

**Understanding the Future of Electromobility
in EU and ASEAN: A Comparative Legal Perspective**

PhD Dissertation

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SUPERVISOR'S OPINION

on Asrul Ibrahim Nur's PhD dissertation to be submitted for final defence

Debrecen, 24 February 2025

In his dissertation, Asrul Ibrahim Nur examines and compares the role of the European Union (EU) and the Association of Southeast Asian Nations (ASEAN) as regional organisations in regulating electromobility. The identification of appropriate economic (business) solutions and regulatory instruments to combat climate change represents a significant challenge for both international organisations and individual states. In this context, the reduction of emissions from the transportation sector is of paramount importance, and the promotion of electromobility represents a significant opportunity to achieve this goal. The significance of this research topic is evident from both an international and a European perspective. Furthermore, the issue of electromobility provides an ideal subject for a comprehensive comparative analysis of how international organisations, which are in many respects different, can respond to a global regulatory challenge.

The research problem is clearly identified in the dissertation, and the hypotheses and research questions provide an appropriate basis for the targeted comparative analysis. After outlining the conceptual foundations, the substantive chapters of the dissertation delineate the evolution and characteristics of the legal framework in both the EU and ASEAN. The dissertation provides sufficient detail to understand the analysis and conclusions, including the institutional and regulatory characteristics of the two international organisations. It correctly highlights the dominance of hard law regulation in the EU and that of soft law in ASEAN. As part of the relevant regulatory framework, the thesis also presents country examples, including France, Germany, Hungary and Poland for the European Union and Indonesia, Vietnam, Singapore and the Lao People's Democratic Republic for ASEAN.

The final conclusions of the dissertation are based on a creative and comprehensive analysis of the relevant regulatory environment and academic literature. The main scientific value and novelty of the thesis lies in its in-depth legal analysis of electromobility regulation and the presentation of comparative findings on the legal nature and functioning of the two international organisations.

Overall, Asrul's research work demonstrates his ability to identify the main research problems of the examined topic, conduct in-depth research and communicate the findings to the scientific community in a professional manner. As the supervisor of the research, I support the acceptance of the dissertation for the final defence.



Dr. Ildikó Bartha, supervisor

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LIST OF ABBREVIATIONS

AEC	: ASEAN Economic Community
AFID	: Alternative Fuels Infrastructure Directive
AFIR	: Alternative Fuels Infrastructure Regulation
AMS	: ASEAN Member States
APAEC	: ASEAN Plan of Action for Energy Cooperation
ASCC	: ASEAN Socio-Cultural Community
ASEAN	: Association of Southeast Asian Nations
ATB	: ASEAN Taxonomy Board
ATSF	: ASEAN Taxonomy for Sustainable Finance
APSC	: ASEAN Politic and Security Community
BEV	: Battery Electric Vehicle
COP	: Conference of the Parties to the United Nations Framework Convention on Climate Change
DNSH	: Do No Significant Harm (principle)
EED	: Energy Efficiency Directive
EGD	: European Green Deal
EP	: European Parliament
EU	: European Union
EV	: Electric Vehicle
GBER	: General Block Exemption Regulation
GHG	: Green House Gas
IEA	: International Energy Agency
IPCC	: Intergovernmental Panel on Climate Change
KLTSP	: Kuala Lumpur Transport Strategic Plan
NDC	: National Determined Contributions
PHEV	: Plug-in Hybrid Electric Vehicle
RED	: Renewable Energy Directive
ROSI	: Regional Organisation Similarity Index
QELRO	: Quantified Emission Limitation or Reduction Objectives
TFEU	: Treaty of Functioning the European Union
UN	: United Nations
UNFCCC	: United Nations Framework Convention on Climate Change
UNEP	: United Nations Environment Programme
UK	: United Kingdom
USA	: United States of America
WMO	: World Meteorological Organisation

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CHAPTER I: INTRODUCTION

1.1. Research Background

The earth and all of its inhabitants are profoundly impacted by climate change. The average temperature of the entire planet has increased by 1°C, which has led to an increase in the number of natural disasters that have occurred in various regions.¹ Several countries and international organisations have launched campaigns and initiatives intending to reduce emissions and mitigate the effects of climate change. A global legal framework that requires participating governments and countries to commit to decreasing emissions through various measures, including the reduction of emissions from the transport sector, is provided by the United Nations Framework Convention on Climate Change (UNFCCC) and its Protocols. This framework serves as a global legal framework.

Compared to the previous year, the global carbon dioxide emissions caused by the transportation industry demonstrated an increase of 8% in the year 2021.² In addition to being a contributor to the phenomenon of climate change, increased emissions also have a negative influence on the species of humans.³ An assortment of harmful substances, such as carbon dioxide (CO₂), hydrocarbons (HCs), carbon monoxide (CO), sulphur dioxide (SO₂), nitrogen oxides (NO_x), and ammonia (NH₃), are released into the atmosphere by automobiles that run on fossil fuels.⁴ These substances have a negative impact on human health. From the perspective of human rights and climate change, increased levels of air

¹ Intergovernmental Panel on Climate Change (IpCC), *Climate Change 2022 – Impacts, Adaptation and Vulnerability: Working Group II Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, 1st ed. (Cambridge University Press, 2023), 126, <https://doi.org/10.1017/9781009325844>.

² International Energy Agency, Transport: CO₂ emissions from transport rebounded in 2021, returning to their historical growth trend, <https://www.iea.org/reports/transport>, 11 October 2022.

³ European Environment Agency, ‘Explaining Road Transport Emissions: A Non-Technical Guide’ (Copenhagen: European Environment Agency, 2016), 6, <https://doi.org/10.2800/71804>.

⁴ The EU has regulated emissions produced by motor vehicles in several directives. Please see European Union, ‘Directive 2004/107/EC of The European Parliament and of The Council of 15 December 2004 Relating to Arsenic, Cadmium, Mercury, Nickel and Polycyclic Aromatic Hydrocarbons in Ambient Air’ (2004); European Union, ‘Directive 2008/50/EC of The European Parliament and of The Council of 21 May 2008 on Ambient Air Quality and Cleaner Air for Europe’ (2008); European Union, ‘Directive (EU) 2016/2284 of The European Parliament and of The Council 14 December 2016 on on the Reduction of National Emissions of Certain Atmospheric Pollutants, Amending Directive 2003/35/EC and Repealing Directive 2001/81/EC’ (2016).

pollution can lead to violations of the right to a pristine, healthy, and long-lasting ecosystem. This is a problem since air pollution can threaten human rights.⁵

This fact shows that efforts to reduce emissions from the transportation sector are crucial. Electromobility is one of the solutions to reduce emissions from the transportation sector that various countries have enthusiastically adopted.⁶ Electromobility technology is one of the keys to human adaptation to climate change.⁷ Adopting a progressive legal framework at the national and international level is prominent in transforming conventional vehicles into EVs and achieving the goal of reducing carbon dioxide emissions. EVs are the technology trusted to decrease carbon dioxide emissions.⁸ Although they do not instantly solve the problems posed by climate change, EV are more reliable than fossil fuel vehicles.⁹

The advancement of electromobility correlates with the UN Sustainable Development Goals (SDGs), as it significantly contributes to environmental sustainability, economic advancement, and social welfare. SDG 7 (Affordable and Clean Energy) is intrinsically linked to electromobility, as the transition from ICE-powered cars to EV necessitates an increased utilisation of renewable energy sources for electricity generation.¹⁰ By advocating for EV fuelled by renewable energy, nations may diminish their reliance on fossil fuels, decrease carbon emissions, and enhance energy security. Furthermore, SDG 9 (Industry, Innovation and Infrastructure) is bolstered by investments in EV technology, the equalisation of charging networks, and smart grids, which facilitate industrial transformation and technical progress.¹¹ The incorporation of electromobility into transport infrastructure fosters sustainable urban development and enhances economic resilience by generating new business and job prospects in the green technology sector.

⁵ Bridget Mary Lewis, *Environmental Human Rights and Climate Change: Current Status and Future Prospects*, *Environmental Human Rights and Climate Change: Current Status and Future Prospects*, 2018, 2, <https://doi.org/10.1007/978-981-13-1960-0>.

⁶ Patrick Jochem et al., 'The Contribution of Electric Vehicles to Environmental Challenges in Transport', *Transportation Research Part D: Transport and Environment* 64, no. July (2018): 1, <https://doi.org/10.1016/j.trd.2018.06.022>.

⁷ Barry Barton and Peter Schütte, 'Electric Vehicle Law and Policy: A Comparative Analysis', *Journal of Energy and Natural Resources Law* 35, no. 2 (2017): 147–70, <https://doi.org/10.1080/02646811.2017.1262087>.

⁸ Jamie Morgan, 'Electric Vehicles: The Future We Made and the Problem of Unmaking It', *Cambridge Journal of Economics* 44, no. 4 (2020): 953–77, <https://doi.org/10.1093/cje/beaa022>; José M. Cansino, Antonio Sánchez-Braza, and Teresa Sanz-Díaz, 'Policy Instruments to Promote Electro-Mobility in the EU28: A Comprehensive Review', *Sustainability (Switzerland)* 10, no. 7 (2018): 1–27, <https://doi.org/10.3390/su10072507>.

⁹ Barton and Schütte, 'Electric Vehicle Law and Policy: A Comparative Analysis'.

¹⁰ United Nations, 'Transforming Our World: The 2030 Agenda for Sustainable Development (Resolution Adopted by the General Assembly on 25 September 2015)', A/RES/70/1 § (2015), 19, <https://docs.un.org/en/A/RES/70/1>.

¹¹ United Nations, 20.

Electromobility is a crucial facilitator for SDG 11 (Sustainable Cities and Communities)¹² and SDG 13 (Climate Action),¹³ as it directly diminishes air pollution and alleviates the impacts of climate change. The extensive use of electric vehicles in urban transportation, including electric buses and shared mobility services, will diminish car emissions, enhance air quality, and promote public health. Sustainable transportation regulations that prioritise electric vehicles enhance the creation of eco-friendly cities by alleviating traffic congestion and enhancing liveability. Furthermore, SDG 12 (Responsible Consumption and Production) is bolstered by a circular economy framework in the production, recycling, and reuse of EV batteries, hence ensuring sustainable resource utilisation.¹⁴ Achieving these SDGs necessitates a comprehensive approach that integrates legislative frameworks, financial incentives, and technology breakthroughs to facilitate an inclusive and equitable transition to electric transportation, benefiting both developed and developing nations.

Increases in the production of EVs around the world are occurring as a direct result of the growing demand in a number of countries. China, Europe, and the United States of America are the current focal points of attention in the EV market.¹⁵ According to global rankings, both the production and sales of electric vehicles are at their highest levels in these three regions. As of 2021, China, Europe, and the United States continue to have a large impact on the global EVs market. In the past ten years, the number of EVs on the planet has seen a significant increase, as indicated by the data published by the IEA.¹⁶ The following figures illustrate the significant growth in the use of EVs across the globe:

¹² United Nations, 21.

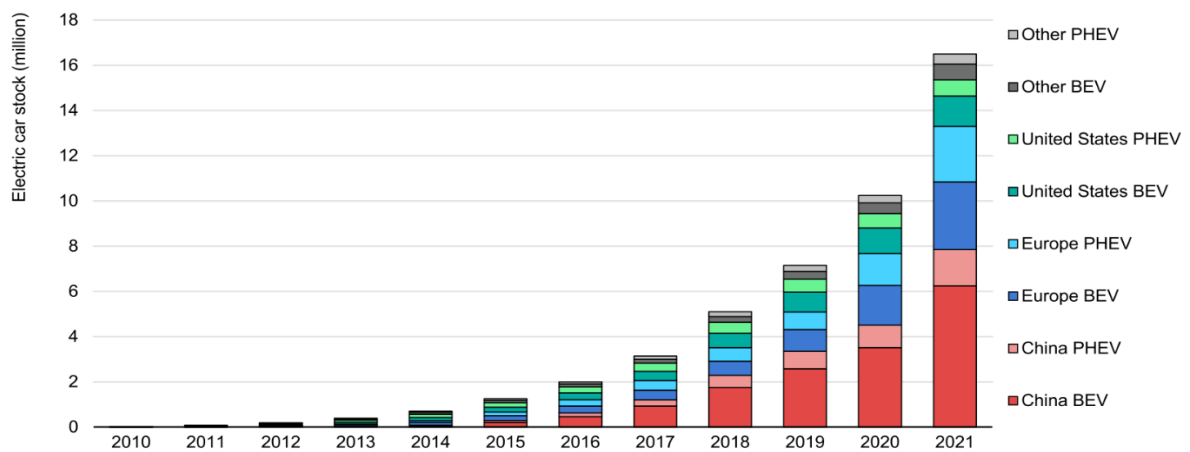
¹³ United Nations, 23.

¹⁴ United Nations, 22–23.

¹⁵ Erika Farkas-csamangó, 'The Legal Environment of Electromobility in Hungary', *Journal of Agricultural and Environmental Law* 28 (2020): 182, <https://doi.org/10.21029/JAEL.2020.28.181>.

¹⁶ International Energy Agency, 'Global EV Outlook 2022 - Securing Supplies for an Electric Future', *Global EV Outlook 2022*, 2022, 14.

Figure 1 EV World Adoption Growth (2010-2021)



Source: IEA (2022)¹⁷

Europe is a region that experienced EV growth in the last ten years, particularly in Nordic countries. In the same year, China had a substantial increase in the sales of EVs, leading to a remarkable total of 2.3 million EVs throughout the country. China's significant expansion has established it as a prominent force in the worldwide EV industry. China accounted for 50% of global electric vehicle sales, including both hybrid and battery-powered cars. This achievement highlighted China's dedication to promoting the use of electric vehicles and decreasing its environmental impact. Conversely, the United States experienced a discernible decrease in EV sales in the later half of 2019. The sole significant deviation from this declining pattern occurred with introducing a fresh Tesla model, which temporarily elevated EV sales. The contrast between the two nations underscores China's assertive drive towards the widespread adoption of electric vehicles, whilst the American market exhibited indications of stalling despite the presence of Tesla.¹⁸

The growth of the EV market in various regions is inseparable from the support of authorities through a legal framework that provides financial and non-financial incentives. In addition, climate targets to reduce emissions from the energy and transport sectors are also influencing authorities to boost the EV industry and public interest in purchasing EVs instead of fossil fuel-based vehicles. EV growth also cannot be separated from the commitment of countries and regions to control emissions under the UNFCCC. EU and US

¹⁷ Europe in this figure including Norway, the United Kingdom, Iceland, and Switzerland. Other in this figure including ASEAN member countries, Australia, India, Japan, Korea, Brazil, Chile, and South Africa.

¹⁸ Jamie Hamilton et al., 'Electric Vehicles', *Electric Vehicles: Setting a Course for 2030* (Deloitte University EMEA CVBA, 2020), 4–5.

are Annex countries in the UNFCCC, while China is not an Annex country. However, China has ratified the UNFCCC following the Kyoto Protocol and the Paris Agreement.

For example, the EU has established a comprehensive set of nine regulations and directives specifically tailored to promote the expansion of the EV market in the region.¹⁹ The legislative measures encompass rigorous pollution requirements, monetary incentives for manufacturers and consumers alike, and steps to construct infrastructure that would facilitate the extensive adoption of electric vehicles. China has implemented a bold strategy, marked by the implementation of assertive laws that provide significant financial support and rewards to encourage the adoption of EVs. The New Energy Vehicle Industry Development Plan has set an ambitious goal for 2020, with the objective of selling 5 million units. This plan showcases China's dedication to establishing itself as a prominent player in the EV industry and aligns with its overarching objective to decrease carbon emissions and address the issue of climate change. Similarly, the United States has adopted China's legislative strategy by introducing subsidies and incentives to encourage the expansion of EVs. These efforts aim to reduce the financial obstacles for consumers and promote the manufacturing and acquisition of EVs, facilitating the shift towards a more environmentally friendly transportation system.²⁰ The EU, China, and the US demonstrate a shared acknowledgement of the vital importance of electric vehicles in attaining environmental objectives and fostering technological advancement in the automotive sector by implementing such laws.²¹

Several Asian countries, such as China and Japan, have adopted the technology to replace conventional fossil-fuel vehicles, which are responsible for a considerable amount of emissions from the transportation sector. EVs that run entirely on electricity will emit no exhaust gases and cause no pollution.²² For instance, since 2015, China has mass-produced EVs, and its domestic market has become one of the largest worldwide.²³ Moreover, China

¹⁹ Mehmet Efe Biresselioglu, Melike Demirbag Kaplan, and Barbara Katharina Yilmaz, 'Electric Mobility in Europe: A Comprehensive Review of Motivators and Barriers in Decision Making Processes', *Transportation Research Part A: Policy and Practice* 109, no. October 2017 (2018): 1–13, <https://doi.org/10.1016/j.tra.2018.01.017>.

²⁰ Tao Wang, 'Recharging China's Electric Vehicle Policy', *Carnegie-Tsinghua Center for Global Policy: Policy Outlook*, no. August (2013): 3.

²¹ Evanthia A. Nanaki, Spyros Kiartzis, and George A. Xydis, 'Are Only Demand-Based Policy Incentives Enough to Deploy Electromobility?', *Policy Studies* 0, no. 0 (2020): 4, <https://doi.org/10.1080/01442872.2020.1718072>.

²² Heidi Auvinen et al., 'Electromobility Scenarios: Research Findings to Inform Policy', *Transportation Research Procedia* 14 (2016): 2565, <https://doi.org/10.1016/j.trpro.2016.05.346>.

²³ Jiuyu Du, Mingguo Ouyang, and Jingfu Chen, 'Prospects for Chinese Electric Vehicle Technologies in 2016–2020: Ambition and Rationality', *Energy* 120, no. 2017 (2017): 586, <https://doi.org/10.1016/j.energy.2016.11.114>.

currently seeks to enlarge the market and strengthen it with the research and development of EV technology.²⁴ On the other hand, Japan has been developing EV technology even with the development of a domestic market that is not as large as China. Nonetheless, Japan has been developing EVs with hybrid car production since 1997.²⁵

In addition to China, Europe, and the USA being major EV producers and markets, another region is predicted to be an up-and-coming producer and market for EV growth. These countries are located in Southeast Asia, which is regionally organized under the ASEAN organisation. ASEAN member countries are the third largest trading partners for the EU after the USA and China.²⁶ Therefore, the relationship between ASEAN and the EU is very politically and economically strategic. ASEAN predicted it will be a centre of EV production and market in 2040.²⁷ Thus, ASEAN must adopt appropriate legal instruments to grow low-carbon vehicles.

Nevertheless, ASEAN demonstrates unique organisational traits in contrast to the EU. ASEAN operates on a consensus-based approach compared to the EU's system, which enforces conformity through directly applicable legislative instruments or requires the adoption of directives into national legislation. Consequently, the legal structure of ASEAN possesses a different degree of coercive authority to enforce consistent adherence across its member states. As a result, the obstacles and regulatory restrictions to the advancement and expansion of EVs in ASEAN are significantly more challenging to overcome. Each member state maintains considerable independence in determining its national policies, resulting in a diverse and varied regulatory environment. The region's diversity makes developing a unified strategy for promoting EVs is challenging. Moreover, mandatory instructions are necessary for the creation of shared norms and motivations that are essential for promoting the use of electric vehicles. The issues are worsened by the differing degrees of economic growth, infrastructure preparation, and policy priorities among ASEAN countries.²⁸ Consequently, whilst the EU may utilise its legal instruments to promote coordinated

²⁴ Du, Ouyang, and Chen, 589.

²⁵ Karol Tucki, Olga Orynycz, and Mateusz Mitoraj-Wojtanek, 'Perspectives for Mitigation of CO2 Emission Due to Development of Electromobility in Several Countries', *Energies* 13, no. 6 (2020): 3, <https://doi.org/10.3390/en13164127>.

²⁶ Xavier Nuttin, 'The Future of EU - ASEAN Relations' (Directorate-General for External Policies, European Parliament, 2017), 25, <https://doi.org/10.2861/784770>.

²⁷ Youngho Chang and Yanfei Li, 'Electric Vehicles and Energy Insecurity in ASEAN Countries: Renewable Energy Integration and Urban Air Quality' (Asian Development Bank Institute, 2019), 3, <https://www.adb.org/publications/electric-vehicles-energy-insecurity-asean-countries>.

²⁸ Art. 288 European Union, 'Consolidated Version of The Treaty on The Functioning of The European Union', The Treaty on The Functioning of The European Union § (1957), http://data.europa.eu/eli/treaty/tfeu_2012/oj.

advancement in the EV industry, ASEAN faces the challenge of managing a complicated interaction of individual countries' interests and capacities, which makes the goal of attaining universal EV expansion considerably more difficult.

Regional organisations such as the EU and ASEAN are crucial in building the electromobility ecosystem. The EU and ASEAN have a shared vision and goal regarding energy transition targets, namely in the advancement of electromobility. Nevertheless, their methodologies differ considerably from a legal perspective. This discrepancy is closely connected to the fundamental disparities in the structure of their legal and regulatory frameworks and their integration features.

The EU's approach is distinguished by a solid and unified legal framework that guarantees consistency and adherence across its member states. This is accomplished by implementing binding regulations and directives that have universal application to all member states or require the enactment of national legislation following EU requirements. This framework enables a synchronised and standardised progress of electromobility throughout the region.

ASEAN, in contrast, functions based on a consensus-based model that emphasises voluntary cooperation and mutual agreement among its member states. This model exemplifies ASEAN's focus on upholding national sovereignty and accommodating various political and economic circumstances. As a result, the legal instruments of ASEAN possess a different level of enforceability than those of the EU, which results in a more fragmented approach to the development of electromobility. Member states have a significant amount of independence in creating their policies and regulations, which leads to a diverse environment. This diversity creates substantial difficulties in establishing a unified electromobility ecosystem.

The legislative and regulatory assimilation disparities between the EU and ASEAN highlight the intricacy of promoting electromobility in diverse regional settings.²⁹ The EU's centralised approach facilitates consistent advancement, whereas ASEAN's decentralised model requires increased coordination of individual national efforts to attain shared energy transition objectives.

The reduction of emissions from the energy and transport sectors will largely depend on the development of electromobility, especially the growth of EV adoption by the public.

²⁹ Fabio Indeo, 'ASEAN-EU Energy Cooperation: Sharing Best Practices to Implement Renewable Energy Sources in Regional Energy Grids', *Global Energy Interconnection* 2, no. 5 (2019): 395, <https://doi.org/10.1016/j.gloi.2019.11.014>.

The role of laws and regulations adopted by regional organisations such as the EU and ASEAN will influence the development of EV production and market both in the region and the world. Therefore, it is essential to conduct a study on the role of regional organisations in climate change mitigation, especially in facilitating the growth of EV production and market through the adoption of various legal instruments. This study will provide an understanding of the future of electromobility through a comparison of legal instruments adopted by regional organisations, namely the EU and ASEAN.

1.2. Problem Statement

This study begins with the understanding that factual conditions related to electromobility occur in the EU and ASEAN. The EU and ASEAN are regional organisations with relatively similar characteristics regarding geography, history, legal system, governance system and climate change impacts. Geographically, both the EU and ASEAN member states are located on continental land, and there are also archipelago countries. The EU and ASEAN have historically experienced traumatic colonisation, increasing solidarity between nations. Historically, both organizations were born out of the need to promote peace and stability after periods of conflict. On the one hand, the EU emerged after World War II, with the aim of preventing further wars through economic integration. The trauma of the Nazi occupation increased the solidarity of the countries in Europe to prevent a repetition. ASEAN was established during the Cold War to promote regional stability and prevent the spread of communism, which later transitioned towards economic and socio-cultural cooperation. The trauma of colonialism by the British, French, Spain, Netherlands, USA, and Japan led to the establishment of ASEAN while maintaining the national sovereignty of each member state.

From a legal system standpoint, both the EU and ASEAN adopt treaties as the foundational legal framework for regional cooperation. In the case of the European Union, these founding treaties (in their current versions) are the Treaty on European Union (TEU) and the Treaty on the Functioning of the European Union (TFEU).³⁰ Regarding ASEAN,

³⁰ The existence of two EU Treaties follows a functional explanation: the Treaty on European Union (TEU) contains the general provisions defining the Union (including its values, objectives and main constitutional principles), while the Treaty on the Functioning of the European Union (TFEU) contains the specific provisions relating to the Union's institutions and policies. [Robert Schütze *European Union Law* Fourth Edition (Oxford, Oxford University Press, 2025), also available on the companion website of the book <https://european-union-law.schutze.eu/chapter/appendix-how-to-study-european-law/how-to-find-the-eu-treaties/>]

these founding documents are the ASEAN (or Bangkok) Declaration, which established the organization itself, and the ASEAN Charter, which has significantly broadened and deepened cooperation among its member states. Both organisations provide structures that govern the collaboration of their member states. Nevertheless, the EU constitutes a binding supranational model, whilst ASEAN prioritises consensus and intergovernmental decision-making. Regarding the governance system, the EU and ASEAN emphasise regional cooperation among member states through established institutions whose competences and decision-making procedures are regulated by the founding treaties of the organizations. Nonetheless, significant distinctions exist, since the EU employs a supranational framework, whilst ASEAN emphasises intergovernmental consensus and principles of non-interference. Regarding climate change impacts, the two regions also experience similar conditions.

Despite having many similarities, the EU and ASEAN have different types of regional integration. Furthermore, this type has an impact on mitigating climate change impacts, such as reducing emissions at each member state's regional and national levels. It also includes the development of electromobility and the growth of EV adoption by the public. Therefore, there is a gap between the EU and ASEAN from the perspective of electromobility development and growth. There are two perspectives to examine the phenomenon. The first perspective is that the distinction in regional integration situations is a preference between strong and weak integration. The consequence of this perspective is that the EU and ASEAN are at two opposite and conflicting Polarities. Second, the difference in regional integration between the EU and ASEAN is a preference variation. Therefore, the form of integration adopted by the EU or ASEAN cannot be contradicted, and each variant has advantages and limitations. The advantages and limitations of each type of regional integration provide opportunities for cooperation between regional organisations.

Variations in the types of regional integration, especially in the political and legal contexts, influence the legal instruments adopted to regulate public affairs. The context of this research is to focus on the issue of electromobility to mitigate and address the impacts of climate change through the reduction of carbon emissions. Therefore, political and legal integration will influence the legal instruments adopted to regulate electromobility. Therefore, a comparative study between the EU and ASEAN from a legal perspective was conducted to understand the prospects for the development and growth of electromobility under variations in the modes of regional integration and the legal instruments adopted.

1.3. Research Questions and Hypothesis

This research will answer three main research questions to sharpen the research analysis. The problem formulations are as follows:

Q1: How did the EU and ASEAN electromobility legal framework develop?

Q2: How does variation in regional integration and choice of legal instruments affect electromobility development?

Q3: Does the legal framework of regional organisations such as the EU and ASEAN influence electromobility development in member states?

Based on the background of the study and the problem statement previously described, this dissertation builds the following hypotheses:

H1: The level of integration within regional international organisations influences the preferred legal instruments for regulating electromobility.

H2: The degree of bindingness of the preferred type of legal instruments adopted by regional organisations correlates with the development and growth of electromobility in member states.

1.4. Research Scope

This research presents a comparative analysis of the role of the EU and ASEAN as regional organisations in regulating electromobility. As legal research, the primary source of documents to be studied is the legal instruments adopted by the EU and ASEAN. In addition, this research will also take references from books, articles in scientific journals, reports, and other relevant documents. Case law from various jurisdictions will also be referred to provide a comprehensive understanding.

However, there are several limitations the scope of this research. Firstly, the EU and ASEAN adopted the legal documents studied for directly regulating electromobility. Therefore, the scope of this research will expressly be limited to the legal instruments addressing climate change, renewable energy, energy efficiency, vehicle emissions, sustainable investment, and building performance. All of these six aspects have a significant direct influence on the development of electromobility.

Second, this research will analyse legal instruments adopted by the EU and ASEAN as regional organization. Therefore, if a description of legal instruments other than those in

these jurisdictions is provided, it will only supplement the discussion and add the necessary information. However, this research will still utilise case law from other courts to provide a broader understanding of cases that may arise in electromobility.

Third, to sharpen the analysis and discussion, this study will also discuss the laws and regulations on electromobility in EU and ASEAN member states. This study selectively chooses France, Germany, Hungary, and Poland as the EU member states to be discussed. The ASEAN member countries selected for this study are Indonesia, Singapore, Vietnam, and Laos.

1.5. Research Methodology

This legal research dissertation applies a comparative legal research method with a law-in-context approach. The consequence of using the comparative law method and law-in-context approach is that this dissertation must be separate from other methods and techniques but instead complement each other.³¹ Therefore, as legal research that interprets legal documents, this dissertation also involves legal doctrinal research methods, namely, interpreting legal texts, building legal arguments, and explaining the validity and relevance of logical and normative legal texts.³² In addition, this research will strengthen the argumentation by using statistical data, historical facts, and research results from other relevant disciplines.

The type of comparison used in this dissertation research is the comparison of laws and regulations in force between two legal systems (*de lege lata/de lege lata* comparison).³³ This dissertation uses a comparative law research method to explain the differences and similarities between two legal models and contribute knowledge to them.³⁴

Operationally, this research was conducted using library research both online and in various libraries. Library research was conducted mainly at *Debreceni Egyetem Egyetemi és*

³¹ Mark Van Hoecke, 'Methodology of Comparative Legal Research', *Law and Method*, 2016, 279–301, <https://doi.org/10.5553/rem/.000010>; Christian Von Bar, 'Comparative Law of Obligations: Methodology and Epistemology', in *Epistemology and Methodology of Comparative Law*, ed. Mark Van Hoecke (Oxford and Portland: Hart Publishing, 2004).

³² Mark Van Hoecke, *Methodologies of Legal Research, Which Kind of Method for What Kind of Discipline?*, ed. Mark Van Hoecke, *Methodologies of Legal Research*, vol. 9 (Oxford: Hart Publishing, 2014).

³³ Juha Karhu, 'How to Make Comparable Things: Legal Engineering at the Service of Comparative Law', in *Epistemology and Methodology of Comparative Law*, ed. Mark Van Hoecke (Oxford and Portland: Hart Publishing, 2004), 80.

³⁴ Geoffrey Samuel, *An Introduction to Comparative Law Theory and Method* (Oxford and Portland: Hart Publishing, 2014), 45.

Nemzeti Könyvtár (DEENK) or online by accessing databases provided on the website. Official EU legal documents are accessed through the website <https://eur-lex.europa.eu/>, and official ASEAN legal documents are accessed at <https://asean.org/legal-instruments-database/>. In the preliminary research conducted, it was found that not all ASEAN legal instruments are available on the organization's official website. Therefore, this research also uses an alternative legal database provided by the Centre for International Law, National University of Singapore (CIL NUS) through the website <https://cil.nus.edu.sg/database-cil/>.

The research identifies the legal instruments the EU and ASEAN adopted to regulate electromobility. Subsequently, each legal instrument was analysed to learn its differences and similarities. The analysis at this stage sought to answer the first research question (Q1). The study was conducted doctrinally and comparatively by building logical normative arguments. Furthermore, to answer the second (Q2) and third (Q3) research questions, the theories of regional integration and hard and soft law in international organisation legal framework are applied.

The analysis and discussion are conducted qualitatively by describing and evaluating each legal instrument on electromobility adopted by the EU and ASEAN.³⁵ The analysis stage will also contextualise the legal instruments in the factual conditions in the EU and ASEAN. Furthermore, the research will conclude and provide recommendations on the research results.

1.6. Research Structure

This dissertation consists of six chapters. Chapter I, Introduction, addresses the research background, hypotheses, research questions, research methods, and dissertation structure. Chapter II centres on the theoretical framework, encompassing the precise definition of electromobility, the interrelation between climate change, energy transition, and electromobility, and the facets of energy justice and sustainability in electromobility. This chapter also explores the process of regional integration and the utilisation of obligatory and non-obligatory legislative tools within the legal structure of international organisations.

The development of electromobility in the EU and ASEAN will be addressed in Chapter III and Chapter IV. Each chapter will discuss the dynamics of energy policy at the

³⁵ Ian Dobinson and Francis John, 'Qualitative Legal Research', in *Research Methods for Law*, ed. Mike McConville and Wing Hong Chui (Edinburgh: Edinburgh University Press, 2007).

regional level, the legal framework on electromobility, and the legal framework for electromobility in EU and ASEAN member states. Chapter V will discuss the significance and nexus between the EU and ASEAN legal frameworks on electromobility. This section will specifically discuss climate change mitigation and adaptation, cooperation between the EU and ASEAN and the role of regional organisations and their member states.

Chapter III and Chapter IV will discuss the progress of electromobility in the EU and ASEAN. Each chapter will analyse the dynamics of energy policy at the regional level, examine the legal framework on electromobility, and explore the legal framework for electromobility in member states of the EU and the ASEAN. Chapter V will compare the EU and the ASEAN legal frameworks regarding electromobility. This chapter also investigates the advantages and disadvantages of the strategies that the EU and the ASEAN have implemented to encourage the usage of electric vehicles. This chapter looks at the many types of regional integration that exist. It will also examine the role of regional organisations and their member nations in addressing climate change. The findings of the current research will be discussed in detail in the sixth chapter, which will conclude the study findings. In addition, this chapter will present the findings of the research as well as the recommendations for the forthcoming research.

CHAPTER II: THEORETICAL FRAMEWORKS

2.1. Introduction

This chapter thoroughly investigates the fundamental concepts and theories underpinning the research. Clarifying and defining certain concepts used in this dissertation is crucial to ensure clear and precise expression of perspectives. This chapter provides a fundamental explanation, outlining the theoretical and conceptual frameworks that direct the research and writing processes of the dissertation. The chapter thoroughly describes these fundamental principles, establishing a logical framework that supports the methodological approach and analytical tactics used in the following parts. In addition, this chapter provides a context for the research by placing it within the existing academic discourse. Furthermore, this chapter discusses a crucial analysis that improves the reader's comprehension of the dissertation's conceptual foundations and emphasises the research's scholarly rigour and methodological validity.

This section will explain and discuss the concept of electromobility, as well as the relationship between climate change, energy transition, and electromobility. It will also explain the aspects of energy justice and sustainability in electromobility. The last section will explain the comparative studies between the EU and ASEAN conducted by scholars from various disciplines. Finally, this section will discuss regional integration and international organisations' adoption of hard and soft law.

This section will explain the concept of electromobility and facilitate a conversation on the topic. In addition, this chapter will also go into further depth on the interrelationship between climate change, energy transition, and electromobility. Moreover, the aspects of energy justice and sustainability in electromobility will be explained in detail in this part. With a particular emphasis on the EU and the ASEAN, the concluding section will describe the comparative analyses conducted by academics from various other fields. The topic of regional integration and the adoption of hard and soft law by international institutions will now be discussed in this section.

All the related problems examined and discussed in this chapter are crucial to the debates of this dissertation study. Hence, this part will strive to elucidate them comprehensively from a legal perspective and other pertinent fields of study. This chapter

aims to establish clear definitions and constraints for the concepts and theories utilised in this research. These constraints are implemented to narrow down the scope of the study and provide practical answers to the research questions while validating the hypotheses.

2.2. Defining the Electromobility

The notion of electromobility will be comprehensively explained in this section, which will explain the overall concept. The scope of this chapter includes historical and legal issues, as well as the challenges and opportunities associated with the development of electromobility to mitigate and adapt to the effects of climate change. Furthermore, this section is an attempt to understand the idea of electromobility, which is being employed in the study for this dissertation.

The technology behind electric cars has not emerged in recent times. In 1828, Jedlik Ányos, a Benedictine monk and Hungarian engineer, was the one who initially invented the technology.³⁶ Following that, scientists made advancements in technology by tapping upon the knowledge and experience of people from other nations, such as Thomas Parker (from the United Kingdom in 1884), Camille Jenatzy (from Belgium in 1899), and A.L. Ryker and William Morrison (from the USA in 1891).³⁷ However, as a consequence of widespread oil well exploration and the development of processing technology to transform oil into car fuel, the majority of countries around the world inevitably gave up on electric vehicle technology.³⁸

Electric mobility, sometimes called electromobility, is a complex concept that combines the transportation, energy, and environmental sectors to combat the effects of climate change. Electromobility is also commonly known as e-mobility or electric mobility. The objective of electromobility is to facilitate the transportation of passengers or cargo through vehicles powered by energy obtained from sources that are less harmful to the environment.³⁹ Therefore, electromobility comprises not only EVs but also the different

³⁶ Farkas-csamangó, 'The Legal Environment of Electromobility in Hungary', 182.

³⁷ Joeri Van Mierlo, 'The World Electric Vehicle Journal, the Open Access Journal for the e-Mobility Scene', *World Electric Vehicle Journal* 9, no. 1 (2018): 1–5, <https://doi.org/10.3390/wevj9010001>; C. C. Chan, 'The Rise & Fall of Electric Vehicles in 1828-1930: Lessons Learned', *Proceedings of the IEEE* 101, no. 1 (2013): 206–12, <https://doi.org/10.1109/JPROC.2012.2228370>.

³⁸ Chan, 'The Rise & Fall of Electric Vehicles in 1828-1930: Lessons Learned'.

³⁹ Shashank Arora et al., *Heavy-Duty Electric Vehicles: From Concept to Reality*, *Heavy-Duty Electric Vehicles: From Concept to Reality* (Oxford: Elsevier and Butterworth-Heinemann, 2021), 1, <https://doi.org/10.1016/B978-0-12-818126-3.09995-4>.

industries involved in the full ecosystem of electric vehicles, ranging from production to distribution. In the realm of electromobility, there are several essential aspects to consider, including concerns surrounding batteries, the availability of charging infrastructure, adherence to safety and security requirements, compliance with environmental standards, and the correct disposal of batteries.⁴⁰

Each nation's legal system's specific criteria and objectives have a role in determining which legal systems recognise electromobility. As an indication, the EU has designated it as low-emission mobility, and the ASEAN has mainly adopted the word sustainable land transport to refer to electromobility.⁴¹ These designations are examples of how the EU and ASEAN have recognised the importance of electromobility. A transport ecosystem that is environmentally sustainable and marked by low emissions is a concept shared by the EU and the ASEAN. Both of the regional organisations use terminology that pertains to this concept. Therefore, to build an electromobility legal ecosystem, both the EU and ASEAN not only adopt legal instruments on transportation. Other legal instruments on renewable energy, energy efficiency, vehicle emission standards, emission reduction targets, and building standards are also integral to the electromobility regulatory ecosystem.

The fundamental goal of developing electromobility is to produce environmental benefits, notably through the reduction of emissions.⁴² Therefore, it is imperative that all industries engaged with electromobility match their activities with the goals of climate change mitigation. There is a significant cause for concern over the use of metal in the manufacturing of batteries for EVs.⁴³ Unfortunately, the mining process for metal ores, such as nickel and manganese, did not contribute to protecting the environment. For instance, the extraction of nickel for use in EV batteries has a negative influence on the availability of clean water for the people living in Indonesia, which produces the most nickel globally.⁴⁴

⁴⁰ Farkas-csamangó, 'The Legal Environment of Electromobility in Hungary'; Asrul Ibrahim Nur, 'The Limits of Indonesia's Legal Framework for Electromobility: Regulatory and Sustainable Issues', *Lentera Hukum* 9, no. 2 (2022): 211, <https://doi.org/10.19184/ejlh.v9i2.31200>.

⁴¹ European Commission, 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions', A European Strategy for Low-Emission Mobility § (2016); ASEAN, *Sustainable Land Transport Indicators on Energy Efficiency and Greenhouse Gas Emissions in ASEAN*, 2019.

⁴² Krystian Pietrzak and Oliwia Pietrzak, 'Environmental Effects of Electromobility in a Sustainable Urban Public Transport', *Sustainability (Switzerland)* 12, no. 3 (2020): 4, <https://doi.org/10.3390/su12031052>.

⁴³ Martin Schröder and Fusanori Iwasaki, 'From Nickel to Electric Cars? Indonesia's Resource Cum Automotive Industry Policy', *Journal of the Asia Pacific Economy*, 2023, 1–22, <https://doi.org/10.1080/13547860.2023.2231192>.

⁴⁴ Rodrigo Castillo, Lilly Blumenthal, and Caitlin Purdy, 'Indonesia's Electric Vehicle Batteries Dream Has a Dirty Nickel Problem', 2022, <https://www.brookings.edu/blog/up-front/2022/09/21/indonesias-electric-vehicle-batteries-dream-has-a-dirty-nickel-problem/>.

Since it is environmentally friendly, electromobility is usually considered a sustainable transportation strategy over the long term. However, if it did not prioritise environmental sustainability and adhere to climate targets, electromobility would no longer possess the sustainability attribute it already possesses. As a consequence, electromobility will not be able to achieve its primary goal of contributing to sustainable development. Therefore, electromobility inherently poses both risks and opportunities, particularly with regard to the accomplishment of climate-related goals.

As electromobility becomes more widespread, potential hazards are associated with environmental and energy-related factors. To facilitate the widespread use of EVs, it is vital to have a reliable and constant supply of power obtained from renewable sources. In the absence of power plants using clean energy as their primary energy source, the amount of emissions produced will remain the same.⁴⁵ In the other direction, there will be an increase in the emissions produced by the power plant sector and an increase in the demand for electricity from EVs. The potential for an increase in demand for coal and other conventional primary energy sources is something the energy sector, including power plants, will have to look out for. By implementing this scenario, the development of electromobility will serve as a driving force behind the increased utilisation of fossil fuels.

On the other hand, the development of electromobility offers the possibility of accelerating the transition to sustainable energy and reducing carbon emissions. Electromobility also has the potential to improve energy security and resilience, mainly through the reduction of fossil fuel usage in vehicles.⁴⁶ Another potential path for improvement is energy efficiency, which can result in cost savings. This is especially effective in building oil processing facilities, distributing fuel oil, and reducing dependence on oil imports for nations that are net importers of oil.⁴⁷

When it comes to the development of electromobility, the legal framework in national and regional jurisdictions is a significant factor. There will be strong ties between the law regulating electromobility and energy and the environment, particularly concerning climate change.⁴⁸ As a result, the regulatory framework that pertains to electromobility can be categorised as a component of both energy law and climate law. Laws on electromobility

⁴⁵ Tucki, Orynych, and Mitoraj-Wojtanek, 'Perspectives for Mitigation of CO2 Emission Due to Development of Electromobility in Several Countries'.

⁴⁶ Biresselioglu, Kaplan, and Yilmaz, 'Electric Mobility in Europe: A Comprehensive Review of Motivators and Barriers in Decision Making Processes', 2.

⁴⁷ Barton and Schütte, 'Electric Vehicle Law and Policy: A Comparative Analysis', 3.

⁴⁸ Raphael J. Heffron, *Energy Law: An Introduction* (Cham: Springer Nature Switzerland, 2021), 3.

are closely connected to political, economic, and environmental activities that foster an environment that encourages the preference for EVs over conventional automobiles. Electromobility laws are inseparable from political, financial, and environmental strategies to create an ecosystem that enables the public to choose EVs over traditional vehicles.⁴⁹ The character of electromobility regulation is inseparable from the complexity of actors and stakeholders in electromobility.

Thus, electromobility can be defined as a sustainable ecosystem that integrates from upstream to downstream of the transportation sector, the utilization of renewable energy, the application of alternative fuels, the provision of incentives, and the deployment of environmentally friendly components in electric vehicle manufacturing. The discussion on electromobility is not only about the number of EVs adopted by the public, but also about the type of primary energy used by power plants. The use of renewable energy by power plants is one of the important elements in building an electromobility ecosystem in a country. The development of electromobility plays an important role in the energy transition, especially the transition from fossil fuels to renewable energy. The application of this integration should be regulated in a cross-sectoral and even cross-country legal framework to develop an integrated and sustainable ecosystem.

2.3. Climate Change and Energy Transition

This section will primarily discuss climate change and the international legal system governing this matter. A scientifically sound set of sources will be utilised to shed light on the threat posed by climate change. As a consequence of the factual impact that climate change has had on humanity, several international legal frameworks have been adopted, which has led to the formation of global climate change law. The UNFCCC, the Kyoto Protocol, and the Paris Agreement will be discussed in this section's examination, which will also focus on international legal systems related to climate change. These three international legal instruments serve as the primary references for the development of climate change law worldwide, notably in the EU and the ASEAN.

⁴⁹ Barton and Schütte, 'Electric Vehicle Law and Policy: A Comparative Analysis'.

2.3.1. Climate Change and International Legal Instruments

This section will focus on climate change and the international legal regime that regulates the phenomenon. The climate change threat will be explained based on scientifically valid sources. Climate change, which has factually impacted humans, has been responded to by adopting various international legal instruments and establishing the climate change law on a global scale. Therefore, the analysis in this section will also discuss international legal instruments on climate change, namely the UNFCCC, Kyoto Protocol, the Paris Agreement, and the Glasgow Climate Pact 2021. These three international legal instruments are the primary references in the development of climate change law globally, including in the EU and ASEAN.

The UNFCCC, adopted in 1992, established a global framework for addressing climate change, emphasizing the principle of common but differentiated responsibilities. Subsequently, in 1997 the Kyoto Protocol was agreed with the aim of building on the UNFCCC by setting binding emission reduction targets for developed countries. However, the protocol had limitations as it excluded developing countries from binding commitments. The Paris Agreement enhanced the Kyoto Protocol by introducing a more inclusive framework, with all countries committing to Nationally Determined Contributions (NDCs) aimed at limiting global warming to below 2°C. Subsequently, at COP 26 in 2021 in Glasgow, UK, the Glasgow Climate Pact was adopted upon in an effort to press for stronger commitments to reduce emissions, increase adaptation finance, and phase down fossil fuel subsidies. These legal instruments demonstrate the growing global effort to combat climate change through multilateral cooperation and ambition.

The emission of carbon dioxide brings about the phenomenon known as climate change due to the actions of humans in various sectors. Deforestation, the conversion of land to other uses, and the usage of fossil fuels are the key factors contributing to the increase in carbon emissions.⁵⁰ The cumulative impact of direct and indirect human activities over an extended period is the fundamental factor driving climate change. Furthermore, there is a clear connection between the increased emission of pollutants resulting from human activities and the deteriorating effects of climate change on the environment. This

⁵⁰ Friedrich Soltau, *Fairness in International Climate Change* (Cambridge: Cambridge University Press, 2009), 21.

circumstance presents a conundrum because the expansion of the economy requires human activities that produce emissions⁵¹

In 1988, the UN and the WMO initiated the process of establishing the IPCC, which was established to work on climate change. Each year, this panel brings together scientists from various countries to discuss various topics. One of their primary goals is to develop a report that can be used as a standard for evaluating the effects of climate change on a worldwide scale.⁵² In 1990, the IPCC launched its first report, which created a common understanding of the scientific information concerning climate change.⁵³ Since then, the IPCC Reports, which are released annually, have become the standard for evaluating the effects of climate change on a global scale. The Reports incorporate recommendations for policymakers worldwide to address and mitigate the effects of climate change.

There is a wide range of variations in the consequences of climate change on different parts of the planet. As a result of climate change, Europe is exposed to four key dangers. Temperatures that are far higher than average are a source of concern since they can cause deaths among people. In addition, the unpredictability of the weather poses an additional threat to the production of agricultural goods. Similar to the United States, the countries of Europe are in danger of witnessing a decline in both the amount and quality of their water supply. The last threat is the rise in sea levels and the flooding that will occur due to river surges becoming more severe.⁵⁴ Compared to other regions, Europe demonstrates a higher level of resistance to the effects of climate change.⁵⁵ On the other hand, the capacity to recover from hardship has its limits; hence, it is of the utmost importance to mitigate and control the effects of climate change.

Compared to Europe, Asia, which is a region substantially impacted by climate change, is in a more precarious position. There is a possibility that the area will see a loss of biodiversity in several different marine and terrestrial areas. There is a possibility that the majority of Asian countries may lose their water sources, which may include rivers and icebergs. As a result of shifting weather patterns, other issues include the restricted

⁵¹ Soltau, 21.

⁵² United Nations, 'UN General Assembly Resolution 43/53', 1988.

⁵³ Joyeeta Gupta, 'A History of International Climate Change Policy', *Wiley Interdisciplinary Reviews: Climate Change* 1, no. 5 (2010): 637, <https://doi.org/10.1002/wcc.67>.

⁵⁴ B Bednar-Friedl et al., 'Europe', in *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, ed. H-O Pörtner et al. (Cambridge and New York: Cambridge University Press, 2022), 1817–1927, <https://doi.org/10.1017/9781009325844.015>.

⁵⁵ Bednar-Friedl et al.

availability of food and the increasing complexity of creating renewable energy. Both of these challenges are a result of climate change. The possibility of home loss as a consequence of constructions that are not sustainable is another aspect that is impacted by climate change. In addition to the increased risk of contracting tropical diseases like dengue fever and malaria, there is also an increased likelihood of contracting these diseases.⁵⁶

The Southeast Asian region is especially vulnerable to the effects of climate change because of its large population.⁵⁷ This global event has most heavily impacted the nations of Myanmar, the Philippines, Thailand, and Vietnam. In addition, the changes brought about by climate change impact the economy.⁵⁸ The effects of climate change on agricultural productivity, fisheries, infrastructure development, energy, and transportation are gradually causing economic losses for the ASEAN states.

The UNFCCC has highlighted the effects of climate change, notably on the health and well-being of humans.⁵⁹ In addition, there are significant repercussions for human rights associated with climate change. There is a risk that climate change may negatively impact people's quality of life, their capacity to access clean water, and their ability to take pleasure in an environment that is pristine and healthy. A further consequence of this phenomenon is that it interferes with people's entitlement to food.⁶⁰ A study published by the United Nations Environment Programme (UNEP) explicitly recognizes that climate change affects the actualization of human rights in various contexts.⁶¹

Various initiatives are being taken at the national and international levels to mitigate and address the impacts of climate change. One of these efforts is to reduce the production of carbon emissions from various sectors. The energy and transport sectors contribute to 73.2% of global emissions.⁶² Therefore, reducing emissions from the energy and transport

⁵⁶ R. Shaw et al., 'Asia', in *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, ed. H-O Pörtner et al. (Cambridge and New York: Cambridge University Press, 2022), 1457–1579, <https://doi.org/10.1017/9781009325844.012>.

⁵⁷ Indra Overland et al., *Impact of Climate Change on ASEAN International Affairs: Risk and Opportunity Multiplier* (Norwegian Institute of International Affairs and Myanmar Institute of International and Strategic Studies, 2017).

⁵⁸ Rajah Rasiah et al., 'Climate Change Mitigation Projections for ASEAN', *Journal of the Asia Pacific Economy* 23, no. 2 (2018): 195–212, <https://doi.org/10.1080/13547860.2018.1442145>.

⁵⁹ United Nations, 'United Nations Framework Convention on Climate Change' (1992), sec. 1(1).

⁶⁰ Elena Cima, 'The Right to a Healthy Environment: Reconceptualizing Human Rights in the Face of Climate Change', *Review of European, Comparative and International Environmental Law* 31, no. 1 (2022): sec. 39, <https://doi.org/10.1111/reel.12430>.

⁶¹ United Nations Environment Programme, 'Climate Change and Human Rights' (New York: United Nations Environment Programme and Sabin Center for Climate Change Law at Columbia University, 2015).

⁶² Hannah Ritchie and Max Roser, 'Emission by Sector', 2022, <https://ourworldindata.org/emissions-by-sector>.

sectors will greatly affect efforts to mitigate the impacts of climate change. Transitioning fossil-fuelled vehicles to EVs is considered one solution to effectively reduce carbon emissions.⁶³ Jurisdictions are adopting various legal instruments to create an electromobility ecosystem to catalyze EV development. The development of electromobility will not only accelerate the adoption of EVs but will also reform charging infrastructure, shift power generation energy sources to renewable energy sources, and even change transport management.⁶⁴

International legal instruments are essential to ensure that all countries continuously implement the energy transition within the climate change framework. The UNFCCC and the international agreements adopted after that are international legal instruments initiated by the UN to respond to climate change. The Convention was adopted in 1992 in parallel with the Earth Summit in Rio de Janeiro, Brazil. Historically, the origins of the UNFCCC cannot be separated from the First World Climate Conference in 1979 initiated by WMO and UNEP. The main objective of the UNFCCC is to provide a framework for an international agreement to reduce the concentration of greenhouse gas (GHG) emissions within a certain period of time. Such efforts ensure that ecosystems can adapt to climate change, there is no threat to food production, and economic development is conducted sustainably.⁶⁵

The UNFCCC also adopted principles that the parties implemented. First is the principle of intergenerational and intra-generational justice of humankind; this principle is implemented by encouraging developed countries to lead efforts to mitigate the impacts of climate change. Furthermore, the principle of prioritizing the vulnerable countries to the impacts of climate change is implemented by encouraging developed countries to take the lead in mitigating the impacts of climate change. The third principle is to prevent, anticipate, minimize and mitigate the impacts of climate change by seeking international cooperation. Another principle is to promote sustainable development by adopting policies that contribute to mitigating climate change impacts. Finally, the principle of collaboration promotes support for all countries to combat the impacts of climate change measurably.⁶⁶

⁶³ Alaize Dall-Orsoletta, Paula Ferreira, and Géremi Gilson Dranka, 'Low-Carbon Technologies and Just Energy Transition: Prospects for Electric Vehicles', *Energy Conversion and Management: X* 16, no. December 2021 (2022), <https://doi.org/10.1016/j.ecmx.2022.100271>.

⁶⁴ Tilman Altenburg, Eike W. Schamp, and Ankur Chaudhary, 'The Emergence of Electromobility: Comparing Technological Pathways in France, Germany, China and India', *Science and Public Policy* 43, no. 4 (2016): 464–75, <https://doi.org/10.1093/scipol/scv054>.

⁶⁵ Art. 2 UNFCCC.

⁶⁶ Art. 3 UNFCCC.

The Kyoto Protocol is an international legal instrument adopted at COP-3 in 1997 in Kyoto, Japan. This protocol obliges the parties to promote sustainable development.⁶⁷ Accordingly, mainly developed countries are committed to measurably reducing emissions within an approved timeframe. The emission reduction commitment recognized in the Kyoto Protocol is through the QELRO mechanism. This mechanism determines emission reduction targets with voluntary commitments and international pressure. However, in its development, the QELRO mechanism was considered ineffective since emissions did not experience a decreasing trend. In addition, many developed countries still need to be fully committed to implementing the Kyoto Protocol.⁶⁸

The Paris Agreement, adopted in 2015, was a significant breakthrough in emission reduction efforts. This agreement aims to enhance global cooperation in implementing the UNFCCC. In particular, it also promotes sustainable development and poverty eradication by preventing temperature rise, enhancing adaptation capacity, and consistent funding flows that ensure climate change resilience and emission reduction.⁶⁹ The Paris Agreement also introduces the concept of NDCs as a global response to climate change.⁷⁰ As an international legal instrument, the Paris Agreement substantially has the character of soft and hard law.⁷¹ However, the existence of NDCs as an integral part of the Paris Agreement still provides optimism for global cooperation to tackle the impacts of climate change and prevent the phenomenon from becoming more dangerous and detrimental to humanity.

Scholars have frequently distinguished hard from soft law. Additionally, the perspectives and categorization employed are highly varied. Hard law's most frequently used indicators include a legally binding perspective, a precise production process, and the presence of a delegation of authority to interpret and implement the law.⁷² In contrast, soft law is defined as a feeble arrangement of obligations, details, delegation, and ambiguous ambiguity or substance.⁷³ Hard and soft laws appear to be poles apart, easily distinguishable.

⁶⁷ Art. 2 para. 1 Kyoto Protocol to the UNFCCC.

⁶⁸ Jonathan Kuyper, Heike Schroeder, and Bjorn-Ola Linner, 'The Evolution of the UNFCCC', *Annual Review of Environment and Resources* 43 (2018): 347.

⁶⁹ Art. 2 para. 1 Paris Agreement to the UNFCCC.

⁷⁰ Art. 3 Paris Agreement to the UNFCCC.

⁷¹ Daniel Bodansky, 'The Legal Character of the Paris Agreement', *Review of European, Comparative and International Environmental Law* 25, no. 2 (2016): 9, <https://doi.org/10.1111/reel.12154>.

⁷² Sabine Saurugger and Fabien Terpan, 'Normative Transformations in the European Union: On Hardening and Softening Law', *West European Politics* 44, no. 1 (2021): 1–20, <https://doi.org/10.1080/01402382.2020.1762440>.

⁷³ Harsh Mahaseth and Karthik Subramaniam, 'Binding or Non-Binding: Analysing the Nature of the ASEAN Agreements', *International and Comparative Law Review* 21, no. 1 (2021): 100–123, <https://doi.org/10.2478/iclr-2021-0004>.

However, some researchers attempt to define soft law to avoid being naive about distinguishing between the two laws.

Blutman classified soft law into three categories. The first category includes non-binding instruments by international organisations and institutions; these instruments may be guidelines, declarations, resolutions, or recommendations.⁷⁴ The second type of soft law document is bilateral or multilateral cooperation that imposes no responsibilities on the participating countries. Joining statements, letters of intent, or memorandums of understanding typically serve as the preferred form of this type of soft law instrument.⁷⁵ Finally, the recommendations made by Non-Governmental Organisations (NGOs) have a tangible effect on world politics.⁷⁶ Blutman's method is predicated on the label of the legal instrument in question. However, the type of instrument does not necessarily indicate the nature of the law, whether hard or soft.⁷⁷ Terpan argues various perspectives when he categorises soft law into three categories: norms that are not legally binding but have legal relevance, norms that are legally binding but have soft characteristics, and finally, a combination of the two.⁷⁸ Additionally, it is stressed that there is a distinction between soft law and non-legal norms, which can be determined by their legal relevance or absence.⁷⁹ An instrument must first be declared a legal action by an authorised organisation before it can be classed as hard or soft.

This dissertation distinguishes hard law and soft law based on their legally binding nature and sanctions, which are the essential factors that distinguish them from hard law.⁸⁰ Furthermore, this study focuses on the choice of legal instrument forms adopted by regional organisations in electromobility development. Therefore, the aspect of the substance is more appropriate to determine whether the law used is hard or soft. Nonetheless, the authors

⁷⁴ László Blutman, 'In the Trap of a Legal Metaphor: International Soft Law', *International and Comparative Law Quarterly* 59, no. 3 (2010): 607, <https://doi.org/10.1017/S0020589310000242>.

⁷⁵ Blutman, 607.

⁷⁶ Blutman, 608.

⁷⁷ Barnali Choudhury, 'Balancing Soft and Hard Law for Business and Human Rights', *International and Comparative Law Quarterly* 67, no. 4 (2018): 964, <https://doi.org/10.1017/S0020589318000155>.

⁷⁸ Fabien Terpan, 'Soft Law in the European Union-The Changing Nature of EU Law', *European Law Journal* 21, no. 1 (2015): 70–72, <https://doi.org/10.1111/eulj.12090>.

⁷⁹ Terpan, 72.

⁸⁰ Ramses A. Wessel, 'Normative Transformations in EU External Relations: The Phenomenon of "Soft" International Agreements', *West European Politics* 44, no. 1 (2021): 72–92, <https://doi.org/10.1080/01402382.2020.1738094>; Fabien Terpan and Sabine Saurugger, 'Soft and Hard Law in Times of Crisis: Budget Monitoring, Migration and Cybersecurity', *West European Politics* 44, no. 1 (2021): 21–48, <https://doi.org/10.1080/01402382.2020.1738096>.

recognise that the EU and ASEAN have inconsistent nomenclature in naming adopted legal instruments.⁸¹

2.3.2. Energy Transition

In this dissertation, the energy transition is discussed as the process of converting the use of energy sources based on fossil fuels to energy sources with a low carbon footprint in order to reduce carbon emissions.⁸² The modern energy transition is characterised by the decreasing use of fossil energy sources, mainly coal, and the increasing use of renewable or low-carbon energy sources, such as wind and solar power. Coal is being used less frequently.⁸³ The primary objective of the energy transition is to save the environment and adapt to the effects of climate change rather than merely reduce carbon emissions.⁸⁴

It is indisputable that there is a pressing need to transition to a global energy system that is less carbon-intensive and more egalitarian.⁸⁵ To meet the objective of limiting the increase in the average global surface temperature to less than 2°C, immediate and urgent change in the sources of energy used worldwide is required.⁸⁶ If a nation does not adequately strategize its energy transition, it will be impacted by the causes driving the energy change.⁸⁷ Consequently, all nations are presently striving to undergo an energy transition and detach themselves from fossil fuels like coal and petroleum.

According to this interpretation, concerns about the environment, and more specifically, climate change, are the primary impetus behind the evolution of the energy sector. Nevertheless, for the transition to a more sustainable energy source to be truly egalitarian and beneficial for all parties involved, it must be intricately connected with the

⁸¹ Nattapat Limsiritong, 'The Problems of Law Interpretation under ASEAN Instruments and ASEAN Legal Instruments', *MFU Connexion* 5, no. 2 (2016): 136–55.

⁸² Heffron, *Energy Law: An Introduction*.

⁸³ Sanya Carley and David M. Konisky, 'The Justice and Equity Implications of the Clean Energy Transition', *Nature Energy* 5, no. 8 (2020): 569, <https://doi.org/10.1038/s41560-020-0641-6>.

⁸⁴ Paula Galbiatti Silveira, *Climate Protection and Environmental Interests in Renewable Energy Law: Perspectives from Brazil and Germany* (Cham: Springer Nature Switzerland, 2022), 14.

⁸⁵ Darren McCauley et al., 'Energy Justice in the Transition to Low Carbon Energy Systems: Exploring Key Themes in Interdisciplinary Research', *Applied Energy* 233–234, no. November 2018 (2019): 916–21, <https://doi.org/10.1016/j.apenergy.2018.10.005>.

⁸⁶ Dolf Gielen et al., 'The Role of Renewable Energy in the Global Energy Transformation', *Energy Strategy Reviews* 24 (2019): 38–50, <https://doi.org/10.1016/j.esr.2019.01.006>.

⁸⁷ Melina Gabriella and Pamela Simamora, 'Ensuring a Just Energy Transition in Indonesia: Lessons Learned From Country Case Studies', *Institute for Essential Services Reform (IESR)*, 2020, <https://iesr.or.id/en/pustaka/ensuring-a-just-energy-transition-in-indonesia-lessons-learned-from-country-case-studies-iesr-2020>.

idea of accountability.⁸⁸ Therefore, it is of the utmost importance that the idea of a contemporary energy transition incorporates factors that pertain to justice.⁸⁹ Because there will be no justice, the process will not be a genuine transition to a new energy source; rather, it will be a change in the utilisation of commodities for energy purposes, moving them from one resource to another.

Jenkins et al. present many viewpoints on energy justice.⁹⁰ Energy justice encompasses three distinct dimensions: distribution, acknowledgement, and procedural. The distribution dimension pertains to the geographical placement of the injustice and the resolution required to address the issue. Moreover, the dimension of recognition is interconnected with the individual undergoing unfair treatment and the methods used to detect it. The final factor is procedural matters, specifically the presence of fair processes and evaluating the necessity for additional procedures to establish justice.

Sovacool and Dworkin presented divergent viewpoints, asserting that energy justice has the potential to serve as a conceptual, analytical, and decision-making instrument.⁹¹ Energy justice, when used as a decision-making instrument, should prioritize and advocate for eight key elements: accessibility, cost-effectiveness, fair legal procedures, effective governance, environmental sustainability, fairness between generations, fairness within generations, and accountability.

The notions of energy transition and energy justice are inherently intertwined and cannot be disentangled. An energy transition will inevitably result in societal inequity without ensuring energy justice. Thus, it is imperative to engage all societal strata in energy transition initiatives, such as the advancement of electromobility. EVs are not exclusively intended for the higher class but equally suitable for the lower class. Hence, the energy justice framework can be a principal guide for the government in achieving energy justice in energy transition initiatives across the country.

Based on the above explanation, the energy transition can be understood as a sustainable effort and process to replace and eliminate dependence on commodities that are used as primary energy sources that have a negative impact on humans and the environment. The conversion is implemented by using primary energy sources that produce less emissions

⁸⁸ Heffron, *Energy Law: An Introduction*, 38.

⁸⁹ Raphael J. Heffron, 'Applying Energy Justice into the Energy Transition', *Renewable and Sustainable Energy Reviews* 156, no. November 2021 (2022): 3, <https://doi.org/10.1016/j.rser.2021.111936>.

⁹⁰ Kirsten Jenkins et al., 'Energy Justice: A Conceptual Review', *Energy Research and Social Science* 11 (2016): 174–82, <https://doi.org/10.1016/j.erss.2015.10.004>.

⁹¹ Benjamin K. Sovacool and Michael H. Dworkin, 'Energy Justice: Conceptual Insights and Practical Applications', *Applied Energy* 142 (2015): 435–44, <https://doi.org/10.1016/j.apenergy.2015.01.002>.

or even zero emissions. This dissertation research defines the energy transition as more than just replacing fuel but also the process of transforming society to use clean energy as a primary energy source. In the transformation process, renewable energy is not used as alternative energy but as the main energy source. In the context of electromobility, EVs and electricity from renewable energy are not an alternative choice but in the long run become the main choice so that the energy transition is well implemented and successful.

2.4. Energy Justice, Economic, and Sustainability Aspects on Electromobility

Energy justice is a concept that is closely related to environmental justice and climate justice.⁹² Energy justice conceptually consists of core principles and implementation principles.⁹³ The core principles of energy justice are distributional justice, procedural justice, and recognition justice.⁹⁴ Distributional justice consists of three interrelated aspects of distribution: the object of distribution, the subject of distribution, and the mode used in the distribution process.⁹⁵ In a broader dimension, energy as a public commodity needs guarantees so that distribution from one place to another can occur safely and continuously.⁹⁶ Therefore, the principle of distributional justice in energy justice is vital because it is related to the guarantee of supply of energy needs. Electromobility development is also inseparable from the dimension of distributive justice.

Furthermore, electromobility technology must be distributed fairly and sustainably to the public to reduce emissions within the climate change framework.⁹⁷ The following core principle is procedural justice, which focuses on the legal process in policymaking.⁹⁸ The procedural aspect of justice also includes fairness in the legislative process by involving public participation without discrimination.⁹⁹ Thus, procedural justice highly depends on the

⁹² Kirsten Jenkins, 'Setting Energy Justice Apart from the Crowd: Lessons from Environmental and Climate Justice', *Energy Research and Social Science* 39, no. September 2017 (2018): 120, <https://doi.org/10.1016/j.erss.2017.11.015>.

⁹³ Heffron, 'Applying Energy Justice into the Energy Transition', 3.

⁹⁴ Heffron, 3.

⁹⁵ Benjamin K. Sovacool, Roman V. Sidortsov, and Benjamin R. Jones, *Energy Security, Equality, and Justice* (New York: Routledge, 2014), 23, <https://doi.org/10.4324/9780203066348>.

⁹⁶ Sovacool, Sidortsov, and Jones, *Energy Security, Equality, and Justice*.

⁹⁷ Andri Gunawan Wibisana, 'Keadilan Dalam Satu (Intra) Generasi: Sebuah Pengantar Berdasarkan Taksonomi Keadilan Lingkungan', *Mimbar Hukum* 29, no. 2 (2017): 294, <https://doi.org/10.22146/jmh.19143>.

⁹⁸ Heffron, 'Applying Energy Justice into the Energy Transition', 2.

⁹⁹ Gordon Walker, 'Beyond Distribution and Proximity: Exploring the Multiple Spatialities of Environmental Justice', *Antipode* 41, no. 4 (2009): 627, <https://doi.org/10.1111/j.1467-8330.2009.00691.x>.

available space for participation and includes the public's involvement.¹⁰⁰ In addition, procedural justice enables everyone to participate in lawmaking without discrimination.¹⁰¹ The last core principle in energy policy is recognition justice, which generally guarantees public recognition of representation, rights, and the vision of the future, especially among local communities.¹⁰² Neglecting the recognition of justice will lead to the public's rejection of energy policies because they will be considered inconsistent with cultural and political values.¹⁰³ The absence of recognition justice will also create a gap in understanding energy needs between the public, regulators, and energy companies.¹⁰⁴

In addition to the core principles, implementation principles are integral to energy justice. Implementation principles can also be interpreted as decision-making tools in energy policy.¹⁰⁵ Sovacool, in his study, revealed eight aspects of implementing energy justice: availability, affordability, due process, good governance, sustainability, intragenerational equity, intergenerational equity, and responsibility.¹⁰⁶ In contrast, McCauley argued that the main problems in implementing energy justice were availability, accessibility, and sustainability.¹⁰⁷ However, this paper takes the view of Sovacool because it is more comprehensive and covers upstream and downstream aspects. In addition, this paper also argues that energy justice is inseparable from human rights; the approach taken by Sovacool is more closely aligned with human rights than McCauley's approach.

Availability is the most fundamental element in implementing energy justice because it relates to efforts to provide the energy needed for daily life.¹⁰⁸ In addition, availability is closely related to a country's energy security.¹⁰⁹ The dimensions of energy availability include quantity, form, quality, and time.¹¹⁰ From an electromobility perspective, one aspect of energy availability—electricity—is crucial. The electricity supply, including energy

¹⁰⁰ Darren McCauley, *Energy Justice: Re-Balancing the Trilemma of Security, Poverty and Climate Change* (Cham: Palgrave Macmillan, 2018), 66.

¹⁰¹ Robert Kuehn, 'A Taxonomy of Environmental Justice', *Environmental Law Reporter* 30 (2000): 10688.

¹⁰² Dall-Orsoletta, Ferreira, and Gilson Dranka, 'Low-Carbon Technologies and Just Energy Transition: Prospects for Electric Vehicles', 3.

¹⁰³ Jenkins et al., 'Energy Justice: A Conceptual Review'.

¹⁰⁴ Gunter Bombaerts et al., eds., *Energy Justice Across Borders* (Cham: Springer Open, 2019), 99, <https://doi.org/10.1007/978-3-030-24021-9>.

¹⁰⁵ Benjamin K. Sovacool, *Energy and Ethics: Justice and the Global Energy Challenge* (New York: Palgrave Macmillan, 2013), 435.

¹⁰⁶ Sovacool, 239.

¹⁰⁷ McCauley, *Energy Justice: Re-Balancing the Trilemma of Security, Poverty and Climate Change*, 9.

¹⁰⁸ Sovacool, *Energy and Ethics: Justice and the Global Energy Challenge*, 220.

¹⁰⁹ McCauley, *Energy Justice: Re-Balancing the Trilemma of Security, Poverty and Climate Change*, 6.

¹¹⁰ Fabio Indeo, 'ASEAN-EU Energy Cooperation: Sharing Best Practices to Implement Renewable Energy Sources in Regional Energy Grids', *Global Energy Interconnection* 2, no. 5 (2019): 394, <https://doi.org/10.1016/j.gloi.2019.11.014>.

sources, is a challenge for power plants, and their distribution should facilitate access.¹¹¹ Therefore, in implementing energy justice, the availability of the charging infrastructure is vital, especially as it relates to the availability aspect of the electromobility framework.¹¹² Affordability is the second element that plays an essential role in energy justice. This element concerns access to decent energy by different levels of society.¹¹³ From an electromobility perspective, the sales price of EVs and battery charging must be affordable for customers. Price is the main factor that makes the public switch from conventional vehicles to EVs.¹¹⁴ The next element of energy justice implementation is due process, which prioritises public participation in formulating energy policies.¹¹⁵ This participation is aimed at stakeholders and parties likely to be affected by the energy policy.¹¹⁶ Therefore, policymakers must predict all parties likely to be affected through various mechanisms, such as repeated public consultations.¹¹⁷ Member states and local communities are the parties affected by electromobility policies at the level of regional organizations such as the EU and ASEAN.

Furthermore, good governance is an essential element in implementing energy justice, closely related to accountability and information disclosure to the public.¹¹⁸ Good governance will encourage the public to contribute actively to energy policy. On the contrary, a lack of information will make the public ignore and not care about the targets set by energy policies.¹¹⁹ Implementing good governance will minimise the occurrence of elitism and social rejection in electromobility policies, as experience in the Nordic area has shown.¹²⁰ The following fundamental element is sustainability, which requires lawmakers to

¹¹¹ Karol Tucki et al., ‘The Development of Electromobility in Poland and EU States as a Tool for Management of CO2 Emissions’, *Energies* 12, no. 15 (2019): 2, <https://doi.org/10.3390/en12152942>.

¹¹² Mehmet Efe Biresselioglu, Melike Demirbag Kaplan, and Barbara Katharina Yilmaz, ‘Electric Mobility in Europe: A Comprehensive Review of Motivators and Barriers in Decision Making Processes’, *Transportation Research Part A: Policy and Practice* 109, no. October 2017 (2018): 3, <https://doi.org/10.1016/j.tra.2018.01.017>.

¹¹³ Sovacool, *Energy and Ethics: Justice and the Global Energy Challenge*, 220.

¹¹⁴ Kristin Ystmark Bjerkan, Tom E. Nørbech, and Marianne Elvsaa Nordtømme, ‘Incentives for Promoting Battery Electric Vehicle (BEV) Adoption in Norway’, *Transportation Research Part D: Transport and Environment* 43 (2016): 170, <https://doi.org/10.1016/j.trd.2015.12.002>.

¹¹⁵ Sovacool, *Energy and Ethics: Justice and the Global Energy Challenge*, 221. 24.

¹¹⁶ Sovacool and Dworkin, ‘Energy Justice: Conceptual Insights and Practical Applications’, 439.

¹¹⁷ Luis Mundaca, Henner Busch, and Sophie Schwer, ‘“Successful” Low-Carbon Energy Transitions at the Community Level? An Energy Justice Perspective’, *Applied Energy* 218, no. October 2017 (2018): 300, <https://doi.org/10.1016/j.apenergy.2018.02.146>.

¹¹⁸ Sovacool and Dworkin, ‘Energy Justice: Conceptual Insights and Practical Applications’, 439.

¹¹⁹ Xing Li et al., ‘The Impact of Environmental Accountability on Air Pollution: A Public Attention Perspective’, *Energy Policy* 161, no. December 2021 (2022): 10, <https://doi.org/10.1016/j.enpol.2021.112733>.

¹²⁰ Siddharth Sareen, ed., *Enabling Sustainable Energy Transitions: Practices of Legitimation and Accountable Governance* (Cham: Palgrave Macmillan, 2019), 80, <https://doi.org/10.1007/978-3-030-26891-6>.

ensure the sustainable use of energy sources. In the context of electromobility law, the sustainability element plays a role in the public's sustainable adoption of EVs.¹²¹ Therefore, electromobility development must also impact the environment, with the guarantee that the electricity that drives EVs also comes from clean energy-based power plants.¹²²

The further implementation principle is intragenerational equity, which aims to provide justice for present generations. This principle is rooted in distributive justice and is closely related to the fair distribution of resources and risks at the national and international levels.¹²³ From the perspective of electromobility development and climate change, present generations have equal access and opportunity to use EVs and electricity derived from renewable energy sources.¹²⁴ The principle of intragenerational equity is also related to the next principle, intergenerational equity, which concerns the future.¹²⁵ In addition, the principles of intragenerational and intergenerational equity are also intertwined with the dimensions of human rights for both present and future generations.¹²⁶ Therefore, electromobility law must consider the connection between intragenerational and intergenerational equity principles. The factors of price, the availability of charging facilities, batteries, and education and promotion to the public concern the present generation and impact future generations.¹²⁷ Next is the principle of responsibility, which complements the principles of energy justice. This principle means lawmakers are responsible for protecting the environment and minimising environmental damage from energy production activities.¹²⁸

Energy justice plays a crucial role in electromobility development, which is part of the energy transition effort. Conceptually, energy justice provides certain guidelines and values for solving energy problems.¹²⁹ Hence, the role of regional organisations such as the

¹²¹ Sovacool, *Energy and Ethics: Justice and the Global Energy Challenge*, 221.

¹²² Angel Arcos-Vargas, ed., *The Role of the Electric Vehicle in the Energy Transition: A Multidimensional Approach* (Cham: Springer Nature Switzerland, 2021), 94, https://doi.org/10.1007/978-3-030-50633-9_8.

¹²³ Sovacool and Dworkin, 'Energy Justice: Conceptual Insights and Practical Applications'; Wibisana, 'Keadilan Dalam Satu (Intra) Generasi: Sebuah Pengantar Berdasarkan Taksonomi Keadilan Lingkungan'.

¹²⁴ Benjamin K. Sovacool, Matthew M. Lipson, and Rose Chard, 'Temporality, Vulnerability, and Energy Justice in Household Low Carbon Innovations', *Energy Policy* 128, no. December 2018 (2019): 499, <https://doi.org/10.1016/j.enpol.2019.01.010>.

¹²⁵ Sovacool, *Energy and Ethics: Justice and the Global Energy Challenge*, 221–22.

¹²⁶ Richard P. Hiskes, *The Human Right to a Green Future: Environmental Rights and Intergenerational Justice* (New York: Cambridge University Press, 2009), 7.

¹²⁷ Johannes Kester et al., 'Policy Mechanisms to Accelerate Electric Vehicle Adoption: A Qualitative Review from the Nordic Region', *Renewable and Sustainable Energy Reviews* 94 (2018): 720, <https://doi.org/10.1016/j.rser.2018.05.067>.

¹²⁸ Sovacool, *Energy and Ethics: Justice and the Global Energy Challenge*, 222–23.

¹²⁹ Sovacool and Dworkin, 'Energy Justice: Conceptual Insights and Practical Applications'.

EU and ASEAN in adopting laws on electromobility is vital and urgent since these international institutions have specific organisational mechanisms to ensure that every decision will be effective and sustainable.¹³⁰ Member states are also expected to effectively implement an international organization's legal output. Furthermore, climate policies such as electromobility are also expected to be effective and sustainable. Therefore, the form of law or legal character of the law adopted will largely determine the effectiveness and sustainability of a climate policy.

Other than energy and climate change dimensions, electromobility, especially the public use of EVs, also has economic aspects. The scope of economic aspects includes various elements, such as production costs, market expansion, and the overall effect on primary energy sources used by plants and vehicles, the environment, and infrastructure. EVs economically facilitate transformation by reducing dependence on fossil fuels such as petroleum and coal, encouraging the use of renewable energy as a source of electrical energy, and catalyzing advances in battery technology in particular the use of raw materials mined in accordance with sustainability standards, and smart grid systems that integrate all elements of electromobility. EVs have also provide new automotive markets and experienced significant growth, driven by declining battery costs, government incentives, and increased awareness of customers switching from conventional vehicles to EVs. In addition, electromobility has also supported job growth in manufacturing, research and development, and infrastructure deployment, including charging stations. Despite these benefits, there are still barriers, such as large initial costs for EVs compared to conventional vehicles, uneven availability of charging infrastructure, and dependence on critical minerals such as lithium, cobalt, and nickel, which pose economic and geopolitical threats.

Electromobility includes not only EVs, but also public transportation and public mobility platforms, which bring significant economic impact. Economic growth does not always have to come at the expense of the environment with high emissions generated by the transportation or industrial sectors. Diversifying the mix of renewable energy used as primary energy sources and adopting electromobility is one solution that can be used by many countries in the world. In the long-term, electromobility and the use of renewable energy also promise to reduce the costs of pollution by reducing greenhouse gas emissions and improving air quality. In addition, electric mobility facilitates a circular economy

¹³⁰ Jacob Katz Cogan, Ian Hurd, and Ian Johnstone, eds., *The Oxford Handbook of International Organizations* (Oxford: Oxford University Press, 2016), 564.

through battery recycling and renewable energy utilization. Nonetheless, it must be recognized that the transition to electromobility requires substantial costs in power plant modernization, urban planning, and worker retraining. These concerns can be addressed with incentives for emerging green industries, a gradual transition to utilizing renewable energy, and optimization of sustainable investments. The economic dimension of electromobility underscores the transformation in the global transportation network, which presents substantial prospects for growth and sustainability as well as the challenge of making electromobility and EVs not just a temporary trend but also part of the lifestyle.

2.5. EU and ASEAN Comparative Study

Academics have thoroughly analysed the links and parallels between the EU and the ASEAN, explicitly emphasising these regional entities' operational and relational aspects. This work aims to enhance comparative legal studies by establishing the EU as a prime example of regional organisational maturity that may guide the growth of other regional institutions. These studies are typically categorised from a classical perspective, which reflects established analytical traditions. Although it is rooted in classical principles, this perspective is highly pertinent today, as the EU persistently advocates for its regionalism model, aiming to exert influence and provide guidance for establishing comparable frameworks in other areas, such as ASEAN.

As regional organisations, the EU and ASEAN continue to evolve and are constantly searching for a suitable organisational design. An interesting study was conducted by Jetschke et al., which measured the level of similarity between international organisations in several regions.¹³¹ The results showed that the EU influenced ASEAN's institutional transformation. ASEAN's institutional design tends to follow the EU institutions that have existed before.¹³² This means that ASEAN then adopts the organisational design abandoned by the EU. This fact reveals at least two critical reasons, namely that ASEAN evaluates the institutional design implemented by the EU and analyses its strengths and weaknesses. Furthermore, ASEAN did not simply transplant the EU's institutional design. There were modifications to suit the principles and needs of the AMS. The EU institutional design can

¹³¹ Anja Jetschke et al., 'Patterns of (Dis)Similarity in the Design of Regional Organizations: The Regional Organizations Similarity Index (ROSI)', *International Studies Perspectives* 22, no. 2 (30 April 2021): 181–200, <https://doi.org/10.1093/isp/ekaa006>.

¹³² Jetschke et al., 16–17.

only be transplanted indirectly as each regional organisation has different historical and political experiences.¹³³

The adoption of the ASEAN Charter in 2007 made it clear that the AMS recognised the EU's institutional design as an inspiration for reforming and strengthening ASEAN institutions.¹³⁴ Moreover, the implementation of the ASEAN Charter, which became effective in 2008, demonstrates the influence of EU-style regionalism on ASEAN's structure and governance.¹³⁵ The Charter represents a notable advancement towards increased integration and formalisation within ASEAN, taking influence from the legal and institutional structure of the EU. This influence emphasises the EU's impact on developing governance models in regions outside of Europe, showcasing the ongoing importance of comparative studies in comprehending the dynamics of regionalism. ASEAN aims to strengthen its unity and efficiency by studying the EU's experience and implementing its ideas. This highlights comparative legal research's significance in informing and directing regional development initiatives.

The EU and ASEAN are acknowledged as regional organisations representing two different forms of regional integration. As a result, many experts have performed extensive research to compare the EU and ASEAN, specifically in climate and energy policy. Research on renewable energy collaboration between the EU and ASEAN has been significantly advanced by scientists like Indeo and Huck et al.¹³⁶ Their research focuses on the mechanisms and techniques of collaborative efforts in renewable energy to address and reduce the impact of climate change. These studies emphasise the importance of collaborations between different regions and demonstrate how the EU and ASEAN may use their distinct integration approaches to promote sustainable energy transitions.

¹³³ Anja Jetschke, 'What Drives Institutional Reforms in Regional Organisations? Diffusion, Contextual Conditions, and the Modular Design of ASEAN', *TRaNS: Trans-Regional and -National Studies of Southeast Asia* 5, no. 1 (2017): 174, <https://doi.org/10.1017/trn.2016.30>.

¹³⁴ Anja Jetschke and Philomena Murray, 'Diffusing Regional Integration: The EU and Southeast Asia', *West European Politics* 35, no. 1 (2012): 174–91, <https://doi.org/10.1080/01402382.2012.631320>.

¹³⁵ Jetschke and Murray, 186–87.

¹³⁶ Indeo, 'ASEAN-EU Energy Cooperation: Sharing Best Practices to Implement Renewable Energy Sources in Regional Energy Grids', 2019; Winfried Huck et al., 'Framework and Content of Energy Transition in Southeast Asia with ASEAN and the EU', *The Journal of World Energy Law & Business* 15, no. August (2022): 396–408, <https://doi.org/10.1093/jwelb/jwac023>.

Table 1 Comparison between EU and ASEAN

No	Comparison Aspects	EU	ASEAN
1.	Lawmaking Process	The lawmaking process involved the executive power (the Council and the Commission), the legislative power (European Parliament), and the judicative power (the Court of Justice of the European Union).	The lawmaking process centralized in the ASEAN Summit as the highest forum of the organization.
2.	Membership in International Treaties	The EU, as an organization, is actively involved in negotiating international agreements.	ASEAN has never been involved as an organization in negotiating international agreements. ASEAN member countries prioritize their national interests over regional ones.
3.	Membership Enlargement	<ul style="list-style-type: none"> a. Stringent accession criteria (in accordance with the Copenhagen Criteria) ensuring alignment with EU laws and values. b. Structured pre-accession process involving legal and economic reforms. c. Enlargement includes integration into EU institutions and systems. 	<ul style="list-style-type: none"> a. Accessible yet constrained by political and economic factors, lacking stringent standards akin to the EU. b. Expansion transpires via informal diplomacy and consensus-building. c. New members acclimatise progressively to ASEAN frameworks without rigorous harmonisation.
4.	Commitments in Energy and Climate Issues	<ul style="list-style-type: none"> a. Adopted binding commitments, such as the European Green Deal. b. Extensive funding and policy instruments like the Emissions Trading System (ETS). c. Strong alignment with international climate treaties. 	<ul style="list-style-type: none"> a. Adopted non-binding commitments such as ASEAN Plan of Action for Energy Cooperation (APAEC). b. Cooperation-driven initiatives like the ASEAN Centre for Energy (ACE). c. Varies by state, collective commitments less ambitious.

Source: Analysed by the author (2025).

The institutional frameworks of the European Union (EU) and the Association of Southeast Asian Nations (ASEAN) demonstrate considerable differences in their approaches for lawmaking, dedication to energy and climate change, participation in international treaties, and processes for membership expansion. These disparities signify their unique historical, cultural, and political settings. The EU functions with a very cohesive and formalised legislative framework. The principal institutions, including the European Commission, the European Parliament, and the Council of the EU, work and cooperate within a strong legislative framework; they can adopt legal norms that are binding on the

member states and have primacy over national laws. Among these norms, legally binding regulations and directives are of particular importance from the point of view of the analysis in this dissertation. The obligations of the EU institutions and the member states can be enforced before the Court of Justice of the European Union which means that the validity and interpretation of EU law is autonomous and no longer dependent on the sovereignty of the member states.¹³⁷ In contrast, ASEAN's legislative process is predominantly intergovernmental and consensus-oriented, prioritising non-interference and state sovereignty. Consequently, ASEAN accords frequently lack enforceable authority, depending predominantly on voluntary adherence, thereby constraining enforcement mechanisms.

The EU is a global leader in energy and climate change programs, implementing ambitious legally enforceable targets as the European Green Deal and the Fit for 55 package. These encompass pledges for net-zero emissions by 2050, comprehensive renewable energy transitions, and rigorous carbon pricing regimes. ASEAN, despite its growing engagement in climate matters, lacks a cohesive legislative framework. Its pledges, including those outlined in the ASEAN Plan of Action for Energy Cooperation, emphasise collaborative although non-binding objectives such as enhancing energy efficiency and transitioning to renewable sources, limited by differing state capacities and priorities. In addition, a significant study conducted by Diaz-Rainey et al. analyses ASEAN's energy policy by drawing on the EU's experience in combining energy security with decarbonisation initiatives.¹³⁸ This comparative analysis examines how ASEAN might learn from the EU's comprehensive strategy to balance energy needs and climate objectives. The three studies described above examine the complex dynamics of energy and climate change policies implemented by the EU and the ASEAN. They highlight the significance of collaboration and alliance in attaining regional sustainability goals. By examining these comparative frameworks, researchers enhance our comprehension of how regional organisations might efficiently cooperate to tackle worldwide environmental issues.

Member states of the EU must conform to international treaties concluded by the Union, thereby maintaining a cohesive position on global matters. This unity enhances its

¹³⁷ Christina Eckes 'The Autonomy of the EU Legal Order: The Case of the Energy Charter Treaty' *European Papers: A Journal of Law and Integration* 8, no. 3. (2023) 1468, <https://doi.org/10.15166/2499-8249/725>

¹³⁸ Ivan Diaz-Rainey et al., 'An Energy Policy for ASEAN? Lessons from the EU Experience on Energy Integration, Security, and Decarbonization', *ADB Working Paper*, 1217 (Tokyo: Asian Development Bank Institute, 2021), <https://doi.org/10.2139/ssrn.3807085>.

impact in multilateral discussions. ASEAN member nations separately ratify treaties, frequently leading to fractured viewpoints. This disparity illustrates the bloc's diminished integration and deference to state sovereignty. The EU enforces stringent criteria for membership (Copenhagen criteria), mandating that potential members comply with the values of the European Union (democratic values, the rule of law) and the requirement of economic stability. The procedure is meticulously organised, facilitating enhanced integration. ASEAN's expansion strategy is characterised by flexibility and pragmatism, prioritising regional stability and economic integration over rigid political or institutional reforms. The European Union's institutional framework fosters profound integration and binding obligations, whereas the Association of Southeast Asian Nations emphasises adaptability and national sovereignty. These distinctions emphasise the EU's function as a supranational entity and ASEAN's character as a cooperative regional organisation with rather intergovernmental characteristics.

2.6. Regional Integration

Regional integration is historically not an entirely inexistent concept. Throughout human history, the idea of uniting forces and resources to achieve specific goals has long existed in the minds of rulers from ancient to modern times. This section will explain regional integration, which is the primary conception in understanding this study. To make the discussion more focused, this section will describe three aspects of regional integration: the definition, form, and application in the European and Asian regions. More specifically, the discussion will focus on the forms of regional integration implemented by the EU and ASEAN.

Regional organisations have at least four integral components: member states, organisational capacity, multilateralism, and regional similarity.¹³⁹ Another essential element in regional organisations is integration, the organisation's backbone. Scholars have different perspectives on using the term regional integration or regionalism. The influence of studies on the development of EU integration conducted by European scholars is one of the momentum of the debate on the discourse of regional integration. Therefore, various experts also explain the definition of regional integration differently based on their

¹³⁹ Frank Schimmelfennig, 'Regional Integration Theory', in *Oxford Research Encyclopedia of Politics* (Oxford: Oxford University Press, 2018).

respective understanding of the phenomenon.¹⁴⁰ In general, two groups of scholars have opinions about regional integration, namely those who make the EU a standard of regional integration and those who consider the EU a variant of a form of regional integration.

Scholars who have looked to the EU as a standard in the study of regional integration, such as Ernst B. Haas, emphasise that regional integration is an attempt to bring states together politically without coercion. According to Haas, this process involves task-sharing, perception-sharing and shared learning among member states.¹⁴¹ This approach reflects how regional states can co-operate voluntarily to achieve common goals without losing national sovereignty. Haas argues that regional integration is not simply establishing a supranational entity but a dynamic process that allows countries to build closer ties through intensive cooperation in various fields. This view positions the EU as an ideal model where political integration can be achieved through consensus and shared commitment of its member states, which then serves as a driver for forming more harmonised and coordinated policies at the regional level.

In line with Haas, scholars such as Tanja A. Börzel and Thomas Risse also highlight the importance of economic interdependence as one of the main factors in regional integration, using the EU experience as concrete evidence of this argument.¹⁴² They argue that as countries become more economically connected, they are more likely to integrate their policies in other areas, such as politics, security, and law.¹⁴³ Börzel and Risse point out that deep economic integration in the EU has created an impetus to expand interaction and cooperation in various sectors, thus strengthening regional cohesion. They add that the success of regional integration depends not only on economic interdependence but also on the existence of a collective drive to expand interaction to other sectors, strengthening relations between member states and creating a more solid foundation for sustainable integration.

In addition, the role of political elites, both at the regional and national levels, is also considered a key factor in the regional integration process, which is reflected in the design

¹⁴⁰ Philippe De Lombaerde, ed., *Handbook of Regional Cooperation and Integration* (Edward Elgar Publishing, 2024), <https://doi.org/10.4337/9781800373747>.

¹⁴¹ Ernst B. Haas, 'The Study of Regional Integration: Reflections on the Joy and Anguish of Pretheorizing', *International Organization* 24, no. 4 (1970): 607–8, <https://doi.org/10.1017/S0020818300017495>.

¹⁴² Tanja A. Börzel and Thomas Risse, 'Grand Theories of Integration and the Challenges of Comparative Regionalism', *Journal of European Public Policy* 26, no. 8 (3 August 2019): 1231–52, <https://doi.org/10.1080/13501763.2019.1622589>.

¹⁴³ Börzel and Risse, 1239.

of the established regional organisations.¹⁴⁴ Scholars influenced by the development of the EU often emphasise the importance of collective identity as a critical element in regional integration.¹⁴⁵ This identity is built through intensive interaction among member states, creating a sense of community and shared purpose. Furthermore, the crises experienced by the EU along the way are also seen as an essential element affecting the cohesiveness of regional integration. Crises often force member states to cooperate more closely to overcome common challenges, strengthening their bonds. In this sense, the EU is not only seen as a model of successful integration but also as a laboratory that demonstrates how crises can catalyse deeper and closer integration in various fields.¹⁴⁶

Amid the dominance of an EU-centric understanding of regional integration, Amitav Acharya has expressed a different perspective. According to Acharya, regionalism is not a concept that originated entirely in the "West" or the European region but has also emerged in other parts of the world, reflecting the richness of each region's local culture and heritage.¹⁴⁷ As such, Acharya emphasises that each region has its unique form of regionalism, which cannot be measured by standards or frameworks developed in Europe.¹⁴⁸ This view challenges the dominance of EU-centric approaches in the study of regionalism. It proposes that we should better appreciate and understand the diversity of forms of regionalism in different regions of the world.

Acharya also rejects the use of the term "regional integration" in favour of "regionalism" or "comparative regionalism" to describe this phenomenon. According to him, the term "integration" has been overly influenced by an EU-centric approach that tends to regard forms of regionalism outside Europe as 'less than perfect' or not ideal. In Acharya's view, each form of regionalism has its unique characteristics and dynamics, which cannot be equated with the European integration experience. Therefore, regionalism is more neutral and inclusive, allowing for more diverse analyses not limited to one particular integration

¹⁴⁴ Börzel and Risse, 'Grand Theories of Integration and the Challenges of Comparative Regionalism', 3 August 2019.

¹⁴⁵ Theresa Kuhn, 'Grand Theories of European Integration Revisited: Does Identity Politics Shape the Course of European Integration?', *Journal of European Public Policy* 26, no. 8 (3 August 2019): 1215, <https://doi.org/10.1080/13501763.2019.1622588>.

¹⁴⁶ Liesbet Hooghe and Gary Marks, 'Grand Theories of European Integration in the Twenty-First Century', *Journal of European Public Policy* 26, no. 8 (3 August 2019): 1113–33, <https://doi.org/10.1080/13501763.2019.1569711>.

¹⁴⁷ Amitav Acharya, 'Regionalism Beyond EU-Centrism', in *The Oxford Handbook of Comparative Regionalism*, ed. Tanja A. Börzel and Thomas Risse-Kappen, First edition, Oxford Handbooks (Oxford, United Kingdom: Oxford University Press, 2016), 109.

¹⁴⁸ Amitav Acharya, 'Comparative Regionalism: A Field Whose Time Has Come?', *The International Spectator* 47, no. 1 (March 2012): 3–15, <https://doi.org/10.1080/03932729.2012.655004>.

model. This perspective enables a broader understanding of how regional organisations develop and function across cultural and historical contexts.

Acharya's argument is supported by the fact that regional organisations were formed not only in the European region but also in other regions such as Asia, Latin America, and Africa, each of which had different backgrounds and motivations for their formation.¹⁴⁹ In Asia, for example, ASEAN was formed to maintain political stability and security in the region, while in Latin America, Mercosur emphasises economic cooperation more.¹⁵⁰ In Africa, the African Union (AU) was established with broader objectives, including economic development, security and political integration. This diversity of goals and motivations shows that regionalism is not a homogenous concept but must be understood in the specific context in which the regional organisation was formed and operates. As such, Acharya's views enrich the discussion on regionalism by emphasising the importance of appreciating the differences and complexities in different world regions.

Based on the explanation of the two groups of perspectives on regional integration described above, there are at least three essential points regarding regional integration. First, it is undisputable that the EU inspires its regional organisations to design organizational institutions.¹⁵¹ However, due to different needs and resources, the EU cannot be used as a standard for other regional organisations. Secondly, the regional integration that has evolved in the EU's organisational development can occur due to internal and external factors. However, not all regional organisations have the same experience as the EU. Therefore, the EU's form of regional integration cannot be used as a standard of perfection for other organisations.¹⁵² Nonetheless, the EU can be an excellent model for the development process of regional integration as reflected in the changes in the main agreements, institutional design, and shared goals. Third, variants of regional integration occur in all regional organisations with different histories, experiences, and goals. Therefore, in assessing a variant of regional integration, it cannot be said to be good or bad. Still, it is based on the political agreement to establish the organisation.

¹⁴⁹ Christina J. Schneider, 'The Political Economy of Regional Integration', *Annual Review of Political Science* 20, no. 1 (11 May 2017): 229–48, <https://doi.org/10.1146/annurev-polisci-051215-023006>.

¹⁵⁰ Frank Mattheis and Uwe Wunderlich, 'Regional Actorness and Interregional Relations: ASEAN, the EU and Mercosur', *Journal of European Integration* 39, no. 6 (2017): 723–38, <https://doi.org/10.1080/07036337.2017.1333503>.

¹⁵¹ Jetschke et al., 'Patterns of (Dis)Similarity in the Design of Regional Organizations'.

¹⁵² Philomena Murray, 'Comparative Regional Integration in the EU and East Asia: Moving beyond Integration Snobbery', *International Politics* 47, no. 3–4 (2010): 308–23, <https://doi.org/10.1057/ip.2010.13>.

Regardless of the arguments regarding the term regional integration or regionalism/comparative regionalism, this dissertation study prefers to use the term regional integration. Regional integration in this study is an open-ended process experienced by regional organisations; in this study, the EU and ASEAN are the primary studies. This study also does not aim to assess the form of regional integration but rather to study how the form of regional integration affects the legal instruments adopted to mitigate the impacts of climate change through the development of electromobility. Therefore, regional integration in this study is interpreted as a factor that encourages organisations to commit and agree to develop electromobility to mitigate the impacts of climate change through emission reduction. This study also uses the terms strong and weak regional integration as a form of variation adopted by regional organisations, such as the EU and ASEAN. Indicators of strong and weak are shown through adopting the form and character of legal instruments to develop electromobility. The distinction between strong and weak regional integration is not to judge good/inadequate or appropriate/inappropriate but rather to examine, discuss, elaborate and compare these two forms of variation by taking the EU and ASEAN as the focus of the study.

Scholars have been concerned with regional integration since the end of World War II, namely in 1948.¹⁵³ The EU is widely considered a leading regional integration experiment that is a model for other regional organisations.¹⁵⁴ Article 174 of the TFEU mentions economic, social, and territorial cohesion, providing a solid legal foundation for regional integration within the EU. Regional integration is successful in the EU version because of member states' economic interdependence and national leadership that fully encourages it.¹⁵⁵ Numerous theories, including intergovernmentalism, neo-functionalism, and post-functionalism, attempt to explain EU regional integration.¹⁵⁶ Nonetheless, the relevance and interdependence of member states are critical variables in determining the viability of regional integration.

¹⁵³ Amitav Acharya, 'Comparative Regionalism: A Field Whose Time Has Come?', *International Spectator* 47, no. 1 (2012): 3–4, <https://doi.org/10.1080/03932729.2012.655004>.

¹⁵⁴ Daniella Da Silva Nogueira de Melo and Maria Mary Papageorgiou, 'Regionalism on the Run: ASEAN, EU, AU and MERCOSUR Responses Mid the Covid-19 Crisis', *Partecipazione e Conflitto* 14, no. 1 (2021): 57–78, <https://doi.org/10.1285/i20356609v14i1p57>.

¹⁵⁵ Tanja A. Börzel and Thomas Risse, 'Grand Theories of Integration and the Challenges of Comparative Regionalism', *Journal of European Public Policy* 26, no. 8 (2019): 2, <https://doi.org/10.1080/13501763.2019.1622589>.

¹⁵⁶ de Melo and Papageorgiou, 'Regionalism on the Run: ASEAN, EU, AU and MERCOSUR Responses Mid the Covid-19 Crisis'; Liesbet Hooghe and Gary Marks, 'Grand Theories of European Integration in the Twenty-First Century', *Journal of European Public Policy* 26, no. 8 (2019): 1113–33, <https://doi.org/10.1080/13501763.2019.1569711>.

The EU integration model is categorised as a political union characterised by formal institutionalisation and division of functions between organs defined in the founding treaty.¹⁵⁷ It also has a centralised structure with clear jurisdictions.¹⁵⁸ This form of integration was not achieved in a short time; the EU needed several decades to achieve the political union variant of integration with a supranational organisational form. One of the moments that shaped regional integration was the crisis that occurred and was experienced by the majority of member states. The response of EU member states to overcome the crisis by giving greater authority to EU organs became one of the instruments to strengthen integration.¹⁵⁹

Climate change is also leading to a profoundly threatening crisis. For this crisis, the EU has strong competencies amidst the impacts faced by all member states. The EU is recognised as one of the critical actors promoting mitigation and coping with the effects of climate change globally. One of the efforts made by the EU to address the climate change crisis is to reduce emissions from the energy and transport sectors. To this end, the EU has adopted several legal instruments, both soft and hard law, to support electromobility development.

The EU and ASEAN serve as models of interdependence among member states. Economic factors, conflict repression, and the support of national political elites all contribute to the interdependence that underpins strong cohesion between EU member states.¹⁶⁰ The EU reaches regional maturity through political policy adaptation to the crises it encounters throughout time.¹⁶¹ Thus, regional integration is tested when the EU faces a crisis.¹⁶² The EU's history demonstrates that crises can be a critical phase of regional integration. The inability to manage crises effectively will push regional organisation leaders to adapt and evolve to deal with the problem.¹⁶³ Recent crises, such as pandemics, have

¹⁵⁷ Carlos Closa, Lorenzo Casini, and Omri Sender, *Comparative Regional Integration: Governance and Legal Models* (Cambridge: Cambridge University Press, 2016).

¹⁵⁸ Reuben Wong, 'Creeping Supranationalism The EU and ASEAN Experiences', in *Drivers of Integration and Regionalism in Europe and Asia: Comparative Perspective*, ed. Louis Brennan and Philomena Murray (London and New York: Routledge, 2015), 235–51.

¹⁵⁹ Zoe Lefkofridi and Philippe C. Schmitter, 'Transcending or Descending? European Integration in Times of Crisis', *European Political Science Review* 7, no. 1 (2015): 3–22, <https://doi.org/10.1017/S1755773914000046>.

¹⁶⁰ Börzel and Risse, 'Grand Theories of Integration and the Challenges of Comparative Regionalism', 2019, 4.

¹⁶¹ Federico Maria Ferrara and Hanspeter Kriesi, 'Crisis Pressures and European Integration', *Journal of European Public Policy*, 2021, 1–23, <https://doi.org/10.1080/13501763.2021.1966079>.

¹⁶² Ferrara and Kriesi.

¹⁶³ Erik Jones, R. Daniel Kelemen, and Sophie Meunier, 'Failing Forward? Crises and Patterns of European Integration', *Journal of European Public Policy* 28, no. 10 (2021): 1525, <https://doi.org/10.1080/13501763.2021.1954068>.

emphasised the importance of the EU responding swiftly and efficiently. Although initially criticised for its tardiness in responding, the EU was able to coordinate regional actions in response to the pandemic crisis.¹⁶⁴

ASEAN has experienced a slow evolution of regional integration. This regional organisation in Southeast Asia was established in 1967 by the five founding countries of Indonesia, Malaysia, the Philippines, Singapore and Thailand through the Bangkok Declaration. Its establishment's original purpose was to strengthen cooperation in economic, security, cultural, educational, agricultural, fisheries, and other objectives for mutual benefit.¹⁶⁵

The Bangkok Declaration officially embarked on the evolution of Southeast Asian regional integration by establishing ASEAN. However, the declaration did not have a significant impact on ASEAN's regional integration due to the wide-ranging objectives and temporary architecture of the organisation, resulting in unclear relationships between member states.¹⁶⁶ The selection of the word 'declaration' for the name of the document also shows that there is a soft law character that is not legally binding for the ASEAN founding countries.

The progress of ASEAN regional integration continued with the adoption of the Declaration of ASEAN Concord or Bali Concord I. This document differed significantly from the Bangkok Declaration as it included more specific areas of cooperation. The areas of collaboration are political, economic, social, cultural, information, security, and improvement of ASEAN Machinery.¹⁶⁷ Although it remains a 'declaration' document, member states strongly commit to adopting a permanent organisational design with specific areas of cooperation and objectives. Another difference is that the signatories of Bali Concord I are the Heads of State or Government of the member states, not the foreign minister, as in the 1967 Bangkok Declaration.

The first hard law legal instrument adopted by ASEAN was the Treaty of Amity and Cooperation in Southeast Asia (TAC) in 1976. The TAC also included fundamental principles that influenced ASEAN integration for at least three decades afterwards. These principles are mutual respect, the right of state sovereignty, non-interference, peaceful

¹⁶⁴ Martin Rhodes, “‘Failing Forward’: A Critique in Light of Covid-19”, *Journal of European Public Policy* 28, no. 10 (2021): 13, <https://doi.org/10.1080/13501763.2021.1954067>.

¹⁶⁵ The ASEAN Secretariat, ‘The ASEAN Declaration (Bangkok Declaration)’, 1967.

¹⁶⁶ Simon Chesterman, ‘Does ASEAN Exist: The Association of Southeast Asian Nations as an International Legal Person’, *Singapore Year Book of International Law and Contributors* 12 (2008): 199–211.

¹⁶⁷ The ASEAN Secretariat, ‘Declaration of Asean Concord (Bali Concord I)’, 1976, <https://asean.org/the-declaration-of-asean-concord-bali-indonesia-24-february-1976/>.

settlement of disputes, renunciation of the threat or use of force, and practical cooperation.¹⁶⁸ The TAC was amended several times with the adoption of the first (1987), second (1998), and third (2010) protocols. After the third protocol was adopted, the scope of the TAC expanded even to non-Asian countries such as Australia, New Zealand, the United States, and France.¹⁶⁹

However, with these three legal instruments, it is still quite challenging to classify the model of regional integration initiated by ASEAN. The integration model leads to the community type with intergovernmental organisational forms and consensus decision-making. The Bangkok Declaration, Bali Concord I, and TAC did not establish a specific integration model. ASEAN attempted to become a community by adopting the ASEAN Charter in 2008.¹⁷⁰ This legal instrument marked a new era for ASEAN as a regional and legal entity. The ASEAN Charter is also an attempt by member states to provide a legal basis for more stable and sustainable regional cooperation.¹⁷¹ The 2008 adoption of the ASEAN Charter provides a legal impetus for the region's regional integration procedures to be distinct.

Regional integration in ASEAN is often stagnant, but significant progress is made occasionally.¹⁷² This fact must be connected to the 2008 adoption of the ASEAN Charter, a significant step toward regional integration. However, as with the EU, the situation is inextricably linked to the dynamics of ASEAN as a regional organisation founded more than five decades ago. The most severe crisis to strike ASEAN occurred during the 1997 'Asia Financial Crisis'.¹⁷³ The most recent catastrophe is the pandemic, to which ASEAN responded with 'business as usual' and without integration.¹⁷⁴

¹⁶⁸ The ASEAN Secretariat, 'Treaty of Amity and Cooperation in Southeast Asia', 1976, <http://agreement.asean.org/home/index/3.html>.

¹⁶⁹ Eric Yong Joong Lee, 'Legal Development of the ASEAN Community Building', in *ASEAN International Law*, ed. Eric Yong Joong Lee (Singapore: Springer Nature Singapore, 2022).

¹⁷⁰ Closa, Casini, and Sender, *Comparative Regional Integration: Governance and Legal Models*.

¹⁷¹ Imelda Deinla, 'The Development of the Rule of Law in ASEAN: The State and Regional Integration' (University of New South Wales, 2009).

¹⁷² Koichi Ishikawa, 'The ASEAN Economic Community and ASEAN Economic Integration', *Journal of Contemporary East Asia Studies* 10, no. 1 (2021): 25, <https://doi.org/10.1080/24761028.2021.1891702>.

¹⁷³ Iwan J. Azis, 'ASEAN Economic Integration: Quo Vadis?', *Journal of Southeast Asian Economies* 35, no. 1 (2018): 2–12, <https://doi.org/10.1355/ae35-1b>.

¹⁷⁴ Jürgen Rüländ, 'Covid-19 and ASEAN: Strengthening State-Centrism, Eroding Inclusiveness, Testing Cohesion', *International Spectator* 56, no. 2 (2021): 15, <https://doi.org/10.1080/03932729.2021.1893058>.

2.7. Concluding Remarks

This chapter has extensively examined the complex topic of electromobility, namely its delicate connection with climate change and the more comprehensive energy transition. It has emphasised the significance of incorporating energy equity and sustainability into electromobility. In addition, it has presented a detailed comparison of the EU and the ASEAN, two significant regional organisations with different approaches to electromobility and energy policy. The correlation between climate change, energy transition, and electromobility is substantial, emphasising the necessity for successful comprehensive solutions to tackle and control these interconnected concerns.

The transition to electromobility is a technological change and a necessity to guarantee energy fairness. This implies that it is necessary to ensure a fair and balanced distribution of both the advantages and disadvantages of the transition to avoid any discrepancies that could worsen existing social imbalances. Both national and regional entities, like the EU and ASEAN, are actively working to encourage the progress of EVs. These regional groups provide structures and guidelines that facilitate electric vehicle infrastructure growth, promote cleaner technology use, and collaborate to achieve common environmental objectives.

The theoretical framework was used to analyse how electromobility has developed in the EU and ASEAN. This approach will entail closely examining the legal structures that regulate regional integration and the activities of international organisations. The study seeks to analyse the divergent paths followed by the EU and ASEAN to identify the advantages and drawbacks of each approach. This analysis will shed light on how varying legal and policy frameworks can impact the effectiveness of electromobility efforts. This comparative analysis is essential for comprehending the many techniques utilised by regional organisations to negotiate the intricacies of the energy transition.

The upcoming chapter will thoroughly analyse the legal and policy frameworks that support electromobility in the EU and the ASEAN. The study will examine the implementation of electromobility agendas in various regions, the obstacles they have faced, and the insights that might be gleaned from their experiences. This comprehensive analysis will improve our comprehension of the correlation between electromobility and energy justice and offer essential direction for policymakers and stakeholders endeavouring to accomplish sustainable and fair energy transitions worldwide.

CHAPTER III: THE DEVELOPMENT OF ELECTROMOBILITY LEGAL ENVIRONMENT IN THE EUROPEAN UNION

3.1. Introduction

This chapter will examine the development of the legal environment for electromobility in the EU based on climate change and energy policies adopted at the regional level. The analysis in this chapter will attempt to answer the research question of developing an electromobility legal framework in the EU. The focus of this chapter is to discuss and analyse the EU by examining the dynamics of climate change governance and the legal framework for electromobility in the EU. The analysis focuses on seven aspects: climate change, renewable energy, energy efficiency, vehicle emissions, sustainable investment, and building performance. In addition, this chapter will also discuss the development of electromobility in several EU member states. This section will also discuss state aid's role in forming the electromobility ecosystem in each country.

It is of the utmost importance to have a solid understanding of developing the legal framework for electromobility in the EU. There is no denying that the elements that speed up or slow down the advancement are inextricably linked. To explain the progress made in electromobility within the EU, a characterisation of each legal product that governs the essential components that facilitate the progression of electromobility will be necessary. This research also considers the legal measures that have been chosen and adopted by the EU to encourage the growth of the ecosystem associated with electromobility.

3.2. Dynamics of the European Union Climate Change Governance

According to a report released by the IPCC in 2023, the European region faces risks from climate change, including flooding, extreme temperature increases, water scarcity, and crop failures that will affect people, the economy, and infrastructure.¹⁷⁵ Legal approaches are often used to mitigate greenhouse gas emissions by adopting hard or soft laws governing

¹⁷⁵ Katherine Calvin et al., 'IPCC, 2023: Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (Eds.)]. IPCC, Geneva, Switzerland.', First (Intergovernmental Panel on Climate Change (IPCC), 25 July 2023), <https://doi.org/10.59327/IPCC/AR6-9789291691647>.

standards, permits, taxes, emissions trading, offsetting mechanisms, financing schemes and other incentive mechanisms.¹⁷⁶ Bradbrook argues that the essential reason for a legal regime to regulate new technologies to mitigate climate change, especially in the energy sector, is to provide legal protection to investors and consumers and avoid doubts about the benefits of using clean energy to mitigate climate change.¹⁷⁷

3.2.1. Solidarity Principle as a Foundation of Regional Integration

The principle of solidarity is one of the essential elements, along with democracy and the rule of law, contained in the EU's fundamental law.¹⁷⁸ The principle of solidarity in the EU legal system developed significantly after the entry into force of the Lisbon Treaty in 2009, which focused on promoting economic, social, and territorial cohesion.¹⁷⁹ The existence of this principle is also a clear statement of the Treaty on the Functioning of the European Union (TFEU), which calls for more robust regional integration. Article 174 TFEU mandates the EU as a regional organisation to strengthen economic, social, and territorial cohesion by adopting harmonised development policies that take into account regional diversity. Article 177 TFEU also authorises the EU to adopt the necessary economic and legal instruments to strengthen this cohesion.¹⁸⁰

The treaties under which the EU was established explicitly mention the principle of solidarity for specific affairs.¹⁸¹ Although it should be recognised that the EU treaties does not provide a detailed explanation of the meaning of the principle of solidarity.¹⁸² Dagilytė distinguishes solidarity in the EU context into two variations: solidarity as a fundamental

¹⁷⁶ Kati Kulovesi, Michael Mehling, and Erkki J. Hollo, 'Introduction: Climate Change and the Law', in *Climate Change and the Law* (New York: Springer, n.d.), 1–693.

¹⁷⁷ Adrian J Bradbrook, 'Creating Law for Next Generation Energy Technologies', *Journal of Energy & Environmental Law* Winter 201 (2011): 17–38.

¹⁷⁸ Kaisa Huhta and Leonie Reins, 'Solidarity in European Law and Its Application in the Energy Sector', *International and Comparative Law Quarterly* 72, no. 3 (July 2023): 774, <https://doi.org/10.1017/S002058932300026X>.

¹⁷⁹ Esin Küçük, 'Solidarity in EU Law: An Elusive Political Statement or a Legal Principle with Substance?', *Maastricht Journal of European and Comparative Law* 23, no. 6 (December 2016): 970, <https://doi.org/10.1177/1023263X1602300604>.

¹⁸⁰ Küçük, 971.

¹⁸¹ Marcus Klamert, 'Loyalty and Solidarity as General Principles', in *Research Handbook on General Principles in EU Law: Constructing Legal Orders in Europe*, ed. Katja S. Ziegler, Päivi J. Neuvonen, and Violeta Moreno-Lax, Research Handbooks in European Law (Cheltenham, UK Northampton, MA, USA: Edward Elgar Publishing, 2022), 118–35, <https://doi.org/10.4337/9781784712389>.

¹⁸² Huhta and Reins, 'Solidarity in European Law and Its Application in the Energy Sector', 774.

value and a legal principle.¹⁸³ Solidarity as a fundamental value of the EU is contained in Article 2 TEU, which is a moral statement and understanding between member states reflected in joint action and responsibility.¹⁸⁴ Therefore, solidarity as a value in its implementation is reciprocal between fellow bound entities, in this case, EU member states.¹⁸⁵ The reciprocity of solidarity value is a consequence of the common interests of EU member states.¹⁸⁶ The value of solidarity is also a counterweight to the competition that is also applied in the EU internal market.¹⁸⁷ Thus, solidarity as a value has been one of the integral foundations since the establishment of the EU as a regional organisation.

The important question is: does solidarity as a value significantly contribute to shaping the characteristics of EU regional integration? This dissertation research argues that solidarity (as a value) has contributed but not significantly. The establishment of the EU as a regional organisation underwent an evolutive development. The EU is the successor of the previous organisation, the European Community, which is also an evolution of the European Atomic Energy Community (EURATOM), the European Coal and Steel Community (ECSC), and the European Economic Community (EEC).¹⁸⁸ In addition, the treaty established the regional organisation known as the EU, which also evolved from the Treaty of Rome 1957 to the Treaty of Lisbon 2007.¹⁸⁹ Therefore, more than solidarity as a value is needed to characterise a solid regional integration. As an institution that upholds the rule of law, the value of solidarity must be transformed into a legal principle¹⁹⁰ that is

¹⁸³ Eglė Dagilytė, ‘Solidarity: A General Principle of EU Law? Two Variations on the Solidarity Theme’, in *Solidarity in EU Law: Legal Principle in the Making*, ed. Andrea Biondi, Eglė Dagilytė, and Esin Küçük (Cheltenham, UK: Edward Elgar Publishing, 2018), 71.

¹⁸⁴ Dagilytė, 72–73.

¹⁸⁵ Peter Hilpold, ‘Understanding Solidarity within EU Law: An Analysis of the “Islands of Solidarity” with Particular Regard to Monetary Union’, *Yearbook of European Law*, 27 November 2015, 261, <https://doi.org/10.1093/yel/yev020>.

¹⁸⁶ Irina Domurath, ‘The Three Dimensions of Solidarity in the EU Legal Order: Limits of the Judicial and Legal Approach’, *Journal of European Integration* 35, no. 4 (June 2013): 2, <https://doi.org/10.1080/07036337.2012.704630>.

¹⁸⁷ Streeck Wolfgang, ‘Competitive Solidarity: Rethinking the European Social Model’, Working Paper, MPIfG Working Paper (Max Planck Institute for the Study of Societies, 1999), <http://www.mpifg.de/pu/workpap/wp99-8/wp99-8.html>.

¹⁸⁸ Martha M. Roggenkamp et al., eds., *Energy Law in Europe: National, EU, and International Regulation*, Third edition (Oxford, United Kingdom: Oxford University Press, 2016), 194.

¹⁸⁹ Roger Goebel, ‘An Historical Perspective I: From Community to Union (1957–1993)’, in *Oxford Principles of European Union Law*, ed. Robert Schütze and Takis Tridimas, First edition (Oxford, United Kingdom: Oxford University Press, 2018), 4–45.

¹⁹⁰ A. Sangiovanni, ‘Solidarity in the European Union’, *Oxford Journal of Legal Studies* 33, no. 2 (1 June 2013): 10, <https://doi.org/10.1093/ojls/gqs033>.

constitutionally recognised (primary law),¹⁹¹ can be applied in secondary law that regulates various kinds of affairs,¹⁹² Judges also use it as a basis for deciding concrete cases.¹⁹³

Following the Treaty of Lisbon's entry into force on 1 December 2009, approximately thirteen articles contain the principle of solidarity governing various fields of affairs. In the TEU, seven articles contain the principle of solidarity, namely EU values in the general and internal market (Article 2), standard foreign and security policy (Article 24, Article 31, and Article 32), and external action (Article 21 and Article 3 (5)). In the TFEU, there are also six articles, which include energy (Article 122 and Article 194), protection of the environment (Article 191 and Article 194), asylum, immigration, external border control (Article 67 and Article 80), terrorism, natural or man-made disasters (Article 222). Thus, the principle of solidarity has been constitutionally recognised by the EU's founding treaties as a regional organisation and by secondary law that applies the principle in specific fields. For instance, the EU has adopted the Renewable Energy Directive and the Energy Efficiency Directive in the energy sector. The principle of solidarity in EU law, particularly in the energy sector, is an essential factor in mitigating climate change, especially in the energy sector, through the development of electromobility.¹⁹⁴

Article 191 TFEU has provided broad competence in the EU's environmental sector, including climate change. Therefore, the EU has adopted various legal instruments governing climate change to maintain good and clean environmental quality for EU citizens. In addition, Article 37 of the Charter of Fundamental Rights of the European Union also mandates the EU to integrate organisational policies with environmental protection aspects following the principles of sustainable development. Therefore, within its jurisdiction, the EU has a solid legal basis and competence to regulate the ecological sector, including climate change.

The remaining question is: Has the principle of solidarity been the basis for judges to decide case law in the EU? Factually, the application of the principle of solidarity by the

¹⁹¹ Hilpold, 'Understanding Solidarity within EU Law', 256; Chris Hilson, 'Rights and Principles in EU Law: A Distinction without Foundation?', *Maastricht Journal of European and Comparative Law* 15, no. 2 (n.d.): 196; Dagilytė, 'Solidarity: A General Principle of EU Law? Two Variations on the Solidarity Theme', 79–80.

¹⁹² Dagilytė, 'Solidarity: A General Principle of EU Law? Two Variations on the Solidarity Theme', 82–83; Huhta and Reins, 'Solidarity in European Law and Its Application in the Energy Sector', 772; Klamert, 'Loyalty and Solidarity as General Principles'.

¹⁹³ Dagilytė, 'Solidarity: A General Principle of EU Law? Two Variations on the Solidarity Theme', 79–80.

¹⁹⁴ Sami Andoura, 'Energy Solidarity in Europe: From Independence to Interdependence', Project: A Test for European Solidarity (Jacques Delors Institute, July 2013), 18–19.

courts has existed since the establishment of the EU internal market.¹⁹⁵ Specifically in the energy sector, two judgments of the Court of Justice of the European Union (CJEU) have become the discourse of legal scholars and provide interpretations of how the principle of solidarity is implemented in the EU energy sector. The two case laws are Case T-883/16 Poland v Commission.¹⁹⁶ and Case C-848/19 P Germany v Poland,¹⁹⁷ Also known as the OPAL Ruling.

The two case laws confirmed that the principle of solidarity is recognised in EU treaties, especially in Article 2 TEU, in Article 3(3) TEU, Article 24(2) and (3) TEU, Article 122(1) TFEU and Article 222 TFEU. The implication of this principle is not only to the EU as an institution but also to its member states.¹⁹⁸ Therefore, the EU is obliged to adopt policies based on the principle of solidarity and member states also have an obligation to apply the principle in their relations with each other.¹⁹⁹ Thus, the principle of solidarity binds the EU and its member states. There are two relationships: vertical between the EU and its member states and horizontal between EU member states to apply the principle of solidarity in the legal framework of the energy sector.²⁰⁰

The principle of solidarity in the energy sector also binds member states to provide mutual assistance in emergencies such as natural disasters and terrorist attacks.²⁰¹ In addition, the EU cannot restrict the principle of solidarity by adopting secondary legal instruments. Moreover, according to the court's judgement, the principle of solidarity balances the interests of the EU and its member states under their respective competencies and the interests of other stakeholders involved in the EU energy sector.²⁰² The existence of the solidarity principle also obliges the EU to adopt energy policies that do not negatively impact member states.²⁰³

¹⁹⁵ Esin Küçük, 'Solidarity in the EU: What Is In A Name?', *Nordic Journal of European Law* 6, no. 2 (9 September 2023): 4, <https://doi.org/10.36969/njel.v6i2.25409>.

¹⁹⁶ Case T-883/16 Republic of Poland v European Commission (Court of Justice of the European Union 10 September 2019).

¹⁹⁷ Case C-848/19 P Federal Republic of Germany v Republic of Poland (Court of Justice of the European Union 15 July 2021).

¹⁹⁸ Huhta and Reins, 'Solidarity in European Law and Its Application in the Energy Sector', 776.

¹⁹⁹ Case C-848/19 P Federal Republic of Germany v Republic of Poland paragraph 41; Case T-883/16 Republic of Poland v European Commission paragraphs 69–70.

²⁰⁰ Laura Kaschny, 'Energy Justice and the Principles of Article 194(1) TFEU Governing EU Energy Policy', *Transnational Environmental Law* 12, no. 2 (July 2023): 283, <https://doi.org/10.1017/S2047102523000110>.

²⁰¹ Case T-883/16 Republic of Poland v European Commission paragraph 71; Case C-848/19 P Federal Republic of Germany v Republic of Poland paragraph 67.

²⁰² Case T-883/16 Republic of Poland v European Commission paragraph 72.

²⁰³ Case T-883/16 Republic of Poland v European Commission paragraph 77.

Legal scholars heavily criticised the OPAL Ruling. Boute argued that the General Court simplified the principle of solidarity in the energy sector and interpreted it too textually. The judgement should have considered the possibility of legal uncertainty in future EU energy policies.²⁰⁴ Nouicer et al. delivered another argument, illustrating the General Court's interpretation of the principle of solidarity as a silver bullet that could jeopardise the achievement of EU targets in the energy sector, such as the use of renewable energy and energy efficiency since each member state has different capabilities.²⁰⁵ Talus also shared a similar opinion, predicting that the OPAL Ruling could require the readaptation and reinterpretation of the EU legal framework in the energy sector to fulfil the principle of solidarity as constructed by the General Court.²⁰⁶

Based on the discussion above, there are three important highlights regarding the principle of solidarity adopted by the EU, especially in the energy sector. First, solidarity is a fundamental principle underlying the establishment of the EU as a regional organisation. This principle is essential in shaping EU regional integration, especially in responding to climate change. Second, solidarity is recognised as a value and a legal principle applied in various sectoral policies. The principle of solidarity in the EU energy law framework plays a vital role in harmonising policies at the regional and national levels. Therefore, it is easier for the EU to harmonise and integrate energy policies with solidarity as a value and principle. Third, applying the principle of solidarity in EU secondary law governing energy requires mutual assistance from member states that also use the principle of solidarity in the jurisdiction of their energy legal framework.

In the context of electromobility development, the solidarity principle is fundamental. Without applying the principle of solidarity in the legal framework of electromobility development of the EU and member states, there will be no harmonisation and integration of policies. This condition will also affect the internal market, especially electromobility. Therefore, this dissertation argues that the principle of solidarity is the basis for strong EU regional integration and affects the development of electromobility in EU member states. The following section will explain and discuss the challenges faced by the

²⁰⁴ Anatole Boute, 'The Principle of Solidarity and the Geopolitics of Energy: Poland v. Commission (OPAL Pipeline)', *Common Market Law Review* 57, no. 3 (2022): 17.

²⁰⁵ Athir Nouicer et al., 'The EU Clean Energy Package', Technical Report (European University Institute, 2020), 24–25, <https://cadmus.eui.eu/bitstream/handle/1814/68899/QM-01-20-700-EN-N.pdf?sequence=1>.

²⁰⁶ Kim Talus, 'The Interpretation of the Principle of Energy Solidarity – A Critical Comment on the Opinion of the Advocate General in OPAL', *Energy Insight* (Oxford: The Oxford Institute for Energy Studies, April 2021), 5, <https://www.oxfordenergy.org/publications/the-interpretation-of-the-principle-of-energy-solidarity-a-critical-comment-on-the-opinion-of-the-advocate-general-in-opal/>.

EU in building an electromobility ecosystem, the underlying legal framework and examples of EU member states adopting legal frameworks for electromobility development.

3.2.2. EU Internal and External Challenges

This dissertation argues that the EU still has internal and external challenges despite a clear legal framework. These challenges come from internal and external to the EU with a spectrum involving certain actors and issues. The actors that lead to internal challenges are the EU member states themselves. The issue of Euroscepticism in EU climate change governance will also be a challenge discussed in this dissertation. Another internal challenge is the characteristics of EU legal instruments adopted to regulate climate change.

Table 2 Mapping Challenges in EU Climate Governance

Challenges			
Internal		External	
Actor	EU member states	Global Politics	EU leadership
Issue	Eurosceptic		Conflicts
EU Legal Instruments	Hard law	International Agreement	Hard law
	Soft law		Soft law

Source: Redefined from Yergin (2021).

External challenges include global politics, EU leadership, and conflicts in the European region. Further external challenges are EU-initiated or sponsored international agreements with specific legal characteristics. I will discuss and elaborate on each challenge in more detail in the sections below. The internal and external challenges faced by the EU need to be understood to gain a broad and critical perspective on the dynamics of EU climate change governance that has existed since the 1990s.

3.2.2.1. Internal Challenges

An emerging challenge from EU member states is the readiness to achieve climate targets to achieve climate neutrality by 2050. The EU has adopted the Regulation on the Energy Union and Climate Action governance, which requires member states to develop and submit

National Energy and Climate Plans (NECPs) by 2019.²⁰⁷ Furthermore, in 2020, the EU published an EU-wide assessment of the final NECPs, which concluded that EU member states had planned sufficiently to reach climate targets.²⁰⁸ The GHG reduction target of 20% by 2020 has been achieved with optimistic expectations for achieving climate targets in 2030 and 2050.²⁰⁹ However, it should be recognised that there remains a wide gap between plans and targets, particularly in terms of energy efficiency and detailed actions, budgets, and resource deployment to achieve the 2030 and 2050 climate targets.

Internal challenges arising from EU member state actors can be measured and addressed through monitoring and reporting mechanisms in EU legal instruments. Monitoring and reporting are attempts by the EU to strengthen climate change governance internally.²¹⁰ In addition, monitoring and reporting mechanisms become instruments for forecasting climate change policy disharmony and establishing a reference for policy improvement.²¹¹ The monitoring and reporting mechanism has been transformed from the EU perspective into a hard law instrument that forces member states to implement it. To achieve climate neutrality in 2050, the EU explicitly applies the mechanism and reporting instrument as a mandatory requirement. Since this mechanism is addressed in the above mentioned Regulation, it can be categorised as a hard law with a soft dimension.²¹² The application of hard law instruments shows a strong commitment between the EU and its member states and is politically strategic regarding sustainability to solve everyday problems.²¹³ Internal challenges arising from EU member states will continue to exist. In

²⁰⁷ European Union, 'Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, Amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and Repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council' (n.d.).

²⁰⁸ European Commission, 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions An EU-Wide Assessment of National Energy and Climate Plans Driving Forward the Green Transition and Promoting Economic Recovery through Integrated Energy and Climate Planning', 2020.

²⁰⁹ Claire Dupont et al., 'Three Decades of EU Climate Policy: Racing toward Climate Neutrality?', *WIREs Climate Change* 15, no. 1 (January 2024): e863, <https://doi.org/10.1002/wcc.863>.

²¹⁰ Jonas J. Schoenefeld and Andrew J. Jordan, 'Towards Harder Soft Governance? Monitoring Climate Policy in the EU', *Journal of Environmental Policy and Planning* 22, no. 6 (2020): 774–86, <https://doi.org/10.1080/1523908X.2020.1792861>.

²¹¹ Jonas J. Schoenefeld, 'The European Green Deal: What Prospects for Governing Climate Change with Policy Monitoring?', *Politics and Governance* 9, no. 3 (2021): 370–79, <https://doi.org/10.17645/pag.v9i3.4306>.

²¹² Terpan, 'Soft Law in the European Union-The Changing Nature of EU Law'.

²¹³ Kenneth W. Abbott and Duncan Snidal, 'Hard and Soft Law in International Governance', *International Organization* 54, no. 3 (2000): 421–56, <https://doi.org/10.1162/002081800551280>.

addition, it is necessary to strengthen monitoring and reporting instruments and the commitment of EU member states to achieve climate neutrality by 2050.

Another internal challenge within the EU is the growing Euroscepticism that right-wing parties promote. The emergence of Euroscepticism is not entirely new; at least, the idea emerged in 1985 and became famous in 1988 when the British Prime Minister, Margaret Thatcher, rejected the idea of full EU integration.²¹⁴ The idea then developed into an ideology of political parties that rejected the idea of EU integration and any policies that were initiated, leading the EU to play a central role and gain strong influence.²¹⁵ In its development, the group of European political parties that gained seats in the European Parliament brought the idea of Euroscepticism into the legislative process, especially in climate change and energy issues.²¹⁶

The existence of Euroscepticism is at least reflected in the configuration of political party groups in the European Parliament for the 2019-2024 period. The growing prominence of environmental concerns on the supranational political agenda has led to the emergence of 'green waves' that impact political parties competing in the 2019 European elections, including this subject in their manifestos.²¹⁷ The EPP, the most prominent political group in the EP, clearly declared in its manifesto that combating climate change will impact the economy and guarantee the long-term viability of the planet for future generations.²¹⁸ Moreover, the EPP is ideologically grounded in Christian Democrats, who often occupy a centrist position on the political spectrum. They demonstrate adaptability in acknowledging empirical circumstances and are receptive to implementing solutions that effectively address issues.²¹⁹ Hence, this political faction is naturally inclined to address environmental concerns, such as climate change, in its political manifesto.

²¹⁴ Ondřej Doležal, 'Euroscepticism of the Conservative Party and the Labour Party during the 2015 General Election Campaign', *Eastern Journal of European Studies* 12, no. 1 (1 June 2021): 243, <https://doi.org/10.47743/ejes-2021-0110>.

²¹⁵ Oliver Treib, 'Euroscepticism Is Here to Stay: What Cleavage Theory Can Teach Us about the 2019 European Parliament Elections', *Journal of European Public Policy* 28, no. 2 (2021): 3, <https://doi.org/10.1080/13501763.2020.1737881>.

²¹⁶ Aron Buzogány and Stefan Četković, 'Fractionalized but Ambitious? Voting on Energy and Climate Policy in the European Parliament', *Journal of European Public Policy* 28, no. 7 (2021): 1043, <https://doi.org/10.1080/13501763.2021.1918220>.

²¹⁷ Mitya Pearson and Wolfgang Rüdiger, 'The Greens in the 2019 European Elections', *Environmental Politics* 29, no. 2 (23 February 2020): 336–43, <https://doi.org/10.1080/09644016.2019.1709252>.

²¹⁸ EPP, 'EPP Manifesto "Lets Open the next Chapter for Europe Together"' (Brussels, Belgium: European People's Party, 2019).

²¹⁹ Thomas Jansen, 'The European People's Party: Origins and Development', *Choice Reviews Online* 36, no. 02 (1998): 36-1216-36–1216, <https://doi.org/10.5860/choice.36-1216>.

The S&D manifesto communicates a comparable narrative, employing a sustainable Europe that safeguards our Planet. S&D's approach to combating climate change includes measures to decrease CO₂ emissions and promote the use of low-emission vehicles. In addition, S&D provides alternative measures, including agriculture policy restructuring, heightened climate change objectives, and allocation of transition funding.²²⁰ Liberal factions within the Renew group also employ climate change as a storyline in their political agenda. Several programs are being implemented to enhance the enforcement of climate change rules through effective legal mechanisms. In addition, the pledge to prevent conflicts between foreign policies and accords and the Paris Agreement and the promotion of renewable energy and electric vehicles also assumes the form of a political manifesto. Furthermore, the Renew group advocates for converting the European Investment Bank into a Climate Bank to fund climate change initiatives.²²¹

The Identity and Democracy (IDE) group lacks interest in environmental and climate change issues. The political organisation's statute does not include the environment and climate change as part of its priorities for the 2019-2024 term. Conversely, the group prioritises reducing the EU's influence, managing illegal immigration, and reinforcing European identity.²²² Multiple scholarly research indicates that right-wing populist political parties show limited concern for environmental issues and climate change. The research undertaken by Huber et al. demonstrates that populist politics obstructs the lofty objectives established by the EU.²²³

Unlike IDE, EGP is a political group that has raised environmental concerns in its campaigns.²²⁴ The manifesto for the 2019 European Elections focuses on climate change. The proposed method entails using 100% renewable energy sources while completely phasing out reliance on fossil fuels and nuclear power. The EGP underscores that climate change poses a tangible threat that the European community must collectively confront. The manifesto released by EGP is sufficiently thorough to elucidate the areas under consideration

²²⁰ S&D, 'A New Social Contract for Europe: Party of European Socialists 2019 Manifesto', *Finance and Development*, vol. 55 (Brussels, Belgium: PES Socialists & Democrats, 2019), <https://doi.org/10.4324/9781315133195-8>.

²²¹ Renew Europe, 'Priorities 2019-2024 Our Vision to Renew Europe: From Reflection to Action', 2019, <https://www.reneweuropegroup.eu/priorities>.

²²² Identity and Democracy group, 'Statutes of the Identity and Democracy (ID) Group in the European Parliament' (2019).

²²³ Robert A. Huber et al., 'Is Populism a Challenge to European Energy and Climate Policy? Empirical Evidence across Varieties of Populism', *Journal of European Public Policy* 28, no. 7 (2021): 998–1017, <https://doi.org/10.1080/13501763.2021.1918214>.

²²⁴ Pearson and Rüdiger, 'The Greens in the 2019 European Elections'.

and the necessary actions to be taken.²²⁵ However, this publication needs more specific suggestions for achieving sustainable consumption.²²⁶ The European Conservatives and Reformists (ECR) is a political group concerned with environmental issues in its campaign program. The campaign's primary objectives are to decrease emissions, maintain air quality, save species and their habitats, and protect individuals involved in fishing and the marine industry. ECR also prioritises energy security concerns that advocate for nuclear energy as a viable alternative energy source. Moreover, it presupposes that using renewable energy sources, such as wind turbines and photovoltaic panels, necessitates significant land.

The socialist factions of the GUE/NGL political coalition consistently prioritise environmental concerns in their electoral efforts.²²⁷ This group has explicitly a 'Climate Emergency Manifesto' that addresses six key areas of concern. The initial matter centres on the legal foundation for climate justice. In addition, the EU must take charge of the transition away from fossil energy and reject the perpetual growth paradigm. This entails directing the change rather than relying solely on market forces, implementing public investment, and placing the duty on regulators rather than people. The final objective is to implement large-scale global measures to address climate change.

In the 2019 European Elections, six out of the seven political groups in the European Parliament included environmental problems, particularly climate change, in their political manifesto. This euromanifesto highlights that climate change is a shared issue that requires the cooperation of all parties to be resolved. The political factions in the EP do not exhibit substantial ideological disparities in their response to the problem of climate change. Nevertheless, the right-wing populist political group does not prioritise environmental issues and climate change in their campaign agenda. This tendency aligns with a study conducted by Lockwood, which found that right-wing populism tends to be associated with climate scepticism due to the inherent unacceptability of the climate change issue.²²⁸ This narrative of climate change denial is also consistent with globalisation and immigration concerns.²²⁹

²²⁵ EGP, 'EGP Priorities for 2019: What European Greens Fight For' (Berlin: European Greens Party, 2019).

²²⁶ IEPP, 'European Greens Party (EGP) Manifesto Analysis' (Brussels and London, 2019), <https://ieep.eu/news/ieep-manifesto-analysis-european-greens-party-egp>.

²²⁷ GUE/NGL, 'Climate Emergency Manifesto: We Only Have One Planet. Let's Save It. Now!' (Brussels, Belgium: European United Left-Nordic Green Left (GUE/NGL), 2019).

²²⁸ Matthew Lockwood, 'Right-Wing Populism and the Climate Change Agenda: Exploring the Linkages', *Environmental Politics* 27, no. 4 (4 July 2018): 712–32, <https://doi.org/10.1080/09644016.2018.1458411>.

²²⁹ David J. Hess and Madison Renner, 'Conservative Political Parties and Energy Transitions in Europe: Opposition to Climate Mitigation Policies', *Renewable and Sustainable Energy Reviews* 104, no. November 2017 (2019): 419–28, <https://doi.org/10.1016/j.rser.2019.01.019>.

In the 2024 European Elections, climate change was also still a prominent issue, although not as massive as in previous elections. The far-right remained consistent in not addressing climate change in its manifesto, posing a challenge to EU climate policy.²³⁰ The results of the 2024 European Elections showed an increase in seats for eurosceptic groups consolidated in a new parliamentary group, Patriot for Europe with the main motors of the Rassemblement National Party of France and Fidesz of Hungary. Patriots for Europe won 84 MEP seats and became the third largest faction in the European Parliament. The number of far-right MEPs is also in the ECR group with an increase to 79 seats. The increasing trend of far-right and eurosceptic seats was previously predicted.²³¹ This situation presents a challenge for the internal EU, especially for pro-European integration groups and environmental protection issues, especially energy and climate change. Groups such as the EPP and S&D still consistently make the issue of climate change a policy agenda in their manifestos.²³²

The challenges seriously question the legitimacy of the EU's climate policies, which are perceived to benefit only certain elites.²³³ Right-wing parties in EU member states oppose the EU's binding policies, particularly on emission reduction, renewable energy use, and energy efficiency, which are considered utopian and unrealistic.²³⁴ The real challenge that the EU should face is the delegitimisation of its climate policy by right-wing parties, as achieving climate targets will depend on public awareness and support.²³⁵ As an idea that seeks to undermine EU integration, countering Euroscepticism requires providing the necessary evidence that the EU remains relevant and that EU integration benefits EU citizens, especially in climate change and energy policy.

Euroscepticism is not limited to the EP but also to the Council. Other than being a co-legislator, the Council also has a role as a forum for debate and discussion for EU member state representatives on a particular topic.²³⁶ Therefore, the presence of EU member state

²³⁰ Mustafa Demir and Amelia Hadfield, 'The Challenge of the Populist Right in Democratic Europe in the 2024 European Parliamentary Elections', *The Fletcher Forum of World Affairs* 48, no. 2 (2024): 93–106.

²³¹ Cas Mudde, 'The 2024 EU Elections: The Far Right at the Polls', *Journal of Democracy* 35, no. 4 (October 2024): 121–34, <https://doi.org/10.1353/jod.2024.a937738>.

²³² 'EPP 2024 Manifesto: Our Europe, a Safe and Good Home for The People' (Brussels, 2024); 'The Europe We Want Social, Democratic, Sustainable: PES Manifesto for the 2024 European Elections' (Rome, 2024).

²³³ Liz Fisher, 'Challenges for the EU Climate Change Regime', *German Law Journal* 21, no. 1 (January 2020): 5–9, <https://doi.org/10.1017/glj.2019.87>.

²³⁴ Stella Schaller and Alexander Carius, *Convenient Truths: Mapping Climate Agendas of Right-Wing Populist Parties in Europe* (Berlin: Adelphi, 2019).

²³⁵ Fisher, 'Challenges for the EU Climate Change Regime'.

²³⁶ Sebastian Oberthür and Claire Dupont, 'The Council, the European Council and International Climate Policy: From Symbolic Leadership to Leadership by Example', in *The European Union as a Leader in*

officials with far-right ideology or euroscepticism in the Council will influence policy debates, especially on climate change.²³⁷

At the time of this dissertation research, the EU member states that hold the presidency are Czechia (1 July-31 December 2022), Sweden (1 January-30 June 2023), Spain (1 July-31 December 2023), Belgium (1 January-30 June 2024), and Hungary (1 July-31 December 2024).²³⁸ A notable difference between the five presidencies is the absence of energy and climate change issues in the priorities of the Hungary presidency. However, energy and climate change are recognised as the root causes of problems in agriculture and migration.²³⁹ Hungary's presidency was highlighted due to its government's perceived pro-euroscepticism and the momentum of its presidency following the European elections.²⁴⁰ Presidency in the Council is a formal power that can determine the priority agenda during the presidency, while still prioritising the right of other EU member states to jointly determine policy priorities. Therefore, the member state that holds the presidency of the council has an important role to play for at least a six-month period.²⁴¹

The further internal challenge faced by EU climate change governance is the legal instruments. The EU has adopted both hard and soft law legal instruments. Article 191 TFEU, as the basis of EU competence in the environment sector, has provided the basis for legal instruments adopted by the EU to regulate climate change. In addition, the energy sector is one of the EU's competencies under Article 194 TFEU. The EU's role in the energy sector is to ensure the operation of the energy market, ensure energy supply at the regional level, promote energy efficiency, energy saving and the development of renewable energy use, and promote the interconnection of energy networks.²⁴² The provision also means that the EU is primarily competent in regulating energy while sharing competence with member

International Climate Change Politics, ed. Rüdiger K.W. Wurzel and James Connelly (Routledge, 2010), 74–92, <https://doi.org/10.4324/9780203839959>.

²³⁷ Jeffrey Rosamond and Claire Dupont, 'The European Council, the Council, and the European Green Deal', *Politics and Governance* 9, no. 3 (30 September 2021): 357, <https://doi.org/10.17645/pag.v9i3.4326>.

²³⁸ European Council and the Council of the European Union, 'List of Presidencies of the Council of the European Union', accessed 3 November 2024, <https://www.consilium.europa.eu/en/council-eu/presidency-council-eu/timeline-presidencies-of-the-council-of-the-eu/>.

²³⁹ European Council and the Council of the European Union, 'Programme of the Hungarian Presidency of the Council of the European Union in the Second Half of 2024', accessed 3 November 2024, <https://hungarian-presidency.consilium.europa.eu/media/32nhoe0p/programme-and-priorities-of-the-hungarian-presidency.pdf>.

²⁴⁰ Ezster Wirth, "'Make Europe Great Again': Far Right Hungary Takes over Presidency of the Council of the European Union", *The Conversation*, 28 June 2024, <https://theconversation.com/make-europe-great-again-far-right-hungary-takes-over-presidency-of-the-council-of-the-european-union-233566>.

²⁴¹ Andreas Warntjen, 'Steering, but Not Dominating: The Impact of the Council Presidency on EU Legislation', in *Unveiling the Council of the European Union: Games Governments Play in Brussels*, ed. Daniel Naurin and Helen Wallace (Hampshire: Palgrave Macmillan, 2008), 217–18.

²⁴² Art. 194 para. (1) TFEU.

states.²⁴³ Thus, the collaboration between the EU and member states to manage the energy sector is expected to ensure the availability and affordability of energy commodities by EU citizens.

EU legal instruments on climate change and energy are fundamental to electromobility development. The legal character of these instruments will affect the sustainability of the electric vehicle ecosystem in the EU region. Climate change and energy transition are crucial to electromobility's development because, without these two issues, electric vehicles would not have been relevant to EU society.²⁴⁴ Therefore, the character of legal instruments, whether hard or soft, will determine electromobility's future. The question is why are legal instruments adopted by the EU categorised as internal challenges? Before answering this question, a discussion will be presented on the hard and soft law characteristics of EU legal instruments regarding the conceptions described by Kelemen and Terpan.

Kelemen argued that at the level of secondary legislation, two main legal instruments have the character of hard law, namely regulation and directive.²⁴⁵ The characteristics of hard law in rules are specific and harmonise and apply directly to all member states. At the same time, directives have characteristics that aim to form harmonise policies with flexibility for member states.²⁴⁶ Adopting hard law as a legal instrument for climate change has two advantages and disadvantages, especially in the energy sectors. The first advantage is the guarantee of commitment and long-term policies' durability, which is indicated by the existence of targets that must be achieved and transparent monitoring mechanisms.²⁴⁷ Furthermore, hard law shows clear obligations for each party, clarity of implementation mechanisms, and sanction and reward mechanisms.²⁴⁸ The first disadvantage of adopting a hard law is that due to the details of the implementation mechanism, there may be no room for flexibility for member states. This issue is closely related to innovations that emerge from within member states and public support for hard law implementation. Further,

²⁴³ Kaisa Huhta, 'The Scope of State Sovereignty under Article 194(2) TFEU and the Evolution of EU Competences in the Energy Sector', *International and Comparative Law Quarterly* 70, no. 4 (2021): 1007, <https://doi.org/10.1017/S0020589321000269>.

²⁴⁴ Daniel Yergin, *The New Map: Energy, Climate and the Clash of Nations* (New York: Penguin Books, an imprint of Penguin Random House LLC, 2021), 328.

²⁴⁵ R Daniel Kelemen, *Eurolegalism: The Transformation of Law and Regulation in the European Union*, *Nucl. Phys.*, vol. 13 (Cambridge and London: Harvard University Press, 2011), 41–43.

²⁴⁶ Kelemen, 13:41.

²⁴⁷ Abbott and Snidal, 'Hard and Soft Law in International Governance', 428.

²⁴⁸ Sharifah Sekalala, 'Hard Law and Soft Law in the Global Context', in *Soft Law and Global Health Problems Lessons from Responses to HIV/AIDS, Malaria and Tuberculosis* (Cambridge University Press, 2017), 35–36, <https://doi.org/10.1163/15718109820295741>.

achieving precise and detailed targets will depend on the capacity of each member state. Therefore, assistance and incentives will be needed to achieve the set targets collectively.

3.2.2.2. External Challenges

The external challenges EU climate change governance faces are global politics and international agreements. Global politics is a challenge mainly because global political conditions will affect the EU and vice versa. Therefore, EU leadership on climate change issues is essential. The EU has had an influential and significant role in climate change diplomacy in various international forums since 1991, as evidenced by the various international agreements adopted by the international community, such as the Kyoto Protocol, the Marrakech Accord, and the Paris Agreement.²⁴⁹ The EU has inspired other countries and international organisations to adopt legal instruments to make climate change issues relevant and essential both domestically and across jurisdictions.²⁵⁰ Diplomacy is an integral part of EU climate change governance, and it gives political and economic leverage to other countries or international organisations.²⁵¹

How does the EU's leadership on global climate change become an external challenge? As an entity acknowledged for its global leadership, any EU policy will generate positive and negative reactions from the international community. For instance, the EGD (European Green Deal, see in details below) sets a target of 55% emission reduction by 2030 compared to 1990.²⁵² This policy will serve as a benchmark for other countries and international organisations to achieve similar or at least close targets. Therefore, the consistency and implementation of the EU's climate change policy are essential to setting a standard for the international community. Policy inconsistency will definitely backfire and delegitimise the EU's leadership and diplomacy on climate change, energy transition, and electromobility issues.

²⁴⁹ Sebastian Oberthür and Claire Roche Kelly, 'EU Leadership in International Climate Policy: Achievements and Challenges?', *International Spectator* 43, no. 3 (2008): 36, <https://doi.org/10.1080/03932720802280594>.

²⁵⁰ Kulovesi, Mehling, and Hollo, 'Introduction: Climate Change and the Law'.

²⁵¹ Diana Vela Almeida et al., 'The "Greening" of Empire: The European Green Deal as the EU First Agenda', *Political Geography* 105, no. June (2023), <https://doi.org/10.1016/j.polgeo.2023.102925>.

²⁵² European Commission, 'Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions', Pub. L. No. COM(2019) 640 final (2019).

The argument is closely related to external challenges from the perspective of global politics, including conflicts, mainly around the European region. Conflicts, such as Russia's invasion of Ukraine in 2022, affect EU climate policy, especially in the energy sector, including the development of electromobility. Russia's invasion of Ukraine is not only a challenge for European countries but also for all countries in the world in terms of achieving climate targets.²⁵³ It must be recognised that the conflict between Russia and Ukraine brought a positive impact by removing the EU's dependence on fossil fuels from Russia. In this context, the conflict is a catalyst that accelerates the achievement of climate targets. It revealed that the EU's climate ambition to reduce dependence on fossil-based energy sources is vulnerable.²⁵⁴ The EU's climate ambition to reduce its dependence on fossil-based energy sources is susceptible due to its reliance on Russia's gas supply to Europe, which accounts for approximately 35% of Europe's gas consumption.²⁵⁵

The external challenge of the conflict between Russia and Ukraine, which later turned into an energy crisis, was addressed with good adaptation by the EU by adopting the REPowerEU Plan, which aims to accelerate the end of EU member states' dependence on Russian fossil energy.²⁵⁶ The Plan is implemented by accelerating the transition to clean energy use, energy efficiency and conservation, diversification of energy sources, and investment licensing reforms at national and regional levels. This mechanism aligns with the EU's pattern of turning crises into opportunities to strengthen integration further.²⁵⁷

The last external challenge is the international agreements that bind the EU. The main point in this aspect is related to the EU's leadership and diplomacy role in addressing climate change issues at the global level.²⁵⁸ To implement its ambitions externally, the EU actively initiates and supports various international agreements, both hard and soft law.²⁵⁹ The EU's participation in various international forums related to climate change, such as the

²⁵³ 'A Transformational Moment? The EU's Response to Russia's War in Ukraine' (Center for European Policy Studies, 30 May 2022), 26.

²⁵⁴ Valeria Costantini et al., 'Fuelling the Fire: Rethinking European Policy in Times of Energy and Climate Crises', *Energies* 15, no. 20 (20 October 2022): 15, <https://doi.org/10.3390/en15207781>.

²⁵⁵ Yergin, *The New Map*, 78.

²⁵⁶ European Commission, 'Communication from The Commission to The European Parliament, The European Council, The Council, The European Economic and Social Committee and The Committee of The Regions', Pub. L. No. COM(2022) 230 (2022), <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2022%3A230%3AFIN&qid=1653033742483>.

²⁵⁷ Ferrara and Kriesi, 'Crisis Pressures and European Integration', 5.

²⁵⁸ Sebastian Oberthür and Claire Dupont, 'The European Union's International Climate Leadership: Towards a Grand Climate Strategy?', *Journal of European Public Policy* 28, no. 7 (2021): 1095–1114, <https://doi.org/10.1080/13501763.2021.1918218>.

²⁵⁹ Tom Delreux and Frauke Ohler, 'Climate Policy in European Union Politics', *Oxford Research Encyclopedia of Politics*, no. March 2019 (2019): 1, <https://doi.org/10.1093/acrefore/9780190228637.013.1097>.

UN Climate Change Conference (COP) and the Paris Agreement, provides evidence of its commitment.

International agreements with both hard and soft law characteristics are an external challenge as they relate to the EU's commitment to leadership and its commitment to assist other countries on climate change issues. The hard and soft law characteristics of international agreements on climate change ratified by the EU will determine its influence and leadership in the future. Therefore, the EU needs to be prudent in ratifying or even initiating international agreements on climate change by considering the characteristics of hard law or soft law.²⁶⁰

The previous section has discussed the dynamics of EU climate change policy, including the internal and external challenges faced in achieving climate targets. The further focus will be on the EU legal framework on electromobility, which serves as a foundation for developing electromobility ecosystems in EU member states. In this context, the laws adopted by the EU are vital in driving electric vehicle innovation, production and adoption. Further analysis of these legal instruments will provide a deeper understanding of how the EU shapes and directs the development of electromobility to support its sustainability goals.

3.3. The EU Legal Framework on Electromobility: Integration Through Climate Target and Energy Transition

This section will discuss the EU legal framework on electromobility. The legal framework discussed is sustainable investment, energy efficiency, renewable energy, energy performance of building regulations, market design, and state aid. This research argues that the legal instruments adopted by the EU in these areas support the development of the electromobility ecosystem. Therefore, it is essential to discuss and elaborate on the legal framework of each field better to understand the development of electromobility in the EU. This section will also attempt to answer one aspect of the first research question (**Q1**) on developing an electromobility legal framework by the EU and the second research question (**Q2**) on the influence of variations in regional integration and choice of legal instruments on electromobility development.

Before discussing each legal framework, it is essential to understand that the ECL, Regulation 2018/1999, and the development of electromobility have very significant links,

²⁶⁰ Wessel, 'Normative Transformations in EU External Relations: The Phenomenon of "Soft" International Agreements', 86–87.

especially in the EU's strategy to address climate change and transition to climate neutrality by 2050. Each legal framework plays a different essential role and has a comprehensive approach to achieving the EU's climate and energy goals. The ECL, adopted in 2021, is the legal basis for the EU's commitment to be climate-neutral by 2050. At the heart of the ECL is an ambitious target to reduce GHG emissions by 55% by 2030. The ECL emphasises the importance of coherent and consistent policies across sectors, including transport, and encourages using low-carbon vehicles. Furthermore, Regulation 2018/1999 is also a key EU element for integrating energy and climate policies. It sets out a framework for governance, focusing on planning, reporting and monitoring national energy and climate plans. The Regulation aims to improve coordination among EU member states to ensure collective achievement of energy and climate targets.

The question is, how can these two regulations catalyse the development of electromobility? The ECL provides for overarching climate targets, while Regulation 2018/1999 establishes a governance structure to ensure coordinated efforts among EU member states in achieving these targets. The development of electromobility, in particular the use of electric vehicles, directly contributes to emissions reductions in the transport sector, which aligns with the broader climate goals set by the ECL. The electromobility ecosystem involves the deployment of EVs and associated infrastructure, such as charging stations. The development of electromobility is aligned with the EU's more comprehensive climate and energy objectives by reducing greenhouse gas emissions from the transport sector, which is a significant contributor to carbon emissions.

This dissertation argues that the EU legal framework on electromobility development is integral to achieving climate targets. Furthermore, the legal instruments adopted cover other policy areas such as energy, finance, and technical electric vehicles. This research's climate target legal framework will focus on emission reduction targets from the transport sector, especially cars and vans. The energy policy area will focus on energy efficiency, renewable energy, and energy performance and buildings. Furthermore, the financial policy area will discuss sustainable finance and state aid as two instruments that affect the acceleration of electromobility development in Europe. In the last section, a discussion will be presented on EV technical aspects, including batteries, which are a vital component in electric vehicles.

3.3.1 Climate Target

This section will discuss the legal framework for climate targets adopted by the EU to support the development of electromobility. This topic is essential as it will provide a complete and comprehensive understanding of electromobility development in the EU. This dissertation argues that the development of the EV ecosystem is an integral part of the EU's ambition to become "the first carbon-neutral continent in the world" by 2050.²⁶¹

The EU's commitment to reduce emission by implementing the Paris Agreement is articulated in the NDC, which constitutes a comprehensive framework and commitment to advancing electromobility. The EU aims to transform its transport system into a sustainable and ecologically friendly model through the implementation of legal instruments that integrate transport, energy, finance, and technology policy. These initiatives not only facilitate the attainment of climate objectives but also establish the region as a global frontrunner in electric mobility innovation and execution.

The EU NDC outlines aggressive climate objectives, including a minimum 55% decrease in GHG emissions by 2030 relative to 1990 levels and attaining climate neutrality by 2050. These climate pledges establish the basis for implementing a legal framework that promotes the advancement of electric mobility throughout the area. The incorporation of decarbonisation objectives within the transport, renewable energy, and technology innovation sectors has shaped the advancement of electric mobility. The advancement of electromobility is a significant element outlined in the EU NDC. This strategy incentivises electric vehicle manufacturing and delineates a defined schedule and measures for transitioning to zero-emission mobility. Furthermore, the EU NDC promotes the establishment of alternative fuel infrastructure to guarantee equitable access to charging facilities for EV customers throughout the regions of EU member states. This policy aligns with the overarching objective of establishing a sustainable and integrated electric mobility system.

The advancement of electric mobility in the EU is associated with the utilisation of renewable energy as a principal source for electricity generation, as indicated by the NDC promise to elevate the proportion of renewable energy in the energy mix to a minimum of 42.5% by 2030.²⁶² The utilisation of renewable energy sources, including wind, solar, and

²⁶¹ Yergin, *The New Map*, 388.

²⁶² Council Of The European Union, 'Submission to the UNFCCC on Behalf of the European Union and Its Member States on the Update of the Nationally Determined Contribution (NDC) of the European Union

ocean waves, decarbonises the power grid to which electric vehicle charging stations are linked. The EU is facilitating NDC implementation by promoting cross-border innovation. Member states are urged to align legislation to facilitate the advancement of electromobility throughout the region.

Therefore, the discussion of the EU legal framework on electromobility will not be separated from the climate target legal framework.²⁶³ For this reason, this section will generally discuss the legal instruments adopted by the EU following the release of The Commission Communication on A Policy Framework for Climate and Energy from 2020 to 2030 on 28 January 2014.²⁶⁴

The EU legal framework on climate targets in this section consists of:

- 1) Regulation (EU) 2018/842 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement (the Effort Sharing Regulation).
- 2) Regulation (EU) 2018/1999 on the governance of the Energy Union and climate action (the Governance Regulation).
- 3) Communication from The Commission to The European Parliament, The European Council, The Council, The European Economic and Social Committee and The Committee of The Regions COM/2019/640 final (The European Green Deal)
- 4) Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law')

The majority of legal instruments chosen are in the form of Regulations which, based on Article 288 TFEU, are legally binding and directly applicable in all member states. Regulations are also an effort to form specific, harmonise, and immediately applicable laws.²⁶⁵ The EU's choice of legal instruments solidifies its commitment to achieving climate targets and addressing environmental and energy issues.

and Its Member States' (Brussels: Council Of The European Union, 17 October 2023), 6, <https://data.consilium.europa.eu/doc/document/ST-14286-2023-INIT/en/pdf>.

²⁶³ This study does not assess the EU Directive 2003/87/EC on the Emission Trading System (ETS) and Regulation 2018/841 (the LULUCF Regulation) as it does not directly relate to electromobility. This research recognizes that the ETS Directive and LULUCF Regulation is an integral part of the EU's commitment to carbon reduction, however, in order to ensure a more focused and incisive study, the discussion of the ETS Directive and LULUCF regulation was not undertaken.

²⁶⁴ European Commission, 'Communications from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions COM(2014) 15 Final', *A Policy Framework for Climate and Energy in the Period from 2020 to 2030* (Brussels, 2014).

²⁶⁵ Kelemen, *Eurolegalism: The Transformation of Law and Regulation in the European Union*, 13:41.

Environmental problems, especially climate change, have a transnational character and must be resolved collectively, involving broad-scale policies.²⁶⁶ One of the EU policies that seeks to mitigate climate change is setting emission reduction targets. The development of the EU climate target is very ambitious, characterised by the gradual increase of emission reduction targets in the last decade. The 2020 target was set in 2009 at 20%, which then increased to 30% in 2030 through the 2030 climate target and finally the EGD, which set a target of 55%.²⁶⁷

The Effort Sharing Regulation (ESR) is the first hard law instrument adopted by the EU with legally binding obligations imposed on member states. This regulation applies an approach of imposing obligations that must be fulfilled by member states accompanied by various flexible options to achieve certain targets.²⁶⁸ This regulation is also a collective effort distributed to each member state to share the common burden of protecting the environment.²⁶⁹ The distribution of emission reduction targets can also be a catalyst for regional integration and demonstrate each member country's commitment to climate change and energy issues.

A further legal instrument is the Governance Regulation adopted by the EU in 2018. The legal basis for the establishment of this regulation is Article 192 and Article 194 TFEU, which authorise the European Parliament and the Council to form legislation to achieve environmental protection and ensure the availability of clean energy. The primary purpose of this regulation is for each EU member state to have common governance to realise an energy union and mitigate climate change.²⁷⁰ The core of the Governance Regulation is the obligation for member states to plan and report and the existence of an EU monitoring

²⁶⁶ Rüdiger K.W. Wurzel and Anthony R. Zito, “‘Green’ Europe: Differentiation in Environmental Policies”, in *Which Europe? The Politics of Differentiated Integration*, ed. Kenneth Dyson and Angelos Sepos, Palgrave Studies in European Union Politics (Basingstoke New York: Palgrave Macmillan, 2010), 265.

²⁶⁷ Jana Gheuens and Sebastian Oberthür, ‘Eu Climate and Energy Policy: How Myopic Is It?’, *Politics and Governance* 9, no. 3 (2021): 331, <https://doi.org/10.17645/pag.v9i3.4320>.

²⁶⁸ Marjan Peeters and Natassa Athanasiadou, ‘The Continued Effort Sharing Approach in EU Climate Law: Binding Targets, Challenging Enforcement?’, *Review of European, Comparative and International Environmental Law* 29, no. 2 (2020): 201, <https://doi.org/10.1111/reel.12356>.

²⁶⁹ Seita Romppanen, ‘Targets, Timetables and Effort Sharing as Governance Tools: Emergence, Scope and Ambition’, in *Handbook on European Union Climate Change Policy and Politics*, Elgar Handbooks in Energy, the Environment and Climate Change (Northampton: Edward Elgar Publishing, 2023), 218.

²⁷⁰ Sabine Schlacke and Michèle Knodt, ‘The Governance System of the European Energy Union and Climate Action’, *Journal for European Environmental & Planning Law* 16, no. 4 (6 December 2019): 326, <https://doi.org/10.1163/18760104-01604002>.

mechanism.²⁷¹ This legal instrument also aims to strengthen EU integration, especially in the energy sector, and reduce emissions to mitigate climate change.

To mitigate the impacts of climate change, the EU adopted a document known as the EGD in 2019 and the European Climate Law in 2021 in an effort to transform the challenge of climate change into an opportunity to achieve green and low-carbon economic growth.²⁷² The EGD consists of three main pillars namely transforming the EU economy for a sustainable future, a European Climate Pact, and the EU as a global leader.. The EGD consists of three main pillars: transforming the EU economy for a sustainable future, a European Climate Pact, and the EU as a global leader. These three pillars further mainstream climate change issues in the EU legal system. In recent decades, EU environmental law has evolved from sectoral and technical policies to one of the elements underlying the substance of EU law and politics.²⁷³ Diaz-Rainey et al. argue that EU climate change law policy generally involves implementing liberalisation, decarbonisation, and securing energy supply at the regional level.²⁷⁴

EGD is a grand strategy to turn ecological crises into economically and industrially favourable opportunities. It also illustrates the EU's ambition to play a more significant role in global climate change advocacy through moral intervention and international influence. However, the EGD is a form of the EU's commitment and ambition for internal consolidation to mitigate climate change.²⁷⁵ The EU's internal institutions, such as the European Commission, the Council, and the European Parliament, play a major role in climate change governance and spurring member states to achieve climate targets.²⁷⁶ Therefore, it is unsurprising that the EU has established the world's most advanced climate change governance.²⁷⁷ Internal consolidation is essential to delivering good climate change governance and effective legal instruments to achieve agreed-upon climate targets and ambitions.

²⁷¹ Kati Kulovesi and Sebastian Oberthür, 'Assessing the EU's 2030 Climate and Energy Policy Framework: Incremental Change toward Radical Transformation?', *Review of European, Comparative and International Environmental Law* 29, no. 2 (2020): 151–53, <https://doi.org/10.1111/reel.12358>.

²⁷² 'Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions (European Green Deal) COM (2019) 640 of 11 December 2019' (n.d.).

²⁷³ Alicja Sikora, 'European Green Deal – Legal and Financial Challenges of the Climate Change', *ERA Forum* 21, no. 4 (2021): 681–97, <https://doi.org/10.1007/s12027-020-00637-3>.

²⁷⁴ Diaz-Rainey et al., 'An Energy Policy for ASEAN? Lessons from the EU Experience on Energy Integration, Security, and Decarbonization'.

²⁷⁵ Vela Almeida et al., 'The "Greening" of Empire: The European Green Deal as the EU First Agenda'.

²⁷⁶ C. Maduta et al., 'Towards Climate Neutrality within the European Union: Assessment of the Energy Performance of Buildings Directive Implementation in Member States', *Energy & Buildings* 301, no. 1 (2023).

²⁷⁷ Delreux and Ohler, 'Climate Policy in European Union Politics'.

The first legal instrument to become binding as a commitment to the implementation of the EGD is the European Climate Law (ECL).²⁷⁸ The basis for adopting the ECL is Articles 191 and 194 TFEU, which give the EU the competence to regulate environmental and energy aspects to benefit EU citizens. The ECL has provided the basis for developing climate change laws, especially the procedures to achieve the set climate targets.²⁷⁹ Through the ECL, the EU affirms its commitment to mitigating the impacts of climate change and creates a legal framework that guides member states in their efforts to achieve ambitious environmental goals. The Instrument is a symbol of commitment and a concrete endeavour to encourage consistent implementation of climate policies across the EU.

Significant distinctions exist between the Governance Regulation and the ECL, especially in terms of focus and scope, objectives, and specific provisions.²⁸⁰ The focus and scope of ECL are more specific to achieving climate targets, especially climate neutrality by 2050. Meanwhile, the Governance Regulation has a broader scope and includes the integration of climate and energy planning among EU member states. Adopting the ECL aims to sharpen the EU's commitment to achieve climate neutrality by 2050 in a clear and specific legal framework. In addition, the ECL also sets long-term targets and monitoring and reporting mechanisms.²⁸¹ Meanwhile, the main objective of the Governance Regulation is to integrate energy policy and climate action and improve the consistency and effectiveness of climate and energy policies among EU member states.²⁸² The provisions of the ECL include achieving climate neutrality by 2050, climate targets, climate change governance, and the establishment of the European Scientific Advisory Board on Climate Change. Meanwhile, the specific provisions in Regulation 2018/1999 are on preparing, submitting, and assessing integrated national energy and climate plans. The regulation also

²⁷⁸ European Union, 'Regulation (EU) 2021/1119 of The European Parliament and of The Council Establishing the Framework for Achieving Climate Neutrality and Amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ("European Climate Law")', 2021 Official Journal of the European Union § (2021).

²⁷⁹ Kati Kulovesi et al., 'The European Climate Law: Strengthening EU Procedural Climate Governance?', *Journal of Environmental Law*, 12 January 2024, 3, <https://doi.org/10.1093/jel/eqad034>.

²⁸⁰ Schlacke and Knodt, 'The Governance System of the European Energy Union and Climate Action', 326–28.

²⁸¹ European Union, Regulation (EU) 2021/1119 of The European Parliament and of The Council establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law'), arts. 2–7.

²⁸² European Union, Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council, chap. 3.

seeks to harmonise and coordinate cooperation among EU member states to achieve Energy Union and climate targets.

How can the EU legal framework on climate targets support the development of electromobility? The EV ecosystem is an integral part of efforts to fight and mitigate climate change.²⁸³ Emission reductions, at the core of climate targets, cannot be achieved without transforming vehicle use from conventional to electric. Therefore, the development of electromobility is a logical consequence of the target and the need to reduce emissions from the transport sector.²⁸⁴ The selection of EVs as the primary vehicle type will also encourage the acceleration of using renewable energy as a primary energy source.²⁸⁵ EVs are not a vehicle that produces absolutely no emissions; it must be recognised that emissions are created in the manufacturing process. However, it must also be recognised that the use of EVs has a very close relationship with environmental protection, especially climate change mitigation.²⁸⁶

3.3.2 Energy

The further legal framework supporting electromobility development in the EU region is renewable energy and energy efficiency. In this section, I will discuss the EU legal framework on renewable energy and energy efficiency in the development of electromobility. The main legal instruments that will be addressed are the EU RED,²⁸⁷ EED,²⁸⁸ and EPBD. This research argues that the development of electromobility cannot be separated from the existence of renewable energy mix targets and energy efficiency. In other words, electromobility development and EU energy policy have a solid correlation and mutual support.

²⁸³ Yergin, *The New Map*, 327.

²⁸⁴ Fabien Leurent and Elisabeth Windisch, 'Triggering the Development of Electric Mobility: A Review of Public Policies', *European Transport Research Review* 3, no. 4 (2011): 224–25, <https://doi.org/10.1007/s12544-011-0064-3>.

²⁸⁵ Barton and Schütte, 'Electric Vehicle Law and Policy: A Comparative Analysis', 23.

²⁸⁶ Yergin, *The New Map*, 339.

²⁸⁷ 'Directive (EU) 2018/2001 of The European Parliament and of The Council of 11 December 2018 on the Promotion of the Use of Energy from Renewable Sources' (n.d.).

²⁸⁸ European Union, 'Directive (EU) 2023/1791 of the European Parliament and of the Council of 13 September 2023 on Energy Efficiency and Amending Regulation (EU) 2023/955 (Recast)', Pub. L. No. 2023/1791 (2023).

3.3.2.1. Renewable Energy Directive

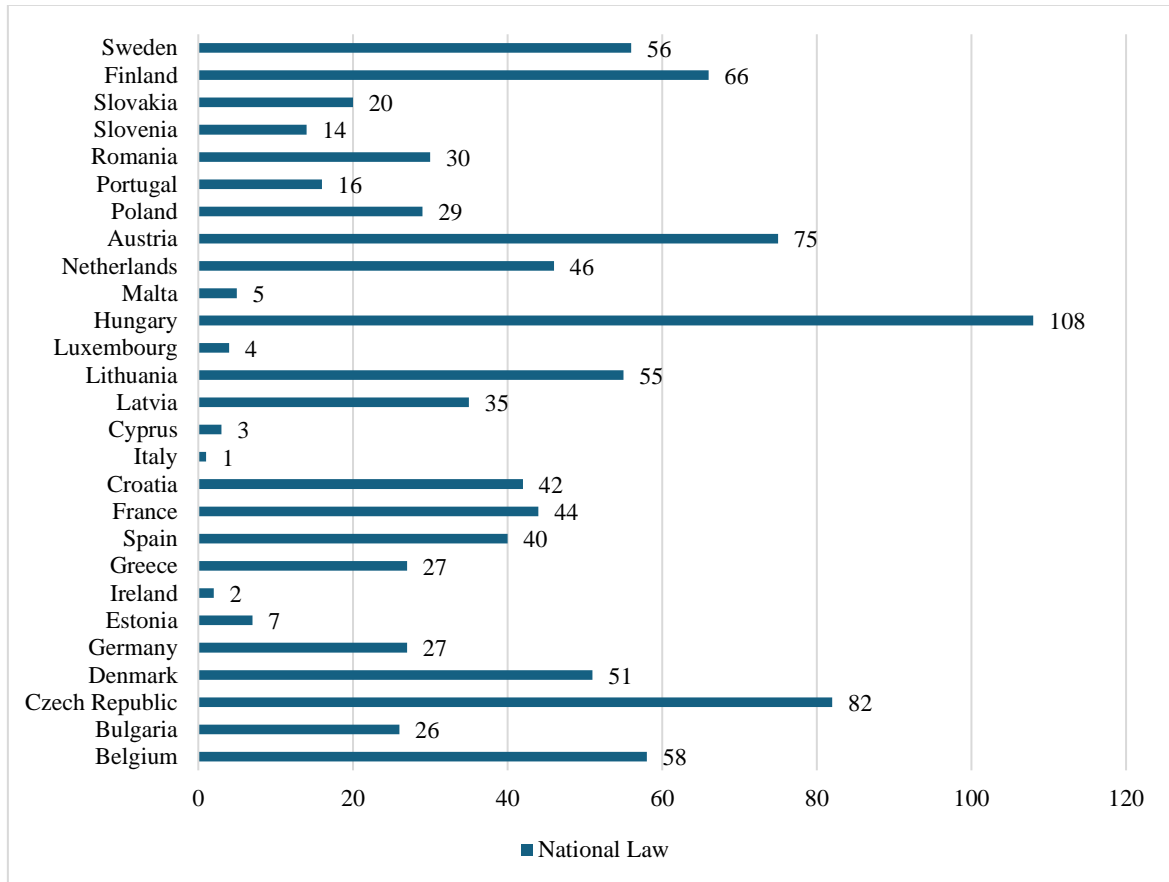
Based on data released by the EEA, until 2022, the renewable energy mix in the EU reached 22.5%.²⁸⁹ Based on data released by the EEA, until 2022, the renewable energy mix in the EU reached 22.5%. This figure is still quite far from the 42% target by 2030 set by Article 3 Directive (EU) 2023/2413, which revises the previous target of 32%. Several research results reveal that regulating renewable energy through legal instruments has a specific purpose. Research conducted by Gallagher with case studies of Germany, Denmark, China and three states in the US (Texas, Colorado and Ohio) revealed that the motives for regulating renewable energy by authorities are economic, availability of energy resources, political systems, and cultural factors and attitudes.²⁹⁰ Another argument is expressed by Crossley, who argues that there are eight main objectives of regulating renewable energy by authorities. These objectives include security, sectoral, economic, education and research, international/regional, environmental, industrial policy, and social objectives.²⁹¹

²⁸⁹ European Environment Agency, 'Share of Energy Consumption from Renewable Sources in Europe' (European Environment Agency, 24 October 2023), <https://www.eea.europa.eu/en/analysis/indicators/share-of-energy-consumption-from#:~:text=The%20EU%20formally%20adopted%20an,were%20introduced%20for%20individual%20countries>.

²⁹⁰ Kelly Sims Gallagher, 'Why & How Governments Support Renewable Energy', *Daedalus* 142, no. 1 (January 2013): 69–73, https://doi.org/10.1162/DAED_a_00185.

²⁹¹ Penelope Crossley, *Renewable Energy Law: An International Assessment*, 1st ed. (Cambridge University Press, 2019), 109–10, <https://doi.org/10.1017/9781316888490>.

Figure 2 EU Renewable Energy Directive (2018) Transposition into National Law



Source: Analysed from <https://eur-lex.europa.eu> (February, 2024)

What are the main objectives and motives of the RED adopted by the EU? The directive has four main objectives: providing legal certainty for renewable energy investments, cost efficiency and integrating renewable energy markets, supporting the collective achievement of the 2030 climate targets and avoiding gaps, accelerating decarbonisation, and developing the potential of renewable energy for heating and cooling.²⁹² Thus, the objectives or motives for adopting RED are energy security, economic, environmental, industrial, and social motives. However, environmental motives, especially climate change mitigation, dominate the revised RED adopted in 2023.²⁹³ This is also evidenced by the total renewable energy mix target increase that must be achieved by 2030.

²⁹² European Commission, 'Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the Promotion of the Use of Energy from Renewable Sources (Recast) COM(2016) 767', Pub. L. No. COM(2016) 767 (2017), 4.

²⁹³ European Commission, 'Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL Amending Directive (EU) 2018/2001 of the European Parliament and of the Council, Regulation (EU) 2018/1999 of the European Parliament and of the Council and Directive 98/70/EC of the

RED is the backbone of decarbonisation, especially in the energy sector.²⁹⁴ The decarbonisation goal will only be achieved with an electromobility ecosystem that contributes to reducing emissions from the transport sector. Article 25 of the EU Renewable Energy Directive mandates that emission reduction from the transport sector should be done by converting fossil-based fuels to renewable energy. Therefore, the massive adoption of EVs is a logical consequence that every EU member state must accelerate. The correlation between RED and electromobility is strong and positively interconnected.

Promoting renewable energy, especially for vehicle fuels, will reduce the carbon intensity of the transport sector. Battery power supply infrastructure that uses renewable energy will promote renewable energy while supporting electromobility. Moreover, EU member states are obligated to promote renewable energy for the transport sector through biofuels and EVs. The growth of electromobility will also reduce the demand for fossil fuels and increase the need for electrification, especially for battery charging power supply. Using renewable energy for electricity will reduce emissions from the transport sector while supporting the sustainability of electromobility.

The adoption of the RED by the EU has provided a clear legal framework for the development of renewable energy. It will contribute positively to the development of electromobility, especially charging infrastructure. The commitment of each member state is needed, considering the type of legal instrument used is a directive. The choice of legal instruments in the form of directives is because the EU provides flexibility to member countries to achieve the renewable energy mix target under national conditions.²⁹⁵ The primary purpose of using directive legal instruments is to form a standard policy with certain flexibility.²⁹⁶ In addition, adopting hard laws to promote renewable energy provides legal certainty for member states, industry, and the public.²⁹⁷ However, legal certainty cannot be interpreted as the absence of changes to the legal framework.²⁹⁸ The amendment of the EU

European Parliament and of the Council as Regards the Promotion of Energy from Renewable Sources, and Repealing Council Directive (EU) 2015/652 COM/2021/557 Final', Pub. L. No. COM/2021/557 (2021), 1.

²⁹⁴ Kim Talus and Pami Aalto, 'Energy Transitions and the Law', in *Routledge Handbook of Energy Law*, ed. Tina Soliman Hunter et al. (New York: Routledge, 2020), 556–57.

²⁹⁵ European Commission, Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the promotion of the use of energy from renewable sources (recast) COM(2016) 767, 9.

²⁹⁶ Kelemen, *Eurolegalism: The Transformation of Law and Regulation in the European Union*, 13:41.

²⁹⁷ Kaisa Huhta, 'Anchoring the Energy Transition with Legal Certainty in EU Law', *Maastricht Journal of European and Comparative Law* 27, no. 4 (2020): 436, <https://doi.org/10.1177/1023263X20932056>.

²⁹⁸ Case C-264/09 European Commission v Slovak Republic (Court of Justice of The European Union 15 September 2011).

Renewable Energy Directive in 2023 proves that the legitimacy of environmental protection, especially climate change, can be a reason for regulatory change.

3.3.2.2 Energy Efficiency Directive

The following legal framework for energy is the EU EED, which was first adopted in 2012 through Directive 2012/27/EU. The 2012 EED set an energy efficiency target of 20% by 2020. This target was achieved by the end of 2020 by implementing energy efficiency at all stages of energy generation, transmission, distribution, and consumption by end users.²⁹⁹ Furthermore, in 2018, through the Clean Energy for All Europeans Package initiative, the EED was revised by adopting Directive (EU) 2018/2002. Referring to Article 1 of Directive (EU) 2018/2002, there is an increased energy efficiency target of at least 32.5% by 2030, and there is an obligation to harmonise it with NCEP as mandated by the Governance Regulation.³⁰⁰

Some EU member states, such as Denmark, France and Italy, have successfully implemented energy efficiency through policy design, governance and attention to national energy market structures.³⁰¹ However, as a mechanism, energy efficiency regulation requires a time-consuming adaptation process.³⁰² Energy efficiency targets must also be dynamic along with the public adaptation process. Therefore, it is unsurprising that in 2023, the new EED increased the energy efficiency target in 2030 by 11.7% compared to the 2020 target. In addition to setting more ambitious targets, Directive (EU) 2023/1791 also introduces an indicative national contributions mechanism. Article 4 of Directive (EU) 2023/1791 mandates each member state to make indicative national contributions that form part of the overall Union contribution.

Therefore, how can EED contribute to the development of electromobility? Although energy efficiency focuses on buildings, homes, and industries, EED can indirectly support electromobility since EVs are a type of energy-efficient vehicle.³⁰³ To accelerate

²⁹⁹ European Commission, 'Energy Efficiency Directive' (European Commission), accessed 7 February 2024, https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficiency-targets-directive-and-rules/energy-efficiency-directive_en#previous-versions-of-the-directive.

³⁰⁰ European Commission.

³⁰¹ Tina Fawcett, Jan Rosenow, and Paolo Bertoldi, 'Energy Efficiency Obligation Schemes: Their Future in the EU', *Energy Efficiency* 12, no. 1 (January 2019): 65, <https://doi.org/10.1007/s12053-018-9657-1>.

³⁰² Elizabeth Shove, 'What Is Wrong with Energy Efficiency?', *Building Research & Information* 46, no. 7 (3 October 2018): 786, <https://doi.org/10.1080/09613218.2017.1361746>.

³⁰³ Pablo Frías Marín and Carlos De Miguel Perales, 'Environmental Aspects of Electric Vehicle', in *The Role of the Electric Vehicle in the Energy Transition: A Multidimensional Approach*, ed. Angel Arcos-Vargas (Cham: Springer Nature Switzerland, 2021), 102.

electromobility, there needs to be connectivity between energy efficiency and the utilisation of renewable energy by EVs. Overall, the EED may not have specific provisions targeting the development of electromobility. However, on a broader scale, aiming to improve energy efficiency and promote sustainable transport can create an enabling ecosystem for the adoption and integration of electric vehicles across the EU.³⁰⁴ The urgency of energy efficiency for the transportation sector is growing in decarbonisation initiatives. Transport is one of the main sectors contributing to greenhouse gas emissions worldwide, and shifting the paradigm of energy used in transport to be more efficient and sustainable is crucial to reducing the overall impact of climate change. In this context, promoting the use of electric vehicles through incentives and supportive policies, such as those that EED can accommodate, is an essential strategy for achieving ambitious emission reduction targets.

3.3.2.3 Energy Performance in Building Directive

The EU adopted the EPBD as a response to climate and energy policy challenges, especially concerning buildings. As much as 42% of energy consumption in the EU region comes from buildings. The EU has to take strategic actions to accelerate energy efficiency in buildings. EPBD was adopted in 2002 through Directive 2002/91/EC and revised in 2010 through Directive 2010/31/EU. A significant revision was then made in 2018 with the adoption of Directive (EU) 2018/844, further strengthening the framework for improving the energy performance of buildings across member states. Since 2021, the European Commission has also initiated fundamental amendments to the EPBD as part of its "Fit for 55" policy.

The EPBD is vital in the context of the EU's climate and energy policy, which has ambitious targets and is a global reference. Buildings contribute to more than 30% of the EU's total emissions. Thus, the regulation of energy performance in buildings must align with and support the achievement of EU climate targets. The EPBD prescribes that EU member states encourage the construction of greener, net-zero emission buildings in line with sustainability principles.

From a legal perspective, the EPBD is a 'hard law' instrument in the form of a directive similar to the RED and EED. Therefore, EPBD is legally binding on member states to achieve specific targets that have been set. In general, EPBD requires EU member states

³⁰⁴ Leurent and Windisch, 'Triggering the Development of Electric Mobility: A Review of Public Policies', 224.

to implement minimum standards for energy performance in new buildings, undertake massive renovation of existing buildings to improve energy efficiency, and introduce energy performance certificates to increase transparency and awareness of energy performance in buildings.³⁰⁵ The EPBD also intends to encourage investment in energy efficiency, reduce overall energy consumption, and minimise the building sector's environmental impact.³⁰⁶

The EPBD contributes significantly to the development of electromobility in the EU. Article 8 of the EPBD requires the presence of power supply facilities for EVs in parking areas.³⁰⁷ The provision will at least accelerate electromobility in three aspects. The availability of charging facilities will facilitate EV users and encourage the public who use buildings to switch to EVs. Furthermore, the presence of charging facilities will also increase the value of the building, especially in terms of green and sustainability. Charging facilities that are connected to renewable energy also reduce the carbon footprint generated by the building.

Based on the explanation of the RED and EED above, both legal frameworks are directives which are hard law and require transposition to the national laws of EU member states before they become effective. As such, directives are not horizontally enforceable on individuals but vertically binding on EU member states.³⁰⁸ Directives also provide flexibility for member states to implement the obligations set by the EU through national legal instruments as deemed most appropriate. Such flexibility is essential as each member state has different energy resources, infrastructure and policy priorities. The directive allows member states' national laws to adapt while ensuring objective consistency. In addition, since directives are part of hard law, legal certainty is one of the aspects of this legal instrument.³⁰⁹

However, the adoption of directive legal instruments also has some disadvantages. Article 288 TFEU has determined that a directive is binding when it has been transposed into the national law of a member state. This provision means that directives are legally

³⁰⁵ European Union, 'Consolidated Text: Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the Energy Performance of Buildings (Recast)' (2018), art. 6,7,11.

³⁰⁶ European Union, art. 10.

³⁰⁷ M. Economidou et al., 'Review of 50 Years of EU Energy Efficiency Policies for Buildings', *Energy and Buildings* 225 (October 2020): 11, <https://doi.org/10.1016/j.enbuild.2020.110322>.

³⁰⁸ Robert Schütze, *An Introduction to European Law* (Cambridge ; New York: Cambridge University Press, 2012), 123.

³⁰⁹ Huhta, 'Anchoring the Energy Transition with Legal Certainty in EU Law', 436.

enforceable when national legal instruments have been adopted.³¹⁰ Therefore, directives have the disadvantage that there is a time gap between the adoption of the directive and the enactment of the member state's national legal instrument. Another drawback is each member state's varying forms and implementation efforts, resulting in possible inconsistencies and even delays. This will also pose challenges in achieving the targets set in the directive. In the context of RED, EED, and EPBD, the renewable energy mix and the percentage of energy that must be reduced can be at stake in whether or not climate targets are achieved. Adopting the directive can be both a challenge and an opportunity in the context of electromobility. The challenge is that each member state will have different electromobility developments due to the varying renewable energy, energy efficiency and energy performance of buildings policies in each member state. The opportunity that arises is that both RED, EED, and EPBD can accelerate the development of electromobility with policy innovations adopted by each member state.

3.3.3 Finance

The financial and legal framework is vital in developing electromobility in the EU. Economic incentives and disincentives are essential variables in determining the public adoption of EVs. The financial, legal framework discussed in this section covers sustainable investment and state aid. This research recognises that many other aspects of finance play a role in the development of electromobility, but in general, sustainable investment and state aid have the most significant role, especially from a regulatory or policy perspective. The development of electromobility is highly dependent on the support provided by the authorities, especially in finance.³¹¹

3.3.3.1. Taxonomy Regulation

Sustainable investment is an essential part of sustainable development. The EU primary legislation does not define sustainable development, but the term appears six times in the Treaty of European Union (TEU) and TFEU. Art. 11 TFEU (Ex Art. 6 TEU) specifies that

³¹⁰ Annegret Engel, *The Choice of Legal Basis for Acts of the European Union: Competence Overlaps, Institutional Preferences, and Legal Basis Litigation*, 1st ed. 2018 (Cham: Springer International Publishing: Imprint: Springer, 2018), 54–55, <https://doi.org/10.1007/978-3-030-00274-9>.

³¹¹ Yergin, *The New Map*, 339.

environmental protection and sustainable development are essential principles in all EU policies and activities.³¹² In addition, the principle of sustainable development is also adopted in the preamble of the Charter of Fundamental Rights of the European Union (EUCFR) and in Article 37, which regulates environmental protection. Sustainable development clauses in EU primary legislation have provided a solid constitutional basis for technical implementation in various sectors, including electromobility.³¹³ Sustainable investment is an essential part of mitigating the impacts of climate change, and the flow of finance to green projects will influence the mitigation process.³¹⁴ The EGD also emphasises that green investment is one mechanism for achieving carbon emission reduction targets. In addition to being a guideline for the EU to achieve carbon emission reductions, the EGD is also a milestone in the EU's strong determination to measurably realise sustainability in the region.³¹⁵

To discuss sustainable investment in the EU further, the analysis will focus on the concept of disclosure in Regulation (EU) 2019/2088 as amended by Regulation (EU) 2020/852 (Taxonomy Regulation). In general, the EU regulation on environmental disclosure aims to harmonise rules for financial market participants and advisors, especially regarding the transparency of financial products.³¹⁶ Furthermore, the legal framework also signals the EU's ambition to achieve a sustainable economy by setting specific standards, particularly to achieve climate targets.³¹⁷ The EU legal framework on sustainable investment applies the fundamental principle of DNSH. The principle is also a minimum standard for EU member states that applies to all financial or economic investments. Historically, this principle originated in international water law and played an essential role in forming the 'do no significant harm' principle, which has since become a principle used in development

³¹² Alina Mihaela Conea, 'EU Taxonomy: Qualifying As Green', *Lex ET Scientia International Journal* 2, no. XXIX (2022): 27.

³¹³ Nicolas de Sadeleer, 'Sustainable Development in EU Law: Still a Long Way to Go', *Jindal Global Law Review* 6, no. 1 (2015): 41, <https://doi.org/10.1007/s41020-015-0009-0>.

³¹⁴ Friedemann Polzin and Mark Sanders, 'How to Finance the Transition to Low-Carbon Energy in Europe?', *Energy Policy* 147, no. July (2020): 3, <https://doi.org/10.1016/j.enpol.2020.111863>.

³¹⁵ Sikora, 'European Green Deal – Legal and Financial Challenges of the Climate Change', 687.

³¹⁶ Guido Busch, Danny Ferrarini and Seraina Grünwald, eds., *Sustainable Finance in Europe: Corporate Governance, Financial Sustainability and Financial Market* (Cham: Palgrave Macmillan, 2021), <https://doi.org/10.4018/978-1-7998-8501-6.ch006>.

³¹⁷ Alessio Maria Paccès, 'Will the EU Taxonomy Regulation Foster a Sustainable Corporate Governance?', *Sustainability (Switzerland)* 13 (2021): 9, <https://doi.org/10.2139/ssrn.3940375>.

by many countries around the world.³¹⁸ In addition, the principle is also widely implemented by courts in national, regional and international jurisdictions.³¹⁹

The EU Taxonomy Regulation contributes significantly to the development of electromobility. The first contribution is the definition and criteria of sustainable activities, which include environmentally friendly economic activities, implementation of the 'does not significantly harm' principle in each economic activity, application of minimum safeguards, and compliance with predetermined environmentally friendly criteria.³²⁰ Classifying electromobility as a sustainable and environmentally friendly field will spur and stimulate investment in this sector. This legal framework also provides certainty to investors in investing in and developing the electromobility industry in both the upstream and downstream sectors. Another implication would be to attract consumers to switch to EVs due to the certainty of sustainable investment.³²¹ By facilitating sustainable investment in the electromobility sector, the EU Taxonomy Regulation also supports and contributes to achieving EU climate targets by reducing emissions from transport. The EU Taxonomy Regulation supports and contributes to the electromobility sector by providing a transparent framework and directing investments towards sustainable economic activities, including those related to electric mobility. This contribution is crucial to accelerate the transition towards a more sustainable and low-carbon transport sector in the EU region.

3.3.3.2. State Aid Legal Framework

A further financial and legal framework contributing to electromobility development is state aid. The legal concept has a constitutional basis in Articles 107-109 TFEU, which has developed dynamically. The focus of the discussion of state aid in this section includes its conceptualisation according to the TFEU and the opinions of scholars, dynamics according to court decisions, and its implementation in the energy sector, especially electromobility.

³¹⁸ Joyeeta Gupta and Susanne Schmeier, 'Future Proofing the Principle of No Significant Harm', *International Environmental Agreements: Politics, Law and Economics* 20, no. 4 (2020): 733, <https://doi.org/10.1007/s10784-020-09515-2>.

³¹⁹ Mara Tignino and Christian Bréthaut, 'The Role of International Case Law in Implementing the Obligation Not to Cause Significant Harm', *International Environmental Agreements: Politics, Law and Economics* 20, no. 4 (2020): 632, <https://doi.org/10.1007/s10784-020-09503-6>.

³²⁰ European Union, 'Consolidated Version of Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the Establishment of a Framework to Facilitate Sustainable Investment, and Amending Regulation (EU) 2019/2088' (2020), art. 3.

³²¹ Uwe Tietge et al., 'Comparison of Leading Electric Vehicle Policy and Deployment in Europe', *The International Council On Clean Transportation*, 2016.

Based on this discussion will provide an understanding of the contribution of state aid in the development of electromobility in EU member states.

In principle, state aid is illegal unless authorised by the European Commission.³²² The prohibition of state aid under Article 107(1) TFEU is because it can lead to interference with competition in the internal market. State aid can be identified from several elements: the subject, beneficiary, and purpose. The subject of state aid is the public authority that provides aid from resources owned by the state. The beneficiaries of state aid are companies or groups of companies deemed by the European Commission to be entities eligible to receive state aid. The purpose of state aid is to provide economic benefits to the recipient that would not be available under regular internal market competition.³²³ State aid that is incompatible with the internal market will disturb the competitive balance between competitors.³²⁴ Therefore, the provision of state aid must have a specific purpose and be compatible with the internal market.³²⁵ Energy is an industry that receives state aid because it affects the lives of many people. There are at least two reasons why the energy sector is eligible for state aid: the high-risk nature of its infrastructure development and the large amount of capital involved. In addition, the energy sector also needs the strong support of political authorities to run sustainably.³²⁶

Two legal instruments form the basis for granting state aid for the energy sector, including electromobility, namely the GBER and Communication from the Commission C/2022/481 Guidelines on State aid for climate, environmental protection and energy 2022. The GBER allows for state aid without prior authorisation from the European Commission. This provision significantly reduces administrative procedures for EU member states.³²⁷ The

³²² Falk Schöning and Clemens Ziegler, 'What Is State Aid?', in *State Aid and the Energy Sector*, ed. Leigh Hancher, Adrien de Hauteclocque, and Francesco Maria Salerno (Oxford London New York New Delhi Sydney: Hart Publishing, 2018), 5.

³²³ Leigh Hancher and Francesco Maria Salerno, 'State Aid in the Energy Sector', in *Research Handbook on European State Aid Law*, ed. Leigh Hancher and Juan Jorge Piernas López, Second edition, Research Handbooks in European Law (Cheltenham, UK: Edward Elgar Publishing, 2021), 65–66.

³²⁴ Ana Poscic, 'State Aid and Gambling Services', in *EU Competition and State Aid Rules: Public and Private Enforcement*, ed. Vesna Tomljenović et al., Europeanization and Globalization, volume 3 (Petar Šarčević International Conference, Berlin Heidelberg: Springer, 2017), 276, <https://doi.org/10.1007/978-3-662-47962-9>.

³²⁵ Ildikó Bartha and Tamás M. Horváth, 'State Aid as a Risk in the Policy of Competitive Advantages in the European Union', *Studia Iuridica Lublinensia* 32, no. 2 (27 June 2023): 41, <https://doi.org/10.17951/sil.2023.32.2.35-55>.

³²⁶ Hancher and Salerno, 'State Aid in the Energy Sector', 4.

³²⁷ Ignacio Herrera Anchustegui and Christian Bergqvist, 'The Role of State Aid Law in Energy', in *Routledge Handbook of Energy Law*, ed. Tina Soliman Hunter et al. (New York: Routledge, 2020), 133, <https://doi.org/10.4324/9780429450891>.

existence of the GBER is part of the implementation of Article 107(3) TFEU, which is the declaration of categories of state aid compatible with the internal market.³²⁸

Council Regulation (EC) No 994/98 of 7 May 1998 on the application of Articles 92 and 93 of the Treaty establishing the European Community to certain categories of horizontal State aid amended by Council Regulation (EU) No 733/2013 of 22 July 2013 allows the European Commission to determine the sectors that can be granted state aid under certain conditions. In 2008 the European Commission adopted the Commission Regulation (EC) No 800/2008 which was amended in 2014 by Commission Regulation 651/2014.³²⁹ The application of GBER aims to focus state aid on priority areas, one of which is environmental protection and energy, in addition to preventing state aid from distorting competition in the internal market.³³⁰ Distortion of competition in the internal market may arise due to financial benefits provided through state aid. This condition is possible since state aid will benefit its recipients through financial facilities that should not be provided by the state. Therefore, these benefits can lead to unfair business competition and disturb the balance in the internal market.³³¹

GBER was amended in 2023 through Commission Regulation (EU) 2023/1315 of 23 June 2023 amending Regulation (EU) No 651/2014. This latest amendment provides EU member states with expanded flexibility to support specific sectors in order to achieve climate neutrality targets. This policy is a mandate of the Green Deal Industrial Plan that has been released by the European Commission previously. In the context of electromobility, the existence of the GBER amendment and the Green Deal Industrial Plan further provides opportunities for the growth and development of the low-emission vehicle ecosystem.³³²

Due to the urgency of environmental protection, the development of zero-emission vehicle ecosystems is also part of the scope for state aid. Article 36b of the GBER specifies several conditions for state aid to develop the electromobility ecosystem. The first condition

³²⁸ Poscic, 'State Aid and Gambling Services', 277.

³²⁹ Monika Mynarzová, 'State Aid in the European Union in the Context of the General Block Exemption Regulation Amendments', in *The 6th International Conference on European Integration 2022* (International Conference on European Integration 2022, Ostrava, Czech Republic, 2022), 478–87.

³³⁰ Kristyna Deiberova and Harold Nyssens, 'The New General Block Exemption Regulation (GBER): What Changed?', *European State Aid Law Quarterly* 8, no. 1 (2009): 27–28.

³³¹ Jerónimo Maillo, 'Balancing Environmental Protection, Competitiveness and Competition: A Critical Assessment of the GBER and the EEAG', *European State Aid Law Quarterly* 16, no. 1 (2017): 7.

³³² European Commission, 'State Aid: Commission Amends General Block Exemption Rules to Further Facilitate and Speed up Green and Digital Transition', Press Release (Brussels, 9 March 2023), https://ec.europa.eu/commission/presscorner/detail/en/ip_23_1523.

is the minimum period for granting state aid, which is twelve months.³³³ The scope of state aid includes investments in the sale and leasing of environmentally friendly vehicles and the modification of conventional vehicles into zero-emissions vehicles.³³⁴ Furthermore, there are also requirements for state aid granting procedures that start with a transparent, non-discriminatory, open, clear, and selective auction process.³³⁵

The Guidelines on State Aid for Climate, Environmental Protection, and Energy 2022 contain a specific regulation and also provide guidance for the provision of state aid in the electromobility sector.³³⁶ The distinguishing provision is the requirement for the availability of pre and post-scenario studies of the provision of state aid in developing electromobility. In addition, member states providing state aid to the electromobility sector are required to minimise distortions and adverse effects that may occur in the market once state aid has been provided. It also provides guidelines for providing state aid for the construction and installation of charging stations with the same market impact mitigation assessment conditions.

State aid plays an essential role in the energy sector, especially in accelerating the development of electromobility in the EU.³³⁷ It aligns with the EU's general climate change and energy policy. State aid is expected to be a catalyst that can help achieve emission reduction targets under the EU timeline. In the context of electromobility, providing state aid is a manifestation of commitment to support the development of a low-carbon vehicle ecosystem. Without this support, the development of electromobility will be stalled or even stopped.³³⁸ Therefore, the amount of state aid a country provides in the electromobility sector can indicate EU member states' low or high commitment to reduce emissions from the energy and transport sectors.

To complement the state aid rule, in 2022 the EU adopted the Foreign Subsidies Regulations (FSR).³³⁹ The purpose of the FSR is to protect the internal market from distortions arising from foreign subsidies under the cover of investment or incentives. The

³³³ European Commission, 'Commission Regulation (EU) No 651/2014 of 17 June 2014 Declaring Certain Categories of Aid Compatible with the Internal Market in Application of Articles 107 and 108 of the Treaty (Consolidated Text)', Pub. L. No. OJ L 187 26.6.2014, p. 1 (n.d.), art. 36b(2).

³³⁴ European Commission, art. 36b(3).

³³⁵ European Commission, art. 36b(4).

³³⁶ European Commission, 'Communication from the Commission – Guidelines on State Aid for Climate, Environmental Protection and Energy 2022', Pub. L. No. OJ C 80, 18.2.2022, pp. 1–89 (n.d.), sec. 4.3.

³³⁷ Anchustegui and Bergqvist, 'The Role of State Aid Law in Energy', 138–39.

³³⁸ Yergin, *The New Map*, 339.

³³⁹ Regulation (EU) 2022/2560 of The European Parliament and of the Council of 14 December 2022 on foreign subsidies distorting the internal market.

FSR also demonstrates the EU's strong efforts to maintain the internal market by minimising or even eliminating subsidies that may interfere with fair competition.³⁴⁰ Although the FSR was adopted to complement the State Aid rules, there are fundamental differences between the two, especially in terms of the source of funds.³⁴¹ The FSR also authorises the European Commission to conduct reviews, investigations and inspections of foreign subsidies suspected of distorting the internal market.

In the context of electromobility development, the existence of FSR is essential to maintain fair competition to strengthen the EV market within the EU and avoid non-EU companies to dominate the electromobility market. Based on the explanation in the previous section, the EU has created a good ecosystem for electromobility development by adopting various legal instruments in various sectors. Distortion of the internal market, especially the energy sector and environmental protection, especially electromobility, will certainly interfere with efforts to achieve EU climate targets.³⁴² FSR can be an instrument for the European Commission to ensure that foreign investment for electromobility development does not disrupt the internal market which affects the achievement of climate targets.

3.3.4 Vehicle Technical Aspects

This section will discuss the EU legal framework on the technical aspects of vehicles supporting electromobility development. The legal instruments discussed are the Alternative Fuel Infrastructure Directive, the Clean Vehicles Directive, the CO₂ Emission Performance Standards for Cars and Vans Regulation, and the European Battery Regulation. This research argues that these four legal instruments significantly influence and support the electromobility ecosystem from the technical aspect of vehicles. This section is essential to understand the importance of supporting electromobility through vehicle technical aspects, including fuel type, emission standards, and vehicle type.

³⁴⁰ Jan Blockx and Pierfrancesco Mattiolo, 'The Foreign Subsidies Regulation: Calling Foul While Upping the Ante?', *European Foreign Affairs Review* 28, no. S1 (2023): 17, <https://doi.org/10.54648/eerr2023014>.

³⁴¹ Lena Hornkohl, 'Protecting the Internal Market From Subsidisation With the EU State Aid Regime and the Foreign Subsidies Regulation: Two Sides of the Same Coin?', *Journal of European Competition Law & Practice* 14, no. 3 (2023): 35, <https://doi.org/10.1093/jeclap/lpad005>.

³⁴² Isabelle Van Damme, 'Understanding the Foreign Subsidies Regulation', *University of Bologna Law Review* 9, no. 1 (2024): 5, <https://doi.org/10.6092/issn.2531-6133/19378>.

3.3.4.1 Alternative Fuel Infrastructure Regulation

Land transportation is one sector that contributes significantly to carbon dioxide emissions. This is due to the massive use of fossil energy sources as vehicle fuel. The emissions produced by burning fossil fuels in the EU region tend to increase yearly. The two types of land transport vehicles that make the most emissions are passenger cars and heavy-duty trucks.³⁴³ To address this issue, the EU has adopted the Alternative Fuel Infrastructure Directive (AFID), which aims to provide a common framework for reducing dependence on fossil fuels by developing alternative fuel infrastructure, including electricity.³⁴⁴

The definition of alternative fuels, according to AFID, has certain characteristics: they come from sources that can substitute fossil oil, have the potential to contribute to decarbonisation and accelerate the environmental protection of the transport sector.³⁴⁵ AFID is essential to the EU's strategy to decarbonise the transport sector to achieve climate targets.³⁴⁶ The directive does not mention EVs as part of the transport decarbonisation solution. However, electric energy as part of alternative fuels is a substantial foundation for the development of electromobility. At least three factors make AFID able to support the development of electromobility in the EU.

AFID determined the standardisation and minimum requirements for EV charging infrastructure across EU member states.³⁴⁷ This provision is beneficial for EV users who travel across EU countries and do not have to worry about unsynchronised charging infrastructure. Standardising infrastructure is also an effort to integrate the electromobility ecosystem between EU member states.³⁴⁸ The directive also facilitates convenient and affordable access to information for EV users regarding the location of charging facilities, prices, and types of payment methods. This access to information is part of promoting

³⁴³ European Environment Agency, *Transport and Environment Report 2022: Digitalisation in the Mobility System : Challenges and Opportunities* (Luxembourg: Publications Office of the European Union, 2022), 25.

³⁴⁴ European Union, 'Directive 2014/94/EU of the European Parliament and of the Council of 22 October 2014 on the Deployment of Alternative Fuels Infrastructure (Consolidated Text)', OJ L 307 28.10.2014, p. 1 § (n.d.).

³⁴⁵ European Union, art. 2(1).

³⁴⁶ Eloy Álvarez Pelegrí and Macarena Larrea Basterra, 'Alternative Energies in Transport in the Context of Energy Transitions', in *The Role of the Electric Vehicle in the Energy Transition: A Multidimensional Approach*, ed. Angel Arcos-Vargas (Cham: Springer Nature Switzerland, 2021), 187, https://doi.org/10.1007/978-3-030-50633-9_8.

³⁴⁷ European Union, Directive 2014/94/EU of the European Parliament and of the Council of 22 October 2014 on the deployment of alternative fuels infrastructure (Consolidated text), art. 4(4) and (5).

³⁴⁸ Christian Thiel et al., 'Assessing the Impacts of Electric Vehicle Recharging Infrastructure Deployment Efforts in the European Union', *Energies* 12, no. 12 (2019): 18, <https://doi.org/10.3390/en12122409>.

transparency to EV users and the public who will switch from conventional vehicles to EVs.³⁴⁹ From an investor perspective, the existence of AFID will provide legal certainty for investors to invest in the sustainable fuel sector, which will also strengthen the electromobility ecosystem.

During this research, an essential change occurred on 13 September 2023 with the EU's adoption of the Alternative Fuel Infrastructure Regulation (AFIR).³⁵⁰ Following this step, the EU aims to achieve its 55% emission reduction target by 2030.³⁵¹ Therefore, it is unsurprising that the first essential change is the form of the legal instrument from a directive to a regulation with a more powerful legal force.³⁵² Some changes related to the development of the electromobility ecosystem include the obligation of member states to meet fleet- and distance-based electric vehicle charging targets for light-duty electric vehicles.³⁵³ Meanwhile, heavy-duty vehicles such as trucks and buses have different targets.

AFIR provides more specific and detailed targets with timeframes and a reporting mechanism to the Commission. In addition, there are provisions regarding user-friendliness for charging facility users and transparency regarding prices and card payment methods for charging facilities with significant power. These provisions are designed to make it easier for EV users and attract the public to convert to a more sustainable mode of transport.

3.3.4.2 Clean Vehicles Directive

Further legal instruments related to the technical aspects of vehicles are the Clean Vehicle Directive (CVD).³⁵⁴ Ten years later, this directive was amended with the adoption of Directive (EU) 2019/1161, which significantly changed three aspects: the definition of a clean vehicle, the target of clean vehicle procurement, and the expansion of the directive's

³⁴⁹ European Union, Directive 2014/94/EU of the European Parliament and of the Council of 22 October 2014 on the deployment of alternative fuels infrastructure (Consolidated text), art. 7.

³⁵⁰ European Union, 'Regulation (EU) 2023/1804 of the European Parliament and of the Council of 13 September 2023 on the Deployment of Alternative Fuels Infrastructure, and Repealing Directive 2014/94/EU' (2023).

³⁵¹ European Commission, 'European Green Deal: Ambitious New Law Agreed to Deploy Sufficient Alternative Fuels Infrastructure', 28 March 2023, https://ec.europa.eu/commission/presscorner/detail/en/IP_23_1867.

³⁵² Marie Rajon Bernard, 'European Union Alternative Fuel Infrastructure Regulation (AFIR)' (International Council on Clean Transportation, April 2023).

³⁵³ European Union, Regulation (EU) 2023/1804 of the European Parliament and of the Council of 13 September 2023 on the deployment of alternative fuels infrastructure, and repealing Directive 2014/94/EU, art. 3.

³⁵⁴ European Union, 'Directive 2009/33/EC of the European Parliament and of the Council on the Promotion of Clean Road Transport Vehicles in Support of Low-Emission Mobility (Consolidated Text)', Pub. L. No. OJ L 120 15.5.2009, p. 5 (2009).

scope. Clean vehicles are defined as vehicles that use alternative fuels instead of fossil fuels or fulfil the emission threshold criteria set out in the directive.³⁵⁵ This definition's consequence is that vehicles that do not meet the above two criteria cannot be categorised as clean vehicles. EVs, as a vehicle mode that does not use fossil fuels, fall under the category defined by the CVD.

CVD and AFIR are closely correlated and complement each other in supporting and accelerating electromobility. On the one hand, AFIR has a role in promoting the use of non-fossil fuels; on the other hand, CVD has a role in stimulating the electric vehicle market through public procurement targets implemented by EU member states. CVD and AFIR also complement each other in providing infrastructure to support electromobility. The increase in EV population promoted by the CVD must be counterbalanced by charging facilities regulated under AFIR. The EU has successfully synchronised upstream and downstream policies to support electromobility.

However, the different types of legal instruments between CVD and AFIR may need fixing in the future. Directive instruments are legally binding but do not have a direct effect.³⁵⁶ This difference may lead to problems in the effectiveness of implementing two different legal instruments.³⁵⁷ Therefore, the EU should consider strategic steps to change the legal instrument on clean vehicles from a directive to a regulation to ensure regulatory equivalence. As a legal instrument that is a direct source of rights and duties and has direct legal effect, regulation can be an appropriate legal instrument.³⁵⁸

The implementation of clean-fuel and low-emission vehicles in the EU is integrally linked to regional visions and policies. Besides the CVD as a hard law instrument, EU GEAR 2030 is a soft law instrument that outlines a vision and strategy for the advancement of the electromobility ecosystem and the reduction of emissions in the transport sector.³⁵⁹ Acknowledging the crucial significance of the automobile industry in economic development and environmental sustainability, GEAR 2030 emphasised the necessity for a holistic approach to manage the sector's transformation. This plan encompasses the adaptation of the EU's automotive value chain, the promotion of low-emission vehicle

³⁵⁵ European Union, art. 4(4).

³⁵⁶ Schütze, *An Introduction to European Law*, 122.

³⁵⁷ Engel, *The Choice of Legal Basis for Acts of the European Union*, 53.

³⁵⁸ Case 106/77 Amministrazione delle Finanze dello Stato v Simmenthal SpA (Court of Justice of The European Union 19 March 1978).

³⁵⁹ European Commission, 'The Report of the High Level Group on the Competitiveness and Sustainable Growth of the Automotive Industry in the European Union (GEAR 2030)' (Brussels, October 2017), 35, <https://www.europarl.europa.eu/cmsdata/141562/GEAR%202030%20Final%20Report.pdf>.

development, and the augmentation of global competitiveness. GEAR 2030 promotes the development of a low-emission vehicle strategy and innovative business models, with the objective of establishing the EU as a frontrunner in sustainable automotive innovation.

A fundamental element of the GEAR 2030 policy is the decarbonisation of the transport sector, which constitutes the predominant source of the EU's greenhouse gas emissions. The project corresponds with EU climate goals, including the Low Emission Mobility Strategy, by encouraging the use of alternative fuel vehicles and the use of renewable energy sources. GEAR 2030 seeks to cultivate collaboration among Member States, industry stakeholders, and policymakers to formulate regulations that facilitate the implementation of zero-emission cars and the requisite infrastructure. This cooperative strategy guarantees that the shift to electric mobility is financially sustainable and ecologically advantageous, aiding the EU's pledge to attain climate neutrality by 2050.³⁶⁰

3.3.4.3 Emission Performance Standards for Cars and Vans Regulation

The EU's ambitious climate targets will only be achieved with a significant reduction in emissions from the transport sector through the development of electromobility.³⁶¹ Therefore, it is important to set performance standards for vehicle carbon dioxide emissions. Light-duty vehicles such as passenger cars and vans contribute significantly to the emissions generated by the transport sector in the EU.³⁶² The EU has long adopted regulations on the emissions performance of light-duty vehicles through Regulation (EC) No 443/2009 for cars and Regulation (EU) No 510/2011 for vans. In 2019, a new regulation was adopted, Regulation (EU) 2019/631, which was later revised by Regulation (EU) 2023/851 to introduce more ambitious targets.

The EU Emission Performance Standards Regulation (EPSR) is essential for the development of electromobility, particularly because cars and vans must be zero-emission by 2035.³⁶³ In addition, the new regulation also increases and strengthens carbon dioxide

³⁶⁰ European Commission, 36.

³⁶¹ Dall-Orsoletta, Ferreira, and Gilson Dranka, 'Low-Carbon Technologies and Just Energy Transition: Prospects for Electric Vehicles', 11.

³⁶² European Environment Agency, *Transport and Environment Report 2022*, 24–25. European Environment Agency, *Transport and Environment Report 2022* (n 272) 24–25.

³⁶³ European Union, 'Regulation (EU) 2019/631 of the European Parliament and of the Council of 17 April 2019 Setting CO₂ Emission Performance Standards for New Passenger Cars and for New Light Commercial Vehicles (Consolidated Text)', OJ L 111 25.4.2019, p. 13 § (n.d.), art. 1(5a).

emission targets with an ultimate target of 100% reduction by 2035.³⁶⁴ The increase in the reduction target of carbon dioxide emissions from cars and vans is also a signal to investors, manufacturers, and consumers that, in the long term, electromobility will develop rapidly. Moreover, the legal instruments adopted are regulations with strong legally binding power and directly applicable to EU member states.

EPSR has correlations with AFIR and CVD. The first correlation is to create supply and demand in the market for comprehensive electromobility development. EPSR and CVD support electromobility from the upstream industrial sector by stimulating the production of EVs and meeting the threshold criteria for carbon dioxide emissions. The three legal instruments also significantly contribute to the downstream electromobility sector as they promote EVs by facilitating more effortless battery charging and financial and non-financial incentives. Overall, all AFIR, CVD, and EPSR are harmonised with the climate targets set by the EU, especially to achieve a climate-neutral target by 2050.

3.3.4.4 European Battery Regulation

Batteries are one of the key components of EVs and contribute significantly to their emission performance. Decarbonising the transport sector would not be achieved without a battery policy aligned with climate targets.³⁶⁵ However, it must be recognised that producing EV batteries requires metal elements extracted from mining and processed in emission-generating processes. Therefore, this section focuses on batteries as an essential component of EVs contributing to emission reduction, as no fossil fuels are involved. The EU has regulated batteries since 1991 with the adoption of Directive 91/157/EEC and, most recently, in 2023 confirmed its commitment to developing electromobility through the adoption of Regulation (EU) 2023/1542 (Battery Regulation)³⁶⁶ which replaces Directive 2006/66/EC.

Adopting the Battery Regulation is to contribute to the internal market while protecting the environment from the impacts caused by battery use and battery waste.³⁶⁷ Another significant regulation is about minimising the carbon footprint of EV batteries.

³⁶⁴ Jan Dornoff, 'CO2 Emission Standards for New Passenger Cars and Vans in the European Union', Policy Update (International Council on Clean Transportation, May 2023), 2–3.

³⁶⁵ Robin Barkhausen et al., 'Analysing Policy Change towards the Circular Economy at the Example of EU Battery Legislation', *Renewable and Sustainable Energy Reviews* 186 (October 2023): 1, <https://doi.org/10.1016/j.rser.2023.113665>.

³⁶⁶ European Union, 'Regulation (EU) 2023/1542 of the European Parliament and of the Council Concerning Batteries and Waste Batteries', OJ L 191, 28.7.2023, pp. 1–117 § (2023).

³⁶⁷ European Union, art. 2.

Despite the very ambitious targets that are not expected to be achieved according to the timeline,³⁶⁸ The Battery Regulation is an integral part of developing an electromobility ecosystem that must be implemented by EU member states. As a global leader in climate change issues, the EU Battery Regulation also influences the battery supply chain, especially the metal materials used as battery raw materials.³⁶⁹ This is especially true because the EU Battery Regulation also determines that raw materials that will be used in the battery manufacturing process must pass a due diligence process.³⁷⁰

The following substance in this regulation is the transformation of changes in the choice of legal instruments. The change can be interpreted as a strengthening commitment to overcome obstacles and problems previously faced by directive legal instruments.³⁷¹ The change in the choice of legal instrument from directive to regulation will also affect the acceleration of the battery industry, its use in EVs, and battery waste management. The EU Battery Regulation also significantly supports the implementation of AFID, CVD and EPSR. All the aforementioned legal instruments represent a comprehensive approach taken by the EU to develop electromobility. In general, the four legal instruments also support the achievement of climate targets set by the EU.

3.4. An Overview of the Electromobility Legal Framework on Selected Member States

The following section will provide an overview of the legal framework for electromobility in selected EU member states. Four countries will be discussed: France, Germany, Hungary, and Poland. France and Germany are the two major economic forces and vehicle manufacturers in the EU. They also represent EU member states with high EV populations. Hungary and Poland represent EU member states with relatively low EV adoption with promising growth.

France, Germany, Poland, and Hungary, as EU member states, demonstrated a commitment to advancing electromobility in accordance with the EU legal framework and

³⁶⁸ Quentin Hoarau and Etienne Lorang, 'An Assessment of the European Regulation on Battery Recycling for Electric Vehicles', *Energy Policy* 162, no. January (2022): 7, <https://doi.org/10.1016/j.enpol.2021.112770>.

³⁶⁹ Hans Eric Melin et al., 'Global Implications of the EU Battery Regulation', *Science* 373, no. 6553 (23 July 2021): 384, <https://doi.org/10.1126/science.abh1416>.

³⁷⁰ European Union, Regulation (EU) 2023/1542 of the European Parliament and of the Council concerning batteries and waste batteries, art. 8.

³⁷¹ European Commission, 'Proposal for a Regulation of the European Parliament and of the Council Concerning Batteries and Waste Batteries, Repealing Directive 2006/66/EC and Amending Regulation (EU) No 2019/1020 (COM(2020) 798 Final)', Pub. L. No. COM(2020) 798 final (2020), 3–5.

NDC. France and Germany, as frontrunners in the automotive sector, have implemented laws that expedite the convergence of electric vehicle infrastructure and renewable energy. Poland and Hungary, however, encounter distinct economic capacity issues that diverge from those of France and Germany. Both nations get advantages from the EU climate obligations outlined in the NDC, including the Modernisation Fund, which assists low-income member states in attaining climate objectives.³⁷² These obligations, along with EU legal frameworks, necessitate that each member state implement national programs that jointly advance the EU's climate objectives.

This topic is important to discuss since any legal instrument adopted by the EU, be it a regulation or directive, will be implemented at the national level of each member state. The purpose of discussing this topic is not only to find out the implementation of EU legal instruments that support the development of electromobility but also to compare the development and growth of electromobility in each selected member state. This will provide sufficient insight to understand electromobility from a legal and policy perspective.

3.4.1. France

France is an EU member state with the largest territory stretching from the Mediterranean Sea to the Atlantic Ocean. Geographically, this region is vulnerable to climate change, especially heat waves, increased rainfall that risks causing flooding, rising sea levels, and the possibility of storms of uncertain frequency and duration.³⁷³ As a member of the EU, France is committed to mitigating and addressing the impacts of climate change by reducing emissions from various sectors, including transport.

The French government has adopted several legal instruments to support the development of electromobility, including the *Loi la Transition Énergétique Pour la Croissance Verte*/the Energy Transition for Green Growth Act (LTECV, 2015) and the *Loi d'Orientation des Mobilités*/the Mobility Orientation Law (LOM, 2019).³⁷⁴ France set ambitious climate targets in the LTECV and delegated significant authority to local governments in the energy transition. Adopting LTCEV is a giant leap for France to make

³⁷² Council Of The European Union, 'Submission to the UNFCCC on Behalf of the European Union and Its Member States on the Update of the Nationally Determined Contribution (NDC) of the European Union and Its Member States', 8.

³⁷³ World Bank, 'Climate Change Overview: France', n.d., <https://climateknowledgeportal.worldbank.org/country/france>.

³⁷⁴ Republic of France, 'France's 4th Biennial Report to the United Nations Framework Convention on Climate Change', 15 May 2020, 22–24, <https://unfccc.int/documents/227790>.

the energy transition and decarbonisation in various sectors.³⁷⁵ This regulation also provides support for the development of electromobility through incentives for EV purchases and targets the establishment of seven million charging facilities throughout France.³⁷⁶ However, the initial implementation of this regulation was delayed due to the national government's delay in establishing and implementing regulations.³⁷⁷

Table 3 France National Legal Framework on Electromobility

Sector	Legal Instruments
Climate and Energy Transition	the Energy Transition for Green Growth Act (<i>Loi la Transition Énergétique Pour la Croissance Verte</i>)
	National Low-Carbon Strategy (<i>Stratégie Nationale Bas-Carbone</i>)
	Law on Combating Climate Change and Strengthening Resilience to its Effects (<i>Loi portant lutte contre le dérèglement climatique et renforcement de la résilience face à ses effets</i>)
Charging Infrastructure Development	the Mobility Orientation Law (<i>Loi d'Orientation des Mobilités</i>)
Financial Incentives	Bonus-Malus System (CO2 Tax Policy)
Emission Standards and Urban Mobility	Air Quality Certificates (Crit'Air Scheme)
	Low Emission Zones (<i>Zone à Faible Emissions</i>)
Renewable Energy and EV Integration	Energy Code (<i>Code de l'Énergie</i>)
	Regulations for Vehicle-to-Grid (V2G)

Source: International Energy Agency (2024).

The further development of electromobility in France is managed through the adoption of a complete legal framework that aligns with the EU's regulatory framework. The Energy Transition for Green Growth Act (*Loi la Transition Énergétique Pour la Croissance Verte*) and National Low-Carbon Strategy (*Stratégie Nationale Bas-Carbone*) advocate for aggressive decarbonisation objectives through the public adoption of EV. The Law on Combating Climate Change and Strengthening Resilience to its Effects (*Loi portant lutte contre le dérèglement climatique et renforcement de la résilience face à ses effets*) enhances the fulfilment of climate obligations by expediting the energy transition. This approach aligns with EU initiatives, including the EGD and Fit for 55 packages, which are anticipated

³⁷⁵ Magali Dreyfus and Roselyne Allemand, 'Three Years After the French Energy Transition for Green Growth Law: Has the "Energy Transition" Actually Started at the Local Level?', *Journal of Environmental Law* 30, no. 1 (1 March 2018): 24–25, <https://doi.org/10.1093/jel/eqx031>.

³⁷⁶ Andreas Rüdinger, 'The French Energy Transition Law for Green Growth: At the Limits of Governance by Objectives', Issue Brief, Climate (Institut du développement durable et des relations internationales, October 2015), 2.

³⁷⁷ Dreyfus and Allemand, 'Three Years After the French Energy Transition for Green Growth Law', 25.

to offer regulatory assistance for infrastructure and market development to enhance the electromobility ecosystem.

The LOM and the Energy Code (*Code de l'Énergie*) are legal instruments essential for enhancing the adoption of electric vehicles by requiring the expansion of charging networks and the incorporation of renewable energy into the electric mobility framework. The Bonus-Malus scheme incentivises EV users while disincentivising conventional vehicle users. The Crit'Air and Low Emission Zone (ZFE) Schemes prioritise EV users for urban mobility, while conventional vehicles face restrictions on accessing city centres. This initiative is also consistent with a systematic allocation of charging stations around France. France has the issue of an inequitable distribution of charging stations, particularly in rural regions, which continues to impede universal EV adoption.

France is integrating renewable energy and vehicle-to-grid technologies organized under V2G and positioning EVs as a clean transportation solution. This strategy supports EU objectives as set out in the RED by fostering a smart energy transition. However, challenges remain in particular regarding regulatory complexity. The large number of overlapping legal instruments sometimes creates an administrative burden for stakeholders involved in electromobility development. Another obstacle is the reliance on financial incentives which raises concerns about long-term fiscal sustainability. Therefore, electromobility development in France must ensure that its climate ambitions can be implemented while promoting equitable access and economic sustainability.

The specific regulation governing electromobility is LOM 2019, which ambitiously sets a target for total decarbonisation of the road transport sector by 2050. To achieve this target, the French government committed to implementing the ESPR by limiting exhaust emissions from passenger cars and light-duty vehicles. Another commitment is to end the sale of cars that still run on fossil fuels by 2040.³⁷⁸ The regulation is also expected to accelerate the use of electric vehicles at the local level, with various incentives provided by both national and local governments.³⁷⁹ The 2019 LOM in 2024 will enter its first phase to

³⁷⁸ République Française, 'LOI N° 2019-1428 Du 24 Décembre 2019 d'orientation Des Mobilités' (2019), sec. 73, <https://www.legifrance.gouv.fr/download/pdf?id=dFFucSM4dRWHkEQLMHYgb--nam6aCtsgM2LdqyWZyGE=>.

³⁷⁹ Martin Pasquesoone, 'Analysis of the Effects from the Mobility Orientation Law on Geographical Inequalities of Mobility and Low-Carbon Mobility in French Low-Density Inter-Municipalities' (Degree Project in Strategies for Sustainable Development, Stockholm, KTH Royal Institute of Technology, 2022), 51.

be evaluated. The interesting question is whether the regulation affects the electromobility ecosystem in France.

In 2019, EV sales share was only 2.8%, with 61,500 vehicles sold.³⁸⁰ By the end of the first half of 2023, the EV population increased significantly to 889,776 units, equivalent to a 15% sales share.³⁸¹ This overview shows that the EU and French legal instruments are working quite effectively to improve the EV population and develop electromobility. The harmonisation and synchronisation of the French national legal framework with the EU in the electromobility sector shows the operation of law in shaping integration, especially in policies related to electromobility. Regulatory legal instruments that contain direct effects after being formally adopted still require support from national legal instruments.

3.4.2. Germany

Germany is one of the major countries in Europe and has the largest vehicle industry, with several brands such as Volkswagen, Mercedes-Benz, and BMW.³⁸² By 2023, Germany's EV market share reached 25%, which is above the EU average of 21%.³⁸³ Therefore, the discussion of electromobility development in Germany is essential and will provide an understanding of the context of an EU member state as the world's major automotive producer. Germany is also a country that strongly influences EU climate change policy. Germany's climate change policy can be categorised as an aggressive and structural economic policy in leadership and an example for other countries, particularly the EU.³⁸⁴

Until 2022, the German electromobility legal framework consists of four types of legal instruments, and their level and scope of application can be distinguished. The EU legal framework on electromobility guides the German national legal framework for electromobility. At the national level, four strategies range from climate action programmes

³⁸⁰ Dale Hall, Sandra Wappelhorst, and Nic Lutsey, 'European Electric Vehicle Factbook 2019/2020' (Washington DC: The International Council on Clean Transportation, n.d.), 8.

³⁸¹ Peter Mock, 'European Vehicle Market and Charging Infrastructure Development Quarterly: January-June 2023', Market Monitor, Fact Sheet Europe (Washington DC: The International Council on Clean Transportation, September 2023).

³⁸² Patrick Plötz and Elisabeth Dütschke, 'Electric Vehicle Adoption in Germany: Current Knowledge and Future Research', in *Who's Driving Electric Cars: Understanding Consumer Adoption and Use of Plug-in Electric Cars*, ed. Marcello Contestabile, Gil Tal, and Thomas Turrentine (Cham: Springer, 2020), 189.

³⁸³ Mock, 'European Vehicle Market and Charging Infrastructure Development Quarterly: January-June 2023', 3.

³⁸⁴ Martin Jänicke, 'German Climate Change Policy: Political and Economic Leadership', in *The European Union as a Leader in International Climate Change Politics*, ed. Rüdiger K.W. Wurzel and James Connelly (Routledge, 2010), 129, <https://doi.org/10.4324/9780203839959>.

to battery charging infrastructure development plans. Twenty-six federal-level regulations support the development of electromobility. There are regulations, strategies, and plans at the state level and local scale.

Table 4 Germany National Legal Framework on Electromobility

Sector	Legal Instruments
Climate Target	Climate Action Plan 2050 (<i>Klimaschutzplan 2050</i>)
	the Climate Action Programme 2030 and the Climate Change Act (<i>Klimaschutzgesetz</i>)
	The Federal Government's Electric Mobility Programme (<i>Nationale Plattform Elektromobilität</i>)
Battery and charging infrastructure	Charging infrastructure master plan
	Batteries Act (<i>Batteriegesetz, BattG</i>)
	Compulsory marking of charging points in accordance with the 10th Ordinance Implementing the Federal Immission Control Act (<i>10. BundesImmissionsschutzgesetzes, BImSchV</i>)
	Charging Station Ordinance (<i>Ladesäulenverordnung, LSV</i>)
	Metering Point Operation Act (<i>Messstellenbetriebsgesetz, MsbG</i>)
	Fast Charging Act (<i>Schnellladegesetz, Schnell, ILG</i>)
Emission Standard	Federal Immission Control Act (<i>Bundesimmissionsschutzgesetz, BImSchG</i>)
Finance	Income Tax Act (<i>Einkommensteuergesetz, EStG</i>)
	Motor Vehicle Tax Act (<i>Kraftfahrzeugsteuergesetz, KraftStG</i>)
	Price Indication Ordinance (<i>Preisangabenverordnung, PAngV</i>)
EV Technical Aspect	Electric Mobility Act (<i>Elektromobilitätsgesetz, EmoG</i>)
	Compensating the biofuels quota with power for electric vehicles within the framework of the 38th BImSchV (38. <i>BundesImmissionsschutzgesetzes, BImSchV</i>)
	Ordinance on Energy Consumption Labelling for Passenger Cars (<i>Verordnung über Verbraucherinformationen zu Kraftstoffverbrauch, Stromverbrauch, CO2-Emissionen und Energiekosten neuer Personenkraftwagen, Pkw-EnVKV</i>)
	Measures and Verification Act (<i>Mess- und Eichgesetz, MessEG</i>)
	German Road Vehicles Registration and Licensing Regulations (<i>Straßenverkehrs-Zulassungs-Ordnung, StVZO</i>)
Energy	Energy Industry Act (<i>Energiewirtschaftsgesetz, EnWG</i>)
	Renewable Energy Sources Act (<i>Erneuerbare-Energien-Gesetz, EEG</i>)
	Low-Voltage Connection Ordinance (<i>Niederspannungsanschlussverordnung, NAV</i>)
	Electricity Duty Act (<i>Stromsteuergesetz, StromStG</i>)
	Ordinance Implementing the Electricity Duty Act (<i>Stromsteuer-Durchführungsverordnung, StromStV</i>)
	Electric Mobility Infrastructure in Buildings Act (<i>Gebäude-Elektromobilitätsinfrastruktur-Gesetz, GEIG</i>)
	Driver Licensing Regulations (<i>Fahrerlaubnis-Verordnung, FeV</i>)

Sector	Legal Instruments
Supporting	Car Sharing Act (<i>Carsharinggesetz, CsgG</i>)
	Road Traffic Act (<i>Straßenverkehrsgesetz, StVG</i>)
	German Road Traffic Regulations (<i>Straßenverkehrs-Ordnung, StVO</i>)
	German Civil Code/rent law (<i>Bürgerliches Gesetzbuch, BGB</i>)
	Apartment Ownership Act (<i>Wohnungseigentumsgesetz, WEG</i>)

Source: Federal Ministry for Digital and Transport, Federal Republic of Germany (2022).

Germany has established a legal framework for the advancement of electromobility, employing a comprehensive and multi-sectoral strategy that incorporates climate objectives, infrastructure, energy policy, and financial incentives. Germany aims to achieve net-zero emissions by 2045, a goal bolstered by the Climate Action Plan 2050 (*Klimaschutzplan 2050*) and the Climate Change Act (*Klimaschutzgesetz*). The transportation industry is a primary focus for reducing automobile emissions. Germany promotes strategic planning and execution of electromobility via its the Federal Platform for Electric Mobility policy (*Nationale Plattform Elektromobilität*).

A crucial element in the advancement of electromobility is the charging infrastructure. The German government has consequently implemented multiple legal instruments, including the Charging Infrastructure Master Plan, the Fast Charging Act, and various laws, such as the Charging Station Ordinance (*Ladesäulenverordnung, LSV*), which mandate standardisation and provide extensive access to charging for EV consumers. The Price Indication Regulation ensures the viability and transparency of costs for consumers charging EV batteries. Furthermore, to guarantee the use of batteries in alignment with sustainability principles, the German Government enacted the Battery Act (*Batteriegesetz, BattG*), while the Measurement Point Operation Act governs measurements for charging stations. Financial incentives for electric vehicle purchases are offered through tax exemptions and discounts. These stipulations pertain to the Income Tax Act (*Einkommensteuergesetz, EStG*) and the Motor Vehicle Tax Act (*Kraftfahrzeugsteuergesetz, KraftStG*).

Additional legal documents, including the Federal Emission Control Act (*Bundesimmissionsschutzgesetz, BImSchG*) and the Electric Mobility Act (*Elektromobilitätsgesetz, EmoG*), emphasise technical and emission requirements by explicitly regulating electric vehicles and advocating for sustainable fuels. The German government enacted the Renewable Energy Sources Act (*Erneuerbare-Energien-Gesetz, EEG*) and the Electric Mobility Infrastructure in Buildings Act (*Gebäude-*

Elektromobilitätsinfrastruktur-Gesetz, GEIG) to guarantee grid preparedness and electricity provision from renewable sources. This robust legal framework establishes Germany as a frontrunner in the energy transition through the development of electromobility.

The pattern of the national legal framework adopted by Germany is similar to the EU regarding legal instruments regulating specific sectors relevant to the development of electromobility. The national legal framework is further enhanced by the adoption of laws at the state and local levels regulating parking, traffic, roads, building standards, and climate change strategies. From a legal perspective, it can be said that electromobility in Germany will have a bright future. However, there are criticisms of the development of electromobility in Germany. There are at least three reasons that criticise the development of electromobility in Germany, especially from the aspects of justice and equity.

The German economy is heavily influenced by the hegemony of the automotive industry; therefore, the transition to electromobility cannot ignore the conventional vehicle industry, which has long existed and employs many people.³⁸⁵ Germany can be the main locomotive in the energy transition, especially in developing electromobility in the EU region and breaking away from dependence on the fossil fuel-based vehicle industry.³⁸⁶ Another criticism of Germany is related to equity in electromobility development, which can only be enjoyed by the upper and middle classes. In addition, the development of the EV industry in Germany is also considered to have yet to reach justice for countries producing raw materials for battery raw materials.³⁸⁷ As an EU member state, Germany has a wide opportunity to advocate for mobility justice in the development of electromobility.

³⁸⁵ Tobias Haas, 'From Green Energy to the Green Car State? The Political Economy of Ecological Modernisation in Germany', *New Political Economy* 26, no. 4 (4 July 2021): 12, <https://doi.org/10.1080/13563467.2020.1816949>.

³⁸⁶ Funda Tekin and Christina Goßner, 'The Fight Against Climate Change in Germany: From Energiewende to Zeitenwende?', in *Climate Change and the Future of Europe: Views from the Capitals*, ed. Michael Kaeding, Johannes Pollak, and Paul Schmidt, The Future of Europe (Cham: Springer, 2023), 47.

³⁸⁷ Tobias Haas, 'The Political Economy of Mobility Justice. Experiences from Germany', *Mobilities* 17, no. 6 (2 November 2022): 906–7, <https://doi.org/10.1080/17450101.2021.1987153>.

3.4.3. Hungary

The development of electromobility in Hungary is a response to climate change that affects human transport needs.³⁸⁸ Currently, although the expansion of EV use in Hungary is less massive than in other EU member states, the trend shows that the market share of these environmentally friendly vehicles is increasing every year. In 2023, the sales of EVs in Hungary increased by 24% compared to the previous year.³⁸⁹ The legal framework adopted by the Hungarian government plays a vital role in the development of electromobility. Hungary is committed to implementing the adopted legal framework mainly to develop electromobility nationally as an EU member state.

Hungary's national legal instrument on electromobility is divided into several regulations that address specific issues.³⁹⁰ In 2010, the Hungarian government adopted the Renewable Energy Act to promote alternative fuels.³⁹¹ The regulation attempts to pave the way for alternative fuels that substitute fossil fuels. One type of fuel promoted is electric power, which can power EVs. The Hungarian Ministry of National Development (Nemzeti Fejlesztési Minisztérium, NFM) further adopted regulations that provide the basis for the morning use of electricity in the transport sector.³⁹² Below is the electromobility legal framework adopted by Hungary:

Table 5 Hungary National Legal Framework on Electromobility

Sector	Legal Instruments
Climate Target	Hungary National Energy and Climate Plan 2020
Battery and charging infrastructure	170/2017 (VI. 29.) <i>Korm. rendelet az elektromos gépjárműtöltési szolgáltatás egyes kérdéseiről</i> (Government Decree on certain issues of electric vehicle charging services)

³⁸⁸ Gabor Szendro, Maria Csete, and Adam Torok, 'Unbridgeable Gap Between Transport Policy and Practice in Hungary', *Journal of Environmental Engineering and Landscape Management* 20, no. 2 (7 June 2012): 107, <https://doi.org/10.3846/16486897.2012.660881>.

³⁸⁹ the European Automobile Manufacturers Association (ACEA), 'New Car Registrations, European Union' (the European Automobile Manufacturers Association (ACEA), 20 December 2023), https://www.acea.auto/files/Press_release_car_registrations_November_2023.pdf.

³⁹⁰ Farkas-csamangó, 'The Legal Environment of Electromobility in Hungary', 181.

³⁹¹ '2010. Évi CXVII. Törvény a Megújuló Energia Közlekedési Célú Felhasználásának Előmozdításáról És a Közlekedésben Felhasznált Energia Üvegházhatású Gázkibocsátásának Csökkentéséről' (n.d.), <https://net.jogtar.hu/jogszabaly?docid=a1000117.tv>.

³⁹² Erika Farkas-csamangó, 'Environmentally Friendly Car in Hungarian Legislation', in *Sustainable Development of Law and Management in the Current World: Scientific Monograph* (Sustainable Development of Law and Management in the Current World Conference, Vilnius: KSU-Kazimieras Simonavičius University, 2021), 117–18.

Sector	Legal Instruments
	243/2019.(X. 22.) Korm. rendelet az elektromobilitás szolgáltatás egyes kérdéseiről (Government decree on certain aspects of the electromobility service)
EV Technical Aspect	1487/2015 (VII. 21.) Korm. határozat a Jedlik Ányos Tervhez kapcsolódó jogalkotási feladatokról (Government Decision on legislative tasks related to the Jedlik Ányos Plan).
	369/2015. (XII. 2.) Korm. rendelet a Jedlik Ányos Terv keretében létesítendő, az elektromos járművek használatához szükséges alapvető töltő infrastruktúra telepítésével összefüggő közigazgatási hatósági ügyek kiemelt jelentőségű üggyé nyilvánításáról (the Government Decree on declaring administrative authority cases related to the installation of basic charging infrastructure for electric vehicles to be established within the framework of the Jedlik Ányos Plan as a matter of priority).
	17/2017. (V. 26.) NFM rendelet a motorhajtóanyagok minőségi követelményeiről (Decree on the quality requirements for motor fuels).
	326/2011. (XII. 28.) Korm. rendelet a közúti közlekedési igazgatási feladatokról, a közúti közlekedési okmányok kiadásáról és visszavonásáról (Government decree on road transport administrative tasks, the issue and withdrawal of road traffic documents)
Energy	2007. évi LXXXVI. törvény a villamos energiáról (Electricity Act).
	2016. évi LXXXI. törvény egyes energetikai tárgyú törvények módosításáról (Act amending certain laws on energy).
Supporting	6/1990. (IV. 12.) <i>Közlekedési, Hírközlési és Építésügyi Minisztérium rendelet a közúti járművek forgalomba helyezésének és forgalomban tartásának műszaki feltételeiről</i> (Transportation, Communication and Construction Ministry Decree on the technical conditions for the registration and keeping in circulation of road vehicles).
	253/1997. (XII. 20.) <i>Korm. rendelet az országos településrendezési és építési követelményekről</i> (Government decree on the national settlement planning and building requirements)
	10/2016. (II. 9.) Korm. rendelet az országos településrendezési és építési követelményekről szóló 253/1997. (XII. 20.) Korm. rendelet, valamint a levegő védelméről szóló 306/2010. (XII. 23.) Korm. rendelet módosításáról (Government Decree 10/2016 (II. 9.) amending Government Decree 253/1997 (XII. 20.) on national settlement planning and building requirements and Government Decree 306/2010 (XII. 23.) on air protection).

Source: Farkas-Csamangó (2020, 2021) & Árpád et.al (2021)

The electromobility legal framework adopted by the Hungarian government is complete, covering upstream to downstream sectors to support the development of the electric vehicle ecosystem. With this legal framework and the progressive EU climate targets, the development of electromobility in Hungary is predicted to be positive. Hungary

faces challenges in terms of renewable energy supply. Research conducted by Árpád et al. predicts that the development of EVs in Hungary will experience electricity supply difficulties after 2040 if there is no expansion in primary energy sources to generate electricity.³⁹³ Another challenge Hungary faces is foreign investment in producing EV batteries. In addition to the growing adoption of EVs, Hungary is an attractive investment place for manufacturing vehicle components such as batteries. The Hungarian automotive industry has slowly shifted from conventional vehicles to EVs and their essential elements.³⁹⁴ Hungary's challenges include environmental and other social issues related to labour.³⁹⁵ Therefore, Hungary needs to take strategic steps so that the main goal of developing electromobility for environmental sustainability does not become a boomerang that would devastate the environment.

3.4.4. Poland

Poland's decarbonisation policy is unique due to the significant amount of coal (72%) in its energy mix and its position as an EU member bound by the 2030 and 2050 climate target commitments.³⁹⁶ Often, the EU climate targets and the political will of the Polish government are not aligned due to the still strong influence of the fossil fuel industry and the growing climate scepticism among Polish politicians.³⁹⁷ However, both the public and the Polish government recognise that decarbonisation is a necessary strategy to mitigate the impacts of climate change.³⁹⁸ One such effort is to build an EV ecosystem by developing electromobility.³⁹⁹ Poland will experience significant growth in EV sales through 2023,

³⁹³ István Árpád et al., 'Investigation of the Impact of EU and Governmental Measures on the Spread and the Energy Supply of Electromobility in Hungary', *Environmental Progress & Sustainable Energy* 40, no. 4 (July 2021): 10, <https://doi.org/10.1002/ep.13575>.

³⁹⁴ John Szabo et al., 'The Hungarian Automobile Industry: Towards an Understanding of the Transition to Electromobility', in *On the Way to Electromobility – a Green(Er) but More Unequal Future?*, ed. Béla Galgóczi (Brussels, Belgium: European Trade Union Institute (ETUI), 2023), 258.

³⁹⁵ Andrea Éltető, 'Aspects of Electric Vehicle Battery Production in Hungary' (ELRN Centre for Economic and Regional Studies Institute of World Economics, June 2023), 48.

³⁹⁶ Katja Biedenkopf, 'Polish Climate Policy Narratives: Uniqueness, Alternative Pathways, and Nascent Polarisation', *Politics and Governance* 9, no. 3 (2021): 392–93, <https://doi.org/10.17645/pag.v9i3.4349>.

³⁹⁷ Joanna Dyduch, Magdalena Góra, and Natasza Styczyńska, 'Concerned But Not Fully Dedicated: The Polish Perspective on Climate Change', in *Climate Change and the Future of Europe: Views from the Capitals*, ed. Michael Kaeding, Johannes Pollak, and Paul Schmidt, The Future of Europe (Cham: Springer, 2023), 86–87.

³⁹⁸ Małgorzata Kozłowska, 'Development of Electromobility in Poland as a Way to Reduce the Negative Impact of Land Transport on the Climate', *Wroclaw Review of Law, Administration & Economics* 13, no. 1 (4 February 2024): 5, <https://doi.org/10.2478/wrlae-2023-0004>.

³⁹⁹ Ministry of Energy, Republic of Poland, 'Electromobility Development Plan in Poland: Energy for the Future' (Ministry of Energy, Republic of Poland, 2018), 12–13.

reaching 52.7%.⁴⁰⁰ This figure is much higher than that of Hungary and Germany, where EV sales growth in 2023 did not reach 50%. Poland's continued reliance on coal-based power generation, alongside its commitment to decarbonisation through electromobility, is a fascinating theme to discuss.

Table 6 Poland National Legal Framework on Electromobility

Sector	Legal Instruments
Climate and Energy Transition	Electromobility and Alternative Fuels Act (<i>Ustawa o elektromobilności i paliwach alternatywnych</i>)
	Energy Law (<i>Prawo energetyczne</i>)
	National Energy and Climate Plan (<i>Krajowy Plan na rzecz Energii i Klimatu</i>)
Charging Infrastructure Development	Act on Public Roads (<i>Ustawa o drogach publicznych</i>)
	Building Law (<i>Prawo budowlane</i>)
	Regulation on Technical Requirements for Charging Points (<i>Rozporządzenie w sprawie warunków technicznych stacji ładowania</i>)
Financial Incentives and Support	Low Emission Transport Fund (<i>Fundusz Niskoemisyjnego Transportu</i>)
	Motor Vehicle Tax Exemption for EVs
	National Programme for the Development of Electromobility ("e-Mobility Poland" Strategy)
Emission Standards and Urban Mobility	Clean Transport Zones Regulation (<i>Rozporządzenie w sprawie Stref Czystego Transportu</i>)
	Environmental Protection Law (<i>Prawo ochrony środowiska</i>)
Renewable Energy	Renewable Energy Sources Act (<i>Ustawa o odnawialnych źródłach energii</i>)
	Act on the Energy Market (<i>Ustawa o rynku energii</i>)

Source: Polish Ministry of Energy (2018)

The legal basis for the development of electromobility in Poland is the Act of Electromobility and Alternative Fuels (Act of 11 January 2018 on electromobility and alternative fuels (*Ustawa z dnia 11 stycznia 2018 r. o elektromobilności i paliwach alternatywnych*) adopted in 2018.⁴⁰¹ This legal instrument transposes the AFID adopted by the EU in 2014. The regulation is the legal basis for developing EV charging infrastructure and promoting the use of alternative fuels. It also regulates the technical requirements for EVs, charging stations, and green transport zones.⁴⁰²

⁴⁰⁰ the European Automobile Manufacturers Association (ACEA), 'New Car Registrations, European Union'.

⁴⁰¹ Kozłowska, 'Development of Electromobility in Poland as a Way to Reduce the Negative Impact of Land Transport on the Climate', 8.

⁴⁰² Michał Dudkowiak, 'Electric Vehicles Regulation in Poland', February 2023, <https://www.dudkowiak.com/electric-vehicles/>.

The act was later amended in 2021 under the Act of 2 December 2021 amending the Act on electromobility and alternative fuels and certain other acts (*Ustawa z dnia 2 grudnia 2021 r. o zmianie ustawy o elektromobilności i paliwach alternatywnych oraz niektórych innych ustaw*). Some of the changes include provisions on the design and construction of new residential buildings, the installation of battery charging facilities, each city's obligation to have a low-emission transport zone, the scope of obligations for battery charging service providers, and inspections by authorities of battery charging facility providers.

Efforts to develop electromobility in Poland are being made by adopting a legal framework that promotes sustainable transportation, reduces emissions, and integrates renewable energy into the transportation sector. Accelerated development of charging infrastructure, electrification of public transport, and financial incentives for EVs are regulated in the Electromobility and Alternative Fuels Act. Furthermore, the Energy Act and the National Energy and Climate Plan are aligned with the policies of the EU's Fit for 55 package, which targets a significant reduction in greenhouse gas emissions by 2030. However, Poland's challenge is its reliance on coal as an energy source for electricity generation. Unlike other EU countries, Poland will have to decarbonize its energy grid to ensure that the electricity to be used by EVs comes from renewable energy power plants.

Although Poland's legal framework has regulated electromobility considerably, the legal challenges must be resolved. The first challenge is the consequence of Poland being an EU member state, hence the need for consistency and harmonisation of national laws on electromobility with the EU legal framework. The logical result of the first challenge is the development of electromobility infrastructure that complies with the standards and interoperability set by the EU.⁴⁰³ This includes providing incentives and funding in accordance with EU internal market regulations while protecting Polish consumers. Poland's main challenge is the progressivity of climate policy as the basic foundation for electromobility development.⁴⁰⁴ With this progress, Poland will catch up to other EU member states.

⁴⁰³ Grzegorz Sierpiński et al., 'Challenges Related to the Implementation and Development of Electromobility in Cities', in *Transport Development Challenges in the 21st Century: Proceedings of the 2019 TranSopot Conference*, ed. Michal Suchanek, Springer Proceedings in Business and Economics (Cham: Springer International Publishing, 2021), 208–9, <https://doi.org/10.1007/978-3-030-50010-8>.

⁴⁰⁴ Dyduch, Góra, and Styczyńska, 'Concerned But Not Fully Dedicated: The Polish Perspective on Climate Change'.

3.5. Concluding Remarks: Integration through Electromobility

Does decarbonising the transport sector through the development of electromobility provide a solution for climate change adaptation? In the EU legal framework context, electromobility is one of the mechanisms that have become a solution to decarbonisation efforts to achieve climate targets and be climate neutral. The foundation of electromobility development is climate change policy applied in the legal framework of vehicles' energy, finance, and technical aspects, including emission standards and governance of battery production and waste management. Based on the discussion and elaboration of various legal instruments and relevant literature, this research underlines that the development of electromobility by the EU is carried out by adopting strong legal instruments to form an electromobility legal framework.

The EU faces internal and external challenges, which are addressed by strengthening the legal framework by changing the legal instrument from directive to regulation. The choice of legal instruments can indicate an institutional commitment to applying strategic plans. Strengthening legal instruments can strengthen EU integration in the areas of climate change and energy that affect electromobility. The EU has chosen a variation of regional solid integration in climate change and energy that is constitutionally reflected in primary and secondary legislation. However, institutionally, the EU recognises that electromobility development cannot be implemented equally in all member states. Each country has internal and external challenges that the EU must address by assisting to achieve the set targets.

CHAPTER IV: 'THE ASEAN WAY' OF DEVELOPING ELECTROMOBILITY IN THE REGION: SOFT LAW AS FOUNDATION

4.1. Introduction

The previous chapter discussed the development of the legal environment for electromobility in the EU, which focuses on the governance aspects of climate change and energy. Furthermore, this chapter will discuss the development of a legal electromobility environment in the ASEAN context. ASEAN has also attempted to combat climate change and promote low-carbon transport as a regional organisation since its establishment in 1967. ASEAN countries have grown into EV industry centres and markets in the last five years. The electromobility ecosystem is developing due to state support through adopted legal frameworks. However, due to the different characteristics and variations of regional integration with the EU, ASEAN has challenges and opportunities in electromobility development. It is crucial to discuss this issue properly to understand regional organisations' role in electromobility development. The analysis and discussion in this chapter are significant in providing new horizons in the academic world regarding ASEAN's role in decarbonising the transport sector.

Before elaborating on ASEAN's role and the legal framework adopted to support electromobility, this chapter will first provide an understanding of the development and evolution of ASEAN law. This discussion is necessary to understand the working mechanism of ASEAN law properly. Following this is an analysis of the role of ASEAN law in developing electromobility at the regional level. To understand the legal framework for electromobility development at the national level of ASEAN member countries, this chapter will discuss the legal frameworks of Thailand, Malaysia, Singapore and Indonesia. The last part of this chapter is the concluding remarks that will summarise the results of the analysis and discussion.

4.2. Understanding the ASEAN Law: Development and Evolution

ASEAN is a regional organisation established in 1967 by the five founding countries of Thailand, Indonesia, Singapore, Malaysia, and the Philippines to respond to the high tension in the region caused by the Cold War's influence after the Second World War.⁴⁰⁵ ASEAN has grown to have ten member countries in the Southeast Asian region.

The adoption of the ASEAN Charter, which came into force in 2008, was a milestone moment in the legal institutionalisation of ASEAN.⁴⁰⁶ The ASEAN Charter consolidates the legal norms adopted by ASEAN through hard and soft law.⁴⁰⁷ Article 1(7) of the ASEAN Charter also affirms that one of ASEAN's objectives is to strengthen and promote the rule of law. Therefore, the existence of the ASEAN Charter, which provides a concrete legal framework, is a progressive step that has emphasised the existence of ASEAN Law.⁴⁰⁸

To understand ASEAN law, it is necessary to discuss the actors involved in the ASEAN lawmaking process, the lawmaking process mechanism and types of legal instruments, and the concept of ASEAN law implementation. These themes must be discussed to answer doubts about the existence and enforceability of ASEAN law, often compared to EU law. ASEAN law has its own distinctiveness as a legal system that combines Western and local values due to the spirit of decolonisation.⁴⁰⁹

4.2.1. The Problematics of ASEAN Lawmaking Process: Actors and Instruments

The existence of the ASEAN Charter brings significant changes to the legality and entity of ASEAN as an organisation.⁴¹⁰ According to Desierto, theoretically, there are five fundamental differences after the enactment of the ASEAN Charter, especially in terms of

⁴⁰⁵ Marty M. Natalegawa, *Does ASEAN Matter? A View from Within* (Singapore: ISEAS Publishing, 2018), 14–15.

⁴⁰⁶ Joel Ng, 'Rule of Law as a Framework within the ASEAN Community', in *ASEAN International Law*, ed. Eric Yong Joong Lee (Singapore: Springer Nature Singapore, 2022), 164, <https://doi.org/10.1007/978-981-16-3195-5>.

⁴⁰⁷ Lee, 'Legal Development of the ASEAN Community Building', 4.

⁴⁰⁸ Barry Desker, 'Is The ASEAN Charter Necessary?', RSIS Commentaries (Singapore: S. Rajaratnam School of International Studies, 2008).

⁴⁰⁹ Tommaso Visone, 'The "ASEAN Way". A Decolonial Path beyond "Asian Values"?', *Perspectives on Federalism* 9, no. 1 (28 August 2017): 3–4, <https://doi.org/10.1515/pof-2017-0001>.

⁴¹⁰ Katja Freistein, "'A Living Document": Promises of the ASEAN Charter', *The Pacific Review* 26, no. 4 (September 2013): 408, <https://doi.org/10.1080/09512748.2012.759266>.

organisational structure and mechanism.⁴¹¹ First, ASEAN changed from a thematic agreement-based cooperation organisation to a charter-based organisation that requires all member states to carry out roles and responsibilities following the objectives and principles of the charter.⁴¹² However, other opinions reveal that in its implementation, many member states are not committed to the ASEAN Charter as the organisation's constitution, particularly in dispute resolution.⁴¹³

The second difference is the certainty of the lawmaking process in ASEAN, with the division of roles among the organised bodies. However, ASEAN does not adopt a complex lawmaking mechanism like the EU. The ASEAN Summit, as the highest organ, holds three functions at once: executive, legislative, and quasi-judicial.⁴¹⁴ The principles of consultation and consensus guide decision-making.⁴¹⁵ In this context, it is argued that the ASEAN Charter does not change the organisation's decision-making mechanism but rather affirms and legalises "The ASEAN Way" in the charter.⁴¹⁶

The third difference is the limitation of the roles and responsibilities of member states holding the ASEAN chairmanship.⁴¹⁷ Before the entry into force of the ASEAN Charter, each state acting as the Chairman had the right to determine the main agenda of the ASEAN Summit, which implied the adoption of specific legal instruments. With the ASEAN Charter, the member state, the ASEAN Chairman, organises the Summit based on a pre-agreed agenda, including those of organs such as the ASEAN Coordinating Council and the ASEAN Secretariat.⁴¹⁸ This provision implements the ASEAN Charter's centrality principle to prevent the ASEAN Summit forum from being used as a tool to legitimise the domestic or foreign political agenda of a particular country or group of countries.⁴¹⁹

⁴¹¹ Diane A Desierto, 'Pre-Charter and Post-Charter ASEAN: Cross-Pillar Decision-Making in the Master Plan for ASEAN Connectivity 2025', in *ASEAN Law and Regional Integration: Governance and The Rule of Law in Southeast Asia's Single Market*, ed. Diane A Desierto and David Cohen (New York: Routledge, 2021).

⁴¹² Diane A Desierto, 'ASEAN' S Constitutionalization of International Law: Challenges to Evolution Under the New ASEAN Charter', *Columbia Journal of Transnational Law* 49 (2011): 287–88.

⁴¹³ Kelly Gerard, 'ASEAN as a "Rules-Based Community": Business as Usual', *Asian Studies Review* 42, no. 2 (3 April 2018): 224–25, <https://doi.org/10.1080/10357823.2018.1444016>.

⁴¹⁴ Desierto, 'ASEAN' S Constitutionalization of International Law: Challenges to Evolution Under the New ASEAN Charter', 286.

⁴¹⁵ Sanae Suzuki, 'Can ASEAN Offer a Useful Model? Chairmanship in Decision-Making by Consensus', *Pacific Review* 34, no. 5 (2021): 2, <https://doi.org/10.1080/09512748.2020.1727553>.

⁴¹⁶ Chun Hung Lin, 'ASEAN Charter: Deeper Regional Integration under International Law?', *Chinese Journal of International Law* 9, no. 4 (1 December 2010): 828, <https://doi.org/10.1093/chinesejil/jmq025>.

⁴¹⁷ Desierto, 'Pre-Charter and Post-Charter ASEAN: Cross-Pillar Decision-Making in the Master Plan for ASEAN Connectivity 2025', 28.

⁴¹⁸ ASEAN, 'The ASEAN Charter' (2008), art. 32.

⁴¹⁹ Faudzan Farhana, 'Chairmanship in ASEAN: Leeson Learned for Indonesia', *Jurnal Penelitian Politik* 19, no. 2 (30 December 2022): 131, <https://doi.org/10.14203/jpp.v19i2.1253>.

Furthermore, all ASEAN member states are obligated to use any and all means necessary to implement ASEAN law.⁴²⁰ This provision aims to ensure that agreements and decisions adopted at the ASEAN Summit are properly implemented and involve all member states without exception. The latest difference is the formalisation of the principles contained in the ASEAN Charter, especially the ASEAN Centrality principle, which seeks to catalyse the integration of Southeast Asian countries' foreign policy.

The fundamental principle in the ASEAN lawmaking process under Article 20(1) of the ASEAN Charter is consultation and consensus-based. The main characteristics of the principle are informality and low possibility of conflict.⁴²¹ The principles and characteristics of the ASEAN lawmaking process have emerged and evolved since the organisation was established in 1967 and are stated in writing in the ASEAN Charter 2008. Actors implement the principles of consultation and consensus, along with informality and avoiding open conflict, to create mutual trust.⁴²² In this dissertation, the definition of actors is limited to those formally recognised in the ASEAN Charter and directly involved in the lawmaking process.

The main actors are the ASEAN member states, which currently consist of ten countries in the Southeast Asian region, namely Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam.⁴²³ Traditionally, each ASEAN member state shares a common regional vision. Therefore, ASEAN is a reflection of its member countries in terms of legal, economic, social, and other issues.⁴²⁴ The heads of state or government of ASEAN member states will hold a high-level conference twice yearly. The summit is the highest policy-making body organised by the member state with the chairmanship.⁴²⁵ Hence, ASEAN member states that hold the chairmanship are extraordinarily influential in lawmaking.⁴²⁶ The importance of the role of member states and chairmanship-holding countries as actors is reflected in the early

⁴²⁰ ASEAN, The ASEAN Charter, art. 5(2).

⁴²¹ Suzuki, 'Can ASEAN Offer a Useful Model? Chairmanship in Decision-Making by Consensus', 2.

⁴²² Winfried Huck, 'Informal International Law-Making in the ASEAN: Consensus, Informality and Accountability', *ZaöRV* 80 (2020): 115.

⁴²³ ASEAN, The ASEAN Charter, art. 4.

⁴²⁴ Chesterman, 'Does ASEAN Exist: The Association of Southeast Asian Nations as an International Legal Person', 262.

⁴²⁵ ASEAN, The ASEAN Charter, art. 7(2b).

⁴²⁶ Heads of state or government of ASEAN member states also have influence as actors who drive lawmaking on certain issues and even organisational solidity. Some former leaders of member states such as Mahathir Muhammad (Malaysia), Lee Kuan Yew (Singapore), Fidel Ramos (the Philippines), and Soeharto (Indonesia) significantly influenced the direction of ASEAN lawmaking. See Umar (n 390) 49 and Acharya (n 389) 155-156.

establishment of ASEAN, which was initiated by the Minister of Foreign Affairs of Thailand, who then invited four foreign ministers from other countries, namely Indonesia, Malaysia, the Philippines and Singapore. The common vision and interest of the five founding countries to stem the influence of communism and the Cold War in the Southeast Asian region became the initial motivation for the establishment of ASEAN.⁴²⁷

This research argues that the ASEAN Summit, as the highest organ attended by heads of state or government of member states, is the leading actor in the lawmaking process. Other organs only implement the legal instruments adopted under their respective fields. The ASEAN Coordinating Council, which consists of all foreign ministers of member states, is the second most powerful organ that has influence, especially in discussing certain issues at the ASEAN Summit. The influence is at least partly due to the historical factor that the foreign ministers of the founding countries initiated the founding of ASEAN. Other ASEAN organs, such as the ASEAN Community Council,⁴²⁸ ASEAN Coordinating Council,⁴²⁹ The ASEAN Secretariat (including the ASEAN Secretary General) and other organs implement all legal instruments adopted by the ASEAN Summit.

There are three problems in the ASEAN lawmaking mechanism. The first problem is the centralisation of lawmaking power in one organ, the ASEAN Summit, and all procedures must be carried out with the principles of consultation and consensus.⁴³⁰ This means there is a specific time limitation to adopt a particular legal instrument once all member states reach a consensus.⁴³¹ This condition shows that ASEAN is a regional organisation characterised as state-centred rather than people-centred.⁴³² However, according to Natalegawa, ASEAN is gradually moving towards a people-centred and people-oriented organisation, although it will take a long time.⁴³³

The second problem is that each ASEAN member state has a different political system and democratic maturity.⁴³⁴ Some examples are the frequent military coups in

⁴²⁷ Ahmad Rizky M. Umar, *Ada Yang Hilang Dari ASEAN* (Jakarta: Celios Publishing House, 2023), 45–46.

⁴²⁸ ASEAN, The ASEAN Charter, art. 8.

⁴²⁹ ASEAN, art. 9.

⁴³⁰ ASEAN, art. 20.

⁴³¹ Yoshifumi Fukunaga, 'Use of Legal Instruments in the ASEAN Economic Community Building', *Journal of Contemporary East Asia Studies* 10, no. 1 (2021): 78, <https://doi.org/10.1080/24761028.2021.1905199>.

⁴³² Amitav Acharya, 'The Myth of ASEAN Centrality?', *Contemporary Southeast Asia* 39, no. 2 (2017): 275.

⁴³³ Natalegawa, *Does ASEAN Matter?*, 164.

⁴³⁴ Jean Blondel, 'Citizens' Values in East and Southeast Asia', in *Democratisation, Governance, and Regionalism in East and Southeast Asia: A Comparative Study*, ed. Ian Marsh, Routledge/Warwick Studies in Globalisation (London ; New York: Routledge, 2006), 227.

Myanmar and Thailand, unresolved human rights cases in Myanmar, Indonesia, Cambodia and the Philippines, or the wave of democratisation that swept Indonesia in the late 1990s. Due to the differences in democratic maturity, the lawmaking process on specific issues has become deadlocked. Moreover, ASEAN adheres to the principle of non-interference in the domestic political affairs of member states. Therefore, the lawmaking process becomes more complicated if one member state considers that a draft legal instrument will interfere with national sovereignty.⁴³⁵

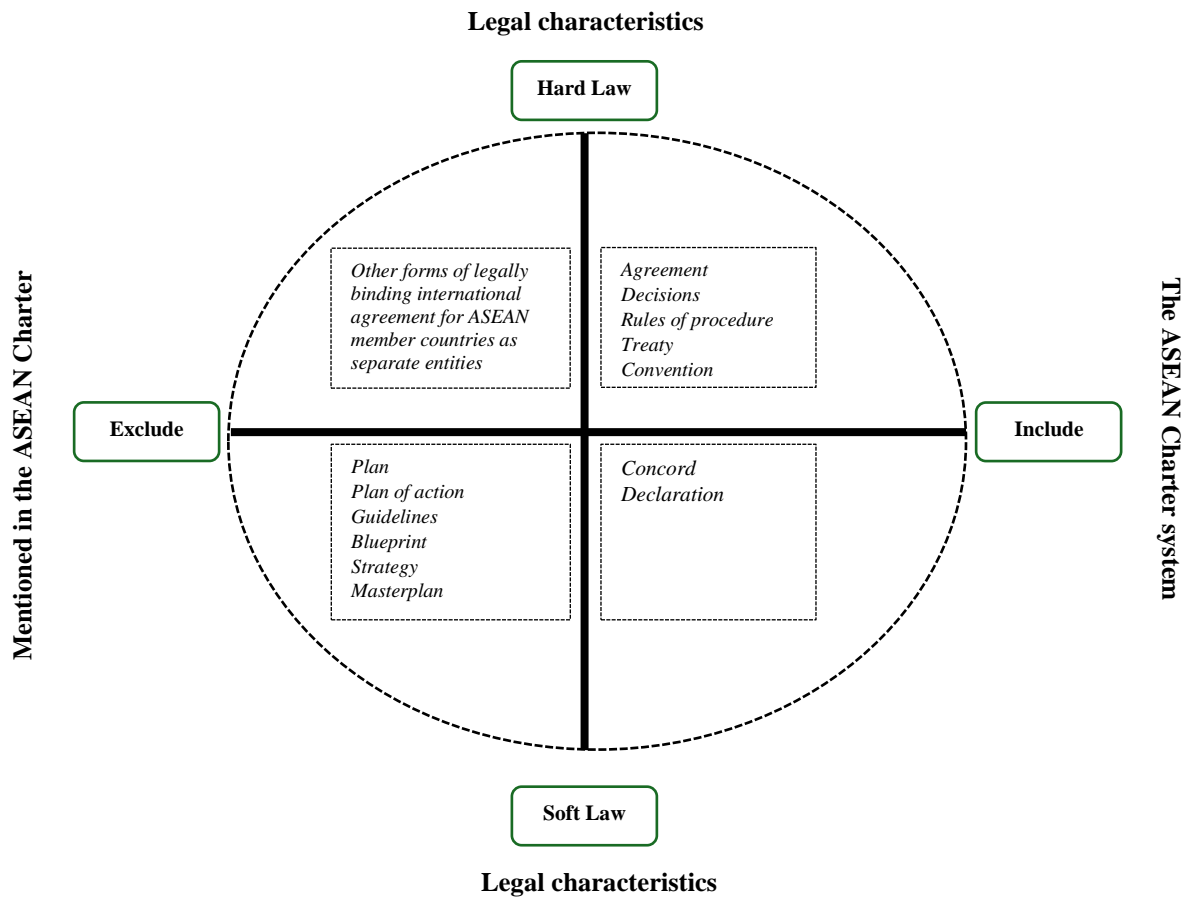
A further problem is that ASEAN needs to recognise a standardised classification of types and forms of legal instruments.⁴³⁶ In the ASEAN Charter, there are several terms that are inconsistently used, such as agreement, decision, ASEAN (legal) instrument, rules of procedure, treaties, convention, concord, declaration, and protocol. This lack of classification creates confusion, at least theoretically, especially in determining the legal character of each instrument. In addition, ASEAN also recognises other forms of (legal) instruments not mentioned in the Charter but practically used in various forums. Such instruments include plans, action plans, guidelines, blueprints, strategies, and master plans. Informality in the lawmaking mechanism ultimately also affects the choice of legal instruments. This phenomenon is often called "The ASEAN Way", which prioritises informality in conjunction with efforts to build trust to achieve common goals.⁴³⁷

⁴³⁵ Taku Yukawa, 'The ASEAN Way as a Symbol: An Analysis of Discourses on the ASEAN Norms', *Pacific Review* 31, no. 3 (2017): 15, <https://doi.org/10.1080/09512748.2017.1371211>.

⁴³⁶ Limsiritong, 'The Problems of Law Interpretation under ASEAN Instruments and ASEAN Legal Instruments', 143–45.

⁴³⁷ Huck, 'Informal International Law-Making in the ASEAN: Consensus, Informality and Accountability', 115.

Figure 3 ASEAN Legal Instruments



Source: Author interpretation on ASEAN Legal Instrument system based on the ASEAN Charter (2024)

The three problems mentioned earlier have severe implications for ASEAN as an organisation. The first implication is that the hierarchy and order of legal instruments are unclear. This is a consequence of the two main principles of consultation and consensus in the ASEAN Charter.⁴³⁸ With these two principles, the hierarchy of legal instruments becomes irrelevant because every strategic issue will be decided by the heads of state or heads of government of member states in the ASEAN Summit. It can be concluded that the legal instruments adopted by ASEAN result from political compromises that have passed the consultation process and reached a unanimous consensus among member states.

The further implication is the possibility of conflict between member states due to the unclear hierarchy of legal instruments. Conflicts often arise among ASEAN member states related to state borders on land and sea. Settlement through the ASEAN Summit is impossible due to the principle of consultation and consensus, and the unclear hierarchy of

⁴³⁸ Lee Leviter, 'The ASEAN Charter: ASEAN Failure or Member Failure', *New York University Journal of International Law and Politics* 43, no. 1 (2010): 167.

legal instruments also causes difficulty in conflict resolution.⁴³⁹ In addition, ASEAN also adheres to six principles that have long been adopted in the 1976 Treaty of Amity and Cooperation, namely (1) respect for the sovereignty of member states; (2) the existence of the sovereignty of member states and free from external intervention; (3) non-interference in domestic affairs; (4) settlement of disputes through peaceful mechanisms; (5) rejection of threats and deployment of force; (6) effective partnerships.⁴⁴⁰ Jetchske's argumentation reveals that the Treaty of Amity and Cooperation was the initial momentum that formalised "the Asian Way" based on the abovementioned six principles.⁴⁴¹ Since the treaty was signed, ASEAN regionalism has taken on the character of a Westphalian organisation characterised by the dominance of member state sovereignty, the principle of non-intervention in domestic affairs, and the non-use of force.

In its development, implementing these principles affects the decision-making mechanism based on the principles of consultation and consensus. In reality, it also has the disadvantage of being ineffective in resolving conflicts between ASEAN countries. This is evident from the fact that the dispute settlement clause stipulated in the ASEAN Charter and the ASEAN Protocol on Enhanced Dispute Settlement Mechanism has never been activated. ASEAN member states involved in economic disputes prefer to settle disputes through the forum provided by the WTO rather than following the mechanism stipulated in the ASEAN Charter. This shows that in the context of dispute settlement, trust-building does not occur because the disputing states are the parties involved in the consultation and consensus process.⁴⁴²

The architecture of the ASEAN legal system began to be built during the Cold War era, which initially wanted to stem the influence of superpowers and their ideologies. Therefore, the principles of consultation and consensus were needed to foster trust among member states, which at that time had not even experienced three decades of independence from colonialism. Subsequently, the principle was evocatively transformed in every legal instrument adopted and culminated in adopting the ASEAN Charter, which entered into force in December 2008. The principles of consultation and consensus characterise ASEAN legal instruments as moderate and balancing all member states' interests. This is no

⁴³⁹ Nattapat Limsiritong, Apiradee Springall, and Onkanya Rojanawanichkij, 'The Difficulty of ASEAN Decision Making Mode on South China Sea Dispute: The ASEAN Charter Perspective', *Asian Political Science Review* 3, no. 1 (2019): 25–33, <https://doi.org/10.2139/ssrn.3459315>.

⁴⁴⁰ The ASEAN Secretariat, 'Treaty of Amity and Cooperation in Southeast Asia', art. 2.

⁴⁴¹ Anja Jetschke and Patrick Theiner, 'Time to Move on! Why the Discussion about ASEAN's Relevance Is Outdated', *Pacific Review* 33, no. 3–4 (2020): 6, <https://doi.org/10.1080/09512748.2019.1673803>.

⁴⁴² Lee, 'Legal Development of the ASEAN Community Building', 14.

exception in the context of legal instruments governing climate change, especially energy and transport, which can also be categorised as moderate and do not have ambitious targets compared to the EU.

4.2.2. The ASEAN Legal Framework on Climate Change: Towards Regional Integration?

The previous section has discussed the problems in the ASEAN legal system. The following section will discuss the legal framework adopted by ASEAN for climate change with a regional integration approach. As explained earlier, ASEAN has chosen to become a regional organisation. Since its establishment in 1967, ASEAN has experienced a fairly slow integration process due to the choice of its member states. Various crises that occurred in the ASEAN region, such as the Vietnam War, genocide by the Red Khmer in Cambodia, the 1998 economic crisis, and the separation of Timor-Leste from Indonesia, did not have the impetus to strengthen regional integration among ASEAN member states. One of the crises plaguing the Southeast Asian region and the rest of the world is climate change. This section will analyse ASEAN's legal framework on climate change, specifically energy and electromobility policies. Discussing these themes before further analysing the ASEAN legal framework on electromobility development is essential.

Researching the ASEAN legal framework on climate change is like entering a jungle of order in disorder. This study divides the ASEAN legal framework on climate change into two periods: before and after the entry into force of the ASEAN Charter in 2008. Before the ASEAN Charter, ASEAN activities were institutionally outside the community's framework. The issue of climate change became an ASEAN concern four decades after the 1967 Bangkok Declaration. The first legal instrument on climate change adopted by ASEAN was the Singapore Resolution on Environmental Sustainability and Climate Change.⁴⁴³ However, initiatives on environmental protection were initiated by ASEAN in 1981 with the adoption of the Manila Declaration on the ASEAN Environment.⁴⁴⁴ Subsequently, ASEAN also adopted several declarations and resolutions at each annual meeting of environment ministers of member states.

⁴⁴³ Association of Southeast Asian Nations, 'Singapore Resolution on Environmental Sustainability and Climate Change' (2009), <https://cil.nus.edu.sg/databasecil/2009-singapore-resolution-on-environmental-sustainability-and-climate-change/>.

⁴⁴⁴ Association of Southeast Asian Nations, 'Manila Declaration on the ASEAN Environment' (1981), <https://cil.nus.edu.sg/databasecil/1981-manila-declaration-on-the-asean-environment/>.

As explained in the previous section, the ASEAN lawmaking process is structurally centred on the ASEAN Summit. To implement the decisions adopted in the supreme body, one of them is then formed the ASEAN Community Council, which consists of three pillars, namely Economic (AEC), Socio-Cultural (ASCC), and Political Security (APSC).⁴⁴⁵ Environmental matters, including climate change, are within the socio-cultural scope, which structurally falls within the scope of the ASCC Council's duties. Technically, the environment ministers of ASEAN member states will be the implementers of cooperation on environmental issues and climate change.⁴⁴⁶ Meanwhile, the energy sector is included in the economic environment, which is the scope of the AEC Council's task, which is technically within the scope of work of the energy ministers of member countries. From 1981 to 2023, 135 legal instruments were adopted by ASEAN through the ASCC and AEC frameworks, with 92% (124) in the form of soft law and 8% (11) hard law.⁴⁴⁷

The pattern of dividing the focus of the issue into several communities, as used by ASEAN, can be categorised as a "role-splitting" model that aims to integrate regional law while at the same time maintaining the influence of national law through the power of member states.⁴⁴⁸ This argument is evident from the composition of the types of legal instruments adopted by ASEAN, especially on climate change, the majority of which are soft laws. From ASEAN's perspective, this attempt can be categorised as an effort towards regional integration through legal management. The pattern of legal adoption before the ASEAN Charter tended to be inconsistent and unstructured in addressing specific issues. The division of focus through sectoral frameworks helped ASEAN to structure the legal instruments adopted. In this context, the ASEAN Charter acts as a constitution, guide, and framework to form a more solid regional integration cohesion through law.⁴⁴⁹

⁴⁴⁵ ASEAN, The ASEAN Charter, art. 9.

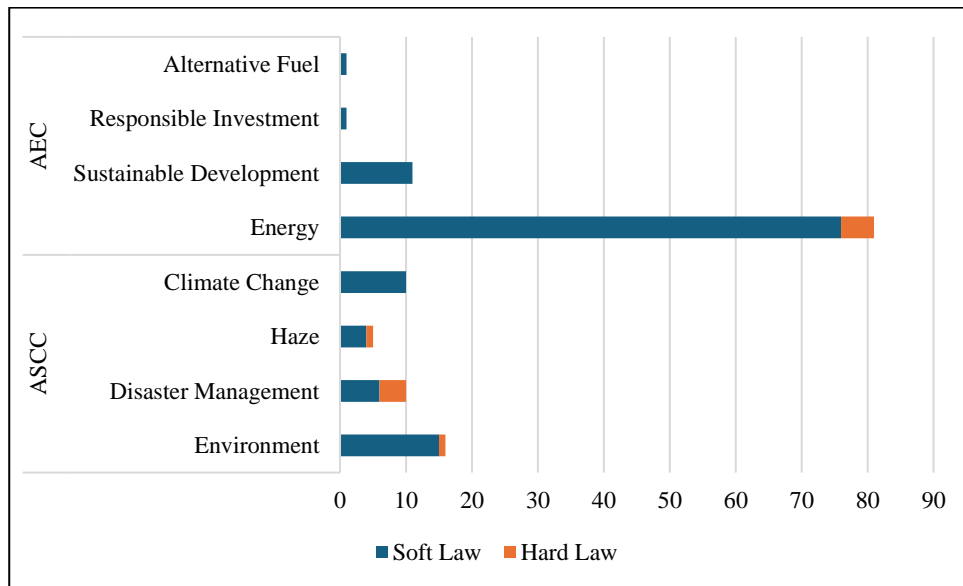
⁴⁴⁶ Raman Letchumanan, 'Climate Change: Is Southeast Asia up to the Challenge?: Is There an ASEAN Policy on Climate Change?' (London: London School of Economics and Political Science, 2010), 53, <http://www2.lse.ac.uk/IDEAS/Home.aspx>.

⁴⁴⁷ In detail, the legal instruments adopted through the ASCC framework are as follows: environmental issues (15 soft laws and 1 hard law), disaster management (6 soft laws and 4 hard laws), haze (4 soft laws and 1 hard law), climate change (only adopted 10 soft laws). Meanwhile, the AEC framework in detail is: energy (76 soft laws including the joint statement of ASEAN leaders at the UNFCCC COP forum every year and 5 hard laws), sustainable development (11 soft laws), responsible investment (1 soft law), and alternative fuel (1 soft law). Analysed from ASEAN Law Database provided by Center for International Law, National University of Singapore. <https://cil.nus.edu.sg/database-cil/> (Accessed from June 2023-April 2024).

⁴⁴⁸ Carlos Closa, Lorenzo Casini, and Omri Sender, *Comparative Regional Integration: Governance and Legal Models*, Integration through Law: The Role of Law and the Rule of Law in ASEAN Integration (Cambridge, United Kingdom: Cambridge University Press, 2016), 234.

⁴⁴⁹ Imelda Deinla, 'The Development of the Rule of Law in ASEAN: The State and Regional Integration' (Sydney, University of New South Wales, 2009), 279–80, <https://doi.org/10.26190/UNSWORKS/22980>.

Figure 4 ASEAN Legal Instruments on Climate Change (1981-2023)



Source: Author analysis based on ASEAN Law Database provided by CIL-NUS (2024).

Legal instruments on climate change adopted by the ASEAN before the entry into force of the ASEAN Charter focused more on environmental issues at a general level. The type of legal instruments adopted mostly applied soft law in the form of declarations, resolutions, or action plans.⁴⁵⁰ Since the ASEAN Charter entered into force on 15 December 2008, the adoption pattern of ASEAN legal instruments on climate change has tended to change along with the sectoral division according to the focus of the ASEAN Community. Climate change issues are specifically part of the ASCC, along with environmental issues, haze pollution, and disaster management. Meanwhile, the AEC focuses on energy, sustainable development, responsible investment, and alternative fuel issues. This division has advantages and disadvantages for implementing the ASEAN legal framework on climate change. The advantage is that the legal instruments adopted will focus more on their respective sectors, while the disadvantage is the possibility of disharmony between community frameworks.⁴⁵¹

The ASEAN Community Vision 2025 states that climate change resilience is one of the visions to be achieved by 2025.⁴⁵² In addition, the ASCC Blueprint 2025 also mentions that climate change resilience is done by increasing institutional and human resource

⁴⁵⁰ Fukunaga, 'Use of Legal Instruments in the ASEAN Economic Community Building', 65.

⁴⁵¹ Simon S. C. Tay, 'The ASEAN Charter: Between National Sovereignty and the Region's Constitutional Moment', *Singapore Year Book of International Law* 12 (2008): 169–70.

⁴⁵² Association of Southeast Asian nations, 'ASEAN Community Vision 2025' (2015), 15.

capacity.⁴⁵³ However, regarding the legal framework adopted by ASEAN, climate change as a global crisis has yet to be responded to in a specific, targeted and measurable manner.⁴⁵⁴ Climate change is considered an issue to be faced by ASEAN using "The ASEAN Way" as the usual mechanism.⁴⁵⁵ The response to climate change will also affect electromobility development, reflected in the legal framework adopted by each ASEAN member country.

4.3. The ASEAN Legal Framework on the Electromobility Development

The focus of ASEAN member countries tends to be on handling impacts, especially related to disasters and natural anomalies that have already occurred. It is reflected in the adoption of hard laws in agreements on disaster management and haze pollution.⁴⁵⁶ ASEAN is a regional organisation that is relatively delayed in mitigating the impacts of climate change, especially emission reduction through the development of electromobility.⁴⁵⁷ In addition, the motives for electromobility development carried out by ASEAN countries tend to be based on industrialisation rather than climate change or emission reduction efforts. This argument is demonstrated by the architecture of the legal framework for ASEAN electromobility development, which tends to be within the scope of the AEC's work, especially in the fields of energy, transport, and investment.

In this section, the ASEAN electromobility legal framework is a set of legal instruments adopted by ASEAN that influence the development of electromobility in member countries. Four legal instruments cover four strategic issues, namely sustainable finance, energy, transport, and smart cities. These four issues are significant to study from a legal perspective to understand electromobility development's direction in ASEAN member countries. The discussion in this section will also provide a perspective on regional

⁴⁵³ Association of Southeast Asian Nations, *ASEAN Socio-Cultural Community Blueprint 2025* (Jakarta: The ASEAN Secretariat, 2016), 16.

⁴⁵⁴ Indra Overland et al., 'The ASEAN Climate and Energy Paradox', *Energy and Climate Change* 2, no. November 2020 (2021): 7, <https://doi.org/10.1016/j.egycc.2020.100019>.

⁴⁵⁵ Mélodie Sahraie, 'The ASEAN Actions on Climate Change : Recognizing or Pro-Actively Addressing the Issue?', *Sustainable Development Law on Climate Change* (Rome: International Development Law Organization and the Centre for International Sustainable Development Law, 2011), 9.

⁴⁵⁶ The agreements including: ASEAN Agreement on Disaster Management and Emergency Response (2005), ASEAN Agreement on Disaster Management and Emergency Response (2010-2015), ASEAN Agreement on Disaster Management and Emergency Response (2016-2020), ASEAN Agreement on Disaster Management and Emergency Response (2021-2025), and ASEAN Agreement on Transboundary Haze Pollution (2002).

⁴⁵⁷ Martin Schröder, Fusanori Iwasaki, and Hideo Kobayashi, 'Promotion of Electromobility in ASEAN: States, Carmakers, and International Production Networks', *ERIA Research Project Report 2021* (Jakarta: Economic Research Institute for ASEAN and East Asia, May 2021), 25.

organisational mechanisms whose integration options differ from those of the EU in conducting electromobility development.

4.3.1. Sustainable Finance in ASEAN: an Opportunity for Electromobility?

The ATB forum formulated Sustainable finance in ASEAN as a soft law by member states. The ATSF is a guide to promote green investment in various fields.⁴⁵⁸ The transition to a green economy is essential for ASEAN member states, most of which are directly affected by the climate change phenomenon.⁴⁵⁹ Therefore, the role of the ATSF is vital to making ASEAN a resilient region that can adapt economically to climate change.⁴⁶⁰ The ATSF Version 1 was introduced in November 2021 and has been updated to take effect on 19 February 2024.

Both Version 1 and Version 2 of the ATSF apply the DNSH principle, a global standard in sustainable investment inspired by the EU Taxonomy Regulation.⁴⁶¹ Operationally, the ATSF consists of environmental objectives and essential criteria that form the foundation for categorising investment types based on their environmental impact.⁴⁶² The environmental objectives of the ATSF are to mitigate climate change, adapt to climate change, protect ecosystems and biodiversity, and resource security and transition to a circular economy.⁴⁶³ Furthermore, the essential criteria consist of DNSH, remedial measures to transition, and social aspects.⁴⁶⁴ A fundamental change in ATSF Version 2 is the presence of social aspects in the essential criteria, which is input from ATB stakeholders. This refinement is not only due to the global trend to mainstream ESG in business but also a consequence of the risks faced by society in investments that have environmental risks.⁴⁶⁵

⁴⁵⁸ ASEAN Taxonomy Board, 'ASEAN Taxonomy for Sustainable Finance' (2021), 3.

⁴⁵⁹ Rabindra Nepal, Han Phoumin, and Abiral Khatri, 'Green Technological Development and Deployment in the Association of Southeast Asian Economies (ASEAN)—At Crossroads or Roundabout?', *Sustainability (Switzerland)* 13, no. 2 (2021): 1, <https://doi.org/10.3390/su13020758>.

⁴⁶⁰ Nihal Ahmed et al., 'Green Finance and Green Energy Nexus in ASEAN Countries: A Bootstrap Panel Causality Test', *Energies* 15, no. 5068 (2022): 1, <https://doi.org/10.3390/en15145068>.

⁴⁶¹ Soo-hyun Lee, "'Do No Significant Harm" as a Core Principle in Sustainable Finance Regulation in the ASEAN Draft and Singapore Taxonomies', *Journal of International and Area Studies* 29, no. 1 (2022): 35–36, <https://doi.org/doi.org/10.23071/jias.2022.29.1.21>.

⁴⁶² ASEAN Taxonomy Board, *ASEAN Taxonomy for Sustainable Finance (Version 2)*, 2024, 21.

⁴⁶³ ASEAN Taxonomy Board, 25.

⁴⁶⁴ ASEAN Taxonomy Board, 30.

⁴⁶⁵ Iris H.Y. Chiu, *The EU Sustainable Finance Agenda: Developing Governance for Double Materiality in Sustainability Metrics*, *European Business Organization Law Review*, vol. 23 (Springer International Publishing, 2022), 92, <https://doi.org/10.1007/s40804-021-00229-9>.

The ATSF is a guideline document and does not have legally binding force and it is different from the EU Taxonomy Regulation.⁴⁶⁶ Therefore, the ATSF is a living document that can be changed at any time based on the principles of consultation and consensus under the ASEAN lawmaking mechanism.⁴⁶⁷ The ATSF has experienced changes within two years due to input from stakeholders. The ATSF as a soft law adopted by ASEAN has two contrasting sides: it has no legally binding force, and there is no obligation for ASEAN member states to implement it. On the other hand, sustainable finance standards on a regional scale are a necessity for ASEAN member states to implement sustainable investment. ASEAN applies the principles of consultation, informality, and consensus in the lawmaking process to build trust among member countries. Therefore, the ATSF acts as a guide and as a manifestation of ASEAN member countries to protect the environment and climate targets in each national jurisdiction.⁴⁶⁸ From this perspective, the ATSF is a non-binding legal instrument with legal relevance.⁴⁶⁹

These two sides of the ATSF also affect the development of electromobility in the Southeast Asian region. Ideally, the ATSF should stimulate investment in low-emission vehicles such as EVs. However, implementing investment in the EV manufacturing sector needs to be improved by the different capabilities and priorities of each ASEAN member state. At least four groups of ASEAN member states address EV investment.⁴⁷⁰ First, the countries that have been the hub of automotive manufacturing and have sufficient natural resources and labour, such as Indonesia, Malaysia and Thailand.⁴⁷¹ These three countries have adopted ambitious targets to become production centres for EVs and their components, such as batteries.⁴⁷² The second group of countries are automotive production centres that have limited resources, namely the Philippines and Vietnam.⁴⁷³ Countries such as Vietnam

⁴⁶⁶ Lee, ““Do No Significant Harm” as a Core Principle in Sustainable Finance Regulation in the ASEAN Draft and Singapore Taxonomies’, 22.

⁴⁶⁷ Freistein, ““A Living Document””.

⁴⁶⁸ Further reading for ASEAN informality, consensus dan trust principles please refers to Huck, ‘Informal International Law-Making in the ASEAN: Consensus, Informality and Accountability’, 115.juga

⁴⁶⁹ Terpan, ‘Soft Law in the European Union-The Changing Nature of EU Law’, 71–72.

⁴⁷⁰ Schröder, Iwasaki, and Kobayashi, ‘Promotion of Electromobility in ASEAN: States, Carmakers, and International Production Networks’, 25–26.

⁴⁷¹ Schröder, Iwasaki, and Kobayashi, ‘Promotion of Electromobility in ASEAN: States, Carmakers, and International Production Networks’.

⁴⁷² Muhammad Rizki Kresnawan et al., ‘Electric Vehicle Readiness in Southeast Asia: A PEST Policy Review’, in *ASEAN Energy Transition with Resiliency in the Post-Pandemic Climate Change Era* (ASEAN Centre for Energy, 2021), 3–4, <https://aseanenergy.org/work/asean-international-conference-on-energy-and-environment/>.

⁴⁷³ Schröder, Iwasaki and Kobayashi (n 388).

have considerable potential to become both a producer and a market for EVs. Still, there is a need to harmonise industrial policies, climate targets and decarbonisation targets.⁴⁷⁴

The third group of countries tend to reject or are sceptical about the development of electromobility.⁴⁷⁵ Brunei Darussalam and Singapore are countries in the third group for different reasons. Brunei is an oil and gas-producing country with a highly dependent economy on fossil commodities. Singapore is a country that has been promoting the use of public transport modes such as buses and rail-based vehicles for two decades. However, due to global developments, especially commitments in the Paris Agreement, both Brunei and Singapore still have targets for the development of electromobility over a longer period.⁴⁷⁶

Laos, Cambodia, and Myanmar are the ASEAN member states in the fourth group. These countries are economically lagging behind other ASEAN member countries due to the lack of natural resources, low quality of human resources, and protracted political conflicts that result in humanitarian disasters. Investment for electromobility development in these three countries tends to stagnate and not develop. Myanmar does not even have an electromobility development plan at all. At the same time, Laos only focuses on developing rail and road infrastructure under the NDC. Cambodia only focuses on developing public transport in Phnom Penh's capital and surrounding areas.⁴⁷⁷ This fact proves that the ATSF has weaknesses because it cannot become a lever and catalyst for electromobility development in ASEAN member countries equally.

4.3.2. ASEAN Energy Cooperation: Connectivity without Solidarity?

Climate change and the energy sector are firmly linked, primarily due to the contribution of emissions.⁴⁷⁸ AMS tends to delay anticipating climate change's impact by transforming fossil

⁴⁷⁴ Khanh Toan Pham, Duc Cuong Nguyen, and Thi Thu Huong Tran, 'Functional Characteristics of Low Carbon Energy Systems and Need for Regional Cooperation in Vietnam', in *Investing in Low-Carbon Energy Systems: Implications for Regional Cooperation*, ed. Venkatachalam Anbumozhi et al. (Singapore: Springer, 2016), 211, <https://doi.org/10.1007/978-981-10-0761-3>.

⁴⁷⁵ Schröder, Iwasaki, and Kobayashi, 'Promotion of Electromobility in ASEAN: States, Carmakers, and International Production Networks'.

⁴⁷⁶ Rika Safrina et al., 'ASEAN Decarbonisation Pathway: A Policy Review on Variable Renewable Energy, Electric Vehicle, and Smart Microgrid' (Jakarta: ASEAN Centre for Energy, 2022), 2, <https://aseanenergy.org/asean-decarbonisation-pathway-a-policy-review-on-variable-renewable-energy-electric-vehicle-and-smart-microgrid/>.

⁴⁷⁷ Kresnawan et al., 'Electric Vehicle Readiness in Southeast Asia: A PEST Policy Review', 2–3.

⁴⁷⁸ Boutkhil Guemide, 'The Effects of Climate Change on the Economic Growth of ASEAN Countries', 2017, 1, <http://web.isanet.org/Web/Conferences/HKU2017-s/Archive/05d22192-b7f5-43cc-af176d2e1760b191.pdf>.

energy into renewable energy. The delay is reflected in the need for more renewable energy governance reforms adopted by ASEAN.⁴⁷⁹ Cooperation in the energy sector carried out by ASEAN member states legally and historically stems from the adoption of the 1976 Bali Concord (Bali Concord I), which initiated the framework for ASEAN cooperation.⁴⁸⁰ Bali Concord I is an essential document in developing ASEAN organisations and forms of cooperation by promoting regional solidarity to spur the growth of member countries.⁴⁸¹ Energy became one of the priority sectors in the economic cooperation framework in Bali Concord I. A decade later, ASEAN adopted the Agreement on ASEAN Energy Cooperation (AAEC), emphasising solidarity in energy cooperation.⁴⁸² The AAEC is a legally binding legal instrument and the primary basis for energy cooperation in ASEAN. However, the form of energy cooperation in AAEC is more aimed at developing fossil energy such as oil and gas.⁴⁸³ In that period, Indonesia and Brunei, ASEAN member countries, became one of the oil and gas producers.⁴⁸⁴

ASEAN energy cooperation has evolved according to the needs and agreements of member states, especially to achieve economic goals and build regional resilience.⁴⁸⁵ In 1997, ASEAN adopted the ASEAN Vision 2020 document, which was the first document to regulate comprehensive cooperation in various fields, including energy. ASEAN Vision 2020 then gave birth to the 1998 Hanoi Declaration and eventually gave birth to a more progressive version of ASEAN energy cooperation, especially related to renewable energy through the adoption of APAEC 1999-2004.⁴⁸⁶ Renewable energy became one of the areas of cooperation in the soft law document. Subsequently, APAEC was adopted every five years, and since 2016, it has changed to ten years, consisting of two phases. The current

⁴⁷⁹ Roman Vakulchuk, Indra Overland, and Beni Suryadi, 'ASEAN's Energy Transition: How to Attract More Investment in Renewable Energy', *Energy, Ecology and Environment* 8, no. 1 (February 2023): 12, <https://doi.org/10.1007/s40974-022-00261-6>.

⁴⁸⁰ The ASEAN Secretariat, 'Declaration of Asean Concord (Bali Concord I)'.

⁴⁸¹ Kei Koga, 'Institutional Transformation of ASEAN: ZOPFAN, TAC, and the Bali Concord I in 1968–1976', *The Pacific Review* 27, no. 5 (20 October 2014): 732, <https://doi.org/10.1080/09512748.2014.948566>.

⁴⁸² Association of Southeast Asian Nations, 'Agreement on ASEAN Energy Cooperation' (1986), <https://agreement.asean.org/media/download/20170606100932.pdf>.

⁴⁸³ Françoise Nicolas, 'ASEAN Energy Cooperation An Increasingly Daunting Challenge' (Paris: Gouvernance européenne et géopolitique de l'énergie/Centre Asie, 2009), 18–19.

⁴⁸⁴ Asrul Ibrahim Nur and Arief Rahman Hakim, 'Debate on Indonesian One-Price Oil Fuel Policy: An Energy Justice Analysis', *Public Goods and Governance* 7, no. 2 (2022): 6, <https://doi.org/10.21868/PGnG.2022.2.1.Asrul>.

⁴⁸⁵ Indeo, 'ASEAN-EU Energy Cooperation: Sharing Best Practices to Implement Renewable Energy Sources in Regional Energy Grids', 2019, 394.

⁴⁸⁶ Sarah Yen Ling Tan and Hanim Kamaruddin, 'Environmental Challenges Within ASEAN: Contemporary Legal Issues and Future Considerations', in *ASEAN Post-50: Emerging Issues and Challenges*, ed. Aida Idris and Nurliana Kamaruddin (Singapore: Springer Singapore, 2019), 160, <https://doi.org/10.1007/978-981-13-8043-3>.

document is APAEC 2016-2025 Phase II for 2021-2025. APAEC is a guide to promote the implementation of cooperation among ASEAN countries within the AEC framework.⁴⁸⁷

Table 7 APAEC Programme Area

APAEC Cycle	Aims	Cooperation Programme Area
1999-2004	The foundation of the energy cooperation between ASEAN member states	1) ASEAN Power Grid (APG) 2) Trans-ASEAN Gas Pipeline (TAGP) 3) Energy Efficiency and Conservation (EE&C) 4) New and Renewable Energy (NRE) 5) Coal and Clean Coal Technologies (CCT) 6) Regional Energy Outlook, Energy Policy and Environmental Analysis
2004-2009	Expand towards deeper and closer regional energy cooperation.	1) ASEAN Power Grid (APG) 2) Trans-ASEAN Gas Pipeline (TAGP) 3) Energy Efficiency and Conservation (EE&C) 4) New and Renewable Energy (NRE) 5) Coal and Clean Coal Technologies (CCT) 6) Regional Energy Policy and Planning (REPP)
2010-2015	Introduce a Civilian Nuclear Energy programme	1) ASEAN Power Grid (APG) 2) Trans-ASEAN Gas Pipeline (TAGP) 3) Energy Efficiency and Conservation (EE&C) 4) New and Renewable Energy (NRE) 5) Coal and Clean Coal Technologies (CCT) 6) Civilian Nuclear Energy (CNE)
2016-2025 Phase I (2016-2020)	Enhancing energy connectivity and market integration in ASEAN to achieve energy security, accessibility, affordability and sustainability for all	1) ASEAN Power Grid (APG) 2) Trans-ASEAN Gas Pipeline (TAGP) 3) Energy Efficiency and Conservation (EE&C) 4) New and Renewable Energy (NRE) 5) Coal and Clean Coal Technologies (CCT) 6) Civilian Nuclear Energy (CNE)
2016-2025 Phase II (2021-2025)	Accelerating energy transition and strengthening energy resilience through greater innovation and cooperation	

Source: APAEC Documents 1999-2025

In 1999, APAEC initiated an energy project to connect Southeast Asian countries. However, the fundamental weakness of the programme is the need for a solid legal basis.⁴⁸⁸ Hence, the progress of APG development has been significantly limited due to regulatory

⁴⁸⁷ ASEAN Centre for Energy (ACE), 'ASEAN Plan of Action for Energy Cooperation (APAEC) 2016-2025. Phase II: 2021-2025', *The ASEAN Centre for Energy* (Jakarta: ASEAN Centre for Energy (ACE), 2021), 4.

⁴⁸⁸ Diaz-Rainey et al., 'An Energy Policy for ASEAN? Lessons from the EU Experience on Energy Integration, Security, and Decarbonization', 11.

and financial constraints.⁴⁸⁹ Energy cooperation to build connectivity among AMS will only make significant progress with solidarity. Differences in economic conditions between AMS need to be addressed flexibly by identifying each country's strengths and weaknesses, which are then outlined in regional policies.⁴⁹⁰ In this context, energy cooperation in ASEAN is only implemented to build connectivity without being based on solidarity. This condition will also affect the development of electromobility in the ASEAN region.

Solidarity in energy cooperation is necessary; at least regional organisations such as the EU have practised it. Solidarity is a legal principle recognised by the EU legal system and has been applied in the energy sector.⁴⁹¹ In application, the principle of solidarity in cooperation between countries requires a clear legal division of responsibilities to achieve the common goals that have been set.⁴⁹² The concept of solidarity in ASEAN energy cooperation has at least appeared in Bali Concord I and AAEC 1986. However, the conception of solidarity must be present in APAEC, which was adopted in 1999. The absence of solidarity in ASEAN energy cooperation will harm the development of electromobility in the region. Automotive manufacturing countries with large populations, like Indonesia, Malaysia and Thailand, will compete to become EV production centres and markets. Meanwhile, economically weak countries such as Cambodia, Laos and Myanmar will only be spectators of electromobility development. Building electromobility through an energy cooperation framework requires a strong legal commitment.⁴⁹³ Therefore, ASEAN leaders should consider upgrading APAEC's legal instruments to be more legally binding.

4.3.3. Transport Sector Roadmap: Connecting the Unconnected Region

In the previous section, the condition of ASEAN energy cooperation was explained, which does not adopt the principle of solidarity. Furthermore, this section will discuss the legal

⁴⁸⁹ Philip Andrews-Speed, 'Energy Security and Energy Connectivity in the Context of ASEAN Energy Market Integration', ASEAN Energy Market Integration, Energy Security and Connectivity: The Nordic and European Union Approaches (ASEAN Studies Center Chulalongkorn University, Energy Studies Institute National University of Singapore, and Norwegian Institute of International Affairs, February 2016).

⁴⁹⁰ Ditya Agung Nurdianto and Budy Prasetyo Resosudarmo, 'Prospects and Challenges for an ASEAN Energy Integration Policy', *Environmental Economics and Policy Studies* 13, no. 2 (June 2011): 125, <https://doi.org/10.1007/s10018-011-0007-1>.

⁴⁹¹ Huhta and Reins, 'Solidarity in European Law and Its Application in the Energy Sector', 772.

⁴⁹² Markus Kotzur, 'Solidarity as a Legal Concept', in *Solidarity in the European Union: A Fundamental Value in Crisis*, ed. Andreas Grimm and Susanne My Giang, Social Sciences Political Science (Solidarity and Its Crisis in the European Union, Cham s.l: Springer International Publishing, 2017), 40.

⁴⁹³ Andoura, 'Energy Solidarity in Europe: From Independence to Interdependence', 19.

framework of ASEAN transport sector cooperation, which is the backbone of electromobility development at the regional level. The issue of sustainable transport has become a concern of ASEAN leaders against the backdrop of problems in major cities in the Southeast Asian region. These problems include congestion, air pollution, emissions, and energy security.⁴⁹⁴ Therefore, the strategy to develop electromobility is very relevant.⁴⁹⁵ The massive use of EVs is predicted to reduce the problems in major cities in AMS.⁴⁹⁶ However, it should be recognised that the development of electromobility in ASEAN tends to be slow due to the low penetration of renewable energy use.⁴⁹⁷ The transport sector is essential in driving development, so low-emission transport is also expected to catalyse sustainable development in the ASEAN region.⁴⁹⁸

To discuss the legal framework of electromobility from a transport perspective, this section will discuss the two main legal instruments that ASEAN has adopted to develop sustainable transport. These legal instruments are the KLTSP 2016-2025 and the MPAC 2025. The KLTSP is the first soft law instrument with a dedicated chapter to guide the development of sustainable transport.⁴⁹⁹ The document mentions three main strategies for developing sustainable transport: increasing the intensity of regional cooperation, identifying and implementing measures and policies to develop sustainable transport, and increasing the capacity of human resources and institutions to support an environmentally friendly transport system.⁵⁰⁰ As a soft law, the document does not specifically mention EVs as the vehicle model to be developed. However, the existence of the term sustainable transport is a big leap for transport cooperation in ASEAN. Also, the clause on sustainable transport is part of the climate change mitigation strategy, which is part of the AMS commitment to reducing emissions.⁵⁰¹

The implementation of KLTSP is managed by a specialised organ led by ASEAN Transportation Ministers on an annual rotation. The Organ is assisted by the ASEAN Transit

⁴⁹⁴ Stefan Bakker et al., 'Low-Carbon Transport Policy in Four ASEAN Countries: Developments in Indonesia, the Philippines, Thailand and Vietnam', *Sustainability* 9, no. 7 (13 July 2017): 12, <https://doi.org/10.3390/su9071217>.

⁴⁹⁵ Bakker et al., 12.

⁴⁹⁶ Overland et al., 'The ASEAN Climate and Energy Paradox', 4.

⁴⁹⁷ Overland et al., 4.

⁴⁹⁸ Stefan Bakker et al., 'ASEAN Cooperation Sustainable Transport: Progress and Options', *Transport and Communications Bulletin for Asia and the Pacific* 87, no. 2017 (n.d.): 1.

⁴⁹⁹ Bakker et al., 7.

⁵⁰⁰ Association of Southeast Asian Nations, *Kuala Lumpur Transport Strategic Plan: ASEAN Transport Strategic Plan, 2016-2025* (Jakarta: The ASEAN Secretariat, 2015), 32–34.

⁵⁰¹ Lew Fulton et al., 'Climate Change Mitigation Pathways for Southeast Asia: CO2 Emissions Reduction Policies for the Energy and Transport Sectors', *Sustainability* 9, no. 7 (3 July 2017): 1160, <https://doi.org/10.3390/su9071160>.

Transport Coordinating Board (TTCB) and the ASEAN Senior Transport Officials Meeting (STOM). In addition, there are also ten working groups consisting of sea, land, air, transport safety, and transport facilitation. This structure, as determined by KLTSP, spearheads the implementation of the soft law document. This research argues that the existence of this structure further complicates the implementation of ASEAN law. The reason is that KLTSP is a soft law that is implemented by a working group that is also temporary. However, the KLTSP and the working group to implement it also have the advantage of guiding transport policy at the local level. AMS officials who are working group members have the influence to implement the KLTSP in their respective jurisdictions.⁵⁰²

To implement the sustainable transport strategy in the KLTSP, ASEAN adopted several other documents, namely the ASEAN Regional Strategy on Sustainable Land Transport, the ASEAN Fuel Economy Roadmap for Transport Sector 2018-2025: With Focus on Light-Duty Vehicles, and a guideline entitled the Sustainable Land Transport Indicators on Energy Efficiency and Greenhouse Gas Emissions in ASEAN in 2019. The three documents are an integral part of KLTSP, specifically aimed at implementing Sustainable Transport within the AEC framework and supporting the ASCC.

The ASEAN Regional Strategy on Sustainable Land Transport aims to guide policy strategies developed by AMS in various areas, such as urban and rural transport modes, alternative fuels, financial incentives, human resource capacity development, institutional strengthening, and research and innovation.⁵⁰³ Meanwhile, the ASEAN Fuel Economy Roadmap for Transport Sector 2018-2025: With Focus on Light-Duty Vehicles is a document that encourages fuel efficiency in small vehicles intending to mitigate climate change. The document contains six objectives that aim to harmonise fuel policies adopted by AMS to mitigate climate change.⁵⁰⁴

The Sustainable Land Transport Indicators on Energy Efficiency and Greenhouse Gas Emissions in ASEAN aims to define indicators and standardise sustainable transport as well as reporting on the linkages between transport, energy and the environment in the AMS.⁵⁰⁵ The KLTSP and its guidelines have at least two meanings for electromobility development efforts in the ASEAN region. Firstly, this document provides guidance for the

⁵⁰² Association of Southeast Asian Nations, *Kuala Lumpur Transport Strategic Plan*, 41–42.

⁵⁰³ Association of Southeast Asian Nations, *ASEAN Regional Strategy on Sustainable Land Transport* (Jakarta: The ASEAN Secretariat, 2019), 8–9.

⁵⁰⁴ Association of Southeast Asian Nations, ed., *ASEAN Fuel Economy Roadmap for the Transport Sector 2018-2025: With Focus on Light-Duty Vehicles* (Jakarta: The ASEAN Secretariat, 2019), 18.

⁵⁰⁵ Association of Southeast Asian Nations, *Sustainable Land Transport Indicators on Energy Efficiency and Greenhouse Gas Emissions in ASEAN: Guidelines* (Jakarta: ASEAN Secretariat, 2019), 13.

development of sustainable transport in AMS. Since it is a soft law, there is no legal obligation for AMS to implement it, it is like an appeal that has no sanction. This document further confirms the unsynchronised nature of ASEAN cooperation on transport, energy and environmental issues.⁵⁰⁶ The existence of guidelines, which is a legal sub-instrument of ASEAN, shows that each AMS must independently identify indicators for the transport, energy and environment sectors to be connected. In this context, ASEAN's role as a regional organisation is no more than an intermediary.

The following legal instrument is the Master Plan on ASEAN Connectivity 2025 (MPAC) adopted in the Vientiane Declaration on the Adoption of the Master Plan on ASEAN Connectivity 2025 on 6 September 2016.⁵⁰⁷ Tiga visi utama dari dokumen ini adalah konektivitas fisik, institusional, dan people to people yang terdiri dari lima tujuan strategis dan tiga belas inisiatif.⁵⁰⁸ The three main visions of this document are physical, institutional, and people-to-people connectivity, which consists of five strategic goals and thirteen initiatives. ASEAN needs enhanced physical connectivity to foster trade expansion among AMS and close the regional development gap. In addition, ASEAN's physical connectivity will provide distribution access for products and ease supply chains.⁵⁰⁹ Therefore, MPAC is expected to provide a framework for cooperation aimed at enhancing connectivity through regulatory and institutional harmonisation.⁵¹⁰ The quality of physical connectivity will largely depend on infrastructure such as roads. Developing better quality roads is also a necessity for ASEAN connectivity.⁵¹¹

Besides MPAC, ASEAN also has another soft law, Sustainable Urban Mobility Plans (SUMP), adopted by the Phnom Penh Declaration on Sustainable Urban Mobility during the 27th ASEAN Transport Ministers Meeting held on 11 November 2021. The SUMP aims to guide AMS in developing sustainable urban transport.⁵¹² The document contains twelve

⁵⁰⁶ Bakker et al., 'ASEAN Cooperation Sustainable Transport: Progress and Options', 8.

⁵⁰⁷ Association of Southeast Asian Nations, *Master Plan on ASEAN Connectivity 2025*, 2nd ed (Jakarta: The ASEAN Secretariat, 2017), 3–4.

⁵⁰⁸ The strategic objectives in MPAC are sustainable infrastructure, digital innovation, seamless logistics, regulatory excellence, and people mobility. Each strategic goal has initiatives that are technical implementations of MPAC 2025. Please refer to Association of Southeast Asian Nations, 7.

⁵⁰⁹ Siow Yue Chia, 'ASEAN Economic Integration and Physical Connectivity', *Asian Economic Papers* 15, no. 2 (June 2016): 30–31, https://doi.org/10.1162/ASEP_a_00438.

⁵¹⁰ Phidel Vineles, 'ASEAN Connectivity: Challenge for an Integrated ASEAN Community', *RSIS Commentaries* 10 (n.d.): 2–3.

⁵¹¹ Phatthan Hiranrithikorn and Chayongkan Pamornmast, 'Does Transport Infrastructure Fosters the Economic Growth: An ASEAN Perspective', *Journal of Security and Sustainability Issues*, 30 December 2019, 670, [https://doi.org/10.9770/jssi.2019.9.2\(25\)](https://doi.org/10.9770/jssi.2019.9.2(25)).

⁵¹² Association of Southeast Asian Nations, 'Guidelines for the Development of Sustainable Urban Mobility Plans in ASEAN Metropolitan Regions' (The ASEAN Secretariat, January 2022).

stages that AMS must go through to develop sustainable urban transport from planning, implementation, to monitoring and evaluation. Model cities such as Singapore still serve as a reference for urban transport development in the ASEAN region. Singapore was chosen as a model because its geographical and climatic conditions are similar to those of other AMS. In addition, Singapore is actively promoting its transport development model to be implemented in other AMS cities.

ASEAN's lack of physical connectivity reflects its need for integration cohesion—the current form of integration chosen by ASEAN results from a political agreement by the elites. ASEAN's physical connectivity development has also failed AMS due to the state-centred form of regional organisation.⁵¹³ In addition, ASEAN also needs help in developing sustainable transport, which requires a good understanding by policymakers to formulate sustainable transport policies.⁵¹⁴ Neither EVs nor electromobility is specifically mentioned as a solution to improve ASEAN connectivity; however, in the physical connectivity vision, there are plans to initiate and develop environmentally friendly and integrated land transport corridors.⁵¹⁵ In this context, electromobility can ideally be a solution for environmentally friendly physical connectivity in ASEAN. The existence of a low-emission transport ecosystem is one of the requirements to mitigate the impact of climate change in the region.⁵¹⁶

The development of electromobility from the perspective of the transport sector experiences a relatively identical problem, namely the overuse of soft law instruments, which tend to make legal harmonisation in the transport sector remain difficult. In both KLTSP and MPAC, all ASEAN stakeholders have understood the importance of building a low-emission vehicle ecosystem in the regional scope. However, the penetration of EV technology is limited by national jurisdictions, leaving low-economy AMS such as Laos, Cambodia and Myanmar relatively behind. The lack of initiative and intervention from regional organisations means that these countries cannot escape the trap of "The ASEAN Way", which upholds the principle of non-interference. The future of electromobility from

⁵¹³ Umar, *Ada Yang Hilang Dari ASEAN*, 61.

⁵¹⁴ Wendy Tan, 'The Missing Link: Sustainable Mobility for Sustainable Cities and Communities', in *Sustainable Development Goals in Southeast Asia and ASEAN: National and Regional Approaches*, ed. Ronald Holzhaecker and Dafri Agussalim, Political Ecology in the Asia Pacific Region, volume 1 (Leiden ; Boston: Brill, 2019), 210–34.

⁵¹⁵ Association of Southeast Asian Nations, *Master Plan on ASEAN Connectivity 2025*, 19.

⁵¹⁶ Shi-Zheng Huang, Muhammad Sadiq, and Fengsheng Chien, 'Dynamic Nexus between Transportation, Urbanization, Economic Growth and Environmental Pollution in ASEAN Countries: Does Environmental Regulations Matter?', *Environmental Science and Pollution Research* 30, no. 15 (19 November 2021): 42825, <https://doi.org/10.1007/s11356-021-17533-z>.

the perspective of the transport sector in ASEAN will only continue if there are significant and strategic steps to help AMS that have not been touched by electromobility technology.

4.3.4. Smart Cities Network: a Shared Vision

EVs are often seen as a future technology that can be a solution to climate change mitigation, especially in reducing emissions from the energy and transport sectors.⁵¹⁷ A city with a large EV population represents modernity and cutting-edge technology while being environmentally friendly. ASEAN has a vision to build smart cities characterised by massive use of renewable energy, implementing energy efficiency, and developing electromobility ecosystems.⁵¹⁸ To realise this vision, ASEAN adopted the ASEAN Smart City Network (ASCN) at the 32nd ASEAN Summit in Singapore in 2018.⁵¹⁹

The ASCN consists of four basic elements that serve as pillars for its implementation in selected cities in the AMS. These are Smart City Strategic Outcomes, Urban Systems, Development Focus Areas, and Enablers.⁵²⁰ Development Focus Areas are at the heart of the ASCN programme and consist of Civic and Social, Health and Wellbeing, Safety and Security, Quality Environment, Built Infrastructure, and Industry and Innovation. Electromobility development is included in the Built Infrastructure area which is implemented in two cities, Kota Kinabalu (Malaysia) and Chonburi (Thailand).⁵²¹ Until 2023 there are significant progresses in project implementation in the selected cities.⁵²² However, there are at least three weaknesses in the implementation of ASCN.

ASCN is an initiative Singapore undertook when becoming the ASEAN Chairman in 2018. Therefore, Singapore became a model city whose policies are expected to be replicated by other AMS cities. The first weakness of ASCN implementation is the need for more capacity of policymakers to build smart cities due to the absence of political will and

⁵¹⁷ Barton and Schütte, 'Electric Vehicle Law and Policy: A Comparative Analysis', 1–2.

⁵¹⁸ Md Shafiullah et al., 'Review of Smart City Energy Modeling in Southeast Asia', *Smart Cities* 6, no. 1 (26 December 2022): 72, <https://doi.org/10.3390/smartcities6010005>.

⁵¹⁹ Association of Southeast Asian Nations, 'Chairman Statement of the 32nd ASEAN Summit', 28 April 2018, 2, <https://asean.org/wp-content/uploads/2018/04/Chairmans-Statement-of-the-32nd-ASEAN-Summit.pdf>.

⁵²⁰ Prema Somasundram, ed., *ASEAN Smart Cities Network* (Singapore: Ministry of Foreign Affairs : Centre for Liveable Cities, 2018), 12.

⁵²¹ Association of Southeast Asian Nations, 'ASEAN Smart Cities Network Monitoring & Evaluation Report 2022' (The ASEAN Secretariat, September 2022), 14, https://asean.org/wp-content/uploads/2022/10/2022-ASCN-ME-Report-Final_21Sep2022-for-public.pdf.

⁵²² Association of Southeast Asian Nations, 'ASEAN Smart Cities Network Monitoring & Evaluation Report 2023' (The ASEAN Secretariat, August 2023), 15–16, https://asean.org/wp-content/uploads/2023/09/2023-ASCN-ME-Report-Final_14Aug2023-for-public.pdf.

the complexity of government structures to support project implementation.⁵²³ Furthermore, the practical implementation of ASCN projects is often faced with a lack of funding support from both the government and the private sector and a limited number of experts in project implementation. In Kota Kinabalu, for example, the lack of funding and the absence of experts became major problems in project implementation.⁵²⁴ The last weakness comes from the regulatory aspects at the local, national and regional scales. As a project that was initiated from a soft law instrument, the legal implementation does not have adequate regulatory support.

ASCN was initially designed to grow livable cities with specific criteria such as environmentally friendly, low emission, massive use of public transport, sustainable waste management, and green infrastructure that supports improving quality of life. However, since its inception in 2018, the cities developed under the ASCN project framework have not made a significant contribution, especially from the decarbonisation and climate change perspective. ASCN is also far from supporting the development of electromobility, which ideally should be an integral part of intelligent cities as expected by its initiators. The partial implementation of ASCN projects in certain towns is also worthy of critical note. ASCN tends to prioritise the number of cities and projects over the quality and outcomes of the projects.

The root of this problem is "The ASEAN Way" which is informal, state-centred, and tends to leave no room for intervention in other countries' domestic policies. ASCN is considered a form of Singapore's soft power to influence city governance in AMS.⁵²⁵ However, ASEAN's principle of non-interference means that ASCN is only a pilot project for specific cities. This research argues that the ineffectiveness of ASCN as a model for city development is due to ASEAN's non-interference principle. This principle not only prohibits interference in domestic affairs but also means that the power and sovereignty of AMS cannot be challenged, including by ASEAN institutions.⁵²⁶

Thus, conceptually and initially, ASCN could be an opportunity for the development of electromobility. However, electromobility cannot currently develop within the ASCN

⁵²³ Si-Ying Tan, Araz Taeihagh, and Kritika Sha, 'How Transboundary Learning Occurs: Case Study of the ASEAN Smart Cities Network (ASCN)', *Sustainability* 13, no. 11 (7 June 2021): 1, <https://doi.org/10.3390/su13116502>.

⁵²⁴ Association of Southeast Asian Nations, 'ASEAN Smart Cities Network Monitoring & Evaluation Report 2023', 15.

⁵²⁵ Tan, Taeihagh, and Sha, 'How Transboundary Learning Occurs'.

⁵²⁶ Sanae Suzuki, 'Why Is ASEAN Not Intrusive? Non-Interference Meets State Strength', *Journal of Contemporary East Asia Studies* 8, no. 2 (2019): 173, <https://doi.org/10.1080/24761028.2019.1681652>.

corridor due to many challenges, especially from within ASEAN itself. The development of electromobility in ASEAN is highly dependent on the national initiatives of each AMS. ASEAN, in particular, cannot be said to be a catalyst for the development of electromobility. In the future, the ASEAN could become a doorway to accelerate the development of electromobility in ASEAN. Therefore, ASEAN needs governance reform especially in technology transfer, science, and policymaking at the city level.

4.4. Electromobility Legal Framework on Selected Member States

The empirical evidence from countries such as the United States, China, and many European nations demonstrates that providing incentives can effectively enhance the public's adoption of electric vehicles. The case of Norway reveals that implementing comprehensive economic incentives at a national level has a favourable impact on adopting EVs. Nonetheless, it should be noted that non-fiscal incentives can impact the development of the EV ecosystem within a nation.

This section will discuss the legal framework for electromobility in four selected AMS. Each country discussed represents a group of AMS in the development of electromobility. The discussion of electromobility development in Indonesia will represent a group of countries that are the centre of automotive production and have adequate natural resources and labour. Furthermore, the discussion of Vietnam is a group of countries with automotive production centres but limited resources. Singapore will represent the group of countries that are skeptical of electromobility development. Laos will represent AMS, which is relatively economically underdeveloped.

The discussion will focus on the legal frameworks adopted by the four countries in their efforts to develop electromobility. However, it is essential to understand that since the countries were selected based on specific classifications, each country will reflect different policies. This classification will help see the optimism and efforts of AMS in developing electromobility in the climate change framework. The discussion will also focus on the three aspects of energy, transport, and smart city policies that have been guided at the regional level. This section will look deeper into the development of electromobility at least until 2023 and its future prospects through the energy, transport and smart city policies adopted by each country.

4.4.1. Indonesia

Indonesia's legal framework for electromobility development generally covers regulating the energy and transport sectors. Electromobility is one of the significant strategies in Indonesia's energy transition project.⁵²⁷ The development of the EV ecosystem in Indonesia began in 2012 during the administration of President Susilo Bambang Yudhoyono, initiated by the Ministry of State-Owned Enterprises and the Ministry of Research, Technology and Higher Education.⁵²⁸ However, the electromobility development initiative in Indonesia faded after the government transition in 2014. The issue of electromobility development was revived in 2019 following the adoption of Presidential Regulation No. 55/2019 on the Acceleration of Battery Electric Vehicle Programme for Road Transportation (EV Presidential Regulation) by President Joko Widodo, who strongly endorses the development of EVs.⁵²⁹ The primary rationale for this regulation is the effort to reduce emissions from the transport and energy sectors and the ambition to capture the opportunity to become an electric vehicle producer and market in Southeast Asia. The Indonesian government provides various incentives on the condition of fulfilling a certain percentage of domestic component content.⁵³⁰

Several cross-disciplinary studies have argued that the state's incentives do not necessarily increase the public's adoption of electric vehicles. A study conducted by Münzel et al. on 32 countries in the European region during 2010-2017 revealed that financial incentives in the form of both fiscal and non-fiscal only increased electric vehicle sales by around 5%-7%.⁵³¹ Quite different results were obtained by research conducted by Lingzhi et al. by analysing state incentive policies in the United States.⁵³² The results show that the same type of incentive policy affects each state differently. A study conducted in China by

⁵²⁷ Budy P. Resosudarmo, Jahan F. Rezki, and Yuventus Effendi, 'Prospects of Energy Transition in Indonesia', *Bulletin of Indonesian Economic Studies* 59, no. 2 (4 May 2023): 166, <https://doi.org/10.1080/00074918.2023.2238336>.

⁵²⁸ Ridwan Arief Subekti et al., *Peluang Dan Tantangan Pengembangan Mobil Listrik Nasional* (Jakarta: LIPI Press, 2014), 30.

⁵²⁹ In 2023, the EV Presidential Regulation was amended by Presidential Regulation Number 79 of 2023. The focus of the regulatory amendment is on providing fiscal and non-fiscal incentives to the manufacturing industry and to EV consumers. Please refer to <https://jdih.kemenkeu.go.id/download/2426f667-7c15-4afb-8a52-4efc01da5e9b/2023perpres079.pdf>

⁵³⁰ Schröder, Iwasaki, and Kobayashi, 'Promotion of Electromobility in ASEAN: States, Carmakers, and International Production Networks', 8.

⁵³¹ Christiane Münzel et al., 'How Large Is the Effect of Financial Incentives on Electric Vehicle Sales? – A Global Review and European Analysis', *Energy Economics* 84 (2019): 104493, <https://doi.org/10.1016/j.eneco.2019.104493>.

⁵³² Jin Lingzhi, Stephanie Searle, and Nic Lutsey, 'Evaluation of State-Level US Electric Vehicle Incentives' (The International Council on Clean Transportation, 2014).

Li et al. revealed that fiscal and non-fiscal incentives significantly affect the public's promotion and adoption of electric vehicles.⁵³³

However, the existence of incentive policies for both industry and consumers is one of the efforts to increase EV production and adoption.⁵³⁴ The Indonesian government provides two types of incentives to develop electromobility: fiscal and non-fiscal. Incentives have been introduced massively since 2020 to accelerate electromobility, including in the domestic EV manufacturing industry, the construction of battery power supply facilities, and the massive use of EVs. The first form of fiscal incentives is rate reduction or exemption from national and local taxes. Tax reductions of up to 100% were initially provided for plug-in hybrid, battery, or fuel-cell electric vehicles.⁵³⁵ In its development, the incentive was only given to fully electric vehicles, namely battery and fuel-cell EVs.⁵³⁶

Another national tax incentive that was introduced in March 2023 is a sales tax reduction from 5% to 11% for EVs that have a local content of at least 40%.⁵³⁷ Providing incentives directly to consumers is one of the efforts to remove barriers to EV adoption due to high prices.⁵³⁸ In addition to national incentives, local governments also provide tax incentives. The incentives provided include a reduction in motor vehicle tax exemption and title transfer duty. Some local governments in Indonesia have also taken the initiative to adopt policies that incentivise building electromobility, especially for two-wheeled vehicles such as electric motorbikes.

⁵³³ Wenbo Li et al., 'Effect of Policy Incentives on the Uptake of Electric Vehicles in China', *Sustainability (Switzerland)* 11, no. 12 (2019): 1–20, <https://doi.org/10.3390/su10023323>.

⁵³⁴ José María Maza-Ortega, Francisco Jesús Matas-Díaz, and Ángel Arcos-Vargas, 'EV International Landscape', in *The Role of the Electric Vehicle in the Energy Transition: A Multidimensional Approach*, ed. Ángel Arcos-Vargas (Cham: Springer Nature Switzerland, 2021).

⁵³⁵ Indonesia, 'Peraturan Pemerintah Nomor 73 Tahun 2019 Tentang Barang Kena Pajak Yang Tergolong Mewah Berupa Kendaraan Bermotor Yang Dikenai Pajak Penjualan Atas Barang Mewah (Government Regulation Number 73 Year 2019 on Luxury Taxable Goods)' (2019), <https://peraturan.bpk.go.id/Details/122493/pp-no-73-tahun-2019>.

⁵³⁶ Indonesia, 'Peraturan Pemerintah Nomor 74 Tahun 2021 Tentang Perubahan Peraturan Pemerintah Nomor 73 Tahun 2019 Tentang Barang Kena Pajak Yang Tergolong Mewah Berupa Kendaraan Bermotor Yang Dikenai Pajak Penjualan Atas Barang Mewah (Government Regulation Number 74 Year 2021 on Amendment of Government Regulation Number 73 Year 2019 on Luxury Taxable Goods)' (2021), <https://peraturan.bpk.go.id/Details/122493/pp-no-73-tahun-2019>.

⁵³⁷ Indonesia, 'Peraturan Menteri Keuangan Nomor 38 Tahun 2023 Tentang Pajak Pertambahan Nilai Atas Penyerahan Kendaraan Bermotor Listrik Berbasis Baterai Roda Empat Tertentu Dan Kendaraan Bermotor Listrik Berbasis Baterai Bus Tertentu Yang Ditanggung Pemerintah Tahun Anggaran 2023 (Regulation of the Minister of Finance Number 38 Year 2023 on Value Added Tax on Delivery of Certain Four Wheel Battery Electric Motor Vehicles and Certain Bus Battery Electric Motor Vehicles Financed by the Government Fiscal Year 2023)' (2023), <https://peraturan.bpk.go.id/Details/246542/pmk-no-38-tahun-2023>.

⁵³⁸ Iana Vassileva and Javier Campillo, 'Adoption Barriers for Electric Vehicles: Experiences from Early Adopters in Sweden', *Energy* 120 (2017): 632–41, <https://doi.org/10.1016/j.energy.2016.11.119>.

The Indonesian government is also promoting non-fiscal incentives for electromobility development. One of the incentives provided is the ease of obtaining loans from banks to purchase EVs. This incentive is a commitment from the banking authorities in Indonesia to promote sustainable finance. Since 2017, the Indonesian Financial Services Authority (OJK) has adopted Financial Services Authority Regulation 51/POJK.03/2017 which will come into effect in 2022. The momentum is perfect to stimulate the increased adoption of EVs through accessible loan facilities from banks.⁵³⁹

Another non-fiscal incentive is to subsidise the price of two-wheeled electric vehicles (electric motorbikes). The Indonesian Ministry of Industry, based on Minister of Industry Regulation No. 6 of 2023, provides a subsidy of IDR7 million or equivalent to EUR425 for 200,000 units in 2023 and 600,000 units in 2024 for specific segments of society. The policy aims to promote EVs to low-income earners who use two-wheelers to transport goods. The form of price incentives is crucial because price is one of the main factors for EV penetration among people who are used to using fossil-fuelled vehicles.⁵⁴⁰

Another step taken by the Indonesian government to change the pattern of conventional vehicle use in the lower economic community is to launch a subsidy programme for converting conventional motorbikes to electric motorbikes. The legal basis of this programme is the Minister of Energy and Mineral Resources Regulation No. 2 of 2023, which provides an incentive of IDR7 million or equivalent to EUR425 for each unit, with 50,000 units in 2023 and 150,000 units in 2024. In addition to reaching low-income groups, this programme is also an effort to increase the EV population in Indonesia.

The incentive policy implemented by the Indonesian government is quite progressive and massive. However, there are some criticisms of the electromobility development programme, which relies on state aid in fiscal and non-fiscal incentives. At the beginning of electromobility development, many incentives were given to the industry, and a small portion was given to consumers. Indonesia also still needs to have a policy to limit conventional vehicles and the use of fossil fuels.⁵⁴¹ The development of electromobility in Indonesia also has a negative impact, namely the massive mining and processing of nickel,

⁵³⁹ Indonesian Financial Services Authority Press Release No. 62/DHMS/IX/2020 can be accessed <https://ojk.go.id/sustainable-finance/id/Pages/Insentif-OJK-untuk-Dukung-Program-Kendaraan-Bermotor-Ramah-Lingkungan-.aspx>

⁵⁴⁰ Makena Coffman, Paul Bernstein, and Sherilyn Wee, 'Electric Vehicles Revisited: A Review of Factors That Affect Adoption', *Transport Reviews* 37, no. 1 (2017): 79–93, <https://doi.org/10.1080/01441647.2016.1217282>.

⁵⁴¹ Mailinda Eka Yuniza, I Wayan Bhayu Eka Pratama, and Rahmah Candrika Ramadhaniati, 'Indonesia's Incentive Policies on Electric Vehicles: The Questionable Effort from the Government', *International Journal of Energy Economics and Policy* 11, no. 5 (2021): 439, <https://doi.org/10.1515/mt-1999-417-807>.

which is one of the main ingredients of EV components, namely batteries.⁵⁴² In addition, the rise of the nickel mining industry in Indonesia is also a momentum for mining conglomerates to enter electromobility-related industries and label their industries as environmentally friendly.⁵⁴³

⁵⁴² Schröder and Iwasaki, 'From Nickel to Electric Cars? Indonesia's Resource Cum Automotive Industry Policy', 5.

⁵⁴³ Trissia Wijaya and Lian Sinclair, 'An EV-Fix for Indonesia: The Green Development-Resource Nationalist Nexus', *Environmental Politics*, April 2024, 2, <https://doi.org/10.1080/09644016.2024.2332129>.

Table 8 The Indonesia's Legal Framework on Electromobility

Sector	Legal Instruments
Main Regulation	Presidential Regulation on the Acceleration of Battery Electric Vehicle Program for Road Transportation (<i>Peraturan Presiden tentang Percepatan Program Kendaraan Bermotor Listrik Berbasis Baterai untuk Transportasi Jalan</i>)
Industrial Development and Incentives	Minister of Industrial Affairs Regulation on Battery-based Electric Motor Vehicle Specifications (<i>Peraturan Menteri Perindustrian tentang Spesifikasi Kendaraan Bermotor Listrik Berbasis Baterai</i>)
	Minister of Industrial Affairs Regulation on Roadmap for Battery-based Electric Motor Vehicle Development (<i>Peraturan Menteri Perindustrian tentang Peta Jalan Pengembangan Kendaraan Bermotor Listrik Berbasis Baterai</i>)
	Minister of Industrial Affairs Regulation on Procedure for Calculating the Domestic Component Level (<i>Peraturan Menteri Perindustrian tentang Tata Cara Penghitungan Tingkat Komponen Dalam Negeri</i>)
	Minister of Industrial Affairs Regulation on Import Period for Whole Battery Electric Motor Vehicles (<i>Peraturan Menteri Perindustrian tentang Jangka Waktu Impor Kendaraan Bermotor Listrik Berbasis Baterai Utuh</i>)
	Minister of Industrial Affairs Regulation on Manufacturing Level Staging of Major and/or Supporting Components (<i>Peraturan Menteri Perindustrian tentang Penahapan Tingkat Manufaktur Komponen Utama dan/atau Pendukung</i>)
Electricity Charging Infrastructure and Tariff Management	Minister of Energy and Mineral Resources Regulation on Electricity Tariff for Charging Battery-based Electric Motor Vehicles (<i>Peraturan Menteri Energi dan Sumber Daya Mineral tentang Tarif Tenaga Listrik untuk Pengisian Kendaraan Bermotor Listrik Berbasis Baterai</i>)
Vehicle Technical Aspect	Minister of Transportation Regulation on Compliance with Technical and Operational Requirements (<i>Peraturan Menteri Perhubungan tentang Pemenuhan Persyaratan Teknis dan Laik Jalan</i>)
	Minister of Transportation Regulation on Electric Motor Vehicle Registration and Vehicle Body Identification Procedure (<i>Peraturan Menteri Perhubungan tentang Registrasi Kendaraan Bermotor Listrik dan Tata Cara Identifikasi Rangka Kendaraan</i>)
Environmental Protection	Minister of Environmental and Forestry Affairs Regulation on Appreciation for Waste Battery Handling (<i>Peraturan Menteri Lingkungan Hidup dan Kehutanan Pemberian Apresiasi Terhadap Penanganan Limbah Baterai</i>)

Source: Nur and Kurniawan (2021) and Yuniza, et. al (2021).

Indonesia's legal framework for electromobility was established to encourage the advancement and utilisation of electric vehicles through several sectoral laws implemented by technical Ministers. Indonesia's policies prioritise industrial and infrastructure expansion, as well as widespread public use of EV, although generally lack climate objectives and

environmental conservation. This policy disparity profoundly impacts Indonesia's energy transition initiatives.

The Presidential Regulation on the Acceleration of the Battery-Based Electric Motor Vehicle Program for Road Transportation has established a solid foundation for the development of the electric vehicle ecosystem. The focus is on offering financial and non-financial incentives to the sector and prioritising domestic production instead of incorporating climate-related goals. Regulatory frameworks established by the Minister of Industry and the Minister of Transportation emphasise the technical, operational, and feasibility dimensions of electric vehicle manufacturing and utilisation, encompassing registration, compliance, and production requirements.

Indonesia, as a nation susceptible to the effects of climate change, has set a goal of 15,197,000 electric vehicles by 2030 in its Enhanced Nationally Determined Contributions (NDC) 2022.⁵⁴⁴ Indonesia lacks a specific climate objective for diminishing greenhouse gas emissions in the transportation and energy sectors. In contrast to other ASEAN member states that have established national sectoral decarbonisation targets, Indonesia's framework does not explicitly associate electric mobility policy with its broader climate commitments under the Paris Agreement. This diminishes the efficacy of policies aimed at developing the EV ecosystem to mitigate emissions from the transportation and energy sectors, which are substantial contributors to national CO₂ levels.

It should be acknowledged that there is ministerial-level regulation on waste management and recycling, especially for hazardous battery waste. The Minister of Environment and Forestry Regulation on Waste Battery Handling pertains to post-use battery management but lacks a comprehensive framework for sustainable disposal or recycling, essential for mitigating the environmental impact of EV proliferation. In the absence of explicit environmental protections, there exists a risk of contamination migration from vehicular emissions to inadequate battery disposal methods. To enhance electromobility policy, Indonesia needs to integrate comprehensive climate objectives and environmental regulations into its legal framework, ensuring that the transition to electric transportation aligns with sustainable development goals and emissions reduction targets as stipulated by the Paris Agreement commitments.

⁵⁴⁴ Government of Indonesia, 'Enhanced Nationally Determined Contribution Republic of Indonesia' (Jakarta, Indonesia, 2022), 24, https://unfccc.int/sites/default/files/NDC/2022-09/23.09.2022_Enhanced%20NDC%20Indonesia.pdf.

Based on this explanation, the question arises, namely how is the role of the ASEAN legal framework in the development of electromobility in Indonesia? As a legal regime based on soft law, the ASEAN legal framework does not directly influence the Indonesian legal framework on electromobility. One aspect that is quite affected by the ASEAN legal framework is sustainable finance, especially in green investment. The ATSF, as a guideline that applies at the regional level, inspires the sustainable investment guidelines issued by the Indonesian Ministry of Investment in 2022. However, it must be recognised that the ASEAN legal framework cannot do much to spur electromobility at the national level.

4.4.2. Vietnam

The progression of electric vehicle adoption in Vietnam is regulated by a regulatory framework for electromobility that incorporates environmental protection strategies. Despite the Vietnamese government's implementation of policies promoting green energy transition and emissions reduction, limitations exist in regulatory enforcement, infrastructure development, and financial incentives essential for comprehensive EV adoption.

Table 9 Vietnam Legal Framework on Electromobility

Sector	Legal Instruments
Environmental Protection	Law No. 72/2020/QH14 on Environmental Protection 2022 (<i>Luật Bảo Vệ Môi Trường</i>)
Development of Electric Vehicles	Decision No. 876/QĐ-TTg on Approving the Action Program for Transition to Green Energy and Mitigation of Carbon Dioxide and Methane Emissions from Transportation (<i>Quyết Định Phê Duyệt Chương Trình Hành Động Về Chuyển Đổi Năng Lượng Xanh, Giảm Phát Thải Khí Các-Bon Và Khí Mê-Tan Của Ngành Giao Thông Vận Tải</i>)
	Circular No. 58/2022/TT-BGTVT on Procedures for Issuance and Revocation of Vehicle Registration and License Plates of Road Motor Vehicles (<i>Thông Tư Quy Định Quy Trình Cấp, Thu Hồi Đăng Ký, Biển Số Phương Tiện Giao Thông Cơ Giới Đường Bộ</i>)

Source: thuvienphapluat.vn (2024).

Law No. 72/2020/QH14 on Environmental Protection establishes a comprehensive legislative framework for environmental governance, encompassing regulations pertinent to sustainable mobility. Although Vietnam has pledged to decrease emissions, the legislation lacks explicit sector-specific regulations for EV adoption and does not specify penalties for non-compliance. Like Indonesia, Vietnam's regulatory framework does not establish a robust connection between EV adoption and the nation's long-term climate objectives, hence

diminishing its efficacy in facilitating swift decarbonisation in the transportation and energy sectors.

The Vietnamese government launched the Action Program for Transition to Green Energy and Emission Reduction to advocate for EV. The legal instrument explicitly advocates for EV and acknowledges the necessity of reducing carbon dioxide and methane emissions from the transportation sector, aligning with Vietnam's international climate obligations under the Paris Agreement. Nonetheless, the legal instrument fails to establish legally obligatory objectives for the production, sale, or growth of EV charging infrastructure. Consequently, in the absence of a solid implementation framework and substantial financial incentives, the shift to green mobility in Vietnam may progress more slowly than anticipated.

Circular No. 58/2022/TT-BGTVT additionally emphasises vehicle registration and licensing procedures, which are essential for the deployment of the EV. Nevertheless, it fails to provide standards for charging infrastructure, battery recycling, or incentives for customers and manufacturers. Consequently, Vietnam's legal framework on electromobility remains deficient in comprehensive financial incentives, such as subsidies or tax reductions, which are essential for promoting the adoption of EV (especially four-wheelers) among the public. Vietnam should integrate legally mandated emission reduction targets, infrastructural regulations, and financial incentives into its legal framework to facilitate a more seamless and successful transition to sustainable transportation and to enhance the advancement of electric mobility.

Vietnam is one of the AMS that has experienced rapid economic growth since introducing economic reforms in the early 90s, known as *Đổi Mới*.⁵⁴⁵ One of the impacts of Vietnam's economic growth is the increasing use of motorised vehicles, especially two-wheelers. In 2019, in Hanoi, the capital of Vietnam, there were 6.6 million motorised vehicles, of which 5.7 million were motorbikes, growing by approximately 27,000 units annually.⁵⁴⁶ However, this fact contrasts with Vietnam's energy transition, which has stagnated and continues to rely on coal as the primary energy source to generate electricity.⁵⁴⁷

⁵⁴⁵ Ivan V. Small, “Driving Is Terrifying”: Auto-Mobility Horizons, Projections and Networks in Vietnam and ASEAN”, *Journal of Cultural Economy* 16, no. 1 (2 January 2023): 63, <https://doi.org/10.1080/17530350.2022.2058060>.

⁵⁴⁶ Hoang Phuong Nguyen et al., ‘Learned Experiences from the Policy and Roadmap of Advanced Countries for the Strategic Orientation to Electric Vehicles: A Case Study in Vietnam’, *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects*, 31 August 2020, 3, <https://doi.org/10.1080/15567036.2020.1811432>.

⁵⁴⁷ Trung Thanh Nguyen et al., ‘Energy Transition, Poverty and Inequality in Vietnam’, *Energy Policy* 132, no. May (2019): 546, <https://doi.org/10.1016/j.enpol.2019.06.001>.

Vietnam's geographical condition, which consists of many highlands and the Mekong River valley, is also a challenge in energy transition, especially in choosing primary energy sources for power plants because it can cause ecological and social disruption.⁵⁴⁸ This combination increases emissions and air pollution, especially in major cities like Hanoi and Ho Chi Minh City.

The growth of fossil-fueled vehicles and the lack of a total energy transition are challenges for the development of electromobility in Vietnam. Prior to 2022, Vietnam did not have a specific dedicated legal framework for the development of electromobility. Instead, Vietnam launched a national project called VinFast, which aims to build a conventional and electric vehicle manufacturing industry and become the centre of the vehicle industry in Southeast Asia. The production target is 500,000 cars and 1,000,000 motorbikes.⁵⁴⁹ Initially, this ambition was not accompanied by plans to build Vietnam's domestic EV ecosystem due to a very small internal market.⁵⁵⁰ In addition, Vietnam's electromobility development also faces the fundamental challenges of transport infrastructure, unclear technical regulations, and weak consumer interest in switching to EVs.⁵⁵¹ However, this problem is due to the high use of motorbikes, which has become a daily culture. Before electromobility development, Vietnam urgently needs significant transport infrastructure development, such as adequate roads and bridges and, specifically for EVs, a stable electricity supply to construct charging stations.⁵⁵²

Vietnam also faces regulatory challenges on an international scale, especially at the ASEAN level. One obstacle is the use of soft law legal instruments because they are not legally binding in national jurisdiction.⁵⁵³ Vietnam is relatively compliant with implementing ASEAN legal instruments in the form of hard law, such as treaties or agreements. Vietnam's compliance with international commitments is reflected in the updated NDC submitted to the UNFCCC in 2022, which sets emission reduction targets in 2030 of 15.8% (without international assistance) and 43.5% (with international

⁵⁴⁸ Small, “Driving Is Terrifying”, 75.

⁵⁴⁹ Kresnawan et al., ‘Electric Vehicle Readiness in Southeast Asia: A PEST Policy Review’, 4.

⁵⁵⁰ Nguyen et al., ‘Learned Experiences from the Policy and Roadmap of Advanced Countries for the Strategic Orientation to Electric Vehicles’, 3.

⁵⁵¹ Nguyen et al., 3.

⁵⁵² Small, “Driving Is Terrifying”, 76.

⁵⁵³ Hao Duy Phan, ‘The Effects of ASEAN Treaties in Domestic Legal Orders: Evidence from Vietnam’, *International Journal of Constitutional Law* 17, no. 1 (2019): 228, <https://doi.org/10.1093/icon/moz004>.

assistance).⁵⁵⁴ In addition, the Vietnamese government has also approved a plan to electrify all vehicles by 2050.⁵⁵⁵

Vietnam has a focus on electrifying two-wheelers (motorbikes). Therefore, the Vietnamese government adopted various legal instruments to create consumer demand and shape the market for electric two-wheelers. Since 2014, the Vietnamese government has adopted a plan to stimulate investment in the low-carbon vehicle sector.⁵⁵⁶ The plan is contained in the National Automobile Industry Development Plan by 2025 and Vision to 2035.⁵⁵⁷ Fiscal and non-fiscal incentives are also instruments that are considered very important in shaping the EV market, especially two-wheelers. The Vietnamese government incentivises tax rates of up to 100% for EV manufacturers importing spare parts and accessories.⁵⁵⁸ However, the incentive policy has yet to be able to develop a massive electric motorbike ecosystem. Cultural and technical barriers are among the challenges faced by Vietnam. Collaboration between the national government and private industry is needed for electric vehicles to penetrate further into Vietnam's fossil-fuelled two-wheeler-dominated automotive market.⁵⁵⁹

In the case of Vietnam, since the existence of *Đổi Mới*, the culture of the people, especially in transport, has changed. Two-wheelers, such as fossil-fuelled motorbikes, are the primary choice for transport due to their ease of access and use. Building electromobility

⁵⁵⁴ Socialist Republic of Viet Nam, 'Socialist Republic of Viet Nam Nationally Determined Contribution (Updated 2022)', October 2022, 4, https://unfccc.int/sites/default/files/NDC/2022-11/Viet%20Nam_NDC_2022_Eng.pdf.

⁵⁵⁵ Socialist Republic of Viet Nam, 'Quyết Định Số 876/QĐ-TTg Của Thủ Tướng Chính Phủ: Phê Duyệt Chương Trình Hành Động về Chuyển Đổi Năng Lượng Xanh, Giảm Phát Thải Khí Các-Bon và Khí Mê-Tan Của Ngành Giao Thông Vận Tải (The Prime Minister, Decision No. 876/QĐ-TTg Date July 22, 2022: Decision on Approving the Action Program for Transition to Green Energy and Mitigation of Carbon Emissions and Methane Emission from Transportation)' (2022).

⁵⁵⁶ Dinh Van Hiep et al., 'Assessment of Electric Two-Wheelers Development in Establishing a National E-Mobility Roadmap to Promote Sustainable Transport in Vietnam', *Sustainability* 15, no. 9 (29 April 2023): 5, <https://doi.org/10.3390/su15097411>.

⁵⁵⁷ Socialist Republic of Viet Nam, 'Quyết Định Số 1168/QĐ-TTg Của Thủ Tướng Chính Phủ: Phê Duyệt Chiến Lược Phát Triển Ngành Công Nghiệp ô Tô Việt Nam Đến Năm 2025, Tầm Nhìn Đến Năm 2035 (Decision No. 1168/QĐ-TTg of the Prime Minister: Approving the Vietnam Automobile Industry Development Strategy to 2025, Vision to 2035)' (2014), <https://vanban.chinhphu.vn/default.aspx?pageid=27160&docid=174938>.

⁵⁵⁸ Socialist Republic of Viet Nam, 'Nghị Định 57/2020/NĐ-CP Sửa Đổi Nghị Định 122/2016/NĐ-CP về Biểu Thuế Xuất Khẩu, Biểu Thuế Nhập Khẩu Ưu Đãi, Danh Mục Hàng Hóa và Mức Thuế Tuyệt Đối, Thuế Hỗn Hợp, Thuế Nhập Khẩu Ngoài Hạn Ngạch Thuế Quan và Nghị Định 125/2017/NĐ-CP Sửa Đổi Nghị Định 122/2016/NĐ-CP (Decree No. 57/2020/ND-CP Dated May 25, 2020 on Amendments and Supplements to Several Articles of the Government's Decree No. 122/2016/ND-CP on Export and Preferential Import Tariff Schedules, Lists of Products, Absolute, Mixed and out-of-Quota Import Duty Rates, and to the Decree No. 125/2017/ND-CP Amending and Supplementing Several Articles)' (2020), https://vntr.moit.gov.vn/storage/doc/file/1641348455%20_%2057_2020_ND-CP.pdf.

⁵⁵⁹ Schröder, Iwasaki, and Kobayashi, 'Promotion of Electromobility in ASEAN: States, Carmakers, and International Production Networks', 20–21.

for Vietnam would make much sense by transforming motorbikes to be electrically powered so that the penetration of electric vehicle technology to the lowest level of society can be implemented. For Vietnam and Indonesia, where most people use two-wheelers, changing the transport culture to be more environmentally friendly and low-carbon must start with the vehicles closest to the people.

4.4.3. Singapore

Geographically, Singapore is a country with a small area of only 733 km² compared to other AMS, such as Indonesia, which reaches 1,877,519 km².⁵⁶⁰ However, Singapore is the most economically developed country in the Southeast Asian region, with a gross national income of US\$70,810 per capita by 2023 and the most favourable investment climate in the world.⁵⁶¹ Singapore lacks land area, so it has no fossil or renewable energy resources. In 2022, 84% of Singapore's energy mix comes from oil, 14% from gas, and the rest from coal and renewable energy sources such as solar and wind.⁵⁶² Singapore's emissions profile is mostly generated by the industrial sector, which accounts for 47%, power generation for 39%, transport for 12%, and buildings and water treatment for 1% each.⁵⁶³

Table 10 Singapore Legal Framework on Electromobility

Sector	Legal Instruments
Electric Vehicle Charging and Licensing	Electric Vehicles Charging Act 2022
	Electric Vehicles Charging (Electric Vehicle Chargers) Regulations 2023 (Amended in 2024).
	Electric Vehicles Charging (Licensing) Regulations 2023 (Amended in 2024)
	Land Transport Authority (LTA) Guidelines on EV Charging Systems
Building Management	Building Maintenance and Strata Management (Amendment) Act 2023

Source: Singapore Land Transport Authority (2024).

⁵⁶⁰ Association of Southeast Asian Nations, 'ASEAN Statistical Highlights 2023' (The ASEAN Secretariat, September 2023), <https://www.aseanstats.org/wp-content/uploads/2023/10/ASH-2023-v1.pdf>.

⁵⁶¹ World Bank, 'The World Bank in Singapore' (World Bank, April 2024), <https://www.worldbank.org/en/country/singapore/overview#1>.

⁵⁶² Hannah Ritchie and Max Roser, 'Singapore: Energy Country Profile' (Our World in Data, 2023), <https://ourworldindata.org/energy/country/singapore?country=%7B%7DSGP~SGP#citation>.

⁵⁶³ Hon Chung Lau et al., 'A Decarbonization Roadmap for Singapore and Its Energy Policy Implications', *Energies* 14, no. 20 (9 October 2021): 3, <https://doi.org/10.3390/en14206455>.

Singapore has achieved notable advancements in the promotion of EV adoption. The Singapore Electric Vehicle Charging Act 2022 serves as a robust legal framework for the nationwide implementation and management of electric vehicle charging infrastructure. The Electric Vehicle Charging Regulations 2023, revised in 2024, delineate the technical and safety standards for chargers, promoting standardisation and public safety. The Electric Vehicle Charging (Licensing) Regulations 2023, amended in 2024, establishes a licensing framework for EV charging operators, thereby improving consumer protection and service reliability. The Land Transport Authority (LTA) Guidelines on Electric Vehicle Charging Systems provide additional regulations for the installation and maintenance of infrastructure. The legal instruments collectively establish a well-regulated and secure charging network in Singapore, essential for the widespread adoption of EV.

Singapore aims to attain zero emissions by 2050, emphasising the decarbonisation of the transport sector. Nonetheless, the legal framework lacks a specified emissions reduction target for the land transport sector. The strategic objective to eliminate conventional vehicles by 2040 lacks a robust legal framework to support it. In contrast to the EGD, which enforces stringent emissions reductions for all member states, Singapore's legal framework exhibits greater flexibility, reflecting the legal nature of ASEAN. Incorporating enforceable climate targets within the EV sector may enhance Singapore's legal obligations regarding electric mobility and improve regulatory certainty.

Singapore's legal framework effectively facilitates the advancement of electric mobility via organised regulations concerning EV charging and licensing. Singapore has yet to integrate climate commitments with the development of electromobility. Furthermore, although Singapore advocates for the adoption of EV, its legal framework currently lacks comprehensive measures for the environmental protection of EV battery waste. Implementing legally binding emissions targets and robust battery recycling regulations will strengthen Singapore's position as a leader in sustainable electric mobility, especially within the Southeast Asia region.

Nonetheless, as a Paris Agreement ratifying country, Singapore is committed to making the energy transition, reducing emissions by 60 million tonnes of CO₂ by 2030, and achieving net zero emissions by 2050.⁵⁶⁴ One of the strategies pursued is to develop electromobility by transforming conventional vehicles into electric or hydrogen-powered

⁵⁶⁴ Republic of Singapore, 'Singapore's Second Update of Its First Nationally Determined Contribution (NDC) and Accompanying Information', 2022, <https://unfccc.int/sites/default/files/NDC/2022-11/Singapore%20Second%20Update%20of%20First%20NDC.pdf>.

ones.⁵⁶⁵ Singapore has made this effort since 2011 by initiating small-scale EV trials until 2013.⁵⁶⁶ Based on these trials, it was concluded that EVs and their ecosystems were technically feasible in Singapore but economically disadvantaged.⁵⁶⁷ Therefore, the Singapore government conducted phase 2 trials until 2016 in line with the commitment to reduce emissions under the Paris Agreement. To realise this target, the Singapore government has adopted several legal instruments vital for electromobility development.⁵⁶⁸ In general, the electromobility development strategy consists of five aspects: the provision of fiscal and non-fiscal incentives, EV technical standardisation, charging station development, industry partnerships, and human resource training and certification.⁵⁶⁹

Several incentive schemes, namely the EV Early Adoption Incentive (EEAI), Enhanced Vehicular Emissions Scheme (VES), Additional Registration Fee (ARF) floor reduction, and Revision of road tax framework for electric cars, provide fiscal and non-fiscal incentives.⁵⁷⁰ These incentives are expected to reduce the price of EVs, especially light vehicles, by up to SGD45,000. EV technical standardisation and charging facility development refer to the EV Charging Act 2022 implemented by the Land Transport Authority (LTA). Technical standardisation includes the obligation to register EV chargers, permit EV charging operators, and build charging facilities in certain public spaces.⁵⁷¹ Furthermore, there is a partnership with industry to develop research and training for skilled technicians. This partnership also involves Singapore's tertiary institutions to develop skilled technicians specialising in EV charger servicing, EV safety, and conversion from ICE vehicles to EVs.⁵⁷²

⁵⁶⁵ Lau et al., 'A Decarbonization Roadmap for Singapore and Its Energy Policy Implications', 17.

⁵⁶⁶ Tobias Massier et al., 'Electrification of Road Transport in Singapore and Its Integration into the Power System', *Energy Technology* 6, no. 1 (January 2018): 21, <https://doi.org/10.1002/ente.201700652>.

⁵⁶⁷ Feng Xue and Evan Gwee, 'Electric Vehicle Development in Singapore and Technical Considerations for Charging Infrastructure', *Energy Procedia* 143 (December 2017): 13, <https://doi.org/10.1016/j.egypro.2017.12.640>.

⁵⁶⁸ There are three key documents in the development of electromobility in Singapore. Firstly, the EV Charging Act 2022 (Act No. 43 of 2022) which was promulgated on 27 December 2022. Second, a planning document entitled 'Charting Singapore's Low-carbon and Climate Resilient Future' developed by the National Climate Change Secretariat Strategy Group, Prime Minister's Office in 2020. Third, the Land Transport Master Plan developed by the Land Transport Authority in 2020.

⁵⁶⁹ Republic of Singapore, 'Our EV Vision' (Land Transport Authority, 2023), https://www.lta.gov.sg/content/ltagov/en/industry_innovations/technologies/electric_vehicles/our_ev_vision.html.

⁵⁷⁰ Republic of Singapore, 'Charting Singapore's Low-Carbon and Climate Resilient Future' (National Climate Change Secretariat Strategy Group, Prime Minister Office, 2020), 11, <https://www.nccs.gov.sg/files/docs/default-source/publications/nccsleds.pdf>.

⁵⁷¹ Republic of Singapore, 'Our EV Vision'.

⁵⁷² Republic of Singapore.

Singapore has made very rapid and progressive progress in the context of adopting electromobility development policies. However, Singapore differs from Indonesia and Vietnam because it has ambitions of becoming an EV manufacturer. Based on research into the legal documents adopted by Singapore, indications of becoming an EV manufacturer are almost nonexistent. Singapore's geography, an archipelago with a limited area, prevents it from becoming an EV manufacturing location in Southeast Asia. Singapore is also different from Indonesia and Vietnam, which are spurring the electrification of two-wheeler vehicles. Singapore's electromobility development focuses on the electrification of light vehicles as well as vehicles for public transport.⁵⁷³

A significant challenge in Singapore's electromobility development is a stable supply of renewable energy sources. Singapore's predominantly fossil-fuelled energy mix profile is the first obstacle that must be resolved by 2030 to achieve a net zero emission target by 2050. The other issues are the affordability and availability of EV models that meet the needs of Singaporeans. As the only developed country in the region, Singapore's move to focus on the electrification of light vehicles and vehicles for public transport should be well appreciated. Sustainability is also a crucial issue that needs to be addressed by the Singapore authorities. The 2030 emission reduction target and net zero emission 2050 will not be achieved if Singapore fails to ensure the sustainability of electromobility development, which relies on energy transition, especially the national energy mix.

4.4.4. Lao People's Democratic Republic

Lao PDR is the only landlocked country in the Southeast Asian region, and trade activities and economic growth depend heavily on land transport.⁵⁷⁴ Economically, Lao PDR is one of the lower-middle income countries with a per capita income of USD2,022 which also places it as the bottom three AMS along with Cambodia and Myanmar.⁵⁷⁵ Its natural resources and renewable energy sources are varied, including hydropower, wind, solar, and biomass.⁵⁷⁶

⁵⁷³ Republic of Singapore, 'Land Transport Master Plan' (Land Transport Authority, 2020), https://www.lta.gov.sg/content/dam/ltagov/who_we_are/our_work/land_transport_master_plan_2040/pdf/LTA%20LTMP%202040%20eReport.pdf.

⁵⁷⁴ Alex Chapman and Ciaran Downey, 'Climate Risk Country Profile: Lao PDR' (The World Bank Group and the Asian Development Bank, 2021), 3, <https://climateknowledgeportal.worldbank.org/sites/default/files/2021-06/15505-Lao%20PDR%20Country%20Profile-WEB.pdf>.

⁵⁷⁵ Association of Southeast Asian Nations, 'ASEAN Statistical Highlights 2023'.

⁵⁷⁶ BounEua Khamphilavanh and Toshihiko Masui, 'Scenario-Based Analysis of Electric Vehicle Penetration in Road Transportation in Laos', in *2020 International Conference and Utility Exhibition on Energy, Environment and Climate Change (ICUE)* (2020 International Conference and Utility Exhibition on

Lao PDR is one of the countries most affected by climate change, mainly due to floods and landslides caused by the overflowing Mekong River.⁵⁷⁷ Lao PDR's energy mix profile comprises 37.2% coal, 10.5% petroleum, 33.4% hydropower, and 18.8% biofuels and waste.⁵⁷⁸ In fact, Lao PDR belongs to the category of countries that do not contribute significantly to the increase in global emissions. However, Lao PDR is one of the countries that ratified the Paris Agreement and submitted its NDC in 2021.

Table 11 Lao PDR Electromobility Legal Framework

Sectors	Legal Instruments
Climate Target	the Decree on Climate Change No. 321/Govt 2019
EV Development	National Policy on the Development of the Electric Vehicle Sector 2024–2030

Source: Asian Transport Outlook (2024).

The climate targets outlined in Lao PDR's NDC are modest but realistic—the Lao PDR targets emission reductions from various sectors by 2030 under scenarios with or without international assistance. Land Use Change and Forestry (LUCF), energy, transport, agriculture, and waste are sectors.⁵⁷⁹ Energy and transport are two sectors closely related to the development of electromobility in Lao PDR. As a country that relies on land transport for its economic activities, reducing emissions from the transport sector through electromobility development is crucial to implement. In addition, the development of electromobility will significantly reduce dependence on oil imports in the next twenty years.⁵⁸⁰

EV technology is not entirely new to Lao PDR, especially in major cities such as Vientiane and Luang Prabang. In 2009, the local bus operator in Vientiane launched an electric bus sponsored by the Chinese government. However, the programme was not sustained due to many technical problems encountered.⁵⁸¹ Therefore, with support from the

Energy, Environment and Climate Change (ICUE), Pattaya, Thailand: IEEE, 2020), 2–3, <https://doi.org/10.1109/ICUE49301.2020.9306970>.

⁵⁷⁷ Chapman and Downey, 'Climate Risk Country Profile: Lao PDR', 2.

⁵⁷⁸ International Energy Agency, 'Energy System of Laos', 2021, <https://www.iea.org/countries/laos>.

⁵⁷⁹ Lao People's Democratic Republic, 'Nationally Determined Contribution (NDC)', 9 March 2021, 17–21, <https://unfccc.int/sites/default/files/NDC/2022-06/NDC%202020%20of%20Lao%20PDR%20%28English%29%2C%2009%20April%202021%20%281%29.pdf>.

⁵⁸⁰ 'Assessment of Electric Vehicle Penetration in the Lao People's Democratic Republic' (Jakarta: Economic Research Institute for ASEAN and East Asia, March 2022), 123.

⁵⁸¹ Global Green Growth Institute, 'Supporting Policy and Technical Standards Development for Electric Vehicles in Lao PDR' (Seoul: Global Green Growth Institute, August 2022), 1, <https://gggi.org/report/supporting-policy-and-technical-standards-development-for-electric-vehicles-in-lao-pdr-2022-english/>.

international community, the Lao PDR government began to develop electric two-wheelers. The condition of most people who still use two-wheeled vehicles is an opportunity to build an electric vehicle ecosystem, considering that the regulations can be quite complete. Regulations adopted by the Lao PDR government include insurance, vehicle technical standards,⁵⁸² taxation, pollution control, and climate change.

The main legal instrument attempting to promote the development of electromobility is the Decree on Climate Change No. 321/Govt, dated 18 September 2019.⁵⁸³ The regulation becomes an extensive framework in efforts to mitigate the impacts of climate change nationally. In particular, the transport and energy sectors are also targeted to reduce emissions. EVs are technically recognised in Lao PDR's legal framework, which categorises them as engine-driven vehicles. The difference with ICE vehicles is that EVs are not categorised by engine capacity and the type of insurance required.⁵⁸⁴ However, EVs are recognised as viable vehicles for land transport in the Lao PDR. The taxation aspect also provides incentives for green vehicles from 2020 at 3%. The Lao PDR government also incentivises and facilitates investment in the green sector.

The question from all the facts described earlier is: why does Lao PDR remain an underdeveloped AMS in developing electromobility? This study argues that at least three explanations exist for why Lao PDR, which has rich natural resources and has adopted various electromobility legal instruments, still lags behind other AMS. The first reason is related to Lao PDR's human resource capacity. Based on the Human Development Index (HDI) data published by UNDP in 2022, Lao PDR ranked 139th with an HDI Value of 0.620 or below the ASEAN HDI Value average of 0.69.⁵⁸⁵ Therefore, the Lao PDR relies heavily on international assistance, such as the Asian Development Bank and China, for both planning and regulation, especially in energy and climate change. ASEAN also contributes to the Lao PDR, especially in energy integration and power generation connected to ASEAN.

⁵⁸² Lao People's Democratic Republic, 'ກົດໝາຍວ່າດ້ວຍ ການຂົນສົ່ງທາງບົກ (ສະບັບປັບປຸງ) Land Transportation Law Number 030/NA', Pub. L. No. 030/NA (2012), <https://laoofficialgazette.gov.la/kcfinder/upload/files/land%20Transportation%20Law.pdf>.

⁵⁸³ Lao People's Democratic Republic, 'Decree on Climate Change Number 321/Govt', Pub. L. No. 321/Govt (2019), <https://lpr.adb.org/sites/default/files/resource/%5Bnid%5D/lao-pdr-climate-change-decree-eo-321-21-oct-2019-eng.pdf>.

⁵⁸⁴ Global Green Growth Institute, 'Supporting Policy and Technical Standards Development for Electric Vehicles in Lao PDR', 6–7.

⁵⁸⁵ Pedro Conceição, 'Uncertain Times, Unsettled Lives: Shaping Our Future in a Transforming World', Human Development Report 2021/2022 (New York, NY: United Nations Development Programme, 2022), https://hdr.undp.org/system/files/documents/global-report-document/hdr2021-22reportenglish_0.pdf.

Lao PDR is an economically undeveloped member state of ASEAN. Nevertheless, the nation has achieved significant progress in advancing electromobility as part of its dedication to alleviating climate change effects. By 2023, the transport sector constitutes 10% of total CO₂ emissions, predominantly originating from road transport. The Lao PDR's 2021 NDC paper outlines government measures promoting electric vehicle adoption, aiming for a 30% penetration rate for two-wheelers and passenger cars by 2030. Notwithstanding these endeavours, the legal framework for electromobility remains inadequately established. Despite augmented investment in charging infrastructure, the nation is deficient in comprehensive policies regarding battery disposal, recycling, and end-of-life management of electric vehicles, hence presenting significant environmental hazards. Furthermore, the NDC lacks clear and enforceable targets for transportation emission reductions, so constraining policy efficacy. Lao PDR should improve legislation for EV battery waste management and incorporate emissions objectives alongside the advancement of electromobility.⁵⁸⁶

Furthermore, EV ecosystem development innovations are centred on big cities only, such as the capital Vientiane and Luang Prabang, which are also included in the ASEAN Smart City Network. Outside these cities, EV penetration is relatively low and conventional vehicles remain the primary choice for mobility. Consequently, the development of EV charging facilities could be higher as authorities are stuck on prioritising more EVs or charging facilities (chicken and egg dilemma).⁵⁸⁷ In addition, the low level of incentives provided is also a disadvantage for the development of electromobility in the Lao PDR. Compared to Indonesia, Vietnam, and Singapore, the number and types of incentives provided by the Lao PDR government are very few and insignificant.

The last reason is the Lao PDR government's absence of commitment to EV industrialisation. Imports are the only option for developing electromobility in the country. The authorities can also not create the necessary competitiveness for EV penetration, especially for people using two-wheelers. This lack of commitment to industrialisation is understandable given Lao PDR's ideology of socialism. State control of various sectors is crucial, leaving little room for innovation and development by the people. The legal

⁵⁸⁶ Asian Transport Outlook, 'Asian Transport Outlook (ATO). (2024). Transport and Climate Profile: Lao People's Democratic Republic' (Asian Development Bank), accessed 1 February 2025, https://asiantransportobservatory.org/documents/207/Lao_PDR-transport-and-climate-policy.pdf.

⁵⁸⁷ 'Assessment of Electric Vehicle Penetration in the Lao People's Democratic Republic', 123.

instruments adopted cannot be appropriately implemented because the state is the leading actor.

4.5. Concluding Remarks

Southeast Asia is one of the regions vulnerable to the impacts of climate change. AMS such as Thailand, Myanmar, Philippines, Vietnam, and Indonesia are among the countries vulnerable to sea level rise and global temperature rise.⁵⁸⁸ Therefore, AMS cooperation is necessary to mitigate and cope with the impacts of climate change. However, ASEAN's organisational foundation is based on informality, consultation, and consensus, which makes cooperation to mitigate climate change impacts less solid. Evidence of this argument is that many ASEAN legal instruments in the form of soft law do not have binding force for AMS. This condition affects the development of electromobility in the ASEAN region, especially from the aspect of equal distribution of innovation and technology. The principle of non-interference adopted by ASEAN is a barrier to technology transfer between countries with progressive and slow electromobility development. In addition, there is also competition among AMS to become EV manufacturers without regional regulations governing competition between countries or companies within the ASEAN region.

In this context, the soft law adopted by ASEAN does not work properly as a guideline. Instead, the soft law becomes an obstacle to the economic integration that ASEAN is trying to establish. In the long run, ASEAN legal problems will have a negative impact on the development of electromobility in the region, which will impact emission reduction efforts as a commitment to the Paris Agreement. In addition, the principle of non-interference makes ASEAN countries with large economic powers, such as Singapore, Thailand, Malaysia and Indonesia, less likely to help weak economic powers, such as Laos, Cambodia and Myanmar. Bilateral economic cooperation schemes are instead one of the opportunities to help develop electromobility in economically weak ASEAN countries.

The study also highlights that the development of electromobility in the four countries discussed cannot be said to be ASEAN-driven. Instead, each country's initiative is either due to international pressure, such as commitments in the Paris Agreement or optimisation of natural resources, especially raw materials for EV battery components. Soft laws adopted by ASEAN governing climate change, energy, investment, and smart cities

⁵⁸⁸ Overland et al., *Impact of Climate Change on ASEAN International Affairs: Risk and Opportunity Multiplier*, 2–3.

cannot directly encourage and catalyse AMS to develop electromobility. Unlike the choice of variations of EU integration, whose electromobility development is supported by the adoption of hard law, ASEAN has chosen a variety of forms of integration as agreed in the ASEAN Charter and is still effective today. The ASEAN Way remains the choice in every era faced by the region. Even climate change, which has a direct impact on the majority of AMS, has yet to be able to change the choice of integration initiated since the establishment of ASEAN in 1967.

**CHAPTER V: UNDERSTANDING ELECTROMOBILITY
DEVELOPMENT IN VARIOUS REGIONAL INTEGRATION
MODEL: EU AND ASEAN IN COMPARATIVE PERSPECTIVE**

5.1. Introduction

Diverse strategies are being implemented at national and international levels to alleviate and manage the consequences of climate change. One of these initiatives is to decrease the production of carbon emissions across different industries. The energy and transport sectors account for 73.2% of world emissions.⁵⁸⁹ Hence, reducing carbon dioxide emissions from both the energy and transportation sectors will significantly impact efforts to alleviate the consequences of climate change. Replacing fossil-fueled vehicles with EVs is widely regarded as an efficient approach to reducing carbon emissions.⁵⁹⁰ Multiple jurisdictions are beginning to use diverse legal tools to establish an electromobility ecosystem to accelerate the development of EVs. The advancement of electromobility will accelerate the adoption of EVs, revamp the charging infrastructure, transition power generation from conventional energies to renewable energy sources, and even revolutionise transport management.⁵⁹¹

Initiatives towards promoting electromobility are wider than the national level. The EU and ASEAN, as regional organisations, have proactively undertaken efforts to promote the shift towards environmentally sustainable energy and transportation systems. The objective of this effort is to expedite the development of electromobility in each member country's national jurisdiction. Regional jurisdictions employ a range of legal measures, including binding and non-binding laws, to address and manage the effects of climate change. Nevertheless, regional integration's various manifestations and adaptations impact the velocity, unity, and standardisation of regulatory frameworks that regulate electromobility.

The EU and ASEAN are recognised as regional entities with distinct integration models. Consequently, numerous experts have performed studies on them, particularly in the field of climate and energy policy. Research on renewable energy collaboration between

⁵⁸⁹ Ritchie and Roser, 'Emission by Sector'.

⁵⁹⁰ Dall-Orsoletta, Ferreira, and Gilson Dranka, 'Low-Carbon Technologies and Just Energy Transition: Prospects for Electric Vehicles'.

⁵⁹¹ Altenburg, Schamp, and Chaudhary, 'The Emergence of Electromobility: Comparing Technological Pathways in France, Germany, China and India'.

the EU and the ASEAN involves the works of Indeo and Huck et al.⁵⁹² These studies examine different aspects of collaborating on renewable energy to combat climate change. Diaz-Rainey et al. did a study that investigated the energy policies of ASEAN.⁵⁹³ This study examined the European Union's efforts to combine energy resilience and emissions reduction measures. The aforementioned three studies examine the energy and climate change policies implemented by the EU and the ASEAN regarding collaboration and alliance.

This chapter provides perspective on comparative law and policy, focusing on their comparative aspects. Furthermore, this also examines how the EU and the ASEAN integration models influence the implementation of regulatory measures on emerging technologies. This dissertation has discussed and analysed the development of electromobility by the EU in chapter three. Moreover, chapter four has also explained the development of electromobility in ASEAN. Furthermore, this chapter will analyse and discuss the comparison of electromobility development in the EU and ASEAN from the legal perspective and regional integration.

To discuss this subject, this chapter is structured as follows. Following the introduction, the subsequent chapters will delve into the EU integration model and the progress made in electromobility. This chapter examines the progress of EU integration throughout times of crisis and the rise of electromobility in response to the climate problem. Moreover, it examines ASEAN's efforts to achieve compromise integration and promote the development of electromobility. Furthermore, the conversation encompasses the process of ASEAN integration and the significance of ASEAN legal tools in promoting the development of electromobility in member states. The next section will analyse the relation between law, development, and innovation in various regional integration models. This chapter will also discuss the EV incentives provided by the governments of the USA and China for electromobility development. These two countries are the largest producers and markets for EVs, which also influence the development of electromobility in the EU and ASEAN regions. Ultimately, this chapter will deliver the concluding remarks as the last section.

⁵⁹² Indeo, 'ASEAN-EU Energy Cooperation: Sharing Best Practices to Implement Renewable Energy Sources in Regional Energy Grids', 2019; Huck et al., 'Framework and Content of Energy Transition in Southeast Asia with ASEAN and the EU'.

⁵⁹³ Diaz-Rainey et al., 'An Energy Policy for ASEAN? Lessons from the EU Experience on Energy Integration, Security, and Decarbonization'.

5.2. The EU Integration Approach and the Advancement of Electromobility

This section will examine the EU integration structure and its connection to implementing legislation measures regarding electromobility. The study posits that crises are a significant factor in regional integration. The initial chapter will elucidate the European Union's assimilation during several crises, encompassing the climate catastrophe. Moreover, it will analyse the progression of electromobility as a solution to the climate catastrophe. This study utilises Ferrara and Kriesi's taxonomy of crisis-decision-making scenarios to examine the dilemma faced by the EU. The typology is determined by the presence of either symmetrical or asymmetrical demands on member states and the extent of the EU's capacity to address the crisis issue.

The EU has reached a mature level of regional integration by adapting its political policies in response to the challenges it has encountered over time.⁵⁹⁴ Within the EU, the Second World War was a significant factor that played a vital role in determining regional integration. However, as a result of the crisis that the EU is currently experiencing, regional integration is being put to the test.⁵⁹⁵ Looking at the history of the EU, it is clear that crises have the potential to play a vital role in regional integration through their impact. If regional organisation leaders are unable to provide adequate crisis management, they will be required to make adjustments and modifications to handle the issue. Recent emergencies, such as pandemics, have brought to light the significance of the EU's capacity to respond promptly and efficiently.⁵⁹⁶ The EU successfully arranged regional measures to combat the pandemic crisis despite initially being criticized for its sluggish response.⁵⁹⁷

The EU integration model is categorised as a political union distinguished by the formal institutionalisation of authorities and the allocation of those authorities among

⁵⁹⁴ Ana Paula Tostes, 'Constructing Integration: Resilience and Political Innovation in the EU', in *Regionalism under Stress: Europe and Latin America in Comparative Perspective*, ed. Detlef Nolte and Brigitte Weiffen (London and New York: Routledge, 2021), 67–80; Ferrara and Kriesi, 'Crisis Pressures and European Integration'.

⁵⁹⁵ Ferrara and Kriesi, 'Crisis Pressures and European Integration'; Philipp Genschel and Markus Jachtenfuchs, 'From Market Integration to Core State Powers: The Eurozone Crisis, the Refugee Crisis and Integration Theory', *Journal of Common Market Studies* 56, no. 1 (2018): 178–96, <https://doi.org/10.1111/jcms.12654>; Simon Otjes and Alexia Katsanidou, 'Beyond Kriesiland: EU Integration as a Super Issue after the Eurocrisis', *European Journal of Political Research* 56, no. 2 (2017): 301–19, <https://doi.org/10.1111/1475-6765.12177>.

⁵⁹⁶ Jones, Daniel Kelemen, and Meunier, 'Failing Forward? Crises and Patterns of European Integration', 1525.

⁵⁹⁷ Rhodes, "'Failing Forward": A Critique in Light of Covid-19', 13.

institutions stated in the treaty that established the union.⁵⁹⁸ In addition to this, it is equipped with a well-regulated structure that is divided into various jurisdictions.⁵⁹⁹ Despite this, completing this integration took time. A few decades were required for the EU to arrive at the kind of integration today known as political union, which incorporates a supranational organisational structure. A crisis struck the majority of member states, and this crisis was the spark that profoundly influenced the region's integration. In response to the calamity, member states of the EU granted more power to EU organisations, which acted as a mechanism to enhance the integration process.⁶⁰⁰

Catastrophic events significantly influence the evolution of the EU's integration as a regional entity. Through the course of the last twenty years, the progress of EU integration has been impacted by at least four different crises, according to the findings of the current study. The Eurozone, the issue with refugees, the COVID-19 epidemic, and the climate crisis are some of the subjects that will be explored during this meeting. Ferrara and Kriesi consider Brexit to be one of the crises that affect the path of EU integration.⁶⁰¹ On the other hand, this dissertation does not include Brexit as one of the crises since it contends that the EU has anticipated the problem that will arise from Brexit. Compared to earlier crises, this one is unique since the nature of the issue and how it will be resolved are still unknown.

At the beginning of 2009, the Eurozone crisis occurred due to the inability of numerous member states of the EU to adequately manage the debt problems they were experiencing, with Greece being particularly impacted. Additionally, the crisis brought to light the limitations of the EU's monetary and fiscal institutional structure despite the EU's high level of competence.⁶⁰² As an additional point of interest, the crisis in the Eurozone exposed the limitations in the distribution of political authority at the supranational level. It emphasised the requirement of increased integration within the EU.⁶⁰³ As a consequence of the crisis, the Euro has managed to maintain its status as a resilient currency, and there has been a sustained demand for the reform of regional monetary and fiscal institutions and

⁵⁹⁸ Closa, Casini, and Sender, *Comparative Regional Integration: Governance and Legal Models*.

⁵⁹⁹ Wong, 'Creeping Supranationalism The EU and ASEAN Experiences'.

⁶⁰⁰ Lefkofridi and Schmitter, 'Transcending or Descending? European Integration in Times of Crisis'.

⁶⁰¹ Ferrara and Kriesi, 'Crisis Pressures and European Integration'.

⁶⁰² Dimitri Katsikas, 'Reforming Under Pressure: The Evolution of Eurozone's Fiscal Governance During a Decade of Crises', in *New Challenges for the Eurozone Governance: Joint Solutions for Common Threats?*, ed. Jose Caetano, Isabel Vieira, and Antonio Caleiro (Cham: Springer, 2021).

⁶⁰³ Genschel and Jachtenfuchs, 'From Market Integration to Core State Powers: The Eurozone Crisis, the Refugee Crisis and Integration Theory'.

systems.⁶⁰⁴ The Eurozone crisis is a scenario of crisis decision-making in which the EU has a high level of authority, and there is uneven pressure on the EU member states. This scenario is characterised as a crisis decision-making scenario. Due to this trend, there is a tendency for member states of the European Union to disagree with one another.⁶⁰⁵

Additionally, the EU has been thrown into a state of crisis as a result of the flood of refugees who originate from regions outside Europe. 2015 marked the beginning of the flood of refugees from North Africa and the Middle East. The EU's inability to effectively and speedily address the refugee crisis resulted in internal disagreements among its member states.⁶⁰⁶ The crisis caused these disagreements. As a result of the refugee crisis, an imbalanced amount of pressure was placed on EU member states.⁶⁰⁷ Since they are the principal destinations for the majority of refugees, Italy and Germany are experiencing higher levels of strain in comparison to Slovenia and Hungary, which are considered to be transit countries for refugees. In addition, the EU has a relatively limited power regarding topics concerning refugees. Although the EU has adopted the Return Directive (2008/115/EC),⁶⁰⁸ there is still a need for additional regulation under the national authorities of each member state. Because it was more likely that member states would not reject certain legislation, the EU introduced several "soft" regulations when it was first established.⁶⁰⁹

Since 2020, Europe has been experiencing the COVID-19 outbreak, referred to as a continuous tragedy. It was clear from the very beginning of this pandemic that the EU needed to be adequately prepared to deal with the issue due to the fact that it lacked appropriate knowledge in the field of public health. As a consequence of the pandemic's spread over international borders, every member state encountered the same difficulties for this catastrophe.⁶¹⁰ An understanding was reached due to the limited jurisdiction of the EU and the equal pressure exerted on all member states.⁶¹¹ To address the situation that arose as

⁶⁰⁴ Katsikas, 'Reforming Under Pressure: The Evolution of Eurozone's Fiscal Governance During a Decade of Crises'.

⁶⁰⁵ Ferrara and Kriesi, 'Crisis Pressures and European Integration'.

⁶⁰⁶ Lunyka Adelina Pertiwi, 'Kompleksitas Rezim Di Uni Eropa: Upaya Penanganan Pengungsi Dan Pencari Suaka', *Jurnal Ilmu Sosial Dan Ilmu Politik* 19, no. 3 (2016): 218–33.

⁶⁰⁷ Genschel and Jachtenfuchs, 'From Market Integration to Core State Powers: The Eurozone Crisis, the Refugee Crisis and Integration Theory'.

⁶⁰⁸ Directive 2008/115/EC of the European Parliament and of the Council of 16 December 2008 on common standards and procedures in Member States for returning illegally staying third-country nationals.

⁶⁰⁹ Peter Slominski and Florian Trauner, 'Reforming Me Softly—How Soft Law Has Changed EU Return Policy since the Migration Crisis', *West European Politics* 44, no. 1 (2021): 93–113, <https://doi.org/10.1080/01402382.2020.1745500>.

⁶¹⁰ Alberto Alemanno, 'The European Response to Covid-19: From Regulatory Emulation to Regulatory Coordination?', *European Journal of Risk Regulation* 11, no. 2 (2020): 307–16, <https://doi.org/10.1017/err.2020.44>.

⁶¹¹ Ferrara and Kriesi, 'Crisis Pressures and European Integration'.

a consequence of the COVID-19 epidemic, the EU put into effect various legal measures, including non-binding and binding regulations. Even though the EU has limited competence in public health, efforts to solve the problem still need to be made. Within the context of the pandemic, the legislative measures introduced include restrictions on travel and the usage of information technologies.

Article 288 of the TFEU outlines the specific legal mechanisms eligible for use within the European Union. Directives, decisions, and regulations can all impose legally enforceable consequences, whereas recommendations and opinions do not have this capability.⁶¹² In contrast, the first three legal documents mentioned are legally binding; however, the two documents mentioned after them are not legally binding. The EU's legislative reaction to the COVID-19 pandemic crisis is strongly tied to legal instruments, and this response includes both strict and flexible measures.⁶¹³ At the onset of this crisis, the EU showed a slow and inconsistent response to its actions. Article 168 of the TFEU gives the EU the authority to handle public health issues and enhance the national policies of its member states, which is why this condition occurred. Consequently, when the COVID-19 Pandemic began to affect member states, the EU lacked the capability and jurisdiction to respond swiftly.⁶¹⁴

Climate change is causing a disadvantage problems. The EU has significant authority to address this matter despite all member states experiencing adverse impacts. The EU is a prominent actor that actively promotes programmes that try to mitigate and control the effects of climate change on a worldwide scale.⁶¹⁵ In an effort to combat climate change, the EU has initiated a project to reduce emissions from the energy and transportation sectors. The EU has accomplished this objective through the implementation of various legal measures, including both non-binding and binding laws, with the intention of promoting the development of electromobility.

⁶¹² Stefan Griller and Jacques Ziller, eds., *The Lisbon Treaty: EU Constitutionalism without a Constitutional Treaty?*, *The Lisbon Treaty: EU Constitutionalism without a Constitutional Treaty?* (Vienna: SpringerWienNewYork, 2008).

⁶¹³ Sarah Wolff and Stella Ladi, 'European Union Responses to the Covid-19 Pandemic: Adaptability in Times of Permanent Emergency', *Journal of European Integration* 42, no. 8 (2020): 1025–40, <https://doi.org/10.1080/07036337.2020.1853120>; de Melo and Papageorgiou, 'Regionalism on the Run: ASEAN, EU, AU and MERCOSUR Responses Mid the Covid-19 Crisis'.

⁶¹⁴ Eleanor Brooks and Robert Geyer, 'The Development of EU Health Policy and the Covid-19 Pandemic: Trends and Implications', *Journal of European Integration* 42, no. 8 (2020): 1058, <https://doi.org/10.1080/07036337.2020.1853718>.

⁶¹⁵ Oberthür and Dupont, 'The European Union's International Climate Leadership: Towards a Grand Climate Strategy?'

Climate change is having considerable repercussions on various industries in the European region, including agriculture, tourism, forestry, energy, health, and infrastructure.⁶¹⁶ The continent of Europe demonstrates a higher level of resilience to the effects of climate change than other regions. On the other hand, the capacity to recover from hardship has its limits, which is why it is essential to mitigate and address the effects of climate change. According to this study's findings, electromobility's development is a direct result of the strong regional integration that has taken place inside the European Union in an effort to combat the climate crisis. At the very least, three different arguments support this assertion further. Initially and most importantly, the EU is primarily responsible for enacting strict legislation to encourage the development of electromobility.

In the first place, the EU is principally responsible for enacting strict legislation to encourage the expansion of electromobility. To lay the groundwork for the development of electromobility in the region, the EU has implemented various legislative measures that control a wide range of industries. Regulations and directives are the most relevant legally binding laws in the area of electromobility regulation. Communication from the European Commission is an example of what is known as "soft legislation." Strict and lax restrictions can bring positive and negative outcomes in developing electromobility. One of the advantages is that legal mechanisms, such as regulations and directives, can bring legislation at both the regional and national levels into alignment with one another.⁶¹⁷ Under these circumstances, it is believed that implementing these legal measures can be completed in a fairly short amount of time. The fact that member states have limited flexibility in determining the method or process for implementing regulations within their jurisdiction is, nevertheless, a restriction that can be considered a disadvantage.⁶¹⁸

The application of soft law, on the other hand, has its advantages and disadvantages. Soft law provides the advantages of adaptability and the possibility of innovative application to facilitate the achievement of legislative objectives.⁶¹⁹ Despite this, it is essential to recognise that the most significant disadvantage of this legislation is that it does not possess any legal power that can be enforced. This means there will be no legal consequences if the legislation is not implemented. However, soft law continues to be legally significant when

⁶¹⁶ Bednar-Friedl et al., 'Europe'.

⁶¹⁷ Kelemen, *Eurolegalism: The Transformation of Law and Regulation in the European Union*.

⁶¹⁸ Kelemen.

⁶¹⁹ Elizabeth Ferris and Jonas Bergmann, 'Soft Law, Migration and Climate Change Governance', *Journal of Human Rights and the Environment* 8, no. 1 (2017): 6–29, <https://doi.org/10.4337/jhre.2017.01.01>.

it comes to the subject matter that it covers.⁶²⁰ In addition, soft law can serve as a source of direction for formulating legally binding laws within the framework of a nation's official legal system. It is also important to emphasise that, as the CJEU has pointed out, the fact that soft measures are not intended to have binding effect does not mean that they have no legal effect at all.⁶²¹ For example, recommendations suggesting measures to be taken by Member States may also have a certain harmonising effect on national law on a non-binding basis.⁶²² Or soft law developed in cooperation between the Commission and Member States (e.g. guidelines on national aid schemes) may become de facto binding through the participation and consent of Member States.⁶²³ Thus, the utilisation of soft law as a device for the development of electromobility is a complementary approach to the utilisation of hard law.

A further thing to consider is that the development of electromobility contributes to strengthening the climate change legislation that the EU has established. Regarding the implementation of strong climate targets, the EU legislation has undergone significant modifications. The adoption of electromobility will make achieving these goals easier, particularly concerning reducing emissions in the energy and transportation industries. This is attributable mainly to the fact that the EU maintains a robust institutional structure that makes it possible to achieve climate goals. An advantageous legal framework has been formed due to the TFEU, which mandates the utilisation of renewable energy sources.⁶²⁴ Furthermore, the majority of the climate and electromobility legal framework measures implemented by the EU and that are legally binding also help to achieve climate objectives.

The development of electromobility is under the climate goals of the EU, in particular the EGD, which aims to reach Net Zero emissions by the year 2050. If the number of people driving electric vehicles continues to increase with the utilisation of renewable energy as the primary energy source, this target will be realised. As a result, the development of electromobility and the accomplishment of climate goals mutually support one another. In addition, the broad adoption of electric vehicles in the EU member states will increase the rate at which climate goals are accomplished. Within this scenario, it is predicted that

⁶²⁰ Ferris and Bergmann.

⁶²¹ C-322/88 Grimaldi (Court of Justice of the European Union 13 December 1989), also cited by Petra Láncoš *The Many Facets of EU Soft Law* (Budapest, Pázmány Press, 2022) 20–21.

⁶²² Láncoš, 21.

⁶²³ Láncoš, 23.

⁶²⁴ Art. 194 of the consolidated version of the Treaty on the Functioning of the European Union [2012] OJ C 326/47.

legal tools of a binding nature will act as a stimulant for the acceptance and growth of electromobility.

It is closely related to the type and qualities of the utilised legal instruments that establish the relationship between regional integration in the EU and the regulation of emerging technologies such as electromobility. Adopting hard laws is justified by the climate crisis, which is regarded as a problem shared by all of the EU member states. There is a great amount of experience that the EU possesses in the field of climate change, which further reinforces its authority in formulating collective climate targets that must be achieved.

5.3. Initiatives for Electromobility Development and ASEAN Compromise Integration

In the following section, this study will investigate the process of ASEAN integration and the several initiatives that have been made to encourage the expansion of electromobility. A brief review of the ASEAN integration process beginning in 1967 will be presented at the outset of this study. Following that, the primary focus of this discussion will be on presenting in-depth explanations of ASEAN legal instruments that affect the integration of ASEAN. The documents discussed above are the Bangkok Declaration from 1967, the Declaration of ASEAN Concord from 1976, the Treaty of Amity and Cooperation in Southeast Asia from 1976, and the ASEAN Charter from 2008. Furthermore, the significance of ASEAN legal tools in adopting emerging technologies, notably the development of electromobility in the Southeast Asian region, will be the primary emphasis of this discussion.

As discussed in the previous chapter, ASEAN has gone through a gradual process of regional integration. In 1967, Indonesia, Malaysia, the Philippines, Singapore, and Thailand came together through the Bangkok Declaration to establish the regional organisation in Southeast Asia. The primary goal of its establishment was to improve collaboration in various fields, including economics, security, culture, education, agriculture, and fisheries, to achieve mutually beneficial outcomes simultaneously.⁶²⁵

The establishment of ASEAN coincided with the Bangkok Declaration, which began the process of regional integration in Southeast Asia. According to the argument presented

⁶²⁵ The ASEAN Secretariat, 'The ASEAN Declaration (Bangkok Declaration)'.

in this dissertation, the declaration did not significantly impact the process of regional integration that was taking place within ASEAN.⁶²⁶ The criticisms that have been raised include the fact that the statement's purpose is comprehensive, that the organisational structure does not have an enduring nature, and that the declaration needs to describe the link between the member nations adequately. The selection of the word "declaration" as the name of the document is further evidence of the non-binding nature of the pledge made by the founding members of ASEAN, in addition to highlighting the soft law nature of the text.

The TAC, signed by ASEAN in 1976, was the first legally binding treaty the organisation ever put into effect. In addition, the TAC included fundamental ideas that continued to impact the integration of ASEAN communities for at least three decades after its implementation. The following are some of the concepts that are included in this list: mutual respect, the acceptance of state sovereignty, non-interference in the affairs of other states, the peaceful resolution of conflicts, the rejection of the use of force or the threat of force, and the encouragement of effective cooperation.⁶²⁷ Through the implementation of the first (1987), second (1998), and third (2010) protocols, the TAC was subjected to a number of modifications. As a result of the acceptance of the third protocol, the territorial scope of the TAC was expanded to include not just countries in Asia but also countries that are located outside of Asia. These countries include France, the United States of America, Australia, and New Zealand.⁶²⁸

Nevertheless, despite the existence of these three legal tools, classifying the paradigm of regional integration that ASEAN initiated continues to be a challenging endeavour. The integration paradigm leads to the establishment of a community that is distinguished by the presence of intergovernmental organisational structures and decision-making that is based on consensus. Neither the Bangkok Declaration nor the Bali Concord I nor the TAC successfully produced a definitive integration paradigm. The ASEAN Charter was adopted in 2008 to establish a community inside the organisation.⁶²⁹ Establishing the ASEAN as a regional and legal body was an important milestone for the organisation. To achieve greater stability and sustainability, the ASEAN Charter provides member nations with a way to construct a stable and long-lasting foundation for regional cooperation.⁶³⁰

⁶²⁶ Chesterman, 'Does ASEAN Exist: The Association of Southeast Asian Nations as an International Legal Person'.

⁶²⁷ The ASEAN Secretariat, 'Treaty of Amity and Cooperation in Southeast Asia'.

⁶²⁸ Lee, 'Legal Development of the ASEAN Community Building'.

⁶²⁹ Closa, Casini, and Sender, *Comparative Regional Integration: Governance and Legal Models*.

⁶³⁰ Deinla, 'The Development of the Rule of Law in ASEAN: The State and Regional Integration'.

In terms of vulnerability to the effects of climate change, the Southeast Asian region is particularly vulnerable.⁶³¹ This global event has most heavily impacted the nations of Myanmar, the Philippines, Thailand, and Vietnam. In addition, the changes brought about by climate change impact the economy.⁶³² Several ASEAN member countries are experiencing economic losses due to climate change, which is disrupting agricultural output, fisheries, infrastructure development, energy, and transportation.

On a regular basis, the international community needs to pay more attention to the ASEAN region, particularly in terms of the targets it has set for reducing emissions.⁶³³ The ASEAN has taken a number of initiatives within its framework to combat climate change. The definition of "ASEAN instruments" that is supplied in the protocol to the ASEAN Charter on Dispute Settlement Mechanisms is the one that is being referred to in this particular piece of writing.⁶³⁴ The ASEAN instruments are defined as written agreements reached by the member states of the ASEAN organisation. These agreements establish the rights and obligations of the ASEAN member states in conformity with international law. Considering this understanding, the ASEAN instrument is a legal document that ASEAN has approved and imposes particular responsibilities on member nations in accordance with international law.⁶³⁵

Regarding climate change, most ASEAN Instruments consist of non-binding soft laws. However, these soft law instruments remain legally significant within the domestic jurisdiction of each member state. The Charter of the ASEAN establishes consensus and consultation as the primary principles governing the organisation's decision-making. Consequently, most of the legal instruments classified as soft law have undergone a process of consultation and consensus-building among the member nations. Consultation and consensus are cultural norms characterised by a lack of formality, a foundation of trust, and amicable working relationships. The term "ASEAN Way" refers to a cultural practice.⁶³⁶

The principles of consultation, consensus, informality, trust, strong cooperation, adaptability, and voluntary participation heavily impact the expansion of electromobility in the ASEAN region. These ideas are crucial in shaping the advancement of electromobility.

⁶³¹ Overland et al., *Impact of Climate Change on ASEAN International Affairs: Risk and Opportunity Multiplier*.

⁶³² Rasiah et al., 'Climate Change Mitigation Projections for ASEAN'.

⁶³³ Overland et al., 'The ASEAN Climate and Energy Paradox'.

⁶³⁴ Letchumanan, 'Climate Change: Is Southeast Asia up to the Challenge?: Is There an ASEAN Policy on Climate Change?'

⁶³⁵ Art. 1(a) Protocol to the ASEAN Charter on Dispute Settlement Mechanisms.

⁶³⁶ Huck, 'Informal International Law-Making in the ASEAN: Consensus, Informality and Accountability'.

Despite the recent acceptance of electric vehicles by the general community in ASEAN countries, there has been a noticeable and consistent increase in the number of persons utilising electric vehicles.⁶³⁷ Each nation within the organisation aims to achieve extensive acceptance of electric vehicles among the general population.⁶³⁸ As members of the ASEAN, Indonesia, Malaysia, and Thailand have significant objectives in electromobility. Indonesia aims to possess 15 million electric vehicles by 2030, while Malaysia plans to have more than 200,000 electric vehicles and 125,000 charging stations. Thailand aims to attain a 30% share of EVs in its vehicle fleet.⁶³⁹

The ASEAN Instrument generally does not actively encourage the rapid expansion of electromobility within its member states. Nevertheless, the legislative structure of ASEAN provides these countries with vital direction on matters related to the environment and climate change, assisting them in attaining their national goals. This approach is consistent with ASEAN's enduring tradition of eschewing conflict, which was fundamental to its original objective of promoting cooperation and solidarity among its constituents. ASEAN has decided to combine climate change efforts with the advancement of electromobility rather than giving preference to one over the other. This approach guarantees that environmental factors are effectively reconciled with progress in electromobility, demonstrating ASEAN's dedication to sustainability and regional collaboration. ASEAN promotes integrating climate change policies into its overall framework, urging its member nations to adopt electromobility that aligns with their environmental objectives while upholding the collaborative ethos that characterises the organisation.

5.4. Variations of Regional Integration: Legal Commitment and Consensus in the Electromobility Development

The rise of EV is closely linked to the commitment and consensus of regional organisations in mitigating and addressing the impacts of climate change within the context of the development of electromobility. The preceding section of this study elucidated the influence of the EU integration model and the ASEAN regional integration on the advancement of

⁶³⁷ Overland et al., 'The ASEAN Climate and Energy Paradox'.

⁶³⁸ Safrina et al., 'ASEAN Decarbonisation Pathway: A Policy Review on Variable Renewable Energy, Electric Vehicle, and Smart Microgrid'.

⁶³⁹ Safrina et al.

electromobility in specific areas. Implementing electromobility as a solution to the climate crisis varies among member states of regional organisations, depending on whether they follow the Political Union or community integration models. This is done to mitigate the environmental impact of the problem. Hence, the crucial inquiry arises as to whether the degree of regional integration impacts the dedication of regional organisations and their legal agreement towards the advancement of electromobility.

The EU and ASEAN demonstrate notable disparities in their organisational frameworks and the nature of legal instruments pertaining to climate change obligations. The primary distinctions lay in the organization's positions inside the Paris Agreement and its legislative and policy formulation capabilities. The EU is a party to the Paris Agreement and engaged in the negotiations. Therefore, the EU is obligated to implement, report on its climate obligations, and align policy in conformity with the Paris Agreement. Conversely, ASEAN, characterised by limited regional integration, is not a signatory to the Paris Agreement. Nonetheless, ASEAN member states are each signatories and ratifiers of the Paris Agreement. The lack of a collectively enforceable regional legislative framework within ASEAN impedes its ability to assess and monitor the climate commitments of its member states.

The EU's legal structure provides a robust legal mechanism for implementing climate policy. Moreover, the EU legal framework offers multiple types of legal instruments, regardless of their binding nature. For instance, the EU implemented the European Green Deal, which constitutes soft law, and the Climate Law, which represents hard law. These structures guarantee alignment and responsibility among EU members on climate commitments. Conversely, ASEAN lacks comparable legislative authority. The ASEAN Charter prioritises consensus among members, who predominantly adopt non-binding legislative tools, hence constraining its capacity to implement climate policy throughout the region. The implementation of soft law, on one hand, diminishes ASEAN's ability to formulate a unified and comprehensive climate strategy. On the other hand, it provides ASEAN member states the latitude to implement national policies as climate obligations.

This study certainly believes that drawing parallels between the EU and ASEAN is possible. Despite this, it is of the utmost importance to strictly adhere to the legal responsibility and agreement contained within each regional authority's internal framework. With legislative instruments capable of being construed in a manner that is both explicit and unambiguous, the EU, which is a model of political union integration, possesses these instruments. Meanwhile, there is a well-defined structure for resolving conflicts through the

court system.⁶⁴⁰ The ASEAN, which operates under a model of semi-community integration, is distinguished by legal documents that do not have a clear mechanism or institutions for resolving conflicts.⁶⁴¹

To accelerate the development of electromobility, the EU integration model can synchronise laws. This harmonisation may also result in the similarity of rules and regulations, limiting the opportunities for innovation available to member states. To advance electromobility as a revolutionary technology, this notion will significantly increase the process's speed and effectiveness. ASEAN is continuously creating and revising its legislative framework as a dynamic regional organisation. When addressing concerns regarding climate change and electromobility, it is anticipated that the fundamental ideas of collaboration, consensus, mutual trust, and informality will continue to be the key priorities. The development of ASEAN regional integration has not been sped up by crises that have affected the majority of member states or all of them, such as the economic crisis in 1998, the tsunami disaster in 2004, and the climate issue. The advancement of electromobility is contingent on the legal acts taken by member nations, which must comply with the conditions established in the legal documents of ASEAN.

Legal instruments that facilitate and expedite the progress of electromobility can be classified as climate adaptation legislation that encourages the adoption of new technologies as remedies. These laws support efforts to achieve essential goals related to adapting to climate change, making decisions based on scientific evidence, assessing risks and vulnerabilities, implementing policies that provide incentives or disincentives, educating the public, and monitoring and evaluating progress.⁶⁴² The involvement of regional organisations and their member nations in marketing this instrument is substantial. Thus, the EU and ASEAN play a crucial role in promoting and expediting the advancement of electromobility while adhering to the legislative framework of climate change adaptation. Member states have a crucial role in the development of electromobility since their national legal and policy tools will ultimately decide the pace of electromobility development and the ability to react to climate change.

⁶⁴⁰ Limsiritong, 'The Problems of Law Interpretation under ASEAN Instruments and ASEAN Legal Instruments'.

⁶⁴¹ Limsiritong.

⁶⁴² Jan McDonald and Phillipa C. McCormack, 'Rethinking the Role of Law in Adapting to Climate Change', *Wiley Interdisciplinary Reviews: Climate Change* 12, no. 5 (2021): 1–21, <https://doi.org/10.1002/wcc.726>.

A few different types of regional integration affect the implementation of legal measures intended to promote developing technologies such as electromobility. The EU integration model, for example, places a greater emphasis on legally binding instruments than it does on non-binding ones, whereas the ASEAN integration model takes the opposite approach. To effectively align laws to achieve the desired climatic objectives, implementing tighter legislation offers the benefit of effectively aligning laws. However, it is important to note that this paradigm can only be employed in regional organisations that have effectively achieved political union integration. While this is going on, regional groups that adhere to the community integration model can effectively stimulate and encourage the use of new technologies by utilising soft law as a relevant framework for crafting national laws.

The EU and the ASEAN may be pursuing different approaches to regional organisation. There is a correlation between the level of integration, objectives, and principles that member states have recognised and accepted when joining regional organisations. If we want to adjust to the effects of climate change properly, it is very necessary to receive new technological policies, such as electromobility technology. The choice of legislative processes made by regional organisations has a considerable impact on the degree to which technology adoption occurs and the rate at which innovation occurs. A well-established fact is that the EU has a strong predilection for strict legislation in matters of climate policy. The decisive legal authority that the EU possesses in this area is the primary factor that drives this choice. This preference is further strengthened by all member countries experiencing the concrete effects of climate change. The ASEAN believes that soft law is the most effective legal instrument when it comes to providing its member states with an incentive to enact legal measures that support electromobility in their various countries.

Table 12 Comparison of Electromobility Development Impacts from EU and ASEAN Perspectives

No	Regional Organization	Integration Characteristic	Legal Instruments Characteristic	Impact on Electromobility Development
1.	European Union	Strong	Hard Law	<p>Positive</p> <ul style="list-style-type: none"> a. legal harmonisation b. clear and measurable targets c. harmony of incentives and disincentives d. information and innovation sharing

No	Regional Organization	Integration Characteristic	Legal Instruments Characteristic	Impact on Electromobility Development
				<p>between member states.</p> <p>Negative</p> <ul style="list-style-type: none"> a. reduced flexibility b. possible barriers to adaptation into national jurisdictions c. unequal competition between member states with different resources d. possible barriers to local initiatives.
2.	Association of Southeast Asian Nations	Weak	Soft Law	<p>Positive</p> <ul style="list-style-type: none"> a. flexibility for member states to adopt legal instruments based on the soft law. b. soft law can balance the diversity of resources owned by each member state. c. policy flexibility based on experience and best practices experienced by member states. d. the legal instruments adopted tend to take into account local potential and initiatives based on available resources. e. national and local initiatives based on regional soft law can be directly implemented in national jurisdictions. <p>Negative</p> <ul style="list-style-type: none"> a. lack of a comprehensive, coherent, and feasible strategy at the regional level. b. barriers to cooperation between different member states.

No	Regional Organization	Integration Characteristic	Legal Instruments Characteristic	Impact on Electromobility Development
				<ul style="list-style-type: none"> c. fluctuating criteria resulting from the ease of modifying soft law. d. insufficient innovation and limited movement of skilled individuals at the regional level.

Source: Author Analysis (2024).

ASEAN also faces climate issues, similar to those of the EU. However, why are their responses different? The EU uses systematic, consistent, and integrated legal instruments to address the climate crisis to build an electromobility ecosystem. It adopts strict legal instruments, customised standards and fiscal incentives to support the advancement of green technologies and the transformation to clean energy. Policies such as the European Green Deal demonstrate the EU's commitment to tackling the climate crisis through strong law-based solutions and solidarity among member states. Implementing these policies allows the EU to create a stable and predictive environment for the development of electromobility while strengthening the EU's position as a world leader in climate change mitigation.

In contrast, ASEAN addresses the climate crisis by using legal instruments that do not have binding legal force, such as declarations and guidelines. This method illustrates the softer nature of ASEAN regional integration, emphasising non-intervention and respect for national sovereignty. The more flexible and customisable soft law mechanisms also demonstrate this; however, they are less effective in providing a strong impetus for consistent policy implementation across member states. This difference is mainly due to the history of each region's political, social and economic evolution. The EU's greater competence in climate matters makes policy implementation more consistent. In contrast, ASEAN, which is comprised of countries that only gained independence after the Second World War, tends to maintain its independence and avoid too tight ties.

Each region's identity and policy strategies are shaped by the political, social and economic changes that shape these regional integration choices. The EU can coordinate a collective response to the climate crisis due to its long evolutionary form of integration and the design of solid supranational institutions. Meanwhile, ASEAN prefers a more decentralised and flexible approach due to its history of colonialism and focus on maintaining national sovereignty. Therefore, the responses to the climate crisis between the

EU and ASEAN differ, reflecting significant differences in the nature and history of regional integration.

5.4. Law, Development, and Innovation: Comparative Perspectives from EU and ASEAN

Law, development and innovation are three interrelated and inseparable aspects of each other. This relationship reflects a complex dynamic where each aspect affects and is affected by the other. The law often governs how innovations can be developed and implemented in the context of development. Well-formulated regulations and policies can create an environment conducive to innovation, promoting sustainable economic growth. Conversely, innovation can inspire changes in the legal framework, prompting regulatory updates to accommodate technological developments and the changing needs of society. Therefore, understanding the interplay between law, development, and innovation is crucial to formulating effective policies.

Scholars endeavour to explain and answer the main question about the relationship between law, development, and innovation: what aspects are most influential? In many cases, the answer depends on the context in which this relationship is analysed. For example, in the context of electromobility, technological innovation in the development of electric vehicles requires clear legal support and adequate infrastructure development. Legal aspects such as emission regulations, tax incentives, and subsidy policies strongly influence the extent to which innovations can be widely implemented. In addition, infrastructure development, such as charging stations, is a crucial element that supports adopting new technologies. In this case, the law serves as a regulator and a driver of innovation and development.

Therefore, this section will discuss the development of electromobility from the perspective of the relationship between law, development and innovation within the integration framework chosen by the EU and ASEAN. The choice of integration model and character has consequences for legal instruments for electromobility development, which is also part of innovation to mitigate the impacts of climate change at the regional level. In the EU, more robust integration allows the application of more harmonised regulations and better coordination between member states. In contrast, with weaker integration, ASEAN provides flexibility for member states to develop policies that suit their local context. Both

approaches have advantages and disadvantages, but the end goal is to promote sustainable development and climate change mitigation through innovation in electromobility.

The question that arises is how law can catalyse development and innovation. There are at least five possible conditions to answer this question. First, the law becomes an instrument that encourages and drives innovation and ultimately spurs development. Ideally, this condition is achieved by presenting legal reform and seeing the law as something that provides space for the growth of innovation. Second, development activities foster innovation, requiring the consolidation of law and its institutions. This second condition places law as a product of development and innovation. Therefore, legal change becomes a necessity. Third, innovation drives legal change to drive development. In this scenario, the law becomes a bridge for innovation and development. Therefore, laws born from the encouragement of innovation will provide more space and even legitimise the implementation of development.⁶⁴³

The fourth scenario establishes the law as a fundamental basis for the implementation of development, which then generates innovations to improve development and even the law itself. In this scenario, the law functions as a framework that regulates the implementation of development and as a catalyst that encourages innovation. With supportive regulations, the development process can run more purposefully and efficiently, thus opening up space for innovation. These innovations, in turn, can improve and refine existing development methods and influence the renewal of legal regulations to be more adaptive and responsive to technological developments and community needs. Thus, law, development and innovation form a mutually reinforcing cycle, where each element contributes to the improvement of the other to achieve sustainable and inclusive development.

The fifth scenario, on the other hand, places innovation as a critical aspect that drives development and ultimately inspires legal reforms to support innovation and development itself. In this framework, innovation is considered a key driver that changes the development landscape by introducing new technologies and methods that are more efficient and effective. When innovation is applied in development, its impact can be so significant that it forces adjustments and reforms in the existing legal framework. These reforms are needed to create regulations that support rather than hinder the innovation process while ensuring

⁶⁴³ Giuseppe Bellantuono and Fabiano Teodoro Lara, eds., *Law, Development and Innovation*, 1st ed. 2016, SxI - Springer for Innovation / SxI - Springer per l'Innovazione 13 (Cham: Springer International Publishing : Imprint: Springer, 2016), <https://doi.org/10.1007/978-3-319-13311-9>.

that innovations are appropriately integrated into development strategies. Therefore, the law responds to new needs arising from innovation development, ensuring that regulations remain relevant and can support technological and sustainable development. This scenario emphasises the law's importance of adaptability and flexibility to maintain a balance between innovation, development and effective regulation.

All these scenarios described above can also be seen as an unbroken cycle. However, law has a vital role in keeping development and innovation in favour of the public interest and democracy. The relationship between law, development, and innovation can also be interpreted as variables that disrupt each other.⁶⁴⁴ The increasing sophistication of innovation, especially in the technology field that demands development, challenges the law to continue to change and evolve without leaving its fundamental values and principles.⁶⁴⁵ In this perspective, the law is not only a bridge for innovation and development but also a guardian of harmonisation between various political, social, cultural, and economic interests and other aspects affected by innovation and development.⁶⁴⁶

Law has an essential role in bridging development and innovation. However, not all countries are able to properly formulate the exact mechanism of this relationship. Developed countries tend to promote the laws adopted by developing countries for transplantation. In this case, the transplanted law can be considered an external factor influencing development and innovation.⁶⁴⁷ The EU, for example, as a developed region, continues to promote climate change issues, including the use of renewable energy and EVs, to developing countries, including the Southeast Asian region, through diplomacy and development projects.⁶⁴⁸

⁶⁴⁴ Roger Brownsword, Eloise Scotford, and Karen Yeung, eds., *The Oxford Handbook of Law, Regulation and Technology*, First edition, Oxford Handbooks (New York, NY: Oxford University Press, 2017).

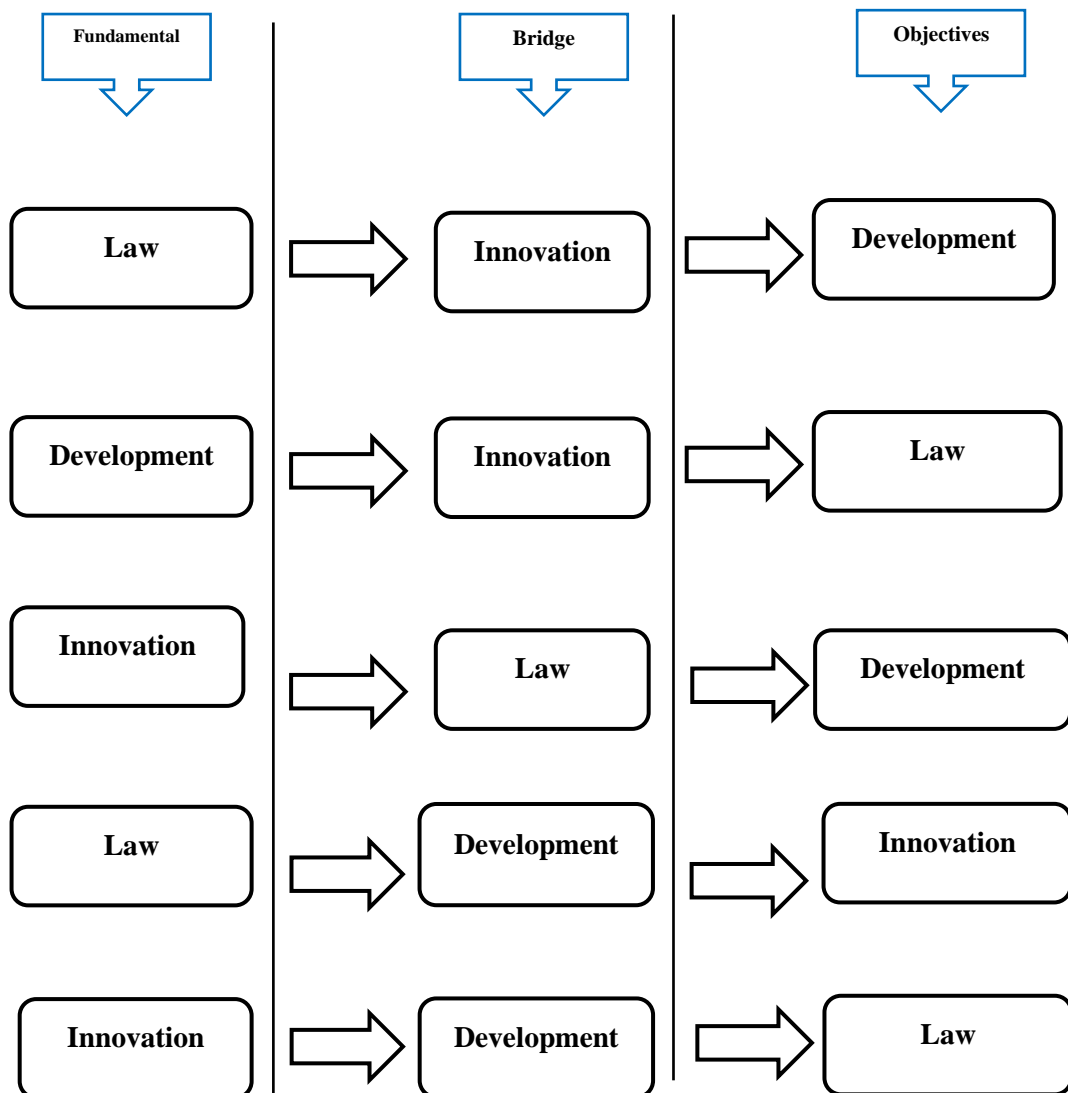
⁶⁴⁵ Roger Brownsword, *Law 3.0: Rules, Regulation and Technology* (Abingdon, Oxon: Routledge, 2021).

⁶⁴⁶ Lyria Bennet Moses, 'How to Think about Law, Regulation and Technology: Problems with "Technology" as a Regulatory Target', *UNSW Law Research Paper* 30 (2014): 1–20.

⁶⁴⁷ Kevin Davis and Michael Trebilcock, 'The Relationship between Law and Development: Optimists versus Skeptics', *American Journal of Comparative Law* 56, no. 4 (1 September 2008): 895–946, <https://doi.org/10.5131/ajcl.2007.0031>.

⁶⁴⁸ Huck et al., 'Framework and Content of Energy Transition in Southeast Asia with ASEAN and the EU'.

Figure 5 The relationship between law, development and innovation



Source: Adaptation from Bellantuono and Lara (2016)

In the context of electromobility development at the level of regional organisations such as the EU and ASEAN, it is essential to analyse and discuss the role of law in innovation and development. Electromobility is an innovation that exists to mitigate climate change and requires the development of supporting infrastructure from upstream to downstream. Implementing laws that encourage development and innovation is also strongly influenced by political factors, preferences, and priorities.⁶⁴⁹ Therefore, this section will also analyse and discuss these factors in the context of the EU and ASEAN as regional institutional entities.

⁶⁴⁹ Brownsword, *Law 3.0*.

5.4.1. Law, Development, and Innovation in EU and ASEAN

The EU has long been recognised as one of the global leaders in climate change and energy governance.⁶⁵⁰ This is not only for the importance of the European region but also to spread its influence to other countries, especially developing countries. Specifically in the development of electromobility, the EU is also the world's largest producer and market for EVs, other than the USA and China. In addition, the EU also applies standards that become a benchmark for different regions in developing the EV ecosystem. Since 2021, the EU has set a low-emission and environmentally friendly vehicle strategy. This strategy also reflects the EU's ambition to become a market leader and a worldwide model in promoting and developing electromobility. Further, the EU aims to reduce its dependence on fossil fuels such as petroleum.⁶⁵¹

In the previous chapter, this study has explained that the EU has adopted various legal instruments to accelerate the development of electromobility. The regulated aspects are transport and climate targets, buildings, battery power supply facilities, and battery standards. The question arises: how do the legal instruments adopted by the EU relate to innovation and development? To answer this question, it is necessary to understand that climate change is a crisis that initiates the development of electromobility. Therefore, the legal strategy adopted by the EU is a response to the climate crisis caused by carbon dioxide emissions. In Ferrara and Kriesi's perspective, the crisis will generate crisis lawmaking which impacts the cohesiveness of EU integration. In the context of the relationship between law, development and innovation, the crisis is both a trigger and an adhesive between the three aspects.

The climate and energy crisis experienced by the EU can be categorised as a type of crisis where there is a high competence for EU institutions to be involved and the authority of member states is evenly distributed. In addition, the climate and energy crisis is also experienced by all member states, which causes the solutions to be taken collectively. Therefore, the legal instruments adopted by the EU to overcome the climate and energy crisis primarily constitute hard law, including regulations and directives. The development of electromobility as a solution also responds to the climate and energy crisis. The EU's

⁶⁵⁰ Oberthür and Dupont, 'The European Union's International Climate Leadership: Towards a Grand Climate Strategy?'

⁶⁵¹ Leurent and Windisch, 'Triggering the Development of Electric Mobility: A Review of Public Policies'.

adoption of legal instruments that encourage electromobility is a strategy to present concrete solutions to climate and energy problems.

Law in the EU context is not considered to be the only variable driving the decarbonisation process through electromobility development.⁶⁵² However, the legal instruments adopted by the EU can be one of the measuring tools for the commitment to electromobility development, as reflected in the increased public adoption of EVs. Clear and firm legal instruments can provide direction and certainty for industry players and the public in adopting new technologies. This can be seen from various policies and regulations that encourage using EVs as part of a long-term strategy to reduce carbon emissions. Thus, the law is an essential foundation that supports accelerating the transition to electromobility.

In addition, legal instruments can also facilitate and even catalyze new innovations in development. Policies that support research and development of EV technologies, as well as incentives for companies that invest resources in this area, are concrete examples of how laws can foster innovation. Regulations that support collaboration between the public and private sectors also accelerate the development and implementation of new technologies. Supported by law, innovations emerge and flourish more quickly and effectively, creating a conducive ecosystem to electromobility.

Therefore, in the context of the EU, law becomes a catalyst that encourages innovation to be implemented in development. Electromobility as an innovation gains juridical legitimacy from various legal instruments adopted by the EU and then massively implemented by member states. Strict environmental and energy policies at the EU level encourage member states to adopt and enforce similar regulations, strengthening the collective commitment to decarbonisation. Consistent and effective implementation of legal instruments across member states creates an even playing field of high standards, ensuring that each country contributes significantly to building a greener future through electromobility.

Another essential variable is the character of regional integration adopted by the EU. Strong regional integration, reflected in the type of hard law instruments adopted, shows the role of law in supporting innovation and development, especially in the context of climate policy.⁶⁵³ In addition, the EU also has a transparent monitoring and evaluation mechanism

⁶⁵² Jon Birger Skjærseth, 'Towards a European Green Deal: The Evolution of EU Climate and Energy Policy Mixes', *International Environmental Agreements: Politics, Law and Economics* 21, no. 1 (2021): 25–41, <https://doi.org/10.1007/s10784-021-09529-4>.

⁶⁵³ Peeters and Athanasiadou, 'The Continued Effort Sharing Approach in EU Climate Law: Binding Targets, Challenging Enforcement?'

for the achievement of targets by member states.⁶⁵⁴ Thus, in the context of regional organisations, the relationship between law, development and innovation cannot be simplified to influence each other alone. Still, there is also another variable, namely regional integration. The development of electromobility in the EU is a relevant example of regional integration playing a vital role in the birth of laws that provide a foundation for the growth of innovation and development to address the climate crisis collectively in the regional scope.

Table 13 Legal Instruments Adopted and EV Shares Market in EU

No	Year	Legal Instruments Adopted by EU	EV Shares in EU Market
1.	2018	<ul style="list-style-type: none"> • Effort Sharing Regulation • Governance Regulation • Renewable Energy Directive • Energy Efficiency Directive (revised) • Energy Performance in Building Directive (revised) 	1,9%
2.	2019	<ul style="list-style-type: none"> • The European Green Deal • Taxonomy Regulation • Clean Vehicle Directive (revised) • EU Emission Performance Standards Regulation 	2,9%
3.	2020	-	10,7%
4.	2021	European Climate Law	18%
5.	2022	<ul style="list-style-type: none"> • Guidelines on State aid for climate, environmental protection and energy • Alternative Fuel Infrastructure Regulation 2023 (initiated in 2022, before was Alternative Fuel Infrastructure Directive 2014) • EU Battery Regulation 2023 (initiated in 2022, before was Directive 91/157/EEC) 	21,6%

Source: Retrieved from EURLex and EEA (2024).

What about regional organisations such as ASEAN that have relatively soft integration characteristics? Since its establishment in 1967, the form of integration desired by ASEAN member states has tended to stagnate. Despite various crises, such as the 1997 Asian economic crisis, political crises, and natural disasters, that have hit the region, ASEAN's regional integration character has not been significantly strengthened.⁶⁵⁵ ASEAN member states tend to maintain their national sovereignty and resist the formation of a strong

⁶⁵⁴ Schoenefeld and Jordan, 'Towards Harder Soft Governance? Monitoring Climate Policy in the EU'.

⁶⁵⁵ Simon S. C. Tay, 'Institutions and Processes: Dilemmas and Possibilities', in *Reinventing ASEAN*, ed. Simon S. C. Tay, Jesus P. Estanislao, and Hadi Soesastro (Singapore: ISEAS, Institute of Southeast Asian studies, 2003), 243–69.

supranational entity.⁶⁵⁶ This fragile integration means that policy coordination and implementation mechanisms at the regional level often need to be more effective and efficient.

Nevertheless, the variable of regional integration remains essential in discussing the relationship between law, development, and innovation in the Southeast Asian region, particularly in terms of climate change and electromobility development. Regional integration, although weak, can provide a platform for member states to share knowledge, technology and best practices in addressing climate change challenges. In electromobility, for instance, harmonising policies and technical standards among ASEAN countries can facilitate wider adoption of electric vehicles and their supporting infrastructure. Regional cooperation would also strengthen ASEAN's bargaining power in international negotiations on climate change and green technology.⁶⁵⁷

In addition, regional initiatives focussed on research and development (R&D) can foster innovation in clean energy and sustainable transport. Therefore, despite the relatively weak character of ASEAN integration, the potential for cooperation and collaboration in law, development and innovation remains significant for achieving sustainable development goals in the region. This suggests that even in the context of weak integration, there are opportunities to advance the climate change and electromobility agendas through collaborative approaches tailored to regional dynamics.

The previous chapter discussed ASEAN's tendency to adopt soft law as the foundation for electromobility development. Is the law then a factor that does not play an important role in electromobility development in ASEAN? This study argues that ASEAN has a different pattern from the EU in the relationship between law, development and innovation in the issue of climate change and electromobility. The pattern that tends to occur in ASEAN is based on the second scenario, where development drives innovation and ultimately demands legal reform. This argument can be explained on at least three grounds.

Firstly, the resource and economic disparities between ASEAN countries are wide. On the one hand, there are AMS that have abundant natural and human resources but need more technology and capacity to maximise this potential. On the other hand, there are AMS

⁶⁵⁶ Guichang Zhu, 'Comparing the European Model and the ASEAN Way: Is There a Third Way of Regionalism for the East Asian Cooperation?', in *The EU's Experience in Integration: A Model for ASEAN+3?*, ed. Lisheng Dong and Günter Heiduk (Bern ; New York: Peter Lang, 2007), 145–70.

⁶⁵⁷ Guangyu Qiao-Franco, 'ASEAN's Role Expectations and the Diffusion of Common but Differentiated Responsibilities Principle in the Climate Change Context', *Pacific Review* 34, no. 6 (2021): 1079–1107, <https://doi.org/10.1080/09512748.2020.1797860>.

with limited natural and human resources. This imbalance in AMS conditions has implications for development needs and the power to innovate. Weak ASEAN integration tends to contribute little to the development of electromobility. Therefore, development initiated by national governments or external encouragement is crucial to foster innovation and legal reform for AMS.

Second, as a region categorised as developing, development is a natural precondition for the growth of innovation. Development both in the physical context, such as infrastructure, and non-physical, such as education, is a necessity that is highly urgent. As development grows, the need for innovation becomes more essential. With the majority of AMS as emerging countries, many development projects initiated by Western countries have addressed specific issues such as climate change, gender equality, democracy, public health, and education. These developments must foster innovation at the grassroots level and encourage legal reforms to facilitate innovation better.

International donor agencies initiated by developed countries such as the USA, Australia, Japan, and EU member states are frequently the agents that address development concerns by providing funds to implement thematic projects. This type of externally-driven development must be recognised as contributing significantly to the growth of innovation within the AMS. However, it must also be recognised that these development projects carry specific missions, such as influencing certain national policies to suit the donor country's or institution's interests. These conditions often lead to resistance motivated by political motives or strict nationalism.

Thirdly, the preference for soft law as ASEAN's instrument does not mean that law is merely an accessory in encouraging and fostering development and innovation. Soft law, such as declarations, guidelines, or joint statements, still play an important role in ASEAN's regional legal framework. The adoption of soft law by ASEAN is an attempt to provide flexibility for AMS to commit to shared principles without sacrificing their national sovereignty. Soft law can also provide room for amendment and adaptation as conditions change.

Soft law is part of the ASEAN identity that the founding leaders consciously chose and then agreed upon in various ASEAN legal instruments. The decision to adopt soft law was based on the history and political context of the region, where the majority of AMS had just gained independence from colonialism and respected their national sovereignty. The relatively weak form of regional integration allows ASEAN to address regional challenges collectively without the necessity of ceding sovereignty to regional institutions. Soft law is

an effective instrument for facilitating regional cooperation while respecting the principle of non-intervention, which is one of ASEAN's main pillars.

The majority of AMS are young countries that gained independence from colonialism after the Second World War. Issues of sovereignty, self-reliance, and anti-foreign intervention are crucial to maintaining national identity.⁶⁵⁸ Hence, the choice of weak regional integration when forming ASEAN became very relevant and logical. This approach allows AMS to collaborate effectively while maintaining complete control over their domestic policies.⁶⁵⁹ It also allows ASEAN to develop organically as AMS increases its capacity based on its resources. Soft law is expected to encourage AMS to develop and promote innovation collectively based on their respective needs and priorities.

In the context of the relationship between law, development and innovation, particularly in the issue of electromobility, the existence of law does not always function as a factor that drives development and innovation. Instead, the law often responds to the needs arising from rapidly evolving development and innovation. The development of electromobility requires legal adaptation and reform to support its implementation. The development of charging infrastructure, technical standards for electric vehicles, and fiscal incentives are some aspects that demand an adaptive legal framework. Without appropriate laws, innovation in electromobility may be hampered by regulatory uncertainty and lack of adequate policy support. Therefore, responsive legal reforms are essential in supporting and accelerating the adoption of electromobility technologies in the ASEAN region.

Development in the ASEAN perspective is a crucial variable that fosters innovation and ultimately demands legal transformation. The need for legal reform becomes more pressing when development is focused on strategic sectors such as electromobility. This is especially relevant when development funds come from external sources, whether private investors or development projects funded by donor countries or institutions. Investors and donors usually expect legal certainty and a conducive regulatory environment to ensure the success of their investments. Therefore, the pressure to reform the law becomes more decisive in this context. Transparent, predictive and pro-innovation regulations are prerequisites for attracting investment and supporting innovation growth. Thus, the

⁶⁵⁸ Pasha L Hsieh and Bryan Mercurio, 'ASEAN Law in the New Regional Economic Order: An Introductory Roadmap to the ASEAN Economic Community', in *ASEAN Law in the New Regional Economic Order: Global Trends and Shifting Paradigms*, ed. Pasha L. Hsieh and Bryan Mercurio (Cambridge, United Kingdom ; New York, NY, USA: Cambridge University Press, 2019), 4.

⁶⁵⁹ Suthiphand Chirathivat, 'What Can ASEAN Learn from the Experience of European Integration? An ASEAN Perspective', in *ASEAN & EU: Forging New Linkages and Strategic Alliances*, ed. Siow Yue Chia et al. (Singapore : Paris, France: Institute of Southeast Asian Studies ; OECD Development Centre, 1997), 216.

relationship between law, development and innovation in electromobility in ASEAN shows that law often has to adapt and evolve to keep up with the changing dynamics of development and innovation.

5.4.2. Law, Development, and Innovation in Different Regional Integration Models

In the previous section, this study discussed the relationship between law, development, and innovation in the context of the EU and ASEAN. The following section will compare the model or pattern of the relationship between law, development and innovation in the EU and ASEAN, especially in the development of electromobility. Why is it necessary to discuss and compare this issue from the perspective of the EU and ASEAN? The EU and ASEAN are two international organisations that have different integration characteristics. However, the EU and ASEAN play essential and complementary roles in global politics. The EU and its member states often provide funding for development projects to help AMS catch up to the EU. These projects also aim to ensure that Southeast Asia, one of the EU's markets and investment locations, proliferates and is accompanied by stable political conditions.⁶⁶⁰ Thus, the EU and ASEAN have interrelated and mutually beneficial interests.

Comparing the connection between law, development, and innovation in developing electromobility between the EU and ASEAN can provide an overview of how the law bridges development and innovation in two regional conditions. In addition, this discussion can also offer a projection of the development conditions of electromobility as one of the innovations to mitigate the effects of climate change. Therefore, this section will discuss and compare two scenarios or patterns implemented by the EU and ASEAN from the perspective of law, development and innovation. In particular, this section will also discuss the ideal model or scenario for ASEAN. Could the EU be a suitable model for ASEAN?

One of the fundamental differences between the EU and ASEAN is the different integration choices and institutional designs. The implications of these choices are felt not only by the institutions and member states but also by the people in each region. EU law is an important factor and a catalyst that provides space for innovation in the development

⁶⁶⁰ Kishore Mahbubani and Jeffery Sng, *The ASEAN Miracle: A Catalyst for Peace* (Singapore: Ridge Books, 2017), 112.

process.⁶⁶¹ In the context of electromobility development, the hard law instrument adopted by the EU requires member states to condition national laws to facilitate the growth of innovation and encourage the development of electromobility. Meanwhile, ASEAN law, the majority of which is in the form of soft law, plays a role in providing guidance and guidelines and a choice of standards for developing electromobility in each AMS.⁶⁶²

In the EU context, law is an enabling factor for innovation to flourish and support development. A strict and comprehensive regulatory framework at the supranational level creates a stable and predictable legal environment, encouraging companies and individuals to invest in innovation. Climate and energy policies such as the European Green Deal and Net Zero Emission are examples of how legal frameworks can spur innovation in strategic sectors such as green technology and renewable energy. In addition, harmonised standards applied across member states make deploying innovative technologies more widely and quickly easier, strengthening regional competitiveness in the global market. Therefore, EU law has a role as a foundation that enhances the innovation ecosystem and ensures that development can be achieved sustainably and integrated.

Conversely, in the ASEAN context, development often paves the way for innovation and legal improvements. In ASEAN, innovations frequently arise in response to pressing development needs, such as improved infrastructure, energy efficiency and natural resource management. As these innovations flourish, the need to update and adapt legal frameworks becomes increasingly apparent. This argument must be supported by at least three conditions: the character of regional integration, rule of law conditions, and institutional design. The relatively loose nature of ASEAN regional integration allows member states to maintain national sovereignty while still having guidelines and guidance so that the adopted regional legal framework can be implemented under domestic needs.

The state of the rule of law in ASEAN, which varies among member states, also plays an important role in determining how effectively law can support innovation. Since ASEAN was established in 1967, the rule of law at the regional level has been based on 'the ASEAN Way,' which adopts the principles of non-interference, conflict avoidance, and consensus in decision-making.⁶⁶³ These principles have become part of ASEAN's legal

⁶⁶¹ Iwona Bąk et al., 'Is the European Union Making Progress on Energy Decarbonisation While Moving towards Sustainable Development?', *Energies* 14, no. 13 (2021), <https://doi.org/10.3390/en14133792>.

⁶⁶² Lee, 'Legal Development of the ASEAN Community Building'.

⁶⁶³ Zhu, 'Comparing the European Model and the ASEAN Way: Is There a Third Way of Regionalism for the East Asian Cooperation?', 153–54.

culture and shape the rule of law under the values of the Southeast Asian community.⁶⁶⁴ In electromobility development, the three principles are also implemented consistently. As a regional institution, ASEAN provides guidelines and guidance that do not have a legally binding force but still have legal relevance.

The institutional design of ASEAN, which is more decentralised than the EU, creates different dynamics in the relationship between law, development and innovation.⁶⁶⁵ These three conditions make the relationship between law, development and innovation in the EU and ASEAN relatively different, reflecting each region's unique historical, political and social contexts. The differences in institutional design between the EU and ASEAN can be explained in terms of six technical differences that make it impossible (or not yet?) for Southeast Asian countries to follow the EU form of integration.⁶⁶⁶

The first difference is that the institutional design is intergovernmental, so there is no sovereignty transfer from the AMS to ASEAN. Secondly, there is no single currency in Southeast Asia like the Euro, which is the currency of most EU member states. This difference makes regional integration more difficult as there is no common currency, and the USD remains the currency for economic transactions between AMS. Third, Southeast Asia has no regional parliament like the European Parliament model. This has led to ASEAN's elitist institutional design without formally institutionalised public participation. Fifth, the position and role of the ASEAN Secretariat could be more substantial than that of the European Commission. Hence, although ASEAN is a *sui generis* legal entity, it needs more representation with a strong mandate to represent the organisation entirely.

ASEAN is in contrast to the EU which has a court organ to resolve disputes between member states. According to the ASEAN Charter, any dispute arising among member states must be settled through dialogue, consultation, and negotiation.⁶⁶⁷ In 2010 ASEAN adopted the Protocol to the ASEAN Charter on Dispute Settlement Mechanisms which became a reference for resolving disputes within ASEAN.⁶⁶⁸ ASEAN's choice not to establish a court

⁶⁶⁴ Amitav Acharya, 'Ideas, Identity, and Institution-building: From the "ASEAN Way" to the "Asia-Pacific Way"?' , *Pacific Review* 10, no. 3 (1997): 319–46, <https://doi.org/10.1080/09512749708719226>.

⁶⁶⁵ Laura Allison, *The EU, ASEAN and Interregionalism: Regionalism Support and Norm Diffusion between the EU and ASEAN*, The European Union in International Affairs (Houndmills, Basingstoke, Hampshire ; New York, NY: Palgrave Macmillan, 2015), 124–25.

⁶⁶⁶ Tommy T. B. Koh, 'ASEAN and EU: Similarities and Differences', in *ASEAN-EU Partnership: The Untold Story*, ed. Tommy T. B. Koh and Lay Hwee Yeo, First edition (Singapore ; Hackensack, NJ: World Scientific, 2020), 39–41.

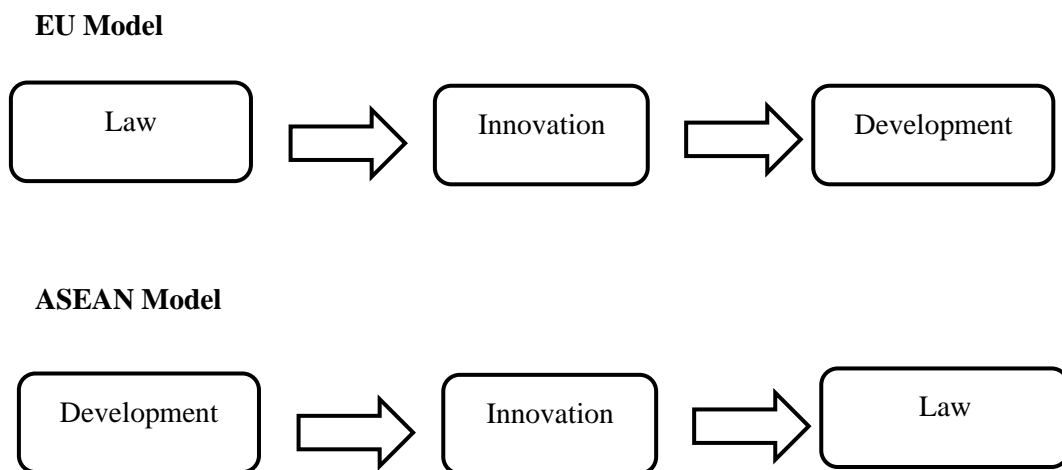
⁶⁶⁷ ASEAN, The ASEAN Charter, art. 22.

⁶⁶⁸ G. J. Naldi, 'The ASEAN Protocol on Dispute Settlement Mechanisms: An Appraisal', *Journal of International Dispute Settlement* 5, no. 1 (1 March 2014): 105–38, <https://doi.org/10.1093/jnlids/idt031>.

was due to political and historical factors after the Second World War. Prior to The ASEAN Charter, disputes were resolved under the TAC to balance the power of all ASEAN countries that were newly liberated from colonialism. In practice, Dispute Settlement Mechanisms are rarely used by ASEAN member states and prefer the International Court of Justice to resolve disputes.⁶⁶⁹ For example, when Indonesia and Malaysia disputed over Sipadan and Ligitan Islands, the International Court of Justice was the preferred forum to resolve the dispute.

Sixth is the pragmatic language policy of making English the language of communication between AMS. This is in contrast to the EU, which recognises 23 national languages of its member states as official languages. The language factor is also an obstacle to ASEAN regional integration as five AMS still need to have English as their national language: Cambodia, Indonesia, Laos, Thailand and Vietnam.

Figure 6 Relation between Law, Development, and Innovation in EU and ASEAN



The model above shows that innovation in both the EU and ASEAN contexts is a variable that connects law and development. The EU allows innovation to grow with legal certainty, while innovation grows in ASEAN because of the need to implement development. In the context of electromobility, this condition is obvious; the growth of the EV ecosystem in the EU region is strongly influenced by the supranational legal framework, which is then implemented by member states. Whereas in the case of ASEAN, the growth of electromobility is highly dependent on each AMS's capacity and development capabilities. Therefore, as explained in the previous chapter, each AMS chooses its path to

⁶⁶⁹ Ahmad Syofyan et al., 'ASEAN Court of Justice: Issues, Opportunities, and Challenges Concerning Regional Settlement Disputes', *Journal of Legal, Ethical, and Regulatory Issues* 24, no. 1 (2021).

build its electric vehicle ecosystem. Indonesia and Vietnam, for example, spur the use of electric two-wheelers because most citizens use this mode of transport.

Is it necessary for ASEAN to follow the EU model to develop electromobility? Historically and politically, it isn't easy for ASEAN to aggressively agree on a stronger, more centralised approach to integration. The experience of colonialism that took away national sovereignty is still a scourge and trauma that has not been eliminated.⁶⁷⁰ The existence of ASEAN is a strategic and forward-looking step to enhance cooperation among countries in the Southeast Asian region. However, the consequences that must be bearable are legal disharmony between AMS and the development of electromobility. There is even unbalanced competition between AMS due to the absence of a common market mechanism as in the EU.

5.5. Concluding Remarks

In summary, this chapter has discussed and analysed the development of electromobility in two different forms of regional integration. The EU, which has chosen strong regional integration, tends to adopt hard law instruments, while ASEAN, with a weak integration character, adopts soft law instruments. Regional integration as a political choice and decision has implications for electromobility development in each region. With hard law instruments, the EU makes electromobility development efforts more systematic, predictable, harmonious and integrated. Meanwhile, ASEAN prefers soft law instruments that maintain the principle of non-intervention, which makes electromobility development run more flexibly while still having non-binding guidelines adopted by ASEAN.

A significant finding in this chapter is that the character of regional integration affects the choice of legal instruments adopted by the EU and ASEAN to regulate electromobility. The character of regional integration also affects the response of regional organisations to the climate crisis faced by all member states. The choice of adopting hard or soft law instruments has advantages and disadvantages.

The advantage is that hard law instruments have binding legal force and oblige member states to implement them in their national jurisdictions. Therefore, they tend to prioritise predictability, synergy, harmonisation, and integration. However, they have the

⁶⁷⁰ Clive J. Christie, *A Modern History of Southeast Asia: Decolonization, Nationalism and Separatism*, Repr (London: Tauris [u.a.], 2000), 5–8.

disadvantage of limited flexibility for member states to innovate policies based on existing resources. In the case of electromobility development, resource equality between EU member states is very important so that climate targets can be achieved through the development of an environmentally friendly vehicle ecosystem.

Soft law has similar advantages and disadvantages as hard law. The advantage of soft law is that there is room for flexibility for member states to use their resources to achieve mutually agreed-upon goals. However, soft law has the disadvantage that there is no clear harmonisation, synergy, or standardisation, so the possibility of achieving common targets becomes unpredictable.

Another finding in this chapter is that due to the different characteristics of regional integration, the EU and ASEAN also have differences in understanding the relationship between law, development, and innovation. The development of electromobility in the EU as part of innovation to address the climate crisis has a foundation in the form of a strong legal framework at the regional level. Therefore, the development of electromobility in the EU context is supported by laws that provide space and a strong foundation for the growth of innovation. Different conditions are experienced by the development of electromobility in ASEAN, which is precisely the opposite of the EU, where the law is present as a response to the need to provide legitimacy and foundation for development and innovation. This difference is based on the main factor of regional integration and two other factors: institutional design and rule of law conditions at national and regional levels.

The findings in this chapter must be recognised as particularly weak in predicting the future of electromobility in the EU and ASEAN. This study focuses on the character of regional integration and the adopted legal instruments. Therefore, this study argues to a limited extent that without changes in the character of regional integration and legal instruments, the development of electromobility in both regions will not experience significant changes. The EU continues to consistently realise its climate ambitions, and ASEAN also maintains 'the ASEAN Way' as a principle of cooperation, including in the development of electromobility.

CHAPTER VI: CONCLUSIONS

6.1. General Findings

To conclude, the discussion on electromobility development in the EU and ASEAN has shown the relatively significant role of regional integration choices and legal instruments adopted by regional organisations. The EU and ASEAN show two polar opposite forms of regional integration and the choice of legal instruments to regulate electromobility development. These differences are influenced by various factors, including historical, political, social and economic. The examples of the EU and the ASEAN show a complexity of internal and external challenges faced by the EU and ASEAN. Therefore, the responses to resolve these challenges are also different. The EU and ASEAN have institutional linkages, especially in cooperation on climate change, energy, and electromobility issues. In general, the results of this dissertation research show that although the EU and ASEAN have different regional integration characteristics which are reflected in the choice of legal instruments adopted to regulate electromobility development, they still have the same goal of mitigating the effects of climate change through reducing emissions from the energy and transportation sectors.

6.2. The Development of Electromobility Legal Framework in the EU and ASEAN

The EU and ASEAN have different strategies for developing legal frameworks for electromobility. The EU and ASEAN apply two contrasting legal principles in building the electromobility legal framework at the regional level, which ultimately affects the national level. The founding treaties constitutionally recognise the principle of solidarity in the EU legal system. This principle of solidarity has consequences and implications for the design of the EU electromobility legal framework in each member state. In addition, this principle also gives the EU, as a regional organisation, a strong and broad competence to regulate the mitigation of climate change impacts and energy sectors as the essential foundation for electromobility development. The EU also considers electromobility development as one of the strategies to achieve climate and net zero emission targets. Therefore, the legal framework for electromobility development adopted by the EU is inseparable from the issues of climate change, emission reduction, use of renewable energy, energy efficiency, and sustainable investment.

Therefore, this dissertation study concludes that the development of the electromobility legal framework is based on efforts to mitigate the effects of climate change. The design of the electromobility legal framework adopted by the EU is complex, integrated, and has clear targets. The complexity of this legal framework design regulates the upstream to downstream sectors to provide a solid legal foundation for electromobility to be implemented at the national level of member states. The existence of the principle of solidarity in the EU legal system also has strategic implications for the legal framework for electromobility development. The most visible implication is the positive growth of EV usage in each EU member state. In addition, the adoption of electromobility development legal instruments that apply within the jurisdiction of each EU member state.

ASEAN's strategy differs from the EU's in developing an electromobility legal framework. This dissertation study concludes that the legal framework for developing electromobility in ASEAN has yet to be based on climate change mitigation efforts. The ASEAN legal framework on electromobility is a response to optimising the natural, human and market resources owned by the AMS. The characteristics of developing electromobility legal frameworks in ASEAN are superficial, prioritising flexibility, and need to be integrated. This is at least partly an implication of two factors: weak organisational competence in the energy sector and the principle of non-interference, which is one of the main foundations of 'the ASEAN Way'. The existence of a flexible and non-integrated legal framework has implications for the legal framework for electromobility development that varies in each AMS. As a factual result, there is a high disparity between AMSs that have large resources to develop electromobility, such as Indonesia, Singapore and Vietnam and AMSs that do not have resources, such as Laos.

6.3. Regional Integration Variations and The Choice of Legal Instruments

The EU and ASEAN have significantly different and contrasting regional integration characteristics. The EU is a regional organisation with a strong integration character, while ASEAN is the opposite. The character of regional integration is a conscious choice made by the founding fathers of these organisations as enshrined in the founding treaties. This dissertation research concludes that regional integration is an implication of the legal principles on which the organisation was founded. In the context of the EU, the principle of solidarity is one of the main elements that form a solid regional integration character. In

contrast, ASEAN does not use the principle of solidarity as a foundation but applies non-interference as one of the principles that can integrate countries in the Southeast Asian region into a regional organisation.

This difference in the character of regional integration has implications for the choice of legal instruments adopted to regulate electromobility development. The EU, with a strong regional integration character, tends to choose hard law instruments, while ASEAN, with a weak regional integration character, relatively chooses soft law instruments. This dissertation research concludes that the choice of hard or soft law is not good or bad but is influenced by the mandate available in the primary law and the needs of each organisation. In addition, political, economic, social and historical factors strongly influence the choice of legal instruments. In the EU context, choosing hard law instruments to develop electromobility will further integrate and harmonise climate and energy policies. In addition, the choice of hard law instruments can also be a catalyst for stronger regional integration. However, in the ASEAN context, the conditions are different. The choice of soft law instruments is considered to be a catalyst for electromobility development and confirms the choice of integration character.

This dissertation research concludes that the different character of regional integration and the choice of legal instruments in regulating electromobility is a variation and not an anomaly. Nevertheless, it must be recognised that there are disparities in electromobility development between member states with different levels in both the EU and ASEAN variants. In the context of the EU, disparities in electromobility development between member states tend to be low due to the competence and intervention of regional organisations. Moreover, the solidarity principle imposes obligations on the EU and member states to provide mutual assistance. In the context of ASEAN, the disparity is very large due to regional organisations' low competence and intervention. In addition, it must be recognised that the principle of non-interference is a challenge for AMS, whose electromobility development tends to be slow or even non-existent.

6.4. The Influence of Regional Organizations Legal Framework on Electromobility Development in Member States

This dissertation research concludes that the legal framework of regional organisations relatively influences the development of electromobility in member states. In the context of the EU, the EU legal framework influences the development of electromobility in member

states due to three factors: the principle of solidarity, the strong character of regional integration, and the choice of hard law instruments. These three factors influence the adoption of national laws in EU member states to develop electromobility. In addition, the existence of these three factors implies that the legal character of the adopted national legal framework tends to be harmonized or at least similar and integrated. This condition is a consequence of the EU adopting hard law instruments that either directly or indirectly regulate the development of electromobility.

In the ASEAN context, three factors relatively influence the development of electromobility by AMS: the principle of non-interference, the weak character of regional integration, and the choice of soft law instruments. This dissertation research concludes that the ASEAN legal framework relatively does not have a significant favourable influence or at least has an impact but not equally on all AMS. These three factors exist from ASEAN's formation as a collection of young countries free from colonialism after the Second World War. However, ASEAN has consciously chosen the form of integration it considers most appropriate and compatible with its needs. The existence of the principle of non-interference, the weak character of regional integration, and the choice of soft law instruments indicate the commitment of AMS to remain in a regional organisation without interfering with each other's domestic affairs. In the context of electromobility development, the existence of soft law instruments provides guidelines for AMS to develop EV ecosystems under domestic capacities and capabilities. In addition, AMS also have broad flexibility to determine the pattern and pace of electromobility development under their respective economic, social and cultural circumstances.

This dissertation has confirmed hypothesis 1 (**H1**) where the level of integration in regional international organisations affects the preferred legal instrument to regulate electromobility. The EU with a strong level of integration prefers hard law instruments, while ASEAN with a weak level of integration tends to choose soft law instruments to regulate electromobility. Moreover, this study also confirms hypothesis 2 (**H2**), that the degree of binding legal instruments adopted by regional organisations correlates with the development of electromobility in member states. The development of electromobility in EU member states is relatively more advanced compared to the more slow-paced AMS.

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