# THE URGENCY OF THE EXTENDED PRODUCER RESPONSIBILITY CONCEPT IN LEGAL POLICIES ON ELECTRIC VEHICLE BATTERY WASTE MANAGEMENT IN INDONESIA: AN ECOCENTRIC PERSPECTIVE AND THE FIQH PRINCIPLE OF DAR'UL MAFASID MUQADDAM 'ALA JALBIL MASHALIH (A COMPARATIVE STUDY WITH SWEDEN)

**THESIS**

**By :**

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**CONSTITUTIONAL LAW PROGRAM STUDY *(SIYASAH)***

**SHARIA FACULTY**

**STATE ISLAMIC UNIVERSITY MAULANA MALIK IBRAHIM**

**MALANG**

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## STATEMENT OF THE AUNTENTICITY

In the name of Allah,

With consciousness and responsibility toward the development of science, the writer declares that thesis entitled:

**"THE URGENCY OF THE EXTENDED PRODUCER RESPONSIBILITY CONCEPT IN LEGAL POLICIES ON ELECTRIC VEHICLE BATTERY WASTE MANAGEMENT IN INDONESIA: AN ECOCENTRIC PERSPECTIVE AND THE FIQH PRINCIPLE OF DAR'UL MAFASID MUQADDAM 'ALA JALBIL MASHALIH (A COMPARATIVE STUDY WITH SWEDEN)"**

Is truly writer's original work which can be legally justified. If this thesis is proven result of duplication or plagiarism from another scientific work, it as precondition of degree will be stated legally invalid.

Malang, June 20th 2025
Writer,


**Ariel Sabilal Haq**
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## APPROVAL SHEET

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**"THE URGENCY OF THE EXTENDED PRODUCER RESPONSIBILITY CONCEPT IN LEGAL POLICIES ON ELECTRIC VEHICLE BATTERY WASTE MANAGEMENT IN INDONESIA: AN ECOCENTRIC PERSPECTIVE AND THE FIQH PRINCIPLE OF DAR'UL MAFASID MUQADDAM 'ALA JALBIL MASHALIH (A COMPARATIVE STUDY WITH SWEDEN)"**

The supervisor stated that this thesis has met the scientific requirements to be proposed and to be examinated on the Assembly Board of Examiners.

Malang, June 20th 2025

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**"THE URGENCY OF THE EXTENDED PRODUCER RESPONSIBILITY CONCEPT IN LEGAL POLICIES ON ELECTRIC VEHICLE BATTERY WASTE MANAGEMENT IN INDONESIA: AN ECOCENTRIC PERSPECTIVE AND THE FIQH PRINCIPLE OF DAR'UL MAFASID MUQADDAM 'ALA JALBIL MASHALIH (A COMPARATIVE STUDY WITH SWEDEN)"**

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**MOTTO**

وَلَا تُفْسِدُوْا فِى الْاَرْضِ بَعْدَ اِصْلَاحِهَا وَادْعُوْهُ خَوْفًا وَّطَمَعًا ۗ اِنَّ رَحْمَتَ اللّٰهِ قَرِيْبٌ مِّنَ الْمُحْسِنِيْنَ ﴿٥٦﴾

Do not do any damage to the earth after it is well regulated. Pray to Him with fear and hope. Indeed, Allah's mercy is very near to those who do good.

(Q.S. Al-A'raf : 56)

"Indeed, Allah obliges us to do good in all things."

(H.R. Muslim)

## FOREWORD

بِسْمِ اللهِ الرَّحْمٰنِ الرَّحِيْمِ

Alhamdulillah, praise be to Allah SWT for all His abundance of grace, taufik, and guidance so that the author can complete this thesis with the title "Comparative Study of the Extended Producer Responsibility Concept in Electric Vehicle Battery Waste Management Legal Policy Between Indonesia and Sweden" well and on time as one of the requirements for obtaining a Bachelor of Law degree. This thesis certainly cannot be completed without the support, prayers, and assistance of various parties who are always present in every phase of the author's life.

And not to forget, the author extends shalawat and greetings always poured out to His Majesty the Prophet Muhammad SAW who has brought humans from the realm of jahiliyyah to a brightly lit realm full of knowledge like today.

On this occasion, the author would like to express many thanks to all those who have provided direction and support in this thesis research. With all generosity, the author expresses his gratitude to:

1. To Prof. Dr. H. M. Zainuddin, MA as the Rector of Maulana Malik Ibrahim State Islamic University Malang.
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3. Dr. Musleh Harry, SH, M.Hum. as the Head Department of Constitutional Law (Siyasah) Study Program, Faculty of Sharia, Maulana Malik Ibrahim State Islamic University Malang.

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light when the direction starts to blur.

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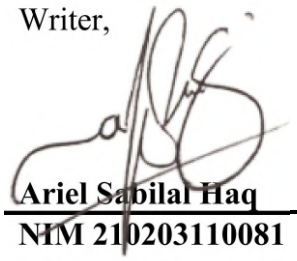
11. All pride and gratitude to myself, thank you for making it this far, even though your steps often faltered, even though doubts often came uninvited. Thank you for choosing to keep going, even when the road feels lonely and heavy. You have learned that not all struggles must be hard, but all must be sincere. Don't forget the tears that once fell silently, the long nights you spent in silence, and the small hopes you kept burning. Thank you for choosing not to give up, for continuing to believe, even when everything seemed impossible. This is not the end, but the beginning of a stronger and wiser version of yourself.

With the completion of this thesis report, it is hoped that the knowledge that the author has gained during lectures can provide charitable benefits for life in this world and the hereafter. As a human being who is never free from mistakes, the author realizes that this thesis is still far from perfection. Therefore, the author

expects constructive criticism and suggestions from readers so as to perfect the writing of this thesis. The author hopes that this thesis can provide benefits for various parties in need.

Malang, May 28th 2025

Writer,



**Ariel Sabilal Haq**

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## TRANSLITERATION GUIDELINES

### A. General

Transliteration is the transfer of Arabic writing into Indonesian writing (Latin), not the translation of Arabic into Indonesian. Included in this category are Arabic names of Arabs, while Arabic names of non-Arabs are written in their national language spelling, or as written in the book being referred to. The writing of book titles in footnotes and bibliographies uses this transliteration rule.

There are many choices and transliteration provisions that can be used in writing scientific papers, both international standards, national standards and provisions specifically used by certain publishers. The transliteration used by the Faculty of Sharia, State Islamic University (UIN) Maulana Malik Ibrahim Malang uses EYD plus, which is a transliteration based on the Joint Decree (SKB) of the Minister of Religion and the Minister of Education and Culture of the Republic of Indonesia, dated January 22, 1998, No. 158/1987 and 0543. b/U/1987, as stated in the book Guidelines for Arabic Transliteration (A Guide Arabic Transliteration), INS Fellow 1992.

### B. Consonant

The list of Arabic letters and their transliteration into Latin letters is presented on the following page:

| Arabic | Indonesian | Arabic | Indonesian |
|---|---|---|---|
| أ | | ط | t |
| ب | B | ظ | z |
| ت | T | ع | ‘ |
| ث | Th | غ | Gh |
| ج | J | ف | F |
| ح | h | ق | Q |
| خ | Kh | ك | K |
| د | D | ل | L |
| ذ | Dh | م | M |
| ر | R | ن | N |
| ز | Z | و | W |
| س | S | ه | H |
| ش | Sh | ء | |
| ص | s | ي | Y |
| ض | d | | |

Hamzah (ء) at the beginning of a word follows its vowel without any sign. If the hamzah (ء) hatches in the middle or at the end, it is written with a sign (').

## C. Vowels, Lengths, and Diphthongs

Every Arabic writing in the form of fathah vowels is written with “a”, kasrah with “i”, dlommah with “u”, while the long readings are each written in the following way:

| Arabic Letters | Name | Latin Letters | Name |
|---|---|---|---|
| اَ | Fathah | A | A |

| | | | |
|---|---|---|---|
| اِ | Kasrah | I | I |
| اُ | Dammah | U | U |

Arabic double vowels whose symbols are a combination of harakat and letters, transliterated in the form of a combination of letters, namely:

| Tanda | Nama | Huruf Latin | Nama |
|---|---|---|---|
| اَيْ | Fathah dan ya | Ai | A dan I |
| اَوْ | Fathah dan wau | Iu | A dan U |

Example :

كَيْفَ : *Kaifa*

هَوْلَ : *Haula*

***D. Maddah***

*Maddah* or long vowels whose symbols are harakat from letters, transliterated in the form of letters and signs, namely:

| Harakat dan Letters | Name | Huruf and Signs | Name |
|---|---|---|---|
| اَ ىَ | Fathah and alif or ya | Ā | a and dash above |
| اِي | Kasrah and ya | Ī | I and the line above |
| اُو | Dammah and wau | Ū | U and upper line |

Example :

مَاتَ : *māta*

رَمَى : *ramaā*

قِيْلَ : *qīla*

يَمُوتُ : *yamūtu*

### *E. Ta Marbūṭah*

There are two transliterations for ta marbūṭah, namely: ta marbūṭah which is alive or gets the *harakat fathah, kasrah, and ḍammah*, the transliteration is [t].

Whereas the ta marbūṭah which is dead or received a sukun harakat, the transliteration is [h].

If the word ending in ta marbūṭah is followed by a word that uses the article al- and the two words are read separately, then *ta marbūṭah* is transliterated with ha [h].

Example:

رَوْضَةُ الأَطْفَالُ : *Raudah al-atfāl*

الَمَدِيْنَةُ الَفَضِيْلَة : *al-madīnah al-fādīlah*

الحِكْمَةُ : *al-ḥikmah*

### **F. *Syaddah (Tasydid)***

*Syaddah* or *tasydīd* which in the Arabic writing system is symbolized by a tasydīd sign (ّ). In this transliteration is symbolized by a repetition of letters (double consonants) marked with a *syaddah*.

Example:

رَبَّنَا : *rabbanā*

نَجَّيْنَا : *najjainā*

الحَقُّ : *al-haqq*

نُعِمَّ : *nu'imma*

عَدُوٌّ : *'aduwwu*

If the letter ى is tasydīd at the end of a word and is preceded by a letter with a kasrah character (ِّ), then it is transliterated as *maddah* (ī).

Example :

عَلِيّ : *'Alī* (bukan '*Aliyy* atau *'Aly*)

عَرَبِيّ : '*Arabī* (bukan '*Arabiyy* atau '*Araby*)

## G. Interpretation

The article in the Arabic writing system is symbolized by the letter لَ (alif lam ma'rifah). In this transliteration guideline, the article is transliterated as usual, al-, both when it is followed by the letter directly following it. The article is written separately from the word that follows it and is connected with a horizontal line (-).

Example :

الشَّمْسُ : *al-syamsu* (not *asy-syamsu*)

الزَّلْزَلَةُ : *al-zalzalah* (not *az-zalzalah*)

الفَلْسَفَة : *al-falsafah*

البَلَدُ : *al-balādu*

## H. Hamzah

The rule of transliterating hamzah letters into apostrophes (') only applies to hamzahs located in the middle and end of words. However, if the hamzah is located at the beginning of the word, it is not symbolized, because in Arabic writing it is an alif.

Example :

تَأْمُرُوْنَ : *ta'murūna*

النَّوْءُ : *al-nau 'u*

شَيْءٌ : *syai'un*

أُمِرْتُ : *umirtu*

## I. Writing Arabic Words Commonly Used in Indonesian

Arabic words, terms or sentences that are transliterated are words, or sentences that have not been standardized in the Indonesian language. Words, terms or sentences that are already common and part of the Indonesian language treasury, or are often written in Indonesian writing, are no longer written according to the above transliteration method. For example, the words Quran (from al-Qur'ān), sunnah, hadith, special and general. However, when these words are part of a series of Arabic texts, they must be transliterated as a whole.

Example :

*Fī ẓilāl al-Qur'ān*

*Al-Sunnah qabl al-tadwīn*

*Al-'Ibārāt Fī 'Umūm al-Lafẓ lā bi khuṣūṣ al-sabab*

### *J. Lafẓ Al-Jalālah (الله)*

The word "Allah" which is preceded by particles such as *jarr* and other letters or acts as *muḍāf ilaihi* (nominal phrase), is transliterated without the letter hamzah.

Example :

دِيْنُ الله : *dīnullāh*

As for the ta marbūṭah at the end of a word that is based on lafẓ al-jalālah, it is transliterated with the letter [t].

Example :

هُمْ فِيْ رَحْمَتِ اللهِ : *hum fī raḥmatillāh*

## TABLE OF CONTENTS

## TABLE LIST

## IMAGE LIST

# ABSTRACT

**Ariel Sabilal Haq,** Student ID 210203110081, 2025, "The Urgency of the Extended Producer Responsibility Concept in Legal Policies on Electric Vehicle Battery Waste Management in Indonesia: An Ecocentric Perspective and the Fiqh Principle of Dar'ul Mafasid Muqaddam 'Ala Jalbil Mashalih (A Comparative Study with Sweden) Thesis. Constitutional Law (Siyasah). Faculty of Sharia. Maulana Malik Ibrahim State Islamic University Malang. Supervisor: Dra. Jundiani, S.H., M.Hum.

**Keywords :** Extended Producer Responsibility, waste batteries, electric vehicles, environmental law

In response to climate change and its commitment to the Paris Agreement, Indonesia is promoting the adoption of electric vehicles (EVs) through Presidential Regulation No. 55 of 2019 to reduce emissions in the transportation sector, which accounts for 60% of national pollution. However, this transition poses serious challenges related to the management of hazardous battery waste, which has the potential to damage the environment, while Indonesia's management system remains weak with minimal regulations and no explicit obligations for manufacturers. The concept of Extended Producer Responsibility (EPR), which requires manufacturers to be responsible for the entire product life cycle, offers a solution. This study analyzes the comparison between Indonesia, which still lacks specific legal frameworks, and the European Union (represented by Sweden), which has a comprehensive EPR framework through the Battery Regulation (EU) 2023/1542. The urgency of implementing EPR in Indonesia is reinforced by the ecosentrist perspective, which demands comprehensive ecosystem protection, and the Islamic legal principle of Dar'ul Mafasid Muqaddam 'ala Jalbil Mashalih, which prioritizes the prevention of harm, to formulate sustainable policies.

# ABSTRAK

**Ariel Sabilal Haq,** NIM 210203110081, 2025, "Urgensi Konsep Extended Producer Responsibility Dalam Kebijakan Hukum Pengelolaan Limbah Baterai Kendaraan Listrik Di Indonesia Perspektif Ekosentrisme, Dan Kaidah Fikih Dar'ul Mafasid Muqaddam 'Ala Jalbil Mashalih (Studi Komparatif Dengan Swedia)". *Skripsi.* Hukum Tata Negara (*Siyasah*). Fakultas Syariah. Universitas Islam Negeri Maulana Malik Ibrahim Malang. Pembimbing Dra. Jundiani, S.H., M.Hum.

**Kata Kunci *:*** *Extended Producer Responsibility,* limbah baterai, kendaraan listrik, hukum lingkungan

Sebagai respons terhadap perubahan iklim dan komitmen pada *Paris Agreement*, Indonesia mendorong adopsi kendaraan listrik (EV) melalui Perpres No. 55 Tahun 2019 untuk menekan emisi di sektor transportasi yang menjadi kontributor 60% polusi nasional. Namun, transisi ini menimbulkan tantangan serius terkait pengelolaan limbah baterai B3 yang berpotensi merusak lingkungan, sementara sistem pengelolaan di Indonesia masih lemah dengan regulasi yang minim dan tanpa kewajiban eksplisit bagi produsen. Konsep *Extended Producer Responsibility* (EPR), yang mewajibkan produsen bertanggung jawab atas seluruh siklus hidup produk, hadir sebagai solusi. Penelitian ini menganalisis perbandingan antara Indonesia yang masih mengalami kekosongan hukum spesifik dengan Uni Eropa (diwakili Swedia) yang telah memiliki kerangka EPR komprehensif melalui *Battery Regulation (EU) 2023/1542*. Urgensi penerapan EPR di Indonesia diperkuat oleh perspektif ekosentrisme yang menuntut perlindungan ekosistem secara menyeluruh dan kaidah fikih *Dar'ul Mafasid Muqaddam 'ala Jalbil Mashalih* yang mengutamakan pencegahan kerusakan, guna merumuskan kebijakan yang berkelanjutan.

# الملخص

أرييل سبيل الحق، NIM 210203110081، 2025، ''أهمية مفهوم المسؤولية الممتدة للمنتج في سياسة القانون لإدارة نفايات بطاريات المركبات الكهربائية في إندونيسيا من منظور الإيكوسنترية، وقاعدة الفقه ''درع المفاسد مقدمة على جلب المصالح'' (دراسة مقارنة مع السويد)''. الأطروحة. القانون الدستوري (سياسة). كلية الشريعة. الجامعة الإسلامية الحكومية مولانا مالك إبراهيم مالانج. المشرفة د. د. جنديايني، درجة الماجستير

الكلمات المفتاحية: المسؤولية الممتدة للمنتج، نفايات البطاريات، المركبات الكهربائية، قانون البيئة

استجابةً لتغير المناخ والتزامًا باتفاقية باريس، تشجع إندونيسيا على اعتماد المركبات الكهربائية من خلال القرار الرئاسي رقم 55 لعام 2019 بهدف خفض الانبعاثات في قطاع النقل الذي يساهم بنسبة 60% من التلوث الوطني. ومع ذلك، فإن هذا التحول يطرح تحديات جادة تتعلق بإدارة نفايات البطاريات B3 التي قد تضر بالبيئة، في حين أن نظام الإدارة في إندونيسيا لا يزال ضعيفًا مع قلة اللوائح التنظيمية وغياب الالتزامات الصريحة من جانب المنتجين. ويأتي مفهوم المسؤولية الممتدة للمنتج، الذي يلزم المنتجين بالمسؤولية عن كامل دورة حياة المنتج، كحل لهذه المشكلة. تحلل هذه الدراسة المقارنة بين إندونيسيا التي لا تزال تعاني من فراغ قانوني محدد والاتحاد الأوروبي (ممثلاً بالسويد) الذي لديه إطار شامل لمسؤولية المنتج الموسعة من خلال لائحة البطاريات (EU) 2023/1542. تتعزز أهمية تطبيق في إندونيسيا من خلال منظور الإيكوسنترية الذي يطالب بحماية النظام البيئي بشكل شامل، ومبدأ الفقه الإسلامي ''درع المفسدات مقدمة على جلب المصالح''.

# CHAPTER I

# INTRODUCTION

## A. Research Background

In recent decades, climate change and global warming have become more pronounced around the world, including in Indonesia. As a tropical country, Indonesia is highly vulnerable to environmental impacts such as changing weather patterns and increasing natural disasters. This vulnerability is caused by high Greenhouse Gas (GHG) emissions, which are also known as carbon emissions. These gases trap heat in the atmosphere. Most of Indonesia's carbon emissions come from the transportation sector, making it a major contributor to the accumulation of these gases.

Fuel-based motorized vehicles (conventional) are one of the main contributors to air pollution, worsening environmental conditions and public health, where conventional vehicles have now become a common necessity that is difficult to separate from people's daily lives.

As the times develop, people's mobility is also getting higher, making vehicles a main need and having an impact on increasing carbon emissions in the atmosphere.[1] Unfortunately, this increase in demand brings alarming environmental

[1] Tria Patrianti, Amin Shabana, and Retnowati Tuti, "Government Risk Communication on Greenhouse Gas Emission Reduction to Tackle Climate Change," *JOURNAL OF COMMUNICATION AND PUBLIC OPINION RESEARCH* 24 (December 2, 2020), https://doi.org/10.33299/jpkop.24.2.3416.

impacts. In Indonesia, motor vehicles account for 60% of total pollution, as emphasized by the Minister of Transportation Budi Karya Sumadi. In fact, Jakarta was ranked 7th in the Air Quality and Pollution Ranking with a US AQI value of 99.[2] The use of conventional vehicles based on Fuel Oil (BBM) is a major contributor to greenhouse gas (GHG) emissions, worsening climate change and air pollution in Indonesia.

This condition is a big challenge for Indonesia, especially considering its commitment to global climate change mitigation efforts through *The Paris Agreement*[3] which has been ratified by 196 countries at COP21 in 2015, and came into effect on November 4, 2016.[4] This agreement emphasizes the importance of the state's role in ensuring the welfare of its citizens with a healthy environment, in line with Article 28H of the 1945 Constitution of the Republic of Indonesia.[5]

In this context, the adoption of electric vehicles (EVs) is a relevant strategic step to reduce GHG emissions. Electric vehicles do not produce direct emissions when used, so they are expected to significantly reduce air pollution and CO2 emissions, especially in countries with high urbanization rates such as Indonesia. Research shows that the transition from conventional vehicles to electric vehicles can reduce GHG emissions substantially, especially if supported by the use

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[2] Audrey Ramadhina and Fatma Ulfatun Najicha, "Electric Vehicle Regulation in Indonesia as an Effort to Reduce Gas Emissions," *Journal of Law to-ra : Law to Regulate and Protect Society* 8, no. 2 (August 25, 2022): 201–8, https://doi.org/10.55809/tora.v8i2.126.

[3] PPID of the Ministry of Environment and Forestry, "Indonesia Signs Paris Agreement on Climate Change," accessed February 5, 2025, https://ppid.menlhk.go.id/siaran_pers/browse/298.

[4] United Nations Climate Change, "The Paris Agreement | UNFCCC," accessed March 21, 2025, https://unfccc.int/process-and-meetings/the-paris-agreement.

[5] Secretary General of the House of Representatives of the Republic of Indonesia, "J.D.I.H. - Constitution 1945 - House of Representatives," promulgated in the Statute Book of the Republic of Indonesia, No. 75, 1959, accessed December 6, 2024, https://www.dpr.go.id/jdih/uu1945.

of renewable energy in charging.[6] The adoption of electric vehicles is an urgent step in the energy transition and sustainable development to address environmental problems in the transportation sector.

In recent years, Indonesia has shown a strong commitment to switch from fossil fuels to sustainable energy sources, including electric vehicles. Increasing awareness of the environmental impact of conventional vehicles has prompted the government to issue various regulations, one of which is Presidential Regulation No. 55/2019 concerning the Acceleration of the Battery-Based Electric Motorized Vehicle (BEV) Program for Road Transportation.[7] This policy aims not only to reduce carbon emissions, but also to reduce dependence on fossil fuels and increase the use of renewable energy.[8] The transition to electric vehicles is considered an important step in slowing the pace of climate change and optimizing the sustainable use of resources in Indonesia.[9] In addition to regulations, government support

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[6] Asrul Ibrahim Nur and Andrian Dwi Kurniawan, "Future Projections of Electric Vehicles in Indonesia: A Perspective Analysis of Sustainable Regulatory and Impact Control of Climate Change," *Indonesian Journal of Environmental Law* 7, no. 2 (September 20, 2021): 197–220, https://doi.org/10.38011/jhli.v7i2.260.

[7] JDIH BPK, "Presidential Regulation No. 55 of 2019 concerning the Acceleration of the Battery Electric Vehicle Program for Road Transportation of T.E.U. Indonesia, Central Government," Regulation Database | JDIH BPK, Ratified in Jakarta on August 8, 2019 by the President of the Republic of Indonesia, Joko Widodo, Promulgated in Jakarta on August 8, 2019 by the Minister of Law and Human Rights of the Republic of Indonesia, promulgated in the Statute Book of the Republic of Indonesia Year 2O19 NUMBER 146, accessed December 6, 2024, http://peraturan.bpk.go.id/Details/116973/perpres-no-55-tahun-2019.

[8] Hernowo Subiantoro and Andina Elok Puri Maharani, "Analysis of Presidential Regulation Number 55 of 2019 Related to the Electric Vehicle Program in the Context of Realizing Environmentally Friendly Transportation. | EBSCOhost," January 1, 2024, https://doi.org/10.20473/jd.v7i1.44453.

[9] Victor Tulus Pangapoi Sidabutar, "Study of Electric Vehicle Development in Indonesia: Prospects and Obstacles," *Journal of Economic Paradigm* 15, no. 1 (May 5, 2020): 21–38, https://doi.org/10.22437/paradigma.v15i1.9217.

through policies and incentives is also a key factor in encouraging the adoption of electric vehicles in the community.

However, the widespread use of electric vehicles has the potential to create new problems, especially related to battery waste. Given that electric vehicle battery waste that falls under the category of Hazardous and Toxic Materials (B3) can cause serious environmental impacts if not managed properly. The handling of electric vehicle battery waste must be carried out seriously so as not to pollute the environment, especially groundwater. According to the Director of Waste Reduction of the Ministry of Environment and Forestry, Vinda Damayanti Ansjar, this waste requires special permits or environmental permits in its management. Without proper handling, this waste is at high risk of contaminating soil and water, as well as endangering human health.[10] Dr. Siti Nurhaliza, an environmental expert from the University of Indonesia, emphasized that this is not just a technical problem, but a real threat to ecosystem sustainability and community safety, potentially causing serious environmental crises in the future.[11]

Agus Purwadi from the Bandung Institute of Technology emphasized that the responsibility of automotive manufacturers does not stop at the sale of electric vehicles, but must include the management of battery waste. Used batteries are toxic materials that should not be disposed of carelessly; must be recycled or

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[10] Choirul Rohman, "MoEF: EV Battery Waste Management Must Be Handled Properly," November 22, 2023, https://otomotif.antaranews.com/berita/3835569/klhk-pengelolaan-limbah-baterai-ev-harus-ditangani-dengan-benar.

[11] Imam Argianto, "Assembling a Green Future: The Role of MIND ID and PT Nasional Hijau Lestari (NHL) in Electric Vehicle Battery Waste Management," Antara News, January 9, 2025, https://www.antaranews.com/berita/4573454/merangkai-masa-depan-hijau-peran-mind-id-dan-pt-nasional-hijau-lestari-nhl-dalam-pengelolaan-limbah-baterai-kendaraan-listrik.

stocked according to standards. International manufacturers are generally responsible for recalling batteries. To overcome this, the standardization of electric vehicle batteries in Indonesia is very necessary. Today, variations in the dimensions and voltages of batteries make it difficult for efficient recycling and reuse processes.[12] Manufacturers such as Hyundai, Wuling, and Toyota offer varying battery life (about eight years for electric cars and three years for electric motors). This B3 waste must be optimized; If it can still be used, it must be processed into something useful with environmental and technical approval from the authorities.

Unfortunately, the battery waste management system in Indonesia is still relatively weak. Until now, there has been no explicit regulation governing manufacturers' obligations in handling their battery waste. This ambiguity increases environmental and health risks. Therefore, a strict regulatory framework is needed to ensure producers are fully responsible for the waste they generate.

Synergy between the Government and the private sector is needed to develop a comprehensive and effective battery waste management strategy. Dr. Siti Nurhaliza emphasized the need for legally binding regulations to require manufacturers to be responsible for the management of their battery waste, both nationally and globally. Without binding policies, the risk of environmental pollution will continue to increase, threatening the sustainability of ecosystems and human health.[13]

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[12] Dicky Kurniawan, "Don't Just Sell Electric Cars, Manufacturers Must Process Battery Waste | tempo.co," Tempo, February 1, 2023, https://www.tempo.co/arsip/jangan-cuma-jual-mobil-listrik-produsen-harus-olah-limbah-baterai-223502.
[13] Imam Argianto, "Stringing Together a Green Future."

Indeed, the use of electric vehicles can reduce exhaust emissions, but improper management of battery waste can threaten environmental sustainability.[14] With the increasing number of electric vehicles, the volume of battery waste will increase significantly, given that *lithium-ion* batteries commonly used in electric vehicles have a limited lifespan and require careful management after their useful life has ended. As such, it is important to develop effective strategies to deal with this waste battery so as not to create new problems for the environment.

In this context, the concept of Extended *Producer Responsibility* (EPR) emerged as a legal instrument that can help address the problem of electric vehicle battery waste. EPR is an approach that requires manufacturers to be responsible for the entire lifecycle of their products, including waste management after the product is no longer in use (post-consumption stage) such as waste collection and recycling. The implementation of EPR can encourage manufacturers to design more environmentally friendly products and facilitate better waste management.[15] By implementing EPR, electric vehicle manufacturers will have an incentive to develop batteries that are easier to recycle and reduce the environmental impact of their products.

In the context of the policy of accelerating electric vehicles in Indonesia, battery waste management has been regulated in several regulations. Presidential

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[14] Endah Retno Dyartanti et al., "Education on Production Technology and Application of Lithium Ion Batteries in Electric Vehicles at SMK Muhammadiyah 6 Karanganyar," *Equilibrium Journal of Chemical Engineering* 4, no. 2 (February 18, 2021): 43–48, https://doi.org/10.20961/equilibrium.v4i2.45154.

[15] Peni Verawati, "Extended Producer Rensponsibility Policy in Handling Waste Problems in Indonesia Towards a Zero Waste Society," *Journal of Justice: Journal of Law and Humanities* 9, no. 1 (2022): 189–97.

Regulation No. 55/2019 concerning the Acceleration of the Battery-Based Electric Motor Vehicle Program (Battery-Based KBL) has mentioned the importance of recycling and battery waste management in Articles 32 and 33. In fact, there are incentives for industries that contribute to waste handling. However, this regulation is very minimal, covering only two articles related to environmental protection, and most importantly, it does not have a clear mechanism for carrying out specific battery waste management obligations.[16]

Although the concept of EPR exists in the Regulation of the Minister of Environment and Forestry No. 75 of 2019 (Roadmap for Waste Reduction by Producers) and Government Regulation No. 27 of 2020 (Specific Waste Management), its application is still limited to plastic packaging waste and general electronics, not yet specifically covering waste electric vehicle batteries. The Ombudsman of the Republic of Indonesia has highlighted the urgency of drafting specific and comprehensive regulations related to the recycling of waste batteries from the use of electric vehicles.[17] In addition, the Ministry of Environment and Forestry (MoEF) emphasizes the importance of proper management of battery waste, considering that the heavy metal components in it have the potential to cause environmental pollution if not handled properly.[18] This legal vacuum creates uncertainty for manufacturers and hinders the development of the EV industry in

[16] JDIH BPK, "Presidential Regulation No. 55 of 2019 concerning the Acceleration of the Battery Electric Vehicle Program for Road Transportation T.E.U. Indonesia, Central Government."
[17] KlikLegal.com, "Ombudsman of the Republic of Indonesia: Urgent 'EV' Battery Waste Management Regulations!," *ClickNews*, February 5, 2023, https://kliklegal.com/ombudsman-ri-regulasi-pengelolaan-limbah-baterai-ev-urgent/.
[18] Choirul Rohman, "MoEF: EV Battery Waste Management Must Be Handled Properly," Antara News, November 22, 2023, https://otomotif.antaranews.com/berita/3835569/klhk-pengelolaan-limbah-baterai-ev-harus-ditangani-dengan-benar.

Indonesia, coupled with the lack of a clear incentive and sanction mechanism in the EPR scheme for electric vehicles.

In contrast to Indonesia, the European Union (EU), in this case Sweden (which adheres to a *mixed law legal system*[19] and is bound by EU rules) has become a *role model* in the policy of managing electric vehicle battery waste. Sweden has a very clear and binding EPR framework for waste batteries. It was originally regulated in Directive 2006/66/EC, which requires manufacturers to be responsible for the management of electric vehicle battery waste through *take-back schemes*, incentives and strict recycling targets.

In 2023, the EU updated this regulation with Battery Regulation (EU) 2023/1542, which further tightens the rules regarding recycling, carbon footprint and sustainability of electric vehicle batteries.[20] As a *Regulation* within the framework of EU law, it is binding as a whole, automatically applicable and uniform in all member states without the need to be changed into national law.[21] The regulation is the basis for strict supervision of manufacturers, and will even impose an "electric vehicle passport" from February 2027 for all EVs sold, supporting the EU's goal to stop the sale of conventional fuel cars by 2035.[22]

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[19] Finn Hiorthoy, "Civil law | History, Systems, and Facts | Britannica," accessed March 21, 2025, https://www.britannica.com/topic/Scandinavian-law.
[20] Gokulakrishnan Kalaivanane, "EU Battery Regulation (2023/1542)-Battery Associates," EU BatteryRegulation, July 31, 2024, https://www.batteryregulation.eu/post/eu-battery-regulation.
[21] European Microbiome Regulatory Science Center, "EU Regulatory Framework | PRI," *Pharmabiotic Research Institute (PRI)* (blog), accessed March 21, 2025, https://pharmabiotic.org/regulatory-framework/.
[22] Serafina Ophelia, "EU Enforces Electric Car Passports in 2027," Mobil KatadataOTO, January 18, 2024, https://otomotif.katadata.co.id/mobil/uni-eropa-berlakukan-paspor-mobil-listrik-di-2027-8633?page=2.

In Indonesia, although the concept of EPR already exists in the Regulation of the Minister of Environment and Forestry No. 75 of 2019 concerning Waste Reduction Roadmap by Producers and Government Regulation No. 27 of 2020 concerning Specific Waste Management, this regulation focuses more on plastic packaging waste and does not cover electronic products or electric vehicle batteries specifically. The application of EPR in waste management policies is still limited to products such as plastics and general electronics, and has not specifically regulated electric vehicle battery waste. As for electric vehicles, Presidential Regulation No. 55 of 2019 only mentions the importance of recycling without a concrete mechanism that binds producers in the EPR scheme. This shows that there is a legal vacuum in EPR regulations for electric vehicles in Indonesia. This legal vacuum creates uncertainty for manufacturers and can hinder the development of the electric vehicle industry in Indonesia.

Current regulations are not enough to address the challenges faced by the electric vehicle industry and its waste management.[23] This comparison shows that Indonesia is still far behind in the EPR regulatory framework for electric vehicle battery waste. Despite the intention to encourage electric vehicles, the lack of concrete details and mechanisms in existing regulations, as well as the lack of specific EPR implementation, are serious obstacles. In contrast, the European Union (represented by Sweden) has established a comprehensive, binding and continuously updated system, which clearly places responsibility on manufacturers and ensures the sustainability of the life cycle of electric vehicle batteries. To ensure

[23] Nur and Kurniawan, "Future Projections of Electric Vehicles in Indonesia," September 20, 2021.

a truly green electric vehicle future, Indonesia needs to urgently develop a clear and comprehensive EPR legal framework, with strong incentive and sanctions mechanisms, mimicking the best practices of developed countries.

Furthermore, there is a misalignment between environmental regulations and transportation regulations in Indonesia. Electric vehicle regulations focus more on incentivizing the purchase and development of charging infrastructure, while environmental aspects related to battery waste have not received enough attention. There are no rules requiring manufacturers to cooperate with third parties in waste management, and recycling infrastructure is still limited. These challenges underscore the urgent urgency to review and strengthen existing legal frameworks.

One of the main challenges in implementing EPR is the lack of awareness and understanding among producers about their responsibilities in waste management. Therefore, there needs to be a regulation that regulates and provides directions related to how to manage electric vehicle battery waste properly. If we use the perspective of ecocentrism, where nature, humans, and the entire ecosystem are considered balanced, then a regulation must also place nature and the entire ecosystem as having an intrinsic value that must be protected, not just as a resource for humans.[24] In the context of electric vehicle battery waste containing Hazardous and Toxic Materials (B3), the ecocentrism approach demands that legal policies focus not only on mitigating impacts, but also on preventing damage to ecosystems

[24] M. Ied Al Munir, "The Paradigm of Environmental Ethics: Anthropocentrism, Biocentrism and Ecocentrism," *YAQZHAN JOURNAL: An Analysis of Philosophy, Religion and Humanity* 9, no. 1 (June 1, 2023): 19–35, https://doi.org/10.24235/jy.v9i1.10000.

as a whole. Poorly managed battery waste has the potential to pollute soil, water, and air, threatening biodiversity and ecosystem balance. Therefore, the law must view battery waste management as an integral part of efforts to maintain the survival of all creatures, not just administrative compliance. Policies should encourage full producer responsibility (*Extended Producer Responsibility*) so that they design more environmentally friendly and recyclable batteries, in line with comprehensive environmental protection principles.

In order to achieve the goal of sustainability, the rules *of Dar'ul Mafasid Muqaddam 'ala Jalbil Mashalih* emerged as a basis for consideration of the importance of developing the legal framework of the *Ius Constituendum* (the law that will come/the law that should exist). In the fiqh rules *of Dar'ul Mafasid Muqaddam 'ala Jalbil Mashalih,* placing the position of avoiding harm must be preceded by taking benefits,[25] it is important to formulate a legal framework that is preventive early in order to avoid harm that has clearly seen its impact in the future, compared to formulating a policy when the harm has been felt. This means that in making a policy, we must consider the harm that has a smaller impact.

In the end, while Indonesia's transition to electric vehicles in Indonesia looks promising, the state should not ignore the significant challenges related to battery waste management. The existing regulatory gap demands serious attention, especially when compared to the comprehensive legal framework implemented in

[25] Ahmad Ridho Suhardi, "Analysis of Dar'u Al Mafasid Muqaddamun 'ala Jalbi Al-Mashalih from Epistimological and Axiological Ontological Aspects" (diploma, UIN Sunan Gunung Djati Bandung, 2019), https://digilib.uinsgd.ac.id/21794/.

the EU and its member states such as Sweden. By adopting the strong principle of Extended Producer Responsibility (EPR), supported by the perspective of ecocentrism and *the principles of Dar'ul Mafasid Muqaddam 'ala Jalbil Mashalih*, Indonesia can ensure that the development of electric vehicles is truly sustainable. This study aims to identify best practices and formulate essential policy recommendations, in order to realize a cleaner and more responsible transportation future in Indonesia.

## B. Research Limitations

In this study, the problem limitation used to focus and determine the extent to which the topic will be studied, in this case the problem limitation used in this study is only limited to the comparison of the concept of *Extended Producer Responsibility* in the management of electric vehicle battery waste between Indonesia and Sweden.

## C. Problem Formulation

Referring to the background explanation above, the formulation of the problem in this study can be presented as follows:

1. How does the concept of *Extended Producer Responsibility* compare in the legal policy of electric vehicle battery waste management in Indonesia and Sweden?

2. What is the urgency of implementing the EPR scheme in the legal policy of electric vehicle battery waste management in Indonesia through the perspective of Ecocentrism and the fiqh principles *of Dar'ul Mafasid Muqaddam 'Ala Jalbil Mashalih*?

## D. Research Objectives

Based on the formulation of the problem that has been explained, the objectives of this research are as follows:

1. Analyze and describe EPR-based electric vehicle battery waste management regulations in Indonesia and Sweden.
2. Describe the urgency of implementing EPR in the legal policy of electric vehicle battery waste management in Indonesia through the perspective of Ecocentrism and the rules of fiqh *Dar'ul Mafasid Muqaddam 'Ala Jalbil Mashalih*

## E. Research Benefits

1. **Theoretical Benefits** : This research is expected to provide benefits and contributions in the study of environmental law and constitutional law related to government policies in supporting the acceleration of electric motor vehicles in Indonesia by paying attention to the aspect of producer

responsibility in waste management through a comparative study of laws with existing policies in the European Union.

2. **Practical Benefits** : This research is expected to provide input to the government in formulating and designing legal policies related to the management of electric motor vehicle battery waste, as well as helping electric vehicle manufacturers understand their responsibilities in paying attention to the sustainability of products and the environment. This research is also expected to help reduce pollution, increase public awareness, and encourage synergy between stakeholders, and support the acceleration program of electric vehicles in Indonesia.

## F. Previous Research

Previous research contains information about studies that have been conducted by previous researchers, both in the form of journals and articles that have been published as well as scientific works such as dissertations and theses that have not been published. This review was chosen because it has relevance to the problems raised in the research, so that it can prevent duplication, confirm the authenticity of the research conducted, and show new differences and contributions compared to previous studies.

The main purpose of tracing previous research is to provide a theoretical and methodological foundation as a comparison, as well as a reference in

developing the research that is being carried out in order to avoid similarities and repetition of topics. Some of the relevant previous studies are described as follows:

1. Hernowo Subiantoro and Andina Elok Puri Maharani (Jurist-Diction Vol. 7 (1) 2024) with the research title "Analysis of Presidential Regulation Number 55 of 2019 Related to the Electric Vehicle Program in the Context of Realizing Environmentally Friendly Transportation". The result of this study, namely Presidential Regulation of the Republic of Indonesia Number 55 of 2019, has been determined as the main legal instrument in accelerating electric vehicles in Indonesia. This regulation aims to support the transformation of transportation towards a more environmentally friendly system in line with the government's commitment in international agreements, such as the Paris Agreement which has been ratified through Law Number 16 of 2016. However, although normatively this regulation has met the principles of the formation of laws and regulations, its effectiveness in accelerating electric vehicles still faces various challenges, such as in its implementation, Presidential Regulation 55/2019 is considered more appropriate if it is lowered into the form of a Government Regulation as an implementing regulation that is more operational and has higher legal force in the Indonesian legal system. In terms of legal certainty, this regulation still shows that there is ambiguity between the norms regulated and the real conditions in the field. The mismatch between the expectations built by the regulations and the reality of their

implementation causes legal uncertainty for electric vehicle industry players and the public as end users.[26]

2. Muhammad Raihan Hanafiah (etheses.uin-malang.ac.id, 2023) with the research title "Juridical Analysis of Electric Vehicle Development Against Environmental Pollution in Indonesia: Environmental Fiqh Perspective". Based on the analysis that has been carried out, the effectiveness of Presidential Regulation Number 55 of 2019 concerning the development of battery-based electric vehicles has not been effective in realizing environmentally friendly transportation. Indonesia's dependence on fossil energy-based power plants, as affirmed in the Decree of the Minister of Energy and Mineral Resources No. 188.K/HK.02/MEM. L/2021, making electric vehicles still dependent on energy sources that pollute the environment. From the perspective of environmental fiqh, the ecological impact due to the use of fossil energy for electric vehicle charging still damages the ecosystem around power plants. Therefore, the energy transition to renewable sources needs to be accelerated so that electric vehicles truly become a sustainable transportation solution.[27]
3. Muliana Mursalim, and Agung Susanto (Jurnal Justicia, Vol. 7 No.2, 2022) with the research title "Ambivalence of Renewable Energy:

[26] Subiantoro and Maharani, "Analysis of Presidential Regulation Number 55 of 2019 Related to the Electric Vehicle Program in the Context of Realizing Environmentally Friendly Transportation. | EBSCOhost."

[27] Muhammad Raihan Hanafiah, "Juridical analysis of electric vehicle development on environmental pollution in Indonesia from an environmental fiqh perspective" (undergraduate, Maulana Malik Ibrahim State Islamic University, 2023), http://etheses.uin-malang.ac.id/61456/.

*Electric Vehicles for Reducing Carbon Emissions and Its Impact on* Environmental Damage in Indonesia". The results of this study are that although electric vehicles have great potential in reducing carbon emissions, their implementation in Indonesia still faces significant environmental challenges. One of the main problems is the ecological impact of mining nickel as a raw material for batteries, which until now has not been clearly regulated. In addition, Indonesia does not yet have an effective mechanism for battery waste management, which risks creating new environmental problems in the future. To ensure the sustainability of the electric vehicle industry from upstream to downstream, stricter and more comprehensive regulations are needed, including increasing the use of renewable energy in power plants, supervision of battery raw material mining activities, and adequate management of battery waste. Without comprehensive regulation, the transition to electric vehicles has the potential to become a new environmental problem rather than a solution to climate change. Therefore, the development of clean energy infrastructure must be the main requirement before electric vehicles are massively used in Indonesia.[28]

4. Asrul Ibrahim Nur and Andrian Dwi Kurniawan (Indonesian Journal of Environmental Law, Vol. 7 No. 2 (2021) with the research title "Future

[28] Muliana Mursalin and Agung Susanto, "Renewable Energy Ambivalence: Electric Vehicles for Reducing Carbon Emissions and Their Impact on Environmental Damage in Indonesia," *Journal of Justice: Journal of Law, Legislation and Social Institutions* 7, no. 2 (December 31, 2022): 306–21, https://doi.org/10.22373/justisia.v7i2.15047.

Projections of Electric Vehicles in Indonesia: A Perspective Analysis of Sustainable Climate Change Impact Control and Regulation". The results of this study show that the acceleration of electric vehicles in Indonesia requires more comprehensive and binding regulations, considering that there are still challenges in legal protection for the public and investors, coordination between agencies, and public education. **Presidential Regulation No. 55 of 2019** needs to be strengthened with more progressive policies, including the revision of the RUEN and the issuance of Government Regulations or Laws that can reach all related sectors. In addition, the success of this transition depends on five main aspects: increasing renewable energy, regulation of battery raw material mining, battery waste management, electric vehicle incentives, and harmonization of national and regional regulations. If not properly regulated, electric vehicles can become a new environmental problem, requiring consistent and integrated policy interventions to ensure sustainable energy transformation. Indonesia is expected to learn and adopt lessons from the successes achieved by China, the European Union, and the United States in designing and implementing effective regulations related to the use of electric vehicles.[29]

5. Muhammad Syauqi Ardiyan (Thesis of the International Relations Study Program, Faculty of Psychology and Socio-Cultural Sciences, Islamic

[29] Asrul Ibrahim Nur and Andrian Dwi Kurniawan, "Future Projections of Electric Vehicles in Indonesia: A Perspective Analysis of Sustainable Regulatory and Impact Control of Climate Change," *Indonesian Journal of Environmental Law* 7, no. 2 (September 20, 2021): 197–220, https://doi.org/10.38011/jhli.v7i2.260.

University of Indonesia, 2023) with the research title "Analysis of Indonesia's Compliance with the Paris Agreement through the Acceleration Policy of the Electric Car Industry in Indonesia in 2020-2023". The results of this study indicate that the policy of accelerating the development of the electric car industry in Indonesia is an important strategic step in supporting the country's commitment to the Paris Agreement as well as efforts to reduce greenhouse gas emissions in the transportation sector. The support from the government along with the development of renewable energy-based infrastructure reflects the seriousness in carrying out the transition process towards cleaner and more sustainable energy. However, there are still challenges in terms of technology, infrastructure, and social and economic impacts that need to be overcome. To ensure the long-term success of this policy, further investment in research and development, increased cooperation with other countries and the private sector, and active participation of the public in supporting the adoption of electric vehicles is needed.

**Table 1.1**

**Previous Research**

| No. | Research Name/Title | Legal Issues | Research Results | Difference | Elements of Novelty |
|---|---|---|---|---|---|
| 1. | Journal article from the Journal of Jurist-Diction Vol. 7 (1) 2024 written | 1) To what extent is the legal certainty of Presidential Regulation | The result of this study, namely Presidential Regulation of the Republic | This study highlights the challenges of the effectivenes | This study offers a new perspectiv e by highlightin |

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| | by Hernowo Subiantoro and Andina Elok Puri Maharani, entitled "Analysis of Presidential Regulation Number 55 of 2019 Related to the Electric Vehicle Program in the Context of Realizing Environmentally Friendly Transportation" | Number 55 of 2019 in encouraging the development of battery-based electric motor vehicles in Indonesia, and are its derivative regulations sufficient to provide legal protection and certainty for industry players?<br>2) Has the policy of accelerating battery-based electric motor vehicles in Presidential Regulation Number 55 of 2019 been able to realize environmentally friendly transportation and in line with the principles of | of Indonesia Number 55 of 2019, has been determined as the main legal instrument in accelerating electric vehicles in Indonesia. This regulation aims to support the transformation of transportation towards a more environmentally friendly system in line with the government's commitment in international agreements, such as the Paris Agreement which has been ratified through Law Number 16 of 2016. However, although normatively | s and legal certainty of Presidential Regulation 55/2019, as well as recommends implementing regulations in the form of Government Regulations to overcome the ambiguity of norms and strengthen the binding power of regulations. | g the regulatory gap of *Extended Producer Responsibility* (EPR) in the management of electric vehicle battery waste in Indonesia, which has not been the main focus in environmental law studies. Different from previous research that emphasized more on accelerating electric vehicles, this study compares EPR schemes in Indonesia and the European Union, |

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| | | sustainable transportation in Indonesia? | this regulation has met the principles of the formation of laws and regulations, its effectiveness in accelerating electric vehicles still faces various challenges, such as in its implementation, Presidential Regulation 55/2019 is considered more appropriate if it is lowered into the form of a Government Regulation as an implementing regulation that is more operational and has higher legal force in the Indonesian legal system. In terms of | | where the European Union already has comprehensive regulations, while Indonesia still faces challenges in its implementation. With a comparative approach, this study not only analyzes policy differences, but also offers concrete solutions to develop sustainability-based EPR regulations and the circular economy in Indonesia. This study is expected |

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| | | | legal certainty, this regulation still shows that there is ambiguity between the norms regulated and the real conditions in the field. The mismatch between the expectations built by the regulations and the reality of their implementation causes legal uncertainty for electric vehicle industry players and the public as end users. | | to contribute to the strengthening of environmental laws and encourage the harmonization of electric vehicle policies and their waste management to create a more environmentally friendly and responsible system. |
| **2.** | The thesis that has been in the form of a journal in etheses.uin-malang.ac.id, 2023 written by Muhammad Raihan Hanafiah, is | 1) How effective is the government's policy in the development of battery-based electric motor vehicles in Indonesia based on | Based on the analysis that has been carried out, the effectiveness of Presidential Regulation Number 55 of 2019 | This study highlights that electric vehicles in Indonesia are not yet fully environmentally friendly because | |

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|---|---|---|---|---|---|
| | entitled "Juridical Analysis of Electric Vehicle Development Against Environmental Pollution in Indonesia Environmental Fiqh Perspective" | Presidential Regulation Number 55 of 2019?<br>2) What are the legal and environmental implications of the use of fossil energy in the supply of electricity for electric motor vehicles in Indonesia? | concerning the development of battery-based electric vehicles has not been effective in realizing environmentally friendly transportation. Indonesia's dependence on fossil energy-based power plants, as affirmed in the Decree of the Minister of Energy and Mineral Resources No. 188.K/HK.02/MEM.L/2021, making electric vehicles still dependent on energy sources that pollute the environment. From the perspective of environmental fiqh, the ecological | they still depend on fossil energy. Therefore, accelerating the transition to renewable energy is necessary for electric vehicles to truly become a sustainable transportation solution. | |

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| | | | impact due to the use of fossil energy for electric vehicle charging still damages the ecosystem around power plants. Therefore, the energy transition to renewable sources needs to be accelerated so that electric vehicles truly become a sustainable transportation solution. | | |
| **3.** | Journal article from the journal Jurnal Justicia, Vol. 7 No.2, 2022. Written by Muliana Mursalim, and Agung Susanto, entitled "Ambivalence of Renewable Energy: *Electric* | 1) How effective is government policy in encouraging the use of electric vehicles as an effort to reduce carbon emissions in Indonesia?<br>2) What is the environmental impact of the use of | Although electric vehicles have the potential to reduce carbon emissions, their implementation in Indonesia still faces environmental challenges. Mining nickel as a battery raw material | This research focuses on environmental challenges in the transition to electric vehicles in Indonesia, especially the impact of nickel mining and unregulated battery | |

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| | *Vehicles for Reducing Carbon Emissions and Its Impact on Environmental Damage in Indonesia".* | electric vehicles, especially related to the exploitation of natural resources and battery waste management, and how do regulations address them? | has not been clearly regulated, and battery waste management is still ineffective. Stricter and more comprehensive regulations are needed, including increasing renewable energy, mining supervision, and adequate waste management. Without comprehensive regulation, the transition to electric vehicles can actually cause new environmental problems. Therefore, clean energy infrastructure must be a priority before electric | waste management. Strict regulation and the use of clean energy are needed for electric vehicles to truly contribute to emission reductions without creating new environmental problems. | |

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| | | | vehicles are widely used. | | |
| **4.** | A journal article from the Indonesian Journal of Environmental Law, Vol. 7 No. 2 2021 written by Asrul Ibrahim Nur and Andrian Dwi Kurniawan, entitled "Future Projections of Electric Vehicles in Indonesia: A Perspective Analysis of Sustainable Climate Change Impact Control and Regulation" | 1) How effective is electric vehicle regulation in Indonesia, especially Presidential Regulation No. 55 of 2019, in supporting the reduction of Greenhouse Gas (GHG) emissions and controlling the impact of climate change?<br>2) What are the legal and policy obstacles in the development of the electric vehicle ecosystem in Indonesia, and how are the solutions so that regulations can be more | The results of this study show that the acceleration of electric vehicles in Indonesia requires more comprehensive and binding regulations, considering that there are still challenges in legal protection for the public and investors, coordination between agencies, and public education. Presidential Regulation No. 55 of 2019 needs to be strengthened with more progressive policies, including the revision of the RUEN | This research highlights the need for stronger and more comprehensive regulations to support the acceleration of electric vehicles in Indonesia. The main challenges include legal protection, agency coordination, and public education. Progressive policies and regulatory harmonization are needed so that electric vehicles truly support environmental | |

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| | | optimal in supporting the green energy transition? | and the issuance of Government Regulations or Laws that can reach all related sectors. In addition, the success of this transition depends on five main aspects: increasing renewable energy, regulation of battery raw material mining, battery waste management, electric vehicle incentives, and harmonizatio n of national and regional regulations. If not well regulated, electric vehicles can become a new environmenta l problem, requiring consistent | sustainabilit y, not create new problems. | |

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| | | | and integrated policy interventions to ensure sustainable energy transformation | | |
| **5.** | Thesis of the International Relations Study Program, Faculty of Psychology and Socio-Cultural Sciences, Islamic University of Indonesia, 2023 written by Muhammad Syauqi Ardiyan, entitled "Analysis of Indonesia's Compliance with the Paris Agreement through the Policy of Accelerating the Electric Car Industry in Indonesia | 1) What is Indonesia's role in accelerating the electric car industry as a form of compliance with the Paris Agreement?<br>2) Is the policy of accelerating electric cars in Indonesia driven by environmental reasons as stipulated in the Paris Agreement, or are there other factors that are more dominant? | The results of this study show that the policy of accelerating the electric car industry in Indonesia is a strategic step in supporting the commitment to the Paris Agreement and reducing greenhouse gas emissions from the transportation sector. Government support and the development of renewable energy-based infrastructure show the seriousness of the transition | This research focuses on compliance with the electric car acceleration policy as a strategic step for Indonesia in supporting the Paris Agreement, but still faces technological, infrastructure, and socio-economic impact challenges. Its success depends on research investment, international cooperation, and | |

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| | in 2020-2023" | | to clean energy. However, there are still challenges in terms of technology, infrastructure, and social and economic impacts that need to be overcome. To ensure the long-term success of this policy, further investment in research and development, increased cooperation with other countries and the private sector, and active participation of the public in supporting the adoption of electric vehicles is needed. | community participation. | |

## G. Research Methods

### 1. Types of Research

This research falls under the category of normative legal research, which is also known as doctrinal law research or normative juridical research,[30] This type of research is a legal research that does not enter or touch the sociological area or empirical law in collecting the data needed in its research.

Soerjono Soekanto and Sri Mamudji argue that normative legal research is legal research that is carried out by examining literature materials or secondary data, and can also be called literature law research *(library legal research).*[31]

### 2. Research Approach

This research uses a normative legal research approach. There are 5 types of approaches that are commonly used in normative law research. At least the researcher applies three approaches in this study, namely the statute approach, the conceptual approach, and the comparative approach. The Legislative Approach is a method that utilizes various types of relevant laws and legal regulations as the basis for analysis of the legal problems being studied. The legislative approach to this study uses Presidential Regulation Number 55 of 2019 concerning the Acceleration of the Battery-Based

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[30] Dr. Muhaimin, *Legal Research Methods* (Universitas Mataram, 2020), https://eprints.unram.ac.id/20305/.

[31] Nurul Qamar, *Doctrinal and Non-Doctrinal Legal Research Methods* (Makassar: CV. Social Politic Genius (SIGn), 2020), https://isbn.perpusnas.go.id/Account/SearchBuku?searchTxt=%20978-602-5522-57-4&searchCat=ISBN.

Electric Motorized Vehicle Program (*Battery Electric Vehicle*) For road transportation.

The conceptual approach comes from the study of the views and doctrines that develop in the legal profession. By studying these doctrines, researchers are able to identify the ideas that shape the understanding of law, legal concepts, and legal principles that are relevant to the problems at hand. In this study, a conceptual approach is applied through the use of the concept of Extended Producer Responsibility, Ecocentrism Theory, and *Dar'ul mafasid muqaddam 'ala jalbil mashalih* as a basis for analysis.

Comparison approach *(comparative approach)* It is carried out through comparative legal studies, which is a method that compares the legal system of a country with that of another country or compares legal regulations from different time periods. In this study, a comparative approach was applied by comparing the waste management policies of electric vehicle batteries between Indonesia and the European Union.

**3. Source of Legal Materials**

In reviewing normative legal research, only normative legal sources are used. In normative law research, only secondary legal sources are used obtained through literature studies, then it is further divided into three types of literature legal sources, namely primary, secondary, and tertiary data.[32] The three sources of legal materials used include:

[32] Dr. Muhaimin, *Legal Research Methods*.

a. Primary Legal Source: is a source of legal material obtained from the main source that is binding on the problem to be researched. There are legal sources that can be used as primary legal materials, such as the 1945 Constitution, Laws, Government Regulations, Jurisprudence, Court Decisions, and so on.[33] The primary legal materials used by the researcher are:

    1) The Constitution of the Republic of Indonesia of 1945
    2) Law Number 16 of 2016
    3) Presidential Regulation Number 55 of 2019 on the Acceleration of the Battery Electric Vehicle (BEV) Program for Road Transportation.
    4) Minister of Environment and Forestry Regulation Number 75 of 2019 on the Roadmap for Waste Reduction by Producers.
    5) Minister of Environment and Forestry Regulation Number 9 of 2024.
    6) Government Regulation No. 27 of 2020 on Specific Waste Management.
    7) Battery Regulation (EU) 2023/1542.

[33] Willa Wahyuni, "Normative Legal Research Objects for Final Project," hukumonline.com, accessed February 28, 2025, https://www.hukumonline.com/berita/a/objek-penelitian-hukum-normatif-untuk-tugas-akhir-lt63a46376c6f72/.

b. Secondary Legal Sources: are sources of research materials that provide explanations of primary legal materials, or support from main legal data that will help researchers in compiling further data. Materials such as law books including theses, theses, legal dissertations and legal journals are the main materials in using secondary legal sources. The type of publication in question is the results of research which are journals or scientific papers that discuss the electric vehicle acceleration program in Indonesia. Such as research conducted by Hernowo Subiantoro and Andina Elok Puri Maharani (Jurist-Diction Vol. 7 (1) 2024) with the research title "Analysis of Presidential Regulation Number 55 of 2019 Related to the Electric Vehicle Program in the Context of Realizing Environmentally Friendly Transportation" and other similar research.

c. Tertiary Law Sources: are legal materials that support information from primary and secondary legal data, generally the data materials used are in the form of legal language dictionaries, encyclopedias, magazines, and mass media.[34]

**4. Legal Material Collection Techniques**

The collection techniques used by the researcher in this study are *library research* or literature data, this is done by collecting sources of legal

[34] Author Amiruddin, "Introduction to Legal Research Methods," University of Indonesia Library (Rajawali Press, 2020), https://lib.ui.ac.id.

material data obtained from legislation, journals, or any data that is related to the object of the problem being discussed. The legal material collection technique used is *Statute Approach*,[35] Therefore, researchers must look for laws and regulations related to the issue. Then it is processed with *Comparative Approach*, by comparing the rules that apply in Indonesia with the rules that apply in the European Union regarding policies in managing electric vehicle battery waste. Likewise, a conceptual approach as a support with legal materials that can be collected from more essential sources, namely searching law books.

**5. Legal Material Analysis**

In a legal development, the analysis of normative legal data in research has a considerable contribution. Opportunities to improve the law that are no longer appropriate, need reform, or have shortcomings can be overcome by identifying gaps in existing legal norms. In conducting this study, the analysis used is the normative juridical analysis method. Normative juridical analysis begins with the normative analysis of primary, secondary and tertiary legal materials based on conceptual approaches and laws and regulations or other approaches that are in accordance with the formulation of the problem.[36] Then using a qualitative analysis[37] by interpreting the legal materials that have been processed. The analysis of legal materials in normative legal research is carried out by systematizing legal materials,

[35] Luqman Hakim, "Getting to Know 5 Approaches to Legal Research in Indonesia," *Deepublish Store* (blog), January 6, 2025, https://deepublishstore.com/blog/pendekatan-penelitian-hukum/.
[36] Dr. Muhaimin, *Legal Research Methods*.
[37] Dr. Muhaimin.

namely selecting legal materials. Furthermore, classify according to the classification of legal materials and compile legal materials so as to obtain research results systematically and logically, namely the relationship and relationship between one legal material and another legal material to get an overview of the answers from the research results.

## H. Writing Systematics

To facilitate the discussion in this report, the researcher will arrange this report into 4 chapters that will be adjusted to the guidelines for writing scientific papers of the Faculty of Sharia, Maulana Malik Ibrahim State Islamic University of Malang, each chapter will be divided into subchapters with the following details:

**Chapter I** contains an Introduction consisting of background, problem formulation, research objectives, research benefits, research methods, previous research and discussion systematics. This chapter contains an explanation of the reasons why this research was conducted.

**Chapter II** contains a Literature Review which discusses the basis or juridical concept to examine research problems. The foundation of these concepts and theories will later be used in analyzing every problem that will be raised in the research.

**Chapter III** contains Results and Discussion, namely the results of research related to issues that have been analyzed to answer the formulation of the problem that has been determined.

**Chapter IV** contains a Conclusion consisting of conclusions and suggestions. The conclusion is the final summary of all the contents of the discussion to conclude the results of the research. Suggestions are proposals to related parties who have authority over the theme being researched for the good of the community or future researchers.

# CHAPTER II

# LITERATURE REVIEW

## A. Conceptual Definition

Conceptual definition is a definition that provides variables that are formulated based on the characteristics of the observed variables. In order to avoid misunderstandings in interpreting the title of this thesis, it is necessary to explain the conceptual definition of the title as follows:

1. The Paris Agreement is a legally binding global agreement, followed by almost all countries in the world since it came into force on November 4, 2016. In essence, all countries agreed to work together to reduce greenhouse gas emissions and deal with the impacts of climate change. Countries are also encouraged to continue to increase their efforts to keep the earth safe. This agreement allows developed countries to help developing countries, both in funding, technology, and transparent reporting. Overall, the Paris Agreement is an important step towards a cleaner and more sustainable world, and supports the achievement of global development goals.[38]
2. The Nationally Determined Contribution (NDC) is a form of real commitment from each country to reduce greenhouse gas emissions and adapt to the impacts of climate change. The NDC is a key element of the

[38] United Nations, "The Paris Agreement," United Nations (United Nations), accessed May 28, 2025, https://www.un.org/en/climatechange/paris-agreement.

Paris Agreement and plays an important role in realizing the long-term goals of the agreement.[39]

3. Extended Producer Responsibility (EPR) is one of the important principles that has recently developed rapidly in the international environmental law regime is the extended producer responsibility principle or what is globally known as *the Extended Producer Responsibility* (EPR) Principle. The Organisation *for Economic Co-operation and Development (OECD)* defines EPR as an environmental policy approach in which the producer's responsibilities, whether physical and/or financial, are extended to the post-consumer or post-consumption stage of the product's life cycle. EPR policy has 2 main mechanisms and characteristics, namely: (1) *the shifting of responsibility*, either physically and/or economically; fully or partially, from downstream to upstream or in other words from consumers to producers; (2) incentivizing manufacturers to include environmental considerations in their product designs. In the realm of preliminaries, producers can join together to meet their EPR obligations using collective collection, sorting, and processing systems to maintain their cost efficiency, such a mechanism is commonly called "collective EPR".[40]

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[39] United Nations Climate Change, "Nationally Determined Contributions (NDCs) | UNFCCC," accessed May 28, 2025, https://unfccc.int/process-and-meetings/the-paris-agreement/nationally-determined-contributions-ndcs.

[40] Maskun Maskun et al., "Normative Review of the Application of the Principle of Producer Responsibility in the Regulation of Plastic Waste Governance in Indonesia," *Environmental Law Building*, 2, 6, no. 2 (February 2022): 184–200, https://doi.org/10.24970/bhl.v6i2.159.

4. Waste Management is the process of managing waste from inception to disposal. Waste management includes: Collection, Transportation, Maintenance, Disposal, Monitoring and waste management regulations.
5. Electric Vehicle Batteries Electric vehicle (EV) batteries are a type of rechargeable battery that supplies electrical energy to electric vehicles. Serving as the main power source, it drives the vehicle's electric motor and delivers power to the electrical system. Generally composed of lithium ion cells or other advanced battery chemistry, it replaces traditional combustion engines, making cars cleaner and more efficient.[41]

**B. Theoretical Framework**

Research is a scientific study that is inseparable from the application of theory that will be a provision for researchers in understanding the broader social context. The theoretical framework is an important requirement in a legal research where in this section the researcher will describe what theories are used to help in the preparation of this research. Theory is used to clarify the scope of the research.

In this study, the researcher used Comparative Legal Theory, Ecocentrism Theory and Public Policy Theory. The reason the researcher uses the theory is because the researcher feels that the three theories help the researcher in organizing the ideas and concepts involved in the research. This helps researchers in

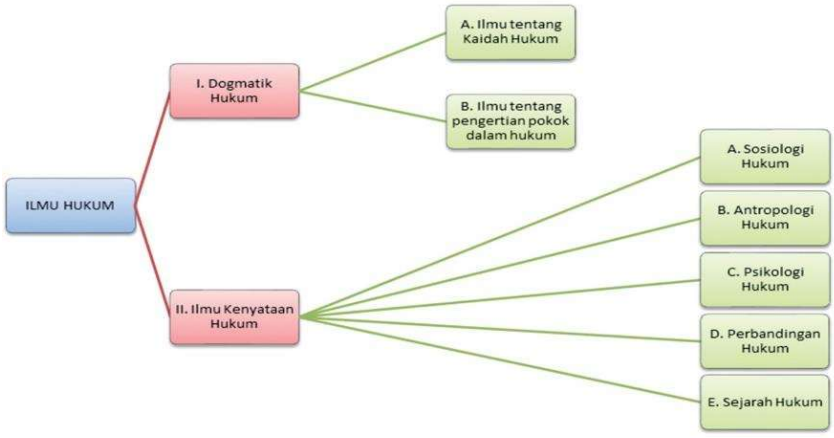
[41] Dave Murden, "What is an Electric Vehicle Battery: Definition, Types, Development & Usage," Eco Tree Lithium, August 11, 2023, https://ecotreelithium.co.uk/news/electric-vehicle-battery/.

understanding the relationship between variables and legal phenomena or issues in research.

1. Comparative Theory of Law

Soerjono Soekanto places comparative law as one of the parts of the legal discipline. He is of the view that comparative law has two main dimensions: first, seeing law as an aspired norm, namely the ideals that a legal system wants to achieve; and second, looking at law as a reality, examining how law is actually applied and functioning in practice. Thus, legal comparisons focus not only on what should have been, but also on what actually happened. To get a clearer understanding of the comparative position of law in the discipline of law, one can refer to the scheme that has been compiled by Soerjono Soekanto[42] :

Image 2.1




Legal comparison is defined as a systematic activity to analyze and evaluate diverse legal systems. The essence of this comparison is to identify

[42] Soerjono Soekanto, *Legal Comparison*, 2nd ed., 340.2 SOE p (Bandung: PT. Citra Aditya Bakti, 1989).

the similarities and differences between the legal systems that are the object of the study. More than just identification, comparative law also includes an in-depth explanation of how law works and functions in the context of its practice. This includes an analysis of the juridical settlement mechanisms applied, as well as the identification of non-legal factors (e.g., social, economic, political, and cultural conditions) that affect the operationalization and implementation of the law.[43]

According to Van Apeldoorn, the law is unique in every place and time. However, no legal system is completely isolated; all have a connection. He explained that although there are many differences between the legal systems of different nations, it turns out that there are also many significant similarities. The science of comparative law, continued Van Apeldoorn, is not just a list of differences and similarities. More than that, this science strives to understand and explain why differences and similarities exist. The goal is to find the reasons and contexts behind diverse legal phenomena around the world.[44]

The main purpose of comparative law in a theoretical context is to enrich the understanding of the structure, function, and dynamics of law across jurisdictions, so as to provide a comprehensive comparative perspective on specific legal issues.

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[43] Prof. Dr. Sunarjati Hartono, S.H., *Capita Selecta Comparative Law*, Seventh Edition (Bandung: PT. Citra Aditya Bakti, 1991), chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://repository.unpar.ac.id/bitstream/handle/123456789/3029/Sunarjati_68495-p.pdf?sequence=1&isAllowed=y.

[44] I. J. Van Apeldoorn, *Introduction to Law*, XXXV (Jakarta: Balai Pustaka, 2011).

2. Ecocentrism Theory

Ecocentrism is a theory that explains that the entire environmental or ecological community, whether living or not, is the center of the universe itself.[45] Ecocentrism understands the environment as a whole ecosystem, not just a resource to meet human needs, but an order that must be considered balanced. It is said that this ecocentrism theory strongly supports a healthier and more sustainable life on earth.[46]

Lynn White introduced this theory of Ecocentrism by stating that in carrying out the process of responsibility and moral obligation, it is not only limited to nature or organic life, but also comprehensively encompasses all ecological aspects in it.[47] Therefore, the preservation of the environment as a whole and balanced must receive attention in the management of natural resources.

Basically, ecocentrism is a paradigm that highlights that all forms of life have equally important intrinsic value. Nature and humans are seen as two interconnected elements in one big narrative. For this reason, ecosystem balance is needed.[48]

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[45] pedulisocial, "DILA : Environmental Ethics | Socially Caring SMEs," accessed February 28, 2025, https://pedulisosial.ukm.undip.ac.id/index.php/2021/04/25/dilla-etika-lingkungan/.

[46] "Ecocentrism is a Type of Environmental Theory, Understand the Concept and Its Purpose," merdeka.com, January 12, 2023, https://www.merdeka.com/jateng/ekosentrisme-adalah-jenis-teori-lingkungan-pahami-konsep-dan-tujuannya-kln.html.

[47] Risno Tampilang, "The Dualism of Ecocentrism and Anthropocentrism: A Theological Implications of Events 1-3 and Responses to the Ecofeminist Movement in Seeing Environmental Exploitation Actions," *Mello : Christian Student Journal* 4, no. 2 (December 31, 2023): 18–36.

[48] Ministry of State Secretariat, "Ecocentrism and Efforts to Respond to the Environmental Crisis | State Secretariat," accessed February 28, 2025, https://www.setneg.go.id/baca/index/ekosentrisme_dan_upaya_menanggapi_krisis_lingkungan_hidup.

This theory is used to define that in drafting a legal framework, there needs to be consideration and attention to environmental sustainability as a whole, not only limited to human needs. A regulation must be fair and provide broader benefits. So this theory is in line with analyzing the urgency of applying the concept *Extended Producer Responsibility* (EPR) in the legal policy of electric vehicle battery waste management in Indonesia.

3. *Dar'ul Mafasid Muqaddam 'Ala Jalbil Mashalih*

Norm *Dar'ul mafasid muqaddam 'ala jalbil mashalih*, which means "preventing harm takes precedence over benefit," is one of the important principles in Islamic fiqh that reflects a preventive approach in the establishment of law. In this rule, Islamic sharia gives priority to protection from harm or damage *(mafsadat)* before considering the advantages or benefits *(Hint)*, especially when both cannot be realized simultaneously.[49] This rule is derived from the spirit of the Qur'an and Sunnah in safeguarding the five main purposes of sharia *(maqāṣid al-syarī'ah)*, namely to protect religion, soul, intellect, descendants, and property. One of the verses that strengthens the urgency of decision-making to prevent damage is found in Surah Al-Baqarah verse 195, which reads:

وَاَنْفِقُوْا فِيْ سَبِيْلِ اللّٰهِ وَلَا تُلْقُوْا بِاَيْدِيْكُمْ اِلَى التَّهْلُكَةِ ۛ وَاَحْسِنُوْا ۛ اِنَّ اللّٰهَ يُحِبُّ الْمُحْسِنِيْنَ ﴿١٩٥﴾

*"And do not throw yourselves into destruction" (QS. Al-Baqarah: 195).*

[49] Suhardi, "Analysis of the Rules of Dar'u Al Mafasid Muqaddamun 'ala Jalbi Al-Mashalih from Epistimological and Axiological Ontological Aspects."

This verse is the basis for the prohibition of carrying out actions that cause harm to oneself and society, and is often used as a reference in the context of preventive Islamic legal policies. For example, in the social and governmental contexts, this principle is applied in the prohibition of activities that are disgusting if they have the potential to cause damage in the future. Therefore, the principle of _dar'ul mafasid_ is not only normative, but also applicable in various aspects of Islamic law, including in public policymaking, Islamic criminal law, and environmental management, as they all require an approach to the *prudence in order to maintain order and the public welfare.*

In the context of electric vehicle battery waste management, the application of the principle of Extended Producer Responsibility (EPR) is an important strategy to ensure environmental sustainability while reducing the negative impact of increasing the use of environmentally friendly vehicle technology. In fiqh, the urgency of implementing this policy can be analyzed through the rules *"Dar'ul mafasid muqaddam 'ala jalbil mashalih"*, which means preventing harm should take precedence over the pursuit of benefits. This rule is very relevant considering that although electric vehicles provide great benefits for reducing carbon emissions (jalbul mashalih), the battery waste they produce has great potential to cause ecological damage if not managed properly (mafasid), such as groundwater pollution, land damage, and threats to public health.

From a policy point of view, countries such as Sweden, which is part of the European Union, have put this rule into practice substantively through firm, structured EPR policies and supported by strong regulations and infrastructure. In the Swedish EPR system, the manufacturer's responsibility does not stop after the product has been sold, but continues to the stage of collection, processing and recycling of waste batteries. EPR regulations in the European Union, including the EU Directive 2006/66/EC on batteries and accumulators, reinforce the principle of preventing environmental damage by encouraging manufacturers to design products that are easy to recycle, as well as funding the full waste management process. This shows that the prevention of environmental damage is placed as a top priority in public policy, in line with the spirit of the fiqh rules.

Meanwhile, in Indonesia, EPR-related regulations are still in the early stages of development and have not yet fully bound producers to take full responsibility for the waste they produce. The absence of an integrated recycling system and weak law enforcement show that the potential for *contamination* from battery waste is still very large and has not been optimally addressed. By referring to the rules *of Dar'ul mafasid muqaddam 'ala jalbil mashalih*, it is imperative for the state to prioritize efforts to prevent environmental damage through strengthening regulations and implementing the EPR concept. In this context, learning from Sweden's experience as a representation of the EU's success is important so that Indonesia can develop a legal framework that balances the need for environmentally friendly technology and ecological responsibility, so that the

benefits obtained from electric vehicles do not lead to greater damage due to their waste management failures.

# CHAPTER III

# DISCUSSION

## A. Comparison of the Concept of Extended Producer Responsibility (EPR) in the Legal Policy of Electric Vehicle Battery Waste Management in Indonesia and Sweden

Indonesia has ratified the Paris Agreement through Law Number 16 of 2016, with Nationally Determined contributions covering mitigation and adaptation aspects. In line with what is stated in the Paris Agreement, Indonesia prepares its Nationally Determined Contribution (NDC) periodically. In the first period, Indonesia's NDC target is to reduce emissions by 29% with domestic efforts, and can increase to 41% with the support of international cooperation from a no-action (business as usual) condition by 2030, which will be achieved through several sectors, including the energy and transportation sectors.[50]

The transportation sector accounts for 24% of total national emissions, with conventional motor vehicles as the main contributor to air pollutants and carbon dioxide. The transition to battery-based electric vehicles (BEV) is a critical strategy to meet the Nationally Determined Contribution (NDC) target, while reducing dependence on fossil fuels which reaches 95% in the land transportation

[50] JDIH, "Law Number 16 of 2016," Regulation Database | JDIH BPK, 2016, http://peraturan.bpk.go.id/Details/37573.

sector.[51] The policy of accelerating electric vehicles through Presidential Regulation Number 55 of 2019 affirms Indonesia's seriousness in building a low-carbon transportation ecosystem. Analysis by the Institute for New and Renewable Energy (IESR) shows that the full adoption of electric vehicles with the support of renewable energy has the potential to reduce transportation sector emissions by up to 90% by 2050.[52] The implementation of this policy is in line with Article 4 paragraph 19 of the Paris Agreement which emphasizes the importance of sustainable development based on environmentally friendly technology.[53]

In this case, Indonesia is actively committed to encouraging the development and deployment of domestic electric vehicles in order to replace conventional fuel vehicles with transportation solutions that are more environmentally friendly and energy-efficient.[54] Electric cars are considered environmentally friendly vehicles because they do not use fossil fuels such as gasoline. This is due to its ability to operate without producing emissions or pollution that are harmful to the environment. Electric vehicles do not emit pollutants that form smoke or greenhouse gases into the atmosphere. In 2019, it is estimated that there are around 3,269,671 units of electric vehicles in circulation in

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[51] Ubaidillah Nugraha and Marko Hermawan, "The Prospect and Challenge of Energy Transition Through Electric Vehicle Development in Indonesia: A Sustainable Development Perspective," 2024, 364–88, https://doi.org/10.4018/979-8-3693-3140-8.ch018.
[52] Prof. Christian Breyer, *Deep Decarbonization of Indonesia's Energy System: A Pathway to Zero Emissions by 2050* (South Jakarta: Institute for Essential Services Reform (IESR), 2021).
[53] United Nations, "Paris Agreement," Pub. L. No. FCCC/CP/2015/L.9/Rev.1-Adoption of the Paris Agreement, § Sustainable Development, FCCC/CP/2015/L.9/Rev.1-Adoption of the Paris Agreement Department of Economic and Social Affairs (2015).
[54] Ilham Pambudi and Vishnu Juwono, "Electric Vehicles in Indonesia: Public Policy, Impact, and Challenges," *Asian Journal of Social and Humanities* 2, no. 2 (November 23, 2023): 347–60, https://doi.org/10.59888/ajosh.v2i2.173.

the global market, and this number is projected to increase significantly to reach 26,951,318 units by 2030.[55]

Image 3.1

Source: *ANTARA/Arif Firmansyah/foc.* *https://rri.co.id/index.php/iptek/780307/sejarah-kendaraan-listrik-dan-perkembangannya-di-indonesia*

In recent years, Indonesia has shown a strong commitment to shift from the use of fossil fuels to more sustainable energy sources, including electric vehicles. As awareness of the environmental impacts of oil-fueled vehicles (conventional) increases, the Indonesian government has issued various regulations to support this transition. One of the key regulations is Presidential Regulation Number 55 of 2019 concerning the Acceleration of the Battery Electric Vehicle (BEV) Program for Road Transportation.[56] This policy not only aims to reduce carbon emissions, but also to reduce dependence on fossil fuels and increase the use of renewable energy. The transition from the use of conventional vehicles to electric vehicles is also considered an important step to slow down climate change and develop sustainable resources in Indonesia.[57] In addition, government support

[55] BRIN Public Relations, "Nickel Potential for Electric Motor Vehicle Batteries," BRIN - Nickel Potential for Electric Motor Vehicle Batteries, February 9, 2022, https://brin.go.id/news/99472/potensi-nikel-untuk-baterai-kendaraan-bermotor-listrik.
[56] JDIH BPK, "Presidential Regulation No. 55 of 2019 concerning the Acceleration of the Battery Electric Vehicle Program for Road Transportation T.E.U. Indonesia, Central Government."
[57] Hernowo Subiantoro and Andina Elok Puri Maharani, "Analysis of Presidential Decree Number 55 of 2019 Related to the Electric Vehicle Program in the Context of Realizing Environmentally

through policies and incentives is also a key factor in encouraging the adoption of electric vehicles in the community.

However, the widespread use of electric vehicles has the potential to create new problems, especially related to battery waste. Electric vehicle battery waste, which is mostly made from hazardous chemicals, can have serious environmental impacts if not managed properly. The Ministry of Environment (MoEF) predicts that there will be a significant increase in battery waste in the next 3-4 years in line with the target of 15 million units of electric vehicles by 2030, with the potential for waste accumulation to reach 500,000 tons/year.[58] In fact, the recycling capacity of national electric vehicle batteries is still nil.

The content of materials in electric vehicle batteries has the potential to have a negative impact in the long term on the environment, if not handled appropriately. Heavy metal elements such as lithium, cobalt, nickel, and manganese contained in batteries can contaminate soil and water if the waste is disposed of carelessly. Exposure to these metals is toxic to living organisms, risks disrupting the balance of ecosystems, and can even enter the food chain that impacts human health. The chemicals in batteries, especially the electrolytes, are corrosive and can accelerate environmental damage. As for when batteries begin to break down or decompose, harmful gases such as carbon dioxide and fluoride can be released into

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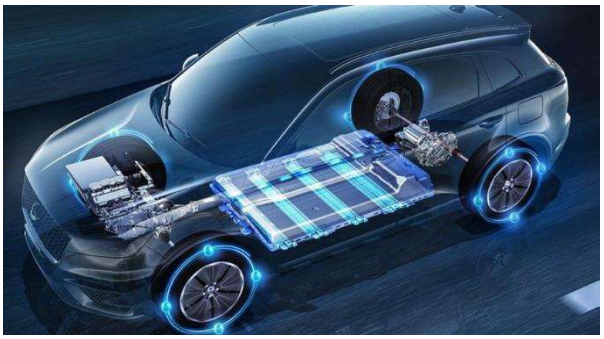
Friendly Transportation," *Jurist-Diction* 7, no. 1 (January 31, 2024): 39–68, https://doi.org/10.20473/jd.v7i1.44453.

[58] CNN Indonesia, "KLH Highlights Big Problem of Battery Waste as EVs Become More Popular in Indonesia," March 13, 2025, https://www.cnnindonesia.com/otomotif/20250313132731-603-1208393/klh-sorot-masalah-besar-limbah-baterai-saat-ev-makin-laku-di-ri.

the air, contributing to worsening global warming and polluting the quality of the air we breathe.[59]

Image 3.2



Source : https://listrikindonesia.com/detail/13375/jadi-komponen-paling-mahal-tips-agar-baterai-kendaraan-listrik-tidak-cepat-rusak

Good battery waste management, especially through efficient recycling processes, is essential to minimize environmental impact and preserve natural resources for future generations. Because battery waste has the potential to pollute the environment, a policy is needed that regulates its management so that destructive waste does not accumulate. Excessive indiscriminate disposal can cause heavy metals to seep into groundwater, pollute the environment, and go against environmental ethical principles.

Currently, Indonesia still faces a shortage of adequate facilities and waste treatment industry for electric vehicle batteries. While experience in conventional battery management is already in place, the much larger scale of electric vehicle battery waste demands a more systematic and integrated management approach. The concept of Extended Producer Responsibility (EPR) offers a mechanism that

[59] Dyah Adriantini Sintha Dewi et al., "Battery Waste Management in Realizing Sustainable Development in the Digital Era," *E3S Web of Conferences* 622 (2025): 02004, https://doi.org/10.1051/e3sconf/202562202004.

can encourage producers to take full responsibility. This concept is an approach that places the primary responsibility for waste management on product manufacturers, throughout the product life cycle to the final stage,[60] including electric vehicle batteries. The EPR concept is a manifestation of the polluter pays principle and the prevention principle which has two main objectives: first, to minimize the environmental impact of the product by reducing the risk posed at the end of its useful life; Second, encouraging manufacturers to consider environmental impacts in long-term product design.[61]

Image 3.3


Source : https://www.hooleybrown.com/blog-post/extended-producer-responsibility-epr-schemes-an-eu-and-uk-guide

The implementation of the *Extended Producer Responsibility* (EPR) scheme specifically for electric vehicle battery waste has not been fully implemented. Although the concept of EPR has been implemented in Indonesia, its application is still limited and does not yet cover the waste of electric vehicle

[60] Asep Setiawan, "Implementation of EPR (Extended Producer Responsibility) in Indonesia: Opportunities and Challenges," *Ministry of Environment and Forestry*, no. Directorate of Waste Reduction (March 26, 2023).
[61] Louis Dawson, Jyoti Ahuja, and Robert Lee, "Steering Extended Producer Responsibility for Electric Vehicle Batteries," *Environmental Law Review*, May 3, 2021, https://doi.org/10.1177/14614529211006069.

batteries specifically. The Ombudsman of the Republic of Indonesia has highlighted the urgency of drafting specific and comprehensive regulations related to the recycling of waste batteries from the use of electric vehicles.[62] In addition, the Ministry of Environment and Forestry (MoEF) emphasizes the importance of proper management of battery waste, considering that the heavy metal components in it have the potential to cause environmental pollution if not handled properly.[63]

In general, waste management should be managed in a priority order, starting with the prevention of waste, followed by reuse (including preparation for reuse), then the recycling process, energy utilization, and as a final step is disposal if other options are not possible. This principle should also be applied in the handling of electric vehicle battery waste. Electric vehicle batteries generally have a lifespan of between 5 to 20 years, depending on their use and how they are maintained.[64] In fact, current electric vehicle batteries can often last longer than the vehicle itself.[65] However, over time, the performance of the battery will decrease. When the capacity is only 70–80% of the original, the battery is no longer powerful enough to be used in the vehicle as it begins to limit the mileage. At this point, the battery is considered unfit for its initial function. Even so, the remaining capacity can still be used for other lighter purposes, such as energy storage at home or

[62] KlikLegal.com, “Ombudsman RI.”
[63] Choirul Rohman, "MoEF."
[64] Kathrin Graulich et al., “Emerging Waste Streams – Challenges and Opportunities” (Berlin: Oeko Institut, 2021), https://www.oeko.de/fileadmin/oekodoc/EEA_emerging-waste-streams_final-report.pdf.
[65] Davide Castelvecchi, “Electric Cars and Batteries: How Will the World Produce Enough?,” *Nature* 596, no. 7872 (August 17, 2021): 336–39, https://doi.org/10.1038/d41586-021-02222-1.

facilities.[66] If not reused, the battery should be recycled so that the valuable materials in it can be recovered.

By adopting the concept of Extended Producer Responsibility in designing policies in the management of electric vehicle battery waste, Indonesia can reduce the negative impact of battery waste containing hazardous and toxic materials, while optimizing the reuse of metals and valuable materials from used batteries. This not only protects the environment and public health, but also opens up green economy opportunities through the sustainable development of the battery recycling industry.

Regulations play a crucial role in ensuring that electric vehicle battery waste is managed responsibly and sustainably, considering that the environmental impact caused by electric vehicle battery waste will have a negative impact if not handled appropriately. One of the approaches that is widely adopted globally in the preparation of the legal framework for the management of electric vehicle battery waste is by including the concept of *Extended Producer Responsibility* (EPR) in the legal framework.

In this case, the European Union became a pioneer in the application of this concept, which was later adopted by various member states. In the European Union (EU), the concept of EPR has been clearly regulated in Directive 2006/66/EC on Batteries and Accumulators and Waste Batteries and Accumulators, which requires battery manufacturers to be responsible for the waste management of

[66] Andrew Farmer and Emma Watkins, "Managing Waste Batteries from Electric Vehicles: The Case of the European Union and Japan," *Institute European Enviromental Policy*, May 31, 2023, https://ieep.eu/publications/managing-waste-batteries-from-electric-vehicles-the-case-of-the-european-union-and-japan/.

electric vehicle batteries. The system involves *take-back schemes*, incentives for manufacturers to use more environmentally friendly materials, and strict recycling targets. In 2023, the EU updated this regulation with Battery Regulation (EU) 2023/1542, which further tightens the rules regarding recycling, carbon footprint and sustainability of electric vehicle batteries.[67]

In this study, Sweden as one of the member countries of the European Union became the object of comparison where the legal system used was similar to Indonesia using *the civil law* system but also adopted the *common law* system in several needs, the system is also often referred to as the Swedish mixed law[68] system chosen as a *role model* comparison because Sweden has a well-organized waste management system, including collection, electricity transportation, and battery waste processing. In addition to Sweden having implemented EPR, Sweden has also had a long-term commitment to the use of renewable energy.[69] As one of the member states of the European Union, the national regulatory system of the member states of the European Union (EU) is based on the EU legal framework.

Within the framework of EU Law, there is a classification of types of rules that have an impact on its member countries, namely: Regulations are binding on all member states directly, Directives are binding on member states, or some member states to achieve certain goals, Decisions binding as a whole, and Recommendations and opinions are not binding. In the EPR-based electric vehicle

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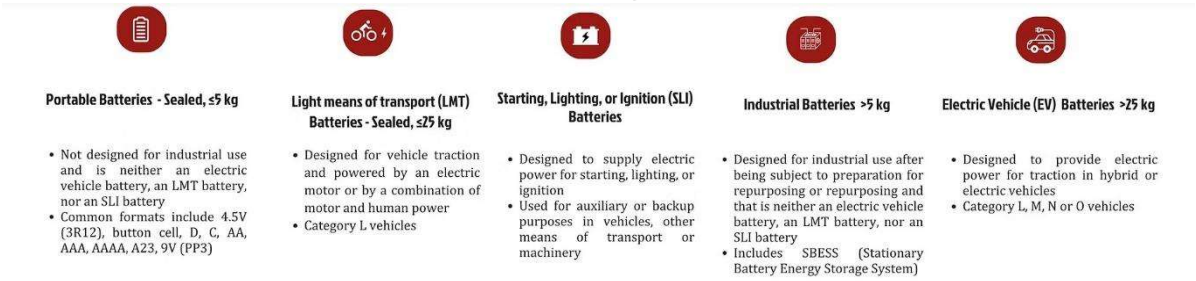
[67] Gokulakrishnan Kalaivanane, "EU Battery Regulation (2023/1542)-Battery Associates."
[68] Finn Hiorthoy, "Civil law | History, Systems, and Facts | Britannica."
[69] Smart City Sweden, "Extended Producer Responsibility in Sweden: Towards Better Waste Management | News," *Smart City Sweden* (blog), accessed June 18, 2025, https://smartcitysweden.com/best-practice/337/extended-producer-responsibility-in-sweden-towards-better-waste-management/.

battery waste management policy, Sweden adopted the rules of the Battery Regulation (EU) 2023/1542. Where the codification of Regulation in the EU legal framework is a legal framework consisting of laws, regulations, and directives that apply in all member states. The regulation is binding in its entirety on all EU countries, applies automatically and uniformly to all EU countries as soon as it comes into force, without the need to be changed into national law.[70]

Image 3.4




Source : https://www.batteryregulation.eu/post/eu-battery-regulation

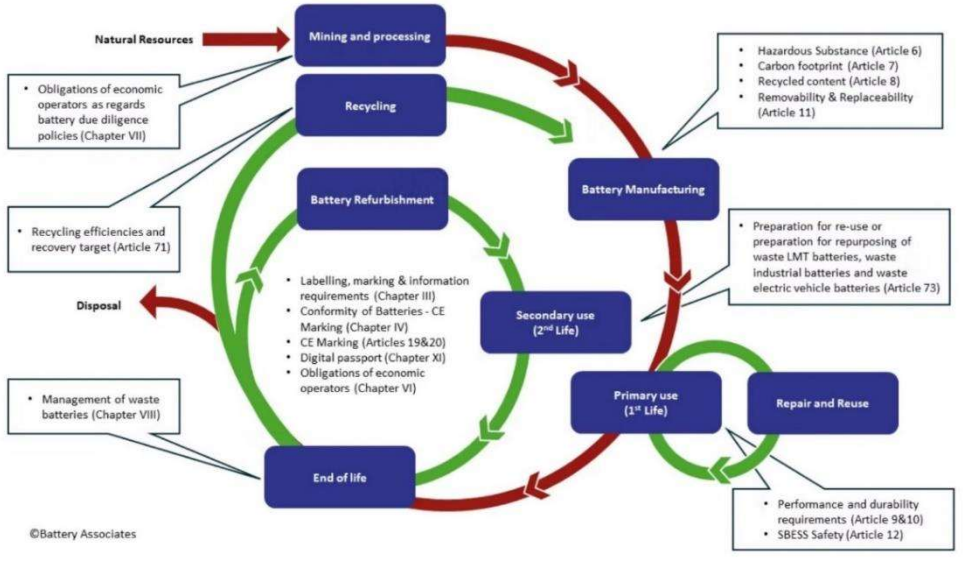
Article 12 of the EU Battery Regulation ensures[71] that the regulations that have been made truly prevent and minimize negative impacts on the environment and encourage the creation of a safe, ethical, and sustainable battery supply chain by considering important aspects such as carbon footprint, responsible sourcing of raw materials, and reuse and recycling efforts. In addition to driving improved environmental performance across the battery lifecycle, the EU designed these rules to support the transition to a circular economy and strengthen its competitiveness in the long term. The EU also sets uniform standards and obligations across its territory to ensure optimal environmental protection and human health, while

[70] European Microbiome Regulatory Science Center, "EU Regulatory Framework | PRI."
[71] EUR-Lex, "Regulation (EU) 2023/1542 of The Euroean Parliament and of The Council," PE/2/2023/REV/1 Document 32023R1542 § (2023), https://eur-lex.europa.eu/eli/reg/2023/1542/oj/eng.

maintaining internal market efficiency. The European Union establishes this rule on a legal basis based on Articles 114 and 192(1) of the Treaty on the Functioning of the European Union (TFEU).

In fact, the regulation also ensures that the entire life cycle of all batteries marketed in the European Union has a regulation of marketing requirements, conformity assessment procedures, and the process of handling the final stage of battery life as a whole. The regulation is the basis for tightening supervision of electric vehicle manufacturers, which is even projected to impose an electric vehicle passport in the European Union that will apply to all electric vehicles sold from February 2027. With this regulation, it can support the projection of the European Union's target to officially stop the sale of ICE *(Internal Combustion Engine)* or conventional fuel cars by 2035.[72]

Image 3.5




Source : https://www.batteryregulation.eu/post/eu-battery-regulation

[72] Serafina Ophelia, "The European Union Enforces Electric Car Passports in 2027."

This regulation reinforces the principle of *Extended Producer Responsibility*, which requires battery manufacturers to bear the entire cost of collecting and treating battery waste, as well as providing collection facilities that are easily accessible to communities throughout the region, including in remote areas. In addition, these regulations set more ambitious targets for recycling and material recovery. Sweden is required to achieve a recycling efficiency of at least 50% for non-NiCd batteries and 80% for NiCd batteries by the end of 2025. Targets for the recovery of critical materials such as lithium, nickel, and cobalt are also set in stages until 2031.[73] The regulation even requires the minimum use of recycled materials in new batteries, which encourages the creation of a circular economy in the sector.

Another important innovation is the implementation of a digital battery passport that will come into effect in 2027. The passport will contain comprehensive information on the carbon footprint, material composition, and health status of the battery, which can be accessed via QR code. This not only improves the transparency of the battery supply chain, but also allows for more effective oversight of the battery life cycle. On the supervisory side, Sweden is required to establish a transparent and integrated electronic reporting system, as well as report production, collection and recycling data to the European Commission on an annual basis.[74] This data must be publicly available in a format that is easily accessible and readable. Although these regulations demand large

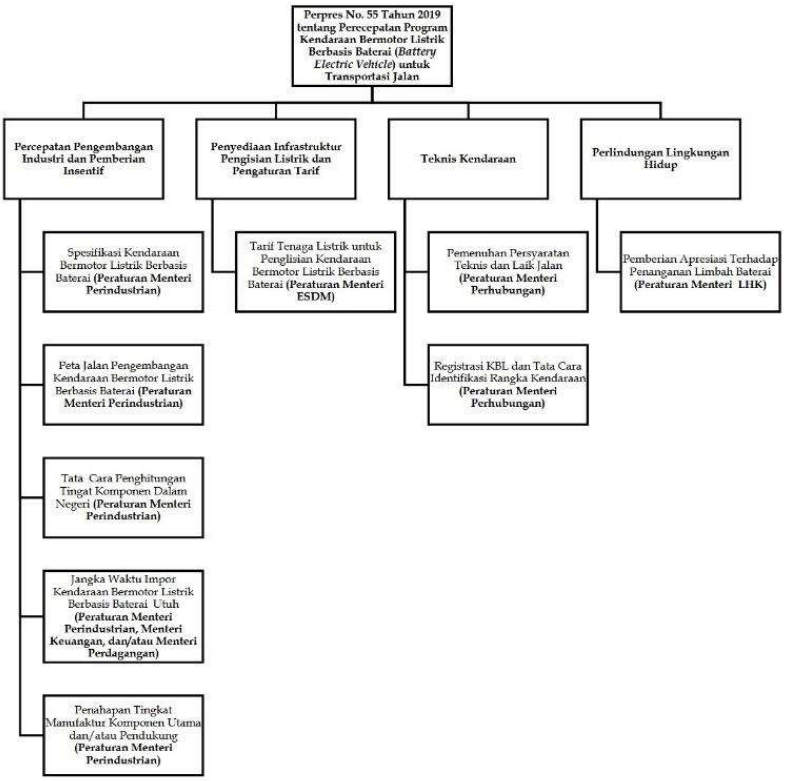
[73] EU Monitor, "Regulation 2023/1542 - Batteries and Waste Batteries," July 28, 2023, https://www.eumonitor.eu/9353000/1/j4nvk6yhcbpeywk_j9vvik7m1c3gyxp/vm56a5qeuvzl?
[74] Andreas Nyman, "EU Battery Regulation Explained," Intertek Sverige, August 11, 2023, https://www.intertek.se/kunskapsbank/blogg/eu-battery-regulation-explained/.

investments in infrastructure and technology, Sweden has the opportunity to be a pioneer in battery waste management and the development of the recycling industry in Europe. With the implementation of this regulation, Sweden can strengthen the supply resilience of critical raw materials, reduce the environmental impact of waste batteries, and support a more sustainable clean energy transition.

In contrast, in Indonesia, although attention to this issue is growing, the legal arrangements are still partial and not fully integrated within the framework of the EPR. Although the concept of EPR already exists in the Regulation of the Minister of Environment and Forestry Number 75 of 2019 concerning the Roadmap for Waste Reduction by Producers[75] and Government Regulation Number 27 of 2020 concerning Specific Waste Management[76], this regulation focuses more on plastic packaging waste and does not include electronic products or electric vehicle batteries specifically. The application of EPR in waste management policies is still limited to products such as plastics and general electronics, and has not specifically regulated electric vehicle battery waste.

[75] JDIH, "Regulation of the Minister of Environment and Forestry Number 75 of 2019," Regulation Database | JDIH BPK, 2019, https://peraturan.bpk.go.id/Details/312182/permen-lhk-no-75-tahun-2019.
[76] JDIH, "Government Regulation Number 27 of 2020," Regulation Database | JDIH BPK, 2020, https://peraturan.bpk.go.id/Details/138876/pp-no-27-tahun-2020.

Image 3.6 Structure of Implementing Regulations of Presidential Regulation Number




Presidential Regulation No.55 of 2019

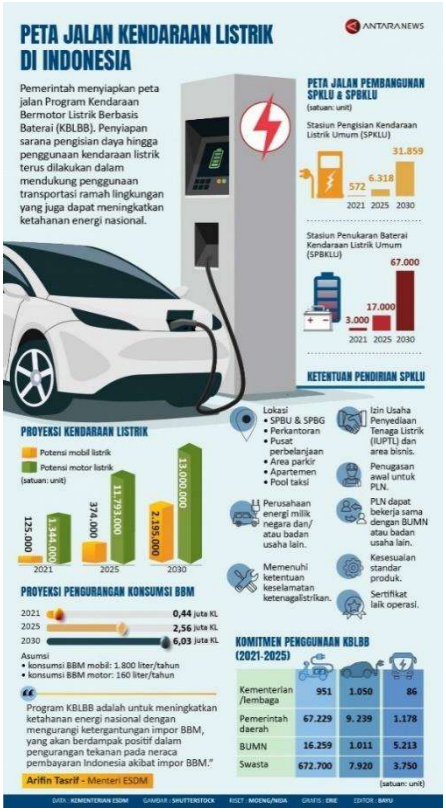
Source: https://jhli.icel.or.id/jhli/article/view/260/124

In the context of electric vehicles, Presidential Regulation Number 55 of 2019 only mentions the importance of recycling without a concrete mechanism that binds manufacturers in the EPR scheme.[77] In article 32 of Presidential Regulation Number 55 of 2019 Acceleration of the Battery *Electric Vehicle* (*BEV)* Program for Road Transportation, it only provides an obligation to appreciate and handle electric vehicle battery waste by recycling and management without an explanation of how the flow and management mechanism will run and be implemented, as for the regulation of the Incentives are only given for the production of electric vehicles,

[77] JDIH BPK, "Presidential Regulation No. 55 of 2019 concerning the Acceleration of the Battery Electric Vehicle Program for Road Transportation T.E.U. Indonesia, Central Government."

there is no special incentive scheme for battery waste management. Meanwhile, regulations that regulate the management of hazardous and toxic waste, namely the Regulation of the Minister of Environment and Forestry Number 9 of 2024, have [78] not been adequate for the management of electric vehicle battery waste because of its larger capacity and scale, so it requires a more specific and directed mechanism to achieve environmental sustainability goals.

Image 3.7




Source : https://www.antaranews.com/infografik/1960608/peta-jalan-kendaraan-listrik-di-indonesia

For more details, a comparison of electric vehicle battery waste management policies, especially in the application of Extended Producer

[78] JDIH, "Regulation of the Minister of Environment and Forestry Number 9 of 2024," Regulation Database | JDIH BPK, 2024, http://peraturan.bpk.go.id/Details/291985/permen-lhk-no-9-tahun-2024.

Responsibility concept as an object of comparison, can be seen through the following table:

Table 3.1 : Comparison of the Implementation of EPR in Electric Vehicle Battery Waste Management Policy between Indonesia and Sweden

| Sweden | Indonesia |
|---|---|
| • Clear and Comprehensive Implementation of EPR: Sweden, as a member of the European Union, implements Directive 2006/66/EC and the most recent Battery Regulation (EU) 2023/1542, which explicitly requires battery manufacturers to take full responsibility for the waste management of electric vehicle batteries throughout the product life cycle | • Commitment to Emission Reduction and Electric Vehicle Transition: Indonesia has ratified the Paris Agreement and drafted NDCs with emission reduction targets, including from the transportation sector through the transition to electric vehicles. The policy of accelerating electric vehicles is regulated in Presidential Regulation Number 55 of 2019. |
| • Take-back Schemes: The EU regulation adopted by Sweden includes battery waste return schemes involving manufacturers. | • There Is No EPR Specific Regulation for Electric Vehicle Battery Waste yet: Although the concept of EPR already exists in the Regulation of the Minister of Environment and Forestry Number 75 of 2019 and Government Regulation Number 27 of 2020, its application is still limited to general plastic and electronic packaging waste, not yet including electric vehicle battery waste specifically. |
| • Incentives for Manufacturers for Eco-Friendly Materials: There is an incentive for manufacturers to use more environmentally friendly materials in the manufacture of batteries. | • Focus on Appreciation and Recycling Without Concrete Mechanisms: Presidential Regulation Number 55 of 2019 only mentions the importance of recycling and appreciating and handling battery waste, without a concrete mechanism that binds producers in the EPR scheme. |
| • Strict and Phased Recycling Targets: The European Union has set ambitious recycling targets, including a recycling efficiency of | • National EV Battery Recycling Capacity Still Nil: The Ministry of Environment (KLH) predicts a significant increase in battery waste |

| | |
|---|---|
| at least 50% for non-NiCd batteries and 80% for NiCd batteries by the end of 2025, as well as a gradual recovery target of critical materials such as lithium, nickel and cobalt until 2031. | in the future, but the national EV battery recycling capacity is still nil. |
| • Mandatory Minimum Use of Recycled Materials: Regulations in Sweden (via the EU) even require the minimum use of recycled materials in new batteries, encouraging a circular economy | • B3 Waste Regulation Is Not Adequate for the Scale of EV Batteries: Regulation of the Minister of Environment and Forestry Number 9 of 2024 regarding B3 waste management is not adequate for the management of electric vehicle battery waste because its larger scale and capacity require a more specific mechanism |
| • Digital Battery Passport: Coming into effect in 2027, the digital battery passport will contain comprehensive information regarding the carbon footprint, material composition, and health status of the battery, which can be accessed via QR codes. This increases transparency and effective oversight. | • Legal Vacancies: There is a legal vacuum in the implementation of EPR in the legal framework for battery waste management for electric vehicles in Indonesia, which can hinder the development of the electric vehicle industry. |
| • Transparent Electronic Reporting System: Sweden is required to establish a transparent and integrated electronic reporting system, as well as report production, collection and recycling data to the European Commission on an annual basis, with publicly available data. | |
| • Tightening Producer Control: Regulations in the EU (and Sweden) are the basis for tightening supervision of electric vehicle manufacturers. | |
| • Long-Term Commitment to Renewable Energy Utilization: Sweden has a long-term commitment to the use of renewable energy that supports the electric vehicle ecosystem. | |

This shows that there is a legal vacuum in the implementation of Extended Producer Responsibility in the legal framework for battery waste management for electric vehicles in Indonesia. This legal vacuum creates uncertainty for manufacturers and can hinder the development of the electric vehicle industry in Indonesia.

Therefore, a comparison between the legal policies of electric vehicle battery waste management in Indonesia and Sweden is important to identify good practices that can be used as a reference in strengthening the national regulatory system.

## B. The Urgency of the Implementation of the EPR Scheme in the Legal Policy of Electric Vehicle Battery Waste Management in Indonesia: Ecocentrism Perspective and Fiqh Rules *Dar'ul Mafasid Muqaddam 'ala Jalbil Mashalih*

In order to realize the goals of the state, the law plays an important role as an instrument to overcome and prevent various problems that can occur. The government, as the representative of the state, carries out the main obligation to ensure the realization of public welfare. Consequently, the protection of citizens' constitutional rights to a good and healthy environment is an integral part of this responsibility. Therefore, any threat or violation of environmental rights requires

active intervention from the state, where attention to environmental sustainability is a concrete manifestation of the state's obligation to prosper its people.[79]

In realizing the value of the normative constitution, law enforcement must be based on the rule of law in order to achieve certainty, justice, order, peace, peace, and welfare. Legal philosophical thinking emphasizes three basic values: justice (just regulations according to the ideals of the law), legal certainty (rules and norms that are legitimate as a means of justice), and legal usefulness (the existence of laws that bring benefits to society).[80] In the context of this study, law enforcement through Extended Producer Responsibility (EPR) regulations for the management of electric vehicle battery waste must consider these three values. The value of justice demands proportional responsibility for producers, the value of legal certainty requires clear and binding regulations, while the value of legal utility refers to the positive impact of battery waste management on the environment and public health in a sustainable manner, in line with the goal of reducing the negative impact of conventional vehicles and supporting the green energy transition.

If we look through the perspective of ecocentrism, this approach puts nature, the environment, and humans in an equally important position. Ecocentrism is a perspective that places the sustainability of ecosystems and life on earth as a whole as the main thing in decision-making and action. This approach emphasizes the importance of maintaining the balance of nature and environmental quality for

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[79] Imam Sukadi et al., "Optimising The Use of Motor Vehicle Emission Tests and Providing Sanctions to Reduce Air Pollution," 2023, http://repository.uin-malang.ac.id/19187/.
[80] Jundiani Jundiani, "Actualization of Antinomy of Philosophical Values Article 33 of the 1945 Constitution," *De Jure: Journal of Law and Sharia* 7, no. 2 (December 1, 2015): 156–69, https://doi.org/10.18860/j-fsh.v7i2.3522.

the sustainability of life in the future. One of the figures of ecocentrism with his concept of "Land Ethic", Aldo Leopold, emphasized that nature must be treated with respect, like humans, because it has its own rights and interests. Leopold invites us to care more and establish relationships that are in harmony with nature. Another figure of ecocentrism, Gary Snyder is also known as a philosopher who supports this view. He emphasized the importance of understanding that humans are part of nature, not separate from it.[81]

In the context of electric vehicle battery waste management, this perspective demands comprehensive protection of ecosystem balance and environmental sustainability, not just focused on human interests alone. The use of electric vehicle technology is one way to reduce carbon emissions and reduce the use of fossil fuels. In Indonesia, the increasing use of electric vehicles shows government and community support for efforts to maintain global environmental sustainability,[82] but the long-term impacts such as the challenges to the management of electric vehicle battery waste have not received enough attention.

From the perspective of ecocentrism, battery waste management is not only about reducing carbon emissions or economic aspects, but also maintaining the function of ecosystems that support the lives of various species. The urgency of legal policies that adopt ecocentrism in Indonesia is also supported by the fact that the country is the world's biodiversity link. Failure to manage battery waste

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[81] Siti Sarah and Radea Yuli A. Hambali, "Ecophilosophy of 'Deep Ecology' Ecocentrism on Deep Ecology Ethics," *Gunung Djati Conference Series* 19 (May 12, 2023): 754–61.

[82] Maria Natasha Rudijanto and Amad Sudiro, "Legality and Safety Regulations of Electric Vehicle Batteries in Indonesia: Challenges and Implementation of National Standards," *Journal of Law, Politic and Humanities* 5, no. 2 (December 27, 2024): 901–8, https://doi.org/10.38035/jlph.v5i2.1065.

sustainably can lead to widespread pollution and disrupt natural habitats, accelerating species loss and degrading the quality of the environment. Therefore, battery waste management policies must be designed with a holistic approach that integrates ecological, social, and economic aspects in a balanced manner for the sustainability of the environment and future generations.

Although currently the negative impact of electric vehicle battery waste management in Indonesia has not been significantly felt, the potential dangers and damages that will arise in the future are very clear and worrying. Electric vehicle battery waste contains toxic chemicals such as cobalt, nickel, and lithium that, if not managed properly, can contaminate soil, water, and air, and threaten human health and ecosystems at large. Therefore, the principle of *Dar'ul mafasid muqaddam 'ala jalbil mashalih*, which is to prioritize the prevention of damage *(mafasid)* rather than the pursuit *of maslahat* is a very relevant philosophical foundation in formulating the legal framework of *ius constituendum* (the law that must be formed) for the management of battery waste.

The rule *of Dar'ul mafasid muqaddam 'ala jalbil mashalih*, which means "preventing harm takes precedence over attracting benefits," is one of the important rules in Islamic fiqh that reflects a preventive approach in the determination of law. In this rule, Islamic sharia gives priority to protection from harm or damage *(mafsadat)* before considering advantages or benefits *(maslahat),* especially when both cannot be realized at the same time.[83] This rule comes from the spirit of the

[83] Suhardi, "Analysis of the Rules of Dar'u Al Mafasid Muqaddamun 'ala Jalbi Al-Mashalih from Epistimological and Axiological Ontological Aspects."

Qur'an and Sunnah in maintaining the five main purposes of sharia *(maqāṣid al-syarī'ah*), namely to protect religion, soul, intellect, descent, and property. One of the verses that strengthens the urgency of decision-making to prevent damage is found in Surah Al-Baqarah verse 195, which reads:

وَلَا تُلْقُوْا بِاَيْدِيْكُمْ اِلَى التَّهْلُكَةِۛ وَاَحْسِنُوْاۛ اِنَّ اللّٰهَ يُحِبُّ الْمُحْسِنِيْنَ ١٩٥

"And do not throw yourselves into destruction" (QS. Al-Baqarah: 195).

This verse is the basis for the prohibition of carrying out actions that cause harm to oneself and society, and is often used as a reference in the context of preventive Islamic legal policies. For example, in the social and governmental contexts, this principle is applied in the prohibition of activities that are disgusting if they have the potential to cause damage in the future. Therefore, the principle *of Dar'ul mafasid muqaddam 'ala jalbil mashalih* is not only normative, but also applicable in various aspects of Islamic law, including in public policymaking, Islamic criminal law, and environmental management, as all of them require a prudent approach in order to maintain order and the public welfare.

This principle emphasizes that although the benefits of electric vehicles in reducing carbon emissions and supporting Indonesia's commitment to the Paris Agreement are enormous, the prevention of the adverse effects of battery waste must be addressed early so that irreparable environmental damage does not occur in the future. If battery waste management is not regulated strictly and systematically from an early stage, the risk of hazardous material pollution will increase along with the rapid growth of electric vehicles in Indonesia. The damage

caused is not only local, but can also disrupt the balance of ecosystems and public health at large.

Therefore, planning regulations for the future *(Ius Constitendum)* before the negative impact or damage that has been predicted actually occurs, it is necessary to have a comprehensive and prevention-oriented legal framework of ius constituendum, which regulates the obligations of manufacturers, mechanisms for collecting, processing, and recycling battery waste in an environmentally friendly manner. Furthermore, the quality of existing regulations in Indonesia is able to promote sustainable development, by paying attention to future aspects.[84] Thus, the potential for mafsadah (damage) can be minimized before the benefits of electric vehicles can really be felt in a sustainable manner.

In addition, the legal framework needs to be supported by clear technical regulations, effective monitoring systems, and public education so that all stakeholders—producers, consumers, and governments—play an active role in preserving the environment. This approach is in line with the fiqhiyah principle that places the prevention of damage as a top priority in policy making, especially in the context of environmental issues that have long-term and cross-generational impacts. By prioritizing the principle of prudence[85] in policymaking, it is a risk management approach by analyzing all risks that can harm society and the environment.

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[84] Jimmy Zeravianus Usfunan and Bagus Hermanto, "The Dynamics of Legislation and Regulatory Approaches in Improving the Quality and Ius of the Indonesian Legislative Constituendum," *Proceeding APHTN-HAN* 2, no. 1 (December 31, 2024): 197–234.
[85] EUR-Lex, Regulation (EU) 2023/1542 of The Euroean Parliament and of The Council.

The urgency of applying the *principles of Dar'ul mafasid muqaddam 'ala jalbil mashalih* in the preparation of the national legal framework *of the ius constituendum* for the management of electric vehicle battery waste in Indonesia is very urgent, considering the potential danger of toxic waste even though the impact has not been felt significantly at this time. This rule of fiqh, which means "preventing harm takes precedence over attracting benefits," became the philosophical and ethical basis for the establishment of comprehensive preventive law. The opportunity to transform Islamic law into national law is supported by Pancasila and the 1945 Constitution which gives an important position to religion, the need to accommodate religious norms in order to foster legal awareness of the Muslim-majority community, the existence of *political will* from the government, and the strong desire of the Indonesian Muslim community to judge according to their faith.[86] As such, a strong and preventive legal framework must be built immediately to prevent clear environmental and health impacts from arising in the future, while ensuring the sustainability of the benefits of electric vehicles and supporting global environmental protection commitments.

In short, although the impact of electric vehicle battery waste is not yet evident at this time, the principle *of Dar'ul mafasid muqaddam 'ala jalbil mashalih* urges Indonesia to immediately build a strong and preventive *legal framework for the constituendum*. This is important to prevent potential environmental and health hazards that are obvious from an early stage, ensure the sustainability of the benefits

[86] Saifullah Saifullah, Mustafa Lutfi, and Abdul Azis, "The Transformation of Islamic Law Values in the Jurisprudence of Constitutional Court Decisions from the Perspective of Integrative Legal Theory," *De Jure: Journal of Law and Sharia* 12, no. 1 (2020): 1–16.

of electric vehicles, and support Indonesia's commitment to global environmental protection. Normatively, this rule becomes an ethical and philosophical foundation in formulating the law to be formed, ensuring that battery waste management is not only driven by economic benefits or technological advancements, but also environmental sustainability and long-term public health.

# CHAPTER IV

# CLOSING

## A. Conclusion

The results of the study show that there is a significant regulatory gap between Indonesia and Sweden regarding the policy of managing electric vehicle battery waste. Sweden, as an EU member state, has implemented *a mature, comprehensive, and binding* Extended Producer Responsibility (EPR) legal framework through *the Battery Regulation (EU) 2023/1542*. These regulations impose full responsibility on manufacturers for the entire product life cycle, from collection to recycling. On the other hand, Indonesia, despite its commitment to accelerate electric vehicles through Presidential Regulation Number 55 of 2019, does not yet have a specific EPR legal framework for waste batteries, thus creating a legal *vacuum*. The urgency to implement the EPR scheme in Indonesia is strengthened by the perspective of ecocentrism that demands comprehensive protection of the ecosystem from the threat of B3 waste, as well as the fiqh rule *of Dar'ul Mafasid Muqaddam 'ala Jalbil Mashalih* which prioritizes the prevention of damage (*mafsadat*) whose impact has been seen in the future rather than the pursuit of benefits (*maslahat*). These two perspectives are the philosophical basis for immediately forming a preventive legal framework (*ius constituendum*) to ensure environmental sustainability.

## B. Suggestion

Based on this conclusion, several suggestions were proposed. First, for the Government, it is recommended to immediately fill the legal gap by formulating specific regulations regarding the management of electric vehicle battery waste based on *Extended Producer Responsibility*. As a legal umbrella, the government can revise or expand the scope of the Regulation of the Minister of Environment and Forestry Number 75 of 2019 concerning the Roadmap for Waste Reduction by Producers and Government Regulation Number 27 of 2020 concerning Specific Waste Management, this regulation focuses more on plastic packaging waste and does not include electronic products or electric vehicle batteries specifically. The new regulation must contain a clear mechanism regarding producer obligations, recycling targets, incentives, and sanctions. Second, for manufacturers, it is advisable not to wait for regulations and start proactively developing collection and recycling systems, as well as working with various parties to build the necessary infrastructure. Third, for academics, further research can be focused on analyzing the economic feasibility of the battery recycling industry in Indonesia, as well as a study on public awareness and participation in supporting sustainable waste management programs.

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