

**LEGAL ANALYSIS OF THE USE OF ELECTRIC BIKES
ACCORDING TO LAW NUMBER 22 OF 2009 AND
REGULATION OF THE MINISTER OF TRANSPORTATION
OF THE REPUBLIC OF INDONESIA
NUMBER PM 45 OF 2020**

^{1*)} **Duarte Tilman Soares**, ^{2)I} **Komang Adi Putra**

¹⁾ Universidade da Paz, Dili, Timor Leste, ²⁾ Kepolisian Daerah Bali, Denpasar,
Indonesia

*) e-mail korespondensi: dtilman.soares@gmail.com

Abstract

*The presence of electric bicycles brings a new mobility approach that also colors the global transportation sector. In its operation, electric bicycles are indeed designed as environmentally friendly transportation that encourages the use of renewable energy. The problem of using electric bicycles began to emerge when there was a debate about the classification of electric bicycles as vehicles between several parties opposing the use of electric bicycles on the highway by several related parties. This study aims to know the legal regulations regarding the use of electric bicycles on sidewalks and legal certainty regarding the use of electric bicycles on sidewalks. This study uses a normative legal research methodology, namely an approach through the perspective of existing norms or in other words, a study in the form of an inventory of applicable laws. Legal regulations regarding the use of electric bicycles on sidewalks are specifically contradictory to Article 284 of Law Number 22 of 2009 concerning traffic and road transportation with Article 5 paragraph (4) of the Regulation of the Minister of Transportation of the Republic of Indonesia Number PM 45 of 2020 concerning certain vehicles using electric drives where the use of sidewalks is generally regulated in Law Number 22 of 2009 concerning Traffic and Road Transportation. Legal certainty regarding use of electric bicycles on the sidewalk is not yet providing legal certainty because it still raises speculation in its application, between the application based on the principle of *lex specialist derogat legi* or its application based on the principle of *Lex Superior Derogat Legi Inferiori* considering that the urgency of the impact of using electric bicycles on the sidewalk can harm one party, so this conflict of norms certainly hinders the purpose of forming a policy, one of which is legal certainty.*

Keywords: *Legal Analysis, Electric Bicycles, Sidewalks*

INTRODUCTION

Traffic problems in various cities in Indonesia are quite complex, heterogeneous society with large numbers is the main thing in overcoming traffic

and road transportation problems. The rapid population growth that occurs every year will automatically cause the need for transportation to increase, both public and private transportation. Traffic problems are problems faced by developed countries and also developing countries such as Indonesia. However, in Indonesia, the problems that are often encountered today are getting worse and bigger than in previous years, including accidents, congestion and air pollution as well as traffic violations (Mahmudal, 2017).

The progress of the era and the development of technology in Indonesia has experienced a very significant increase, especially in the field of transportation. Modes of transportation are very much needed by everyone, because every activity that is carried out requires a means of transportation.

Transportation is a very important and strategic means in facilitating the economy, and other activities with the aim of strengthening unity and unity and influencing aspects of the life of the nation and state. The increasing population and the growing economy in developing countries such as Indonesia require society to have high mobility in order to meet their life needs. (Nasution, 2014).

Riding a motorcycle in some developed countries is a hobby that is certainly fun. When riding a motorcycle you can interact directly with the environment that is crossed such as the cold mountain air and the gentle breeze that hits the face and body. However, behind the pleasure there are potential dangers that when you are not ready to face it will be a disaster for you and other fellow road users.

Traffic and Road Transportation are regulated in Law Number 22 of 2009, that Traffic and Road Transportation as part of the national transportation system must develop its potential and role to realize security, safety, order, and smoothness of traffic and Road Transportation in order to support economic development and regional development. Traffic and Road Transportation Security is a state of freedom of every person, goods, and/or Vehicle from the disturbance of unlawful acts, and/or fear in traffic. Traffic and Road Transportation Safety is a state of avoiding every person from the risk of accidents during traffic caused by humans, Vehicles, Roads, and/or the environment. (Hermawati, 2024).

An electric motor is an electromechanical device that consumes electrical power to produce mechanical energy as a driving force. A battery-based electric motor vehicle (“KBL”) is a vehicle that is driven by an electric motor and gets its electrical power supply from a battery directly in the vehicle or from outside. (Faruq, 2024), while Article 5 of the Regulation of the Minister of Transportation of the Republic of Indonesia Number PM 45 of 2020 concerning Certain Vehicles Using Electric Drives states:

- (1) Certain vehicles as referred to in Article 2 paragraph (1) may be operated on:
 - a. Special lanes, and/or
 - b. Certain areas.
- (2) The special lanes as referred to in paragraph (1) letter a include:
 - a. Bike lane, or

- b. Lanes provided specifically for certain vehicles using electric motors
- (3) Certain areas as intended in paragraph (1) letter b include:
 - a. Settlement;
 - b. Roads designated for car free days;
 - c. Tourist area;
 - d. The area around mass public transportation facilities as part of a particular vehicle using an integrated electric motor drive;
 - e. Office area; and
 - f. Area off the road.
- (4) In the event that a special lane as referred to in paragraph (2) is not available, certain vehicles may be operated on the sidewalk with adequate capacity and taking into account pedestrian safety.
- (5) Adequate capacity as referred to in paragraph (4) must accommodate a certain number of pedestrians and vehicles.

The conflict between Article 284 of Law Number 22 of 2009 concerning road traffic and transportation with Article 5 paragraph (4) of the Regulation of the Minister of Transportation of the Republic of Indonesia Number PM 45 of 2020 concerning certain vehicles using electric drives where the use of sidewalks is generally regulated in Law Number 22 of 2009 concerning Road Traffic and Transportation. Sidewalks are one of the supporting facilities for the implementation of road traffic and transportation. Pedestrians have the right to the availability of supporting facilities in the form of sidewalks, crossings, and other facilities. Sidewalks are also regulated in Government Regulation Number 34 of 2006 concerning Roads ("PP Roads"). Article 34 paragraph (4) of the PP Roads states that sidewalks are only intended for pedestrian traffic. There are several criminal provisions that can be imposed on those who misuse sidewalks, namely: Article 275 paragraph (1) of the LLAJ Law Any person who commits an act that results in disruption to the function of Traffic Signs, Road Markings, Traffic Signal Devices, Pedestrian facilities, and Road User safety devices as referred to in Article 28 paragraph (2) shall be punished with imprisonment for a maximum of 1 (one) month or a maximum fine of Rp. 250,000.00 (two hundred and fifty thousand rupiah). And Article 284 of the LLAJ Law Any person who drives a Motor Vehicle without prioritizing the safety of Pedestrians or cyclists as referred to in Article 106 paragraph (2) shall be punished with imprisonment for a maximum of 2 (two) months or a maximum fine of Rp. 500,000.00 (five hundred thousand rupiah).

Based on the background description above which has provided a description of the problems, the problems in this study can be formulated, including: How is the legal regulation regarding the use of electric bicycles on sidewalks according to Law Number 22 of 2009 concerning traffic and road transportation with the Regulation of the Minister of Transportation of the Republic of Indonesia Number PM 45 of 2020 concerning certain vehicles using electric drives? How is the legal certainty regarding the use of electric bicycles on sidewalks according to Law

Number 22 of 2009 concerning traffic and road transportation with the Regulation of the Minister of Transportation of the Republic of Indonesia Number PM 45 of 2020 concerning certain vehicles using electric drives?

METHOD

The type of research used is normative legal research. Normative research is an approach through the perspective of existing norms or in other words is research in the form of an inventory of applicable legislation, which seeks to find the principles or philosophical basis of legislation, or research in the form of an effort to find law that is in accordance with a particular case which in this case examines, analyzes, examines and reviews existing legal rules and norms and through legal comparisons. (Ariawan, 2013).

RESULTS AND DISCUSSION

Legal Regulations for the Use of Electric Bicycles on Sidewalks According to Law Number 22 of 2009 Concerning Traffic and Road Transportation with Regulation of the Minister of Transportation of the Republic of Indonesia Number PM 45 of 2020 Concerning Certain Vehicles Using Electric Drives

The implementation of the law against a violation is the task of the government as an official who is authorized to implement the law against a violation. Awareness of traffic safety is often ignored and knowledge of traffic order is also poorly understood by most people. Basically, driving on the highway should pay attention to the interests of the wider community, not just for one's own interests, so that it is not uncommon for road users to ignore the rules and safety of other road users with various problems.

In general, there are three laws and regulations governing vehicles, namely Law Number 22 of 2009 concerning Traffic and Road Transportation (hereinafter abbreviated as Law 22/2009), Government Regulation No. 55 of 2012 concerning Vehicles (hereinafter abbreviated as PP 55/2012), and Presidential Regulation No. 55 of 2019 concerning Acceleration of the Battery-Based Electric Motor Vehicle Program (Battery Electric Vehicle) for Road Transportation (hereinafter abbreviated as Perpres 55/2019).

Based on Law Number 22 of 2009 concerning Traffic and Road Transportation (LLAJ Law), those who are required to wear helmets that meet Indonesian national standards are motorcyclists, motorcycle passengers, and drivers and passengers of four-wheeled or more motorized vehicles. The power source for electric bicycles comes from batteries. Because they are not run by a motor engine, electric bicycles are not included in motorcycles whose drivers and passengers are required to wear helmets as referred to in the LLAJ Law.

The Ministry of Transportation has also issued regulations regarding electric bicycles as stated in the Ministerial Regulation Number PM 45 of 2020 concerning Certain Vehicles Using Electric Motor Drives. The electric bicycles referred to in the regulation are certain vehicles that have two wheels and are equipped with mechanical equipment in the form of an electric motor. Electric bicycles are included in certain types of vehicles using electric motor drives, in addition to electric scooters, hoverboards, unicycles, and scooters. To use an electric bicycle, a person must also wear a helmet, be at least 12 years old, and are not allowed to carry passengers (unless equipped with a passenger seat). The age limit has also been regulated, if the electric bicycle user is 12-15 years old, they must be accompanied by an adult. Article 5 explains that the use of electric bicycles can be operated in special lanes and certain areas. The special lanes referred to are bicycle lanes or lanes provided specifically for certain vehicles using electric motor drives. The specific areas referred to are:

1. Settlement Streets designated for car free days.
2. Tourist area
3. The area around mass public transportation facilities as part of certain vehicles uses an integrated electric motor drive.
4. Office area.
5. Area off the road.

Regulation of the Minister of Transportation Number PM 12 of 2019 concerning Protection of the Safety of Motorcycle Users Used for the Interest of the Community is;

- a. That in order to provide safety, security, affordability and regularity to motorbike users used for the benefit of the community, legal certainty is required.
- b. That based on the considerations as referred to in letter a, it is necessary to stipulate a regulation of the Minister of Transportation regarding the protection of the safety of motorbike users used for the benefit of the community.

The Ministry of Transportation has also issued regulations regarding electric bicycles as stated in the Ministerial Regulation Number PM 45 of 2020 concerning Certain Vehicles Using Electric Motor Drives. The electric bicycles referred to in the regulation are certain vehicles that have two wheels and are equipped with mechanical equipment in the form of an electric motor. Electric bicycles are included in certain types of vehicles using electric motor drives, in addition to electric scooters, hoverboards, unicycles, and scooters. To use an electric bicycle, a person must also wear a helmet, be at least 12 years old, and are not allowed to carry passengers (unless equipped with a passenger seat). The age limit has also been regulated, if the electric bicycle user is 12-15 years old, they must be accompanied by an adult. Article 5 explains that the use of electric bicycles can be operated in special lanes and certain areas.

The special lanes referred to are bicycle lanes or lanes provided specifically for certain vehicles using electric motors. The specific areas referred to are:

- 1) Settlement Streets designated for car free days.
- 2) Tourist area
- 3) The area around mass public transportation facilities as part of certain vehicles uses an integrated electric motor drive.
- 4) Office area.
- 5) Area off the road.

The police will take strict action against electric bike users who dare to enter public roads. The prohibition on crossing public roads has actually been stated in the Regulation of the Minister of Transportation Number PM 45 of 2020. There are two forms of action that the police will take if electric bike users violate the regulation.

First, vehicle function check. If an electric bike is found to not have pedal components for pedaling, then the user will be ticketed, while the vehicle will be confiscated by officers. If it is still worthy of being called a bicycle, there should still be pedals. If not, it is considered an electric motorbike. Police officers can observe motorcyclists closely after manual ticketing is now re-enacted. This includes taking action against electric motorbike users who do not obey the rules and enter public roads.

Second, maximum speed checks. Electric bicycles may not be driven over 20 kilometers per hour (kph). If they violate, the bicycle will be confiscated because it endangers other drivers. If the maximum speed is found to be above 20 kph, for example, it has reached 50 kph, this is considered dangerous and will also be confiscated. So far, the police have focused on preventive efforts in the form of socialization and appeals to electric bicycle users not to use their vehicles on the highway. The effect of the legal vacuum with the absence of a legal product that explains the procedure on how officers should act in handling incidents where the existence of electric bicycle vehicles has been crossed, causing discoordination and misperception between the public and police officers. The police also ensured that electric bicycles cannot be ticketed even if there is a traffic violation by the driver, because there is no legal regulation.

The presence of electric bicycles brings a new mobility approach that also colors the global transportation sector. In its operation, electric bicycles are indeed designed as environmentally friendly transportation that encourages the use of renewable energy. The energy source in electric bicycles comes from rechargeable batteries, so that pollution due to gas emissions from motor vehicle use such as HC (Hydrocarbons) 3.57 g/km, CO (Carbon Dioxide) 3.15 g/km, CO₂ 1.82 g/km and NO_x (Nitrogen Oxide) of 2.29 g/km can be avoided. Electric vehicles that are not only a new form of business supporting the economy, but also excel with their existence that is not noisy, can reduce the use of fuel oil so that it directly reduces

exhaust gases into the atmosphere, and prioritizes the latest energy source, namely electrical energy.

If we connect the concept of battery-based KBL and non-motorized vehicles with the characteristics of electric bicycles, then we can find two legal problems. First, the laws and regulations in Indonesia do not yet regulate vehicles that combine engines and human energy as a driving force. Second, there are no regulations that specifically regulate electric bicycles. With the absence of regulations that specifically regulate electric bicycles, this results in the absence of clear 'signs' for electric bicycle users. However, there is a regulation of the Minister of Transportation that regulates electric bicycles.

To prepare a legal umbrella for electric vehicles in traffic, the Ministry of Transportation has issued two regulations. First, Regulation of the Minister of Transportation (PM) No. 44 of 2020 concerning Testing the Physical Type of Motorized Vehicles with Electric Motors as the Drive Motor. Second, Regulation of the Minister of Transportation Number. 45 of 2020 concerning Certain Vehicles Using Electric Motors. The two ministerial regulations were prepared as a legal basis that regulates a number of provisions/prerequisites for the use of electric motorized vehicles in operating on public roads as a mode of land transportation. However, this regulation does not contain any prohibitions or sanctions regarding violators of the rules for using electric bicycles on the highway.

This is because they are the most vulnerable road users to injury. Cyclists are often victims of motorized vehicles that hit from behind, collide with, and some are even grazed, which can result in cyclists' lives. Cyclists who do not obey traffic rules and are not orderly also cause disaster for others. If motorized vehicle drivers do not prioritize cyclists, then there are sanctions that are given. This has been emphasized in Article 284 of the LLAJ Law that "Any person who drives a motorized vehicle without prioritizing the safety of pedestrians or cyclists as referred to in Article 106 paragraph (2) shall be punished with imprisonment for a maximum of 2 (two) months or a maximum fine of Rp. 500,000.00 (five hundred thousand rupiah)" (Syafitri, 2024).

Conflict theory, which emphasizes friction in the constitutional dimension, provides a useful perspective in analyzing this problem. The conflict does not only occur physically, but also includes incompatibilities in the norms that apply in the legal system. Such conflicts can give rise to challenges in understanding and implementing the law consistently and sustainably. In this case, the conflict of norms between Law Number 22 of 2009 and PM Number 45 of 2020 creates legal uncertainty in regulating the use of sidewalks. Article 284 of Law Number 22 of 2009 stipulates regulations regarding road traffic and transportation, including the use of sidewalks by pedestrians. On the other hand, Article 5 paragraph (4) of PM Number 45 of 2020 provides special provisions regarding the use of sidewalks by certain vehicles with electric drives. This conflict reflects the complexity of constitutional law, where various regulations and norms often conflict or are

inconsistent with each other. (Putri, 2024). Resolving this kind of norm conflict requires appropriate management and a deep understanding of the relevant social and legal parameters. Resolving this norm conflict must also pay attention to the basic principles of state law, such as the supremacy of law, equality before the law, as well as justice and legal certainty. Thus, through understanding conflict theory, the author can highlight the complexity of constitutional legal political issues and the importance of appropriate management in responding to this kind of norm conflict. However, in this research the principle of *Lex Specialis Derogat Legi Generalis* is used as a medium for dissection and analysis of the use of legal basis.

Legal Certainty Regarding Regulation of Electric Bicycle Use on Sidewalks

Legal certainty can be realized through good and clear norms in a law and it will be clear also its implementation. In other words, legal certainty means that the law, its subject and object are precise, as well as the threat of punishment. (Indradewi, 2013).

According to Jan Michiel Otto, legal certainty is defined as the possibility that in certain situations:

- 1) There are clear, consistent and easily obtained rules, published and recognized because of the (power of) the state.
- 2) The governing bodies (government) implement these legal regulations consistently and also submit to and obey them.
- 3) Citizens in principle adapt their behavior to these rules.
- 4) Independent and unbiased judges (courts) apply these legal rules consistently when they resolve legal disputes.
- 5) Judicial decisions are concretely implemented (Soeroso, 2011).

Without legal certainty, people will not know what to do, will not know whether their actions are right or wrong, prohibited or not prohibited by law. This legal certainty can be realized through good and clear normative acts in a law and its implementation will also be clear. (Yanti, 2019).

Based on Article 5 of the Regulation of the Minister of Transportation of the Republic of Indonesia Number PM 45 of 2020 concerning Certain Vehicles Using Electric Drives, it states:

- (1) Every person who uses a particular vehicle as referred to in Article 2 paragraph (1) must fulfill the following provisions:
 - a. wear a helmet;
 - b. minimum user age is 12 (twelve) years;
 - c. not permitted to carry passengers except for Electric Bicycles equipped with passenger seats;
 - d. it is not permitted to make modifications to the motor power that can increase speed;
 - e. understand and comply with traffic procedures including:

1. use certain vehicles in an orderly manner while paying attention to the safety of other road users;
2. give priority to pedestrians;
3. maintain a safe distance from other road users; And
4. drive a particular vehicle with full concentration.

- (2) In the case of certain vehicle users aged 12 (twelve) to 15 (fifteen) years, certain vehicle users must be accompanied by an adult.

Based on Article 5 of the Regulation of the Minister of Transportation of the Republic of Indonesia Number PM 45 of 2020 concerning Certain Vehicles Using Electric Drives, it states:

- 1) Certain vehicles as referred to in Article 2 paragraph (1) may be operated on:
 - a. special lane, and/or
 - b. certain area.
- 2) The special lanes as referred to in paragraph (1) letter a include:
 - a. Bike lane, or
 - b. A lane provided specifically for certain vehicles using electric motors
- 3) Certain areas as intended in paragraph (1) letter b include:
 - a. Settlement;
 - b. Roads designated for car free days;
 - c. Tourist area;
 - d. The area around mass public transportation facilities as part of a particular vehicle using an integrated electric motor drive;
 - e. Office area; and
 - f. Area off the road.
- 4) In the event that a special lane as referred to in paragraph (2) is not available, certain vehicles may be operated on the sidewalk with adequate capacity and taking into account pedestrian safety.
- 5) Adequate capacity as referred to in paragraph (4) must accommodate a certain number of pedestrians and vehicles.

There are several criminal provisions that can be imposed on those who misuse the sidewalk, namely:

- 1) Article 275 paragraph (1) of the LLAJ Law. Any person who commits an act that results in disruption to the function of traffic signs, road markings, traffic signal devices, pedestrian facilities and road user safety devices as referred to in Article 28 paragraph (2) shall be punished with imprisonment for a maximum of 1 (one) month or a maximum fine of IDR 250,000.00 (two hundred and fifty thousand rupiah).
- 2) Article 284 of the LLAJ Law: Any person who drives a motor vehicle without prioritizing the safety of pedestrians or cyclists as referred to in Article 106 paragraph (2) shall be punished with imprisonment for a maximum of 2 (two) months or a maximum fine of IDR 500,000.00 (five hundred thousand rupiah).

The conflict between Article 284 of Law Number 22 of 2009 concerning road traffic and transportation with Article 5 paragraph (4) of the Regulation of the Minister of Transportation of the Republic of Indonesia Number PM 45 of 2020 concerning certain vehicles using electric drives where the use of sidewalks is generally regulated in Law Number 22 of 2009 concerning Road Traffic and Transportation. Sidewalks are one of the supporting facilities for the implementation of road traffic and transportation. Pedestrians have the right to the availability of supporting facilities in the form of sidewalks, crossings, and other facilities. Sidewalks are also regulated in Government Regulation Number 34 of 2006 concerning Roads ("PP Roads"). Article 34 paragraph (4) of the PP Roads states that sidewalks are only intended for pedestrian traffic. (Framiyanti, 2024, pp. 672-682). Based on the theory of justice according to John Rawls, this inequality situation must be given rules in such a way that it can benefit the weakest group of society. This happens if two conditions have been met. First, the inequality situation guarantees differences for the weakest group of people. This means that the situation of society must be such that it produces the highest possible profit for the small people. Second, inequality is tied to positions that are open to everyone. The intention is so that everyone is given the same opportunity in life. Based on this guideline, all forms of differences between people based on: race, skin, religion and other differences must be rejected.

Furthermore, John Rawls emphasized that a program for enforcing justice with a people's dimension must pay attention to two principles of justice, namely, first, providing equal rights and opportunities for the broadest basic freedoms as broad as the same freedom for everyone. Second, being able to reorganize the socio-economic gap that occurs so that it can provide reciprocal benefits for everyone, both those from fortunate and unfortunate groups. So from all the explanations of the material above, it can be analyzed that from all existing policies, it is necessary to consider the opportunities obtained by pedestrians and electric bicycle users, considering that if in certain situations an electric bicycle lane has not been provided, it must be fair for both parties to be given tolerance so that policies must have a flexible side in regulating society, also adjusted to the circumstances and facilities available.

Based on the theory of legal policy, the terminology of policy comes from the term "policy" (English) or "politiek" (Dutch). This terminology can be interpreted as general principles that function to direct the government (including law enforcement) in managing, regulating or resolving public affairs, community problems or areas of drafting laws and regulations and allocating laws/regulations in a (general) goal that leads to efforts to realize the welfare and prosperity of the community (Citizens) (Mulyadi, 2018, p. 389). Criminal law policy is basically the whole of the regulations that determine what actions are prohibited and included in criminal acts, and how the sanctions are imposed on the perpetrators with the aim of overcoming crime. In theory, many doctrines have been put forward by experts

related to the understanding of criminal law policy. Based on the explanation of the theory, the policy will determine the direction and welfare of society, including the improvement of policies related to the use of electric bicycles in Indonesia, so that later the policies that are formed and perfected will provide legal certainty and achieve the objectives of the formation of the legal policy itself.

CONCLUSION

Legal regulations regarding the use of electric bicycles on sidewalks according to Law Number 22 of 2009 concerning traffic and road transportation with the Regulation of the Minister of Transportation of the Republic of Indonesia Number PM 45 of 2020 concerning certain vehicles using electric drives are specifically contradictory in Article 284 of Law Number 22 of 2009 concerning traffic and road transportation with Article 5 paragraph (4) of the Regulation of the Minister of Transportation of the Republic of Indonesia Number PM 45 of 2020 concerning certain vehicles using electric drives where the use of sidewalks is generally regulated in Law Number 22 of 2009 concerning Traffic and Road Transportation. Sidewalks are one of the supporting facilities for the implementation of traffic and road transportation. Pedestrians have the right to the availability of supporting facilities in the form of sidewalks, crossings, and other facilities. Sidewalks are also regulated in Government Regulation Number 34 of 2006 concerning Roads ("PP Roads"). Article 34 paragraph (4) of the PP Roads states that sidewalks are only intended for pedestrian traffic.

There are several criminal provisions that can be imposed on those who misuse the sidewalk. Legal certainty regarding the use of electric bicycles on sidewalks according to Law Number 22 of 2009 concerning traffic and road transportation with the regulation of the Minister of Transportation of the Republic of Indonesia Number PM 45 of 2020 concerning certain vehicles using electric drives because it has not provided legal certainty because it still raises speculation in its application, between the application based on *generalis specialist lex principle* or its application based on *The principle of Lex Superior Derogat Legi Inferior* considering that the urgency of the impact of using electric bicycles on sidewalks can harm one party, this conflict of norms certainly hinders the goal of forming a policy, one of which is legal certainty.

REFERENCE

- Ariawan, I. G. K. (2013). Metode Penelitian Hukum Normatif. *Kertha Widya*, 1(1)
- Budiarto, A. & Mahmudal. (2017). *Traffic Engineering*. Solo: UNS Press
- Faruq, AU, & Ubaidillah, L. (2024). Analisis Hukum Terhadap Legalitas Pengendara Sepeda Listrik di Jalan Raya Berdasarkan Undang-Undang Nomor 22 Tahun 2009 Tentang Lalu Lintas dan Angkutan Jalan. *Jurnal Hukum dan Peradilan Indonesia*, 2(1)

- Framiyanti, L. P. D., Dewa, P. E. T., & Tungga, B. (2024). Analisis Kebijakan Hukum Terhadap Penggunaan Sepeda Listrik Di Trotoar Menurut Pasal 284 Undang-Undang Nomor 22 Tahun 2009 Tentang Lalu Lintas Dan Angkutan J Alan Dengan Pasal 5 Ayat (4) Peraturan Menteri Perhubungan Republik Indonesianomor Pm 45 Tahun 2020 Tentang Kendaraan Tertentu Dengan Menggunakan Penggerak Listrik. *Rio Law Jurnal*, 5(2), 672-682
- Hermawati, M., Nuhi, M. H., Andari, A., Marito, E. E., Farros, N., & Josua, H. (2024). Penegakan Hukum Bagi Pengguna Sepeda Listrik di Jalan Raya Dalam Perspektif Hukum Positif Indonesia (Undang-Undang Lalu Lintas). *Media Hukum Indonesia (MHI)*, 2(2), 66-73
- Indradewi, A. A. S. N. (2013). Karakteristik Dasar dan Urgensi Pemikiran Hukum Progresif dalam Konteks Penegakan Hukum. *Widyasrama*, 22(2)
- Mulyadi, M. (2018). *Bunga Hukum Pidana Rapai Perspektif Teoritis dan Praktis*. Bandung: PT. Alumni
- Nasution, M. N. (2014). *Manajemen Transportasi*. Jakarta: Ghalia Indonesia.
- Putri, S. D., Sugiarti, Y., & Fithry, A. (2024). Legalitas Penggunaan Sepeda Listrik Di Tinjau Dari Perspektif UU No 22 Tahun 2009 Tentang Lalu Lintas Dan Angkutan Jalan. *Jurnal Ilmiah Wahana Pendidikan*, 10(1), 773-785
- Soeroso. (2011). *Pengantar Ilmu Hukum*. Jakarta: PT. Sinar Grafika
- Yanti, A. I. E. K. (2019). Kewenangan Pengelolaan Desa Wisata Dalam Perspektif Peraturan Daerah Provinsi Bali Nomor 4 Tahun 2019 Tentang Desa Adat Di Bali. *Kerta Dyatmika*, 16(2), 59-68