number 11 of 2008 concerning Electronic Information and

⁹ Erastus Misheng'u Mwanauo et al., "Digitalization: A Carbon Emission Apocalypse In The 4IR," *Zambia ICT Journal* 7, no. 1 (2023): 69–78, <https://doi.org/10.33260/zictjournal.v7i1.161>.

¹⁰ Pawankumar Sharma and Bibhu Dash, "The Digital Carbon Footprint: Threat to an Environmentally Sustainable Future," *International Journal of Computer Science and Information Technology* 14, no. 03 (2022): 19–29, <https://doi.org/10.5121/ijcsit.2022.14302>.

¹¹ Yang Shen, Zhihong Yang, and Xiuwu Zhang, "Impact of Digital Technology on Carbon Emissions: Evidence from Chinese Cities," *Frontiers in Ecology and Evolution* 11, no. April (2023), <https://doi.org/10.3389/fevo.2023.1166376>.

Transactions, which emphasizes that the use of personal data must with the permission of the owner of the personal data. In addition, its removal must also be through the application for a court order to be forgotten (the right to be forgotten). In fact, this legal vacuum must be resolved immediately so that there is legal certainty for the independence of digital dignity in Indonesia. Kelsen put forward a norm level theory inspired by a student named Melk, that:

A legal norm always has 2 (two) faces (*das doppelte rechtsantlitz*). A legal norm is upward sourced and based on the norm above it, but downward it is also the basis and source for the legal norm below it, so that a legal norm has a relative validity period because the validity period of a legal norm depends on the legal norm above it.¹²

Based on the theory mentioned above, the waste management law should not only cover conventional waste but also include the management of digital waste. This research will be conducted by analyzing the impact of the legal vacuum on digital waste management in Indonesia so as to encourage the government to be able to immediately formulate regulations that discuss digital waste management. Thus, the purpose of finding solutions to the legal vacuum that occurs in digital waste management is expected to be an input to the government so that there is no longer a legal vacuum in regulating digital waste.

2. METHOD

Legal research is a means to find the ultimate truth in a legal problem that occurs, through the flow or process of legal research methods, certain legal systems, and certain consistency.¹³ In another sense, that legal research is a series of analyses that include methods, systematics, and special thoughts with the aim of understanding a particular legal phenomenon and trying to find solutions to problems that arise.¹⁴ Thus, in the research process it is necessary to use appropriate research methods to support the investigation in accordance with the formulation of the problem to be investigated and achieve the research objectives that have been set.

Based on the type, this research is a type of normative legal research. Muhaimin suggested that normative legal research is a type of research that investigates and evaluates a law as norms, regulations, legal principles, legal principles, legal doctrines, legal theories, and other references with the aim of providing answers to

¹² Ali Marwan Hasibuan, "The Legal Vacuum of Testing the Decrees of the People's Consultative Assembly," *Judicial Journal* 15, no. 1 (2022): 121–44, <https://doi.org/10.29123/jy.v15i1.439>.

¹³ Nitaria Angkasa and others, *Legal Research Methods: As an Introduction*, ed. by M Akib, Maroni, and Hamzah, First Print (Bandar Lampung: CV. Laduny Alifatama, 2019).

¹⁴ Ani Purwati, *Legal Research Methods*, ed. Tika Lestari, Prints I (Surabaya: CV. Jakad Media Publishing, 2020).

legal problems under investigation.¹⁵ This research will examine and analyze the legal vacuum of digital waste management in Indonesia, thus, in its stages, this research is limited to document studies, where sources of legal materials such as laws and regulations, legal theories, as well as legal principles and principles related to digital waste management are used as references.

Because this research is ormativ, the method of approach is to use a statutory approach (statute approach). This approach is implemented by reviewing all laws and regulations related to the legal issue under investigation.¹⁶ For this reason, this study examines regulations related to and intersecting with digital waste management, namely regulations regarding conventional waste management such as Law Number 18 of 2008 concerning Waste Management, PP Number 81 of 2012 concerning Management of Household Waste and Similar Waste of Household Waste, Article 26 of Law Number 19 of 2016 concerning Amendments to Law Number 11 of 2008 concerning Electronic Information and Transactions, Law Number 27 of 2022 concerning Personal Data Protection, as well as other legal regulations.

In this study, prescriptive analysis techniques were used, which involved preparing arguments against research findings. This argumentation aims to provide a prescription or judgment regarding truth or error, and determine what should or should be according to law against the legal facts investigated.¹⁷ Thus, at the end of this study there will be an assessment related to the legal vacuum of digital waste regulation, how it has an impact, and how the solution should be implemented.

3. RESULTS AND DISCUSSION

3.1 The Impact of Digitalization on Human Life

Digitalization has a tremendous impact on the development of people's lives. This digitalization does not only occur in several regions of the country, but almost all parts of the world also experience it, including in Indonesia. This all-digital era at least brings tremendous changes in various fields, both in the fields of work, education, economic activities, and so on.¹⁸

With the advent of digitalization, the impact is felt by various countries, including Singapore which has become a center of innovation and technology in the Asian region. Top companies such as Grab, Lazada and Singapore-based Carousell have achieved global success, opening the door to greater foreign investment in the

¹⁵ Muhaimin, *Legal Research Methods, Print I* (Mataram: Mataram University Press, 2020).

¹⁶ Muhaimin.

¹⁷ Muhaimin.

¹⁸ The Indonesiabaik.id Drafting Team, *Towards a Digital Indonesia*, ed. Edy Pang, Institutional Repositories & Scientific Journals, Prints Pe (Jakarta: Directorate General of Information and Public Communication of the Ministry of Communication and Information Technology, 2019), <https://indonesiabaik.id/ebook/menuju-indonesia-digital>.

country. Singapore is also recognized as one of the most digitally advanced countries in the world, ranking at the top of the Digital Capabilities Index.¹⁹

The use of digitalization shows that wider internet access can encourage innovation, productivity, new economic opportunities, and increase a country's competitiveness. In addition, many countries have experienced significant economic growth after improving internet access. For example, the development of the information and communication technology (ICT) industry in countries such as the United States, South Korea, and China has made an important contribution to their economic growth.²⁰

A major shift occurred as the digital world began to adapt to human needs. As is known in the surrounding environment that human needs have now begun to be accommodated by the digital world or cyberspace. The closeness of human needs to digital means makes the two very difficult to separate, so it is not uncommon to find people who are often dependent on the use of digital means.²¹

Digitalization also changes the direction of communication which was initially often done conventionally, then there was a development in accordance with the challenges of the times. In this era of digitalization, production in industry no longer depends on the power of energy as in previous industrial times, but rather relies on the power of communication technology and information processes. Not only that, in the learning process in the world of education has also gradually switched to the use of digital technology, which is commonly often referred to as Digital Learning. Digital Learning is changing the learning format from being limited to in-person meetings to learning that is more flexible, uses platforms, and can be accessed from various locations.²²

The development of people's lives is often faced with efforts to enforce and apply the law in Indonesia.²³ Unfortunately, the fact on the ground often happens that society develops faster than the development of laws and regulations²⁴, So this causes a problem, namely there is no or no legal problem regulated in a law and

¹⁹ Dian Sudiantini et al., "Digital Transformation: Impacts, Challenges, and Opportunities for the Digital Economy," *Trending: Journal of Economics, Accounting and Management* 1, no. 3 (2023): 21–30, <https://doi.org/10.30640/trending.v1i3.1115>.

²⁰ Ikhlasul Ammar and Dias Satria, "Digitalization of the MSME Sector and Its Impact on Economic Growth in Indonesia" 2, no. 4 (2023): 716–26, <http://dx.doi.org/10.21776/jdess.2023.02.4.01>.

²¹ Aning Az Zahra, "Empowering the Digital Society," in *Knowing the Anonymity of Virtual Identity*, ed. Aftina Nurul Husna and Rayinda Faizah (Magelang: Unimma Press, 2021), 14.

²² Tungga Bhimadi Karyasa, "Digitalization of the Metaverse Era," in *Problems and Regulations A Challenge in the Metaverse Era*, ed. Adi Wijayanto et al. (Tulungagung: Akademi Pustaka, 2022), 155, <https://osf.io/preprints/osf/ks67t>.

²³ Naufal Akbar Kusuma Hadi, "Law Enforcement in Indonesia Seen from the Perspective of Legal Sociology," *Journal of Law and Economic Development* 10, no. 2 (2022): 227, <https://doi.org/10.20961/hpe.v10i2.62834>.

²⁴ Rokilah Rokilah, "The Role of the Regulations in Indonesia State System," *Adjudication : Journal of Legal Sciences* 4, no. 1 (2020): 29–38, <https://doi.org/10.30656/ajudikasi.v4i1.2216>.

regulation. This situation arises because a law cannot thoroughly regulate every aspect of human life. Therefore, there is a possibility that the rules in a country, such as Indonesia, are considered incomprehensive and unable to guarantee legal certainty for its citizens, which can lead to a legal vacuum in society (rechtsvacuum).

3.2 Legal Vacuum in Digital Waste Management

In fact, legal arrangements in Indonesia are based on Kelsen's norm level theory, that each legal norm must have a relative validity period, so that it can be used in the future as possible in accordance with the development of community law. For this reason, of course, in social life, a legal system that is stable and can adapt to the development of society is needed, but still maintains the noble values of nationality in line with the ideals of the founding fathers of the nation.

Sekti and Congress stated that the legal vacuum (rechtvacuum) occurs because "in the preparation of virtuous legislation from the legislature and executive in reality it takes a long time, so that by the time the legislation is declared in force, the things or circumstances to be regulated by the regulation have changed".²⁵ In line with the opinion of Sekti and Congress, Mitendra argues that:

often found also inconsistencies of the Executive Agency (Government) or other bodies in order to implement the Law in an effort to ensure the legal certainty of the community, this can be found in the case of the mandate of a Legislation that requires the issuance of implementing regulations but in fact the implementing rules are basically a collection of guidelines to be the basis for further implementing the contents of a Regulation Higher legislation never existed or was created.²⁶

In connection with the above opinion, the legal vacuum requires more synergy and awareness from the government and society, which is realized by reducing the ego attitude of the sector related to duties and responsibilities as state administrators, both in the relationship between parties who form laws and regulations and involving the active role of the community.

One of the legal vacuums that occurs in Indonesia is related to digital waste management. As is known, regulations regarding waste have been explained in Law Number 18 of 2008 concerning Waste Management. This law was issued because the government realizes that the waste problem has become a national concern, so the handling needs to be carried out thoroughly and integrated from

²⁵ Ranti Roezalia Sekti and Evi Congress, "Legal Vacuum in Determining Financing for the Placement of Indonesian Migrant Workers," *Magnum Opus 5 Law Journal*, no. 1 (2022): 86–87, <https://doi.org/https://doi.org/10.30996/jhmo.v5i1.5853>.

²⁶ Hario Mahar Mitendra, "Phenomena in a Legal Vacuum," *Journal of Rechtsvinding Online*, no. April (2018): 1–7, <https://doi.org/10.33331/rechtsvinding.v12i1.1116>.

beginning to end, aiming to provide economic benefits, public health, environmental safety, and change people's behavior.

From the waste problem, it encourages the government to provide legal certainty, clarify the government's responsibilities and authorities, and involve community participation so that waste management can be carried out proportionally, effectively, and efficiently. However, waste management regulated in Law Number 18 of 2008 concerning Waste Management is specifically intended for conventional waste management. It can be seen in Article 1 number 1 of Law Number 18 of 2008 concerning Waste Management, that what is meant by waste is the rest of human daily activities and / or natural processes in solid form. The "form on" clause provides an understanding that the waste in question is tangible waste produced from the daily activities of the community, which then in Article 2 paragraph (1) mentions the types of waste managed under Law Number 18 of 2008 concerning Waste Management.

First: household waste refers to the type of waste that comes from daily activities within the household, but does not include fecal waste and other special types of waste; Second: waste similar to household waste refers to the type of waste originating from commercial, industrial, special areas, social facilities, public facilities, and/or other facilities; Third: Specific waste refers to types of waste that meet the following criteria: contain hazardous and toxic materials, have hazardous and toxic waste, arise due to disasters, in the form of building demolition debris, cannot be processed technologically, and appear irregularly.

In the derivative regulation of Law Number 18 of 2008 concerning Waste Management, namely Government Regulation of the Republic of Indonesia Number 81 of 2012 concerning Management of Household Waste and Similar Household Waste, it is also implied that the waste management in question is conventional waste. In classifying the types of waste to be managed in the two regulations, there is no 1 (one) type of digital waste that should also be a concern.

Although it is related to the digitalization era, waste management is only related to management technology, such as the Digital Waste Bank, as conducted by Utami and friends. Utami and his friends researched that the Digital Waste Bank was implemented with the idea of recording transactions electronically which is equipped with main functions such as checking savings balances, garbage pick-up options, waste recording summaries, and balance transfer options.²⁷ Digitalization

²⁷ Kery Utami, Zackharia Rialmi, and Ranti Nugraheni, "Digital Waste Bank Application Planning Analysis Case Study on Green Solution Waste Bank," *Journal of Applied Management Research (PENATARAN)* 7, no. 1 (2022): 34–49, <https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwi78vSpppmDAXUUSWwGHXhdBVgQFnoECBAQAQ&url=https%3A%2F%2Fjournal.stieken.ac.id%2Findex.php%2Fpenataran%2Farticle%2Fdownload%2F594%2F618%2F1279&usg=AOvVaw2ciEXF9Og21qcTL>.

applied in waste management is only limited to management methods but does not specifically regulate digital waste generated by the use of digital applications.

As a developing society, the use of digital data is no longer something foreign, even daily life both related to work and other economic activities, almost entirely using digital data. This fact can be seen in the supporting data as follows:

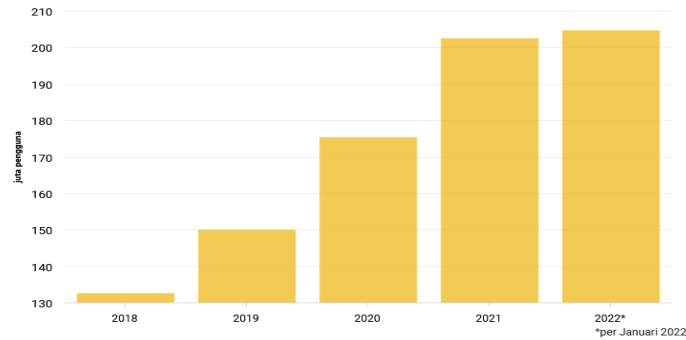


Figure 1. Number of Internet Users in Indonesia (2018-2022*)
Source: databox, 2022²⁸

From Figure 1. It can be explained that Indonesia is included in the countries with the largest number of internet users in the world. In 2022, a report from We Are Social noted that the number of internet users in Indonesia reached 204.7 million people. In other data, active Indonesian internet users are as follows:

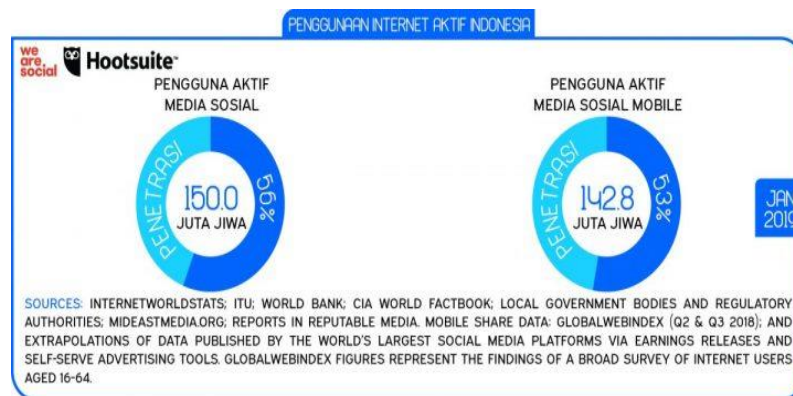


Figure 2. Number of Active Internet Users in Indonesia (2019)
Source: Aptika Kominfo, 2019²⁹

From Figure 2. It can be explained that in 2019, the number of internet users in Indonesia reached 150 million people, with a penetration rate of 56%, spread

²⁸ Cindy Mutia Annur, "There are 204.7 Million Internet Users in Indonesia Early 2022," Databoks, 2022, <https://databoks.katadata.co.id/datapublish/2022/03/23/ada-2047-juta-pengguna-internet-di-indonesia-awal-2022>.

²⁹ Leski Rizkinaswara, "Internet Use in Indonesia," Aptika Kominfo, 2019, <https://aptika.kominfo.go.id/2019/08/penggunaan-internet-di-indonesia/>.

throughout the region. This number is almost comparable to the number of mobile internet users, which reached 142.8 million people, with a penetration rate of 53%. This figure belongs to a fairly high category.

The number of active internet users in Indonesia also has an impact on changes in community activities, one example is the decline in paper use due to switching to the use of digital form documents, or commonly referred to as paperless. As is known, that the use of paper in the office causes high and less efficient expenses.³⁰ With this paperless culture, it is considered to provide benefits, such as saving money expenses, saving workspace capacity, maintaining the security of personal information, helping to save the environment.³¹

The benefits of paperless are considered to help save the environment³², It is said that the increase in paper used also causes an increase in CO2 gas which gives due to global warming³³, So that with paperless, the community will also reduce the use of paper, electricity, and tree consumption as the basic material for making paper. Thus, paperless can be a solution to the waste problem and is considered to support the government's task in terms of waste management, based on Article 6 letter f of Law Number 18 of 2008 concerning Waste Management, which states that the government's task involves providing facilities to adopt local technology that is developing among local communities, with the aim of reducing and managing waste.

3.3 The Problem of the Emergence of Digital Waste

In fact, with paperless, it turns out that the problem of waste management is not completely over. Many do not realize that the switch from paper-based to paperless, which in fact requires storage space on digital media such as e-email, Google Drive, and cloud, still raises new problems. As mentioned earlier that in this all-digital world, waste disposal can contribute 4% of carbon emissions. Data such as email, audio files, videos, images with various formats, even all browsing history through Chrome, Safari, and bookmarks, which are no longer used, but are still stored online, whether in the cloud or the like, have added CO2 levels to the environment. If each email produces 4-50 grams of CO2, then you can imagine the amount of CO2 produced by the majority of the earth's population, as well as companies that are operationally email-based. At the same time, the emergence of online

³⁰Trias Pyrenia Iskandar and Winne Wardiani, "Application of Paperless as a Digital Communication Media," *Scientific Journal of LISKI (Communication Study Circle)* 6, no. 2 (2020): 2442–4005, <https://doi.org/https://doi.org/10.25124/liski.v5i2.3208>.

³¹ Finally, "Paperless and Its Challenges in Indonesia."

³² Saringatun Mudrikah, Kusmuriyanto, and Kardiyem, "Efforts to Foster a Paperless Culture through the Use of Ispring Quiz Maker at SMK YPPM Boja," *Panrita Abdi-Journal of Community Service* 5, no. 1 (2021): 89–99, <https://doi.org/https://doi.org/10.20956/pa.v5i1.9221>.

³³ Nining Sariyyah, "Assistance in Paper Waste Management Activities at SD GMT Ende 4," *Education Publication* 9, no. 1 (2019): 42, <https://doi.org/10.26858/publikan.v9i1.7512>.

video-based platforms, which require user to watch it, has been shown to increase carbon emissions by 1%. Every 100 gigabytes of data stored in the cloud emits as much as 0.2 tons of CO₂ every year. In this context, an average business activity that stores about 347.56 terabytes of data can produce about 700 tons of CO₂ per year.

According to a report, a study funded by energy company OVO shows that Britons send more than 64 million non-essential emails every day. The results of this study show a relationship between email delivery and carbon emissions. Mike Berners-Lee, a researcher who advises OVO, explained that the use of computers to type emails and send over the internet uses electrical energy, which ultimately contributes to the earth's carbon emissions.³⁴

Furthermore, Cloud Storage is actually a data center infrastructure that uses a lot of electrical energy. Although most users do not realize it because there is no visible air pollution, the carbon footprint of this information technology is significant and continues to increase. A BBC report on November 19, 2020 noted that the UK produced annual carbon emissions of 435.2 million tonnes in 2019.³⁵

Based on the explanation above, it can be said that the more data created in the form of digital storage, the possibility of increasing the amount of digital waste is also quite large. Supposedly, this is also a concern for the government as well as its attention to conventional waste management. It is conceivable that the more digital documents stored, the more CO₂ hoarding will be produced, resulting in an increasingly polluted environment.

On the one hand, the problem of digital waste is also collided with the existence of Law Number 19 of 2016 concerning Amendments to Law Number 11 of 2008 concerning Electronic Information and Transactions. In this law, a person's personal data is very protected, not even just anyone can delete the data he has stored. As mentioned in Article 1 point 4 of Law Number 19 of 2016 concerning Amendments to Law Number 11 of 2008 concerning Electronic Information and Transactions, that what is meant by electronic document is any Electronic Information created, transmitted, sent, received, or stored in analog, digital, electromagnetic, optical, or similar form, which can be seen, displayed, and/or heard through a Computer or Electronic System, including but not limited to writing, sound, images, maps, designs, photographs or the like, letters, signs,

³⁴ Jawahir Gustav Rizal and Bayu Galih, "[Fact Talk] Is It True That Deleting Emails Helps Reduce Carbon Emissions?," Kompas.com, 2022, <https://www.kompas.com/cekfakta/read/2022/01/08/155459482/fakta-bicara-benarkah-hapus-email-membantu-kurangi-emisi-karbon?page=all>.

³⁵ Rizal and Galih.

numbers, Access Codes, symbols or perforations that have meaning or meaning or can be understood by a person capable of understanding them.

Furthermore, regarding the security of electronic documents, it is stated in Article 26 of Law Number 19 of 2016 concerning Amendments to Law Number 11 of 2008 concerning Electronic Information and Transactions, namely: Paragraph (1) Unless otherwise stipulated by laws and regulations, the use of any information through electronic media that concerns a person's personal data must be carried out with the consent of the Person concerned; Paragraph (2) Any person who is violated by his rights as referred to in paragraph (1) may file a claim for losses incurred under this Law; Paragraph (3) Each Electronic System Operator must delete irrelevant Electronic Information and/or Electronic Documents under its control at the request of the Person concerned based on a court determination; Paragraph (4) Every Electronic System Operator must provide a mechanism for deleting Electronic Information and/or Electronic Documents that are no longer relevant in accordance with the provisions of laws and regulations.

The security of electronic data is then also strengthened by Law Number 27 of 2022 concerning Personal Data Protection. As stated in Article 1 point 1 of Law Number 27 of 2022 concerning Personal Data Protection, Personal Data is data about natural persons who are identified or can be identified separately or combined with other information either directly or indirectly through electronic or non-electronic systems. Thus, electronic documents stored on digital storage media are also protected by law.

Based on the conditions mentioned above, the tension between the demand to reduce carbon emissions by digital waste disposal and the demand for safeguarding personal data in cyberspace, causes a legal vacuum (*rechts vacuum*) at the level of the Law to be increasingly visible. In fact, the legal vacuum (*recht vacuum*) of digital waste management also has an impact on people's lives, including the following.

First, there is legal uncertainty. The existence of a legal vacuum (*recht vacuum*) also creates legal uncertainty for digital waste management. The public also does not have a guide to behave in the use of digital data. Thus, people will continue to undergo the use of digital documents which still continue to trigger digital waste. Second, there is legal chaos. With legal uncertainty, the community is free to determine what is allowed to continue to be done and what is not allowed to be done. In this case, it means that as long as digital waste management is not regulated by the government, the community does not have a definite measure of whether or not an action or action is concerned, especially related to digital waste management. This condition creates confusion in the community regarding the rules that should be used as guidelines or applied in digital waste management.

Third, increased environmental pollution. The legal vacuum (*recht vacuum*) causes public ignorance of the impact of using digital data which has the potential to cause digital waste. In the absence of law, it is still legal for people to use digital data that can cause digital waste, so with this ignorance, the community also indirectly makes an increase in environmental pollution from the hoarding of digital waste produced. Fourth, the disharmony of government and society. The legal vacuum (*recht vacuum*) indicates disharmony between the government and society. Legal vacuum (*recht vacuum*) in digital waste management can lead to inaccurate decision-making by the government, so this can ultimately lead to public opinion based on mere assumptions.

3.4 Legal Vacuum Solutions in Digital Waste Management

People need rules to create harmony in their lives. The regulation can be tangible in legal form, which can be written or unwritten. The laws that apply in society must be based on underlying legal principles. In the context of the whole society, the law should fulfill its ideal function by providing elements of justice, certainty, and benefit to all members of society.

From the impact arising from a legal vacuum (*recht vacuum*) in digital waste management, this legal vacuum (*recht vacuum*) must be resolved immediately so that there is legal certainty for the independence of digital dignity in Indonesia. The solutions that can be sought in the event of a legal vacuum (*rechts vacuum*) are as follows.

First, the government harmonizes the law. The government needs to re-harmonize the interrelated regulations on digital waste management. As stated earlier, between Law Number 18 of 2008 concerning Waste Management, Law Number 19 of 2016 concerning Amendments to Law Number 11 of 2008 concerning Electronic Information and Transactions, and Law Number 27 of 2022 concerning Personal Data Protection still has a clash of legal objectives, the dilemma between the elimination of digital waste and the protection of personal data security owned by the public. Thus, there needs to be a review so that articles or rules related to the regulation of personal data need to be adjusted again to the conditions of society that are increasingly developing.

Making legal products aims to be implemented in people's lives. The laws made must be dynamic, following the development of society. This is important so that the laws enacted are effective and prevent waste that can create legal uncertainty. Therefore, in the law-making process, various aspects that exist in society must be considered.

Second, the government issued the latest Law on Digital Waste Management. As the norm level theory proposed by Kelsen, it is very necessary to think that a new law is made specifically for digital waste management, which is in accordance with

the development of society today and in the future, so that its application is relative and flexible. This regulation regarding digital waste management can contain settings regarding the type of data that can be stored in digital storage media, the maximum limit of data storage period allowed, then it can also arrive at sanctions that must be received if there is still data that has not been used for a long time but is still stored in digital storage. Thus, there is already a previous contract for what will happen and the impacts caused and solutions to the use of digital data that has the potential to cause digital waste, so that in the future there will be no more conflicts of objectives of applicable regulations that no longer have conformity with the current state of society.

Third, the community actively participates in the process of drafting the Law on Digital Waste Management. The importance of the community being included in the process of drafting the Law on Digital Waste Management is so that there is no rejection from the community when the law is ready to be promulgated. The community as a related party and directly feel the impact of the law on digital waste management, so its role is very important.

Fourth, the government and the public have legal awareness of the use of digital data. The government and society must be wise in using digital data in this digitalization era. The government and the public must have legal awareness, that the use of digital data also has an impact on digital landfilling. For this reason, it is necessary to do with full awareness that digital waste reductions can be done in the following ways, such as: cleaning e-mail and deleting e-mail that has been read, emptying spam and unsubscribing to unnecessary newsletters. Furthermore, it can also be done to delete files that are not important to photo, video, audio, browsing history or internet searches, and other documents that are no longer needed. Against large data capacity, storage can be done with secondary storage such as memory card or hard disk devices. With this awareness, at least the government and the community have contributed to the problem of digital waste management.

The solutions mentioned above can be implemented if the government and society both have the will to unite goals in the digital waste management process. If these two roles can run well, then with the smooth implementation of law enforcement efforts in Indonesia and a high level of legal awareness, the implementation of the law will be more felt by the entire community. Thus, legal vacancies in digital waste management can be avoided.

4. CONCLUSION

The legal vacuum (*recht vacuum*) in digital waste management occurs because there is no harmonization between related regulations, so it is faced with dilemmatic conditions between the defense of legal protection of people's personal data and the interests of environmental management that can be polluted by the presence of digital waste. Legal vacuum (*recht vacuum*) in digital waste

management, causing impacts such as legal uncertainty, triggering legal chaos, and causing an increase in environmental pollution. The solutions offered in this study to the legal vacuum (*recht vacuum*) in digital waste management, namely: the government harmonizes the law; the government issues the latest law on digital waste management; the public actively participates in the process of drafting laws on digital waste management; and the government and the public must have legal awareness of the use of digital data. With these solutions, it is hoped that the legal vacuum (*recht vacuum*) in digital waste management will not occur again and cause impacts that are not expected by both the government and the community. This research was conducted by one author, as mentioned at the beginning of the title of the study, namely Antonius Maria Laot Kian. This research was conducted with independent research funding in the absence of other research funders.

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