



China-Indonesia Electric Car Cooperation: Transformation Towards Green Economy in the Digital Era

Sylvia Octa Putri*¹, Ghafira Nabila Zahrani, Regina Rivera Rafa Dany,
Yosephine Natania Pasha, Najmi Ramadhan Prasajo and Muhammad Razif Andika

Faculty of Social and Political Sciences,
Universitas Komputer Indonesia, Bandung, Indonesia
*sylvia.octa.putri@email.unikom.ac.id

Abstract. Indonesia collaborated with China in the development of the electric car industry to support the green economy and reached Net Zero Emissions (NZE) in 2060. China's investment focuses on nickel downstreaming and manufacturing of electric vehicle batteries, playing an important role in the clean energy transition. This study aims to analyze the dynamics and implications of this investment against the green economy in Indonesia. Using the mixed-method, this study processes secondary data from the journal, government reports, and news. The results show that Chinese investment speeds up the growth of the Indonesian electric vehicle industry, but still faces challenges such as dependence on fossil energy, investment regulations, and environmental impacts. Therefore, stricter policy is needed and a continuous strategy to ensure the economic and environmental benefits of this cooperation.

Keywords: China, Electric Vehicle, Green Economy, Indonesia.

1 Introduction

The environment is a fundamental force that sustains life on this planet. In an era of crisis like today, environmental considerations must always be prioritized, particularly in the business sector. A contemporary perspective is essential for economic stakeholders, governments, and the general public to understand how to prevent and mitigate the impacts of uncontrolled environmental threats [1]. Since environmental issues transcend territorial boundaries, addressing these challenges requires collaborative efforts among nations. International cooperation facilitates technological advancements, resource sharing, and the exchange of knowledge necessary to tackle pressing issues such as climate change, pollution, greenhouse gas emissions, and the depletion of natural resources [2]. Environmental concerns have increasingly gained global attention due to the rising exploitation of natural resources, which has led to a higher frequency of natural disasters. Furthermore, certain governmental policies have contributed to a decline

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in public awareness regarding environmental preservation. Over the past decade, widespread deforestation has exacerbated environmental degradation, further intensifying pollution in the surrounding environment. Given these circumstances, urgent and coordinated action is necessary to safeguard the planet for future generations.

In response to existing environmental challenges, a concept has emerged to preserve both the natural and social environment, particularly within the context of the global economy—this concept is known as the "Green Economy." A green economy aims to mitigate environmental degradation while simultaneously promoting social welfare and equity [3]. It serves as a benchmark for safeguarding economic activities by implementing more environmentally friendly production processes. The adoption of policies related to the green economy has increased significantly, leading to the emergence of various innovations that support its implementation. One prominent example of such innovation is the development of environmentally friendly vehicles, particularly electric cars. According to Yin (2024), advancements in electric vehicle technology demonstrate that management and technological innovations have a clear positive impact on both corporate performance and the overall health of the environment [4]. Innovation in this sector plays a crucial role in addressing global warming and mitigating the effects of climate change, as electric vehicles produce significantly lower emissions compared to conventional fuel-powered vehicles [5]. As a result, several major economies, including those in Europe, the United States, China, Japan, and South Korea, have begun investing heavily in the electric vehicle industry [5]. This change marks a significant step toward achieving sustainable development by integrating economic growth with environmental responsibility.

In order to contribute to the "Green Economy", Indonesia has established a strategic partnership with China in the production of electric vehicles. This collaboration was first initiated during a bilateral meeting on July 27, 2023, where President Joko Widodo and President Xi Jinping agreed to strengthen economic sectors through investment, serving as a catalyst for cooperation in the North Kalimantan industrial area and the new capital city, Nusantara. As a follow-up to this agreement, President Joko Widodo, in front of Chinese investors, emphasized that the development of electric vehicles is a top investment priority. He also underscored the importance of establishing an integrated electric vehicle supply chain, encompassing raw material processing, electric vehicle battery production, and the manufacturing of electric cars and motorcycles in Indonesia. The initiative aims to achieve a production target of more than 1 million electric cars and 2.4 million other electric vehicles by 2035 [6]. To further reinforce their commitment, particularly in the electric vehicle sector, President Xi Jinping and President Joko Widodo held another bilateral meeting on October 17, 2023, at the Great Hall of the People in Beijing. This meeting resulted in the signing of ten Memoranda of Understanding (MoUs), one of which focused on Strengthening Investment and Economic Cooperation [7]. The MoU signifies both nations' commitment to deepening bilateral cooperation in the electric vehicle industry while developing a more integrated supply chain for electric vehicles. This collaboration represents a significant step toward the implementation of the green economy. With substantial investments from China, Indonesia can accelerate the development of its electric vehicle industry. However, with effective investment management, the benefits of this partnership can be

maximized and equitably distributed to all levels of Indonesian society. Therefore, this study aims to analyze the cooperation between Indonesia and China in the development of electric vehicles within the context of the green economy. Accordingly, this research seeks to answer the question: "What are the dynamics and implications of China's electric vehicle cooperation for Indonesia's Green Economy?".

2 Literature Review

2.1 International Cooperation

The concept in this article departs from international cooperation viewed through the theory of liberalism and cites several liberal academic studies related to defining international cooperation. International cooperation has a long-time span, it can be defined if international cooperation is cooperation with interests that are aligned and accompanied by modernization that occurs, will always expand the scope of cooperation needs [8]. The United Nations explains that member states have chosen and recognized cooperation as a way to protect common interests and promote the progress of their countries [9]. So, the cooperation between China and Indonesia is analyzed with the concept of international cooperation analyzed through the view of liberalism, because the main focus of liberalism explains that international cooperation can reduce excess conflict and make it easier to achieve their respective national needs without conflict.

2.2 Foreign Direct Investment (FDI)

Direct investment abroad or Foreign Direct Investment (FDI) is a mechanism of a country's population (the sender) to have ownership of assets with the aim of controlling production, distribution, and other activities in other countries (the recipient) [10]. Direct investment was mostly carried out by multinational companies (MNEs) [11]. The cause of the state to make efforts to obtain direct investment into law is caused by the potential positive impact obtained for the country's economic sector [12]. Direct investment abroad increases economic growth through increased output, technology transfers, and creating new jobs [13]. Thus, the discussion used by researchers includes how direct investment abroad, especially in investment cases carried out by China to Indonesia in the context of electric cars. This investment involves implementing green economic concepts in supporting the development of environmentally friendly technology.

2.3 Sustainable Development Goals

The definition of Sustainable Development itself was put forward by the UN Commission in 1987 under the leadership of the G.H. Brundtland, which emphasized that sustainable development means meeting the important needs of the current generation without reducing the opportunity for future generations to meet their needs [14]. There are 17 Goals in sustainable development and it have a focus on the environment and economic growth to prosper people's lives, so in this case the Sustainable Development is closely related to Green Economy or Green Economy which encourages investment

in the field of biotechnology, energy efficiency, creative industry, and sustainable lifestyles can contribute to increased welfare in the production and consumption sector, while helping the environmental conditions [15]. Therefore, to discuss about China's cooperation with Indonesia regarding technological switching between conventional cars to electric cars requires the Sustainable Development concept to study.

2.4 Green Economy Theory

The term Green Economy or Green Economy has emerged since 1989 on Edward Barbier's papers in the book "Blueprint for a Green Economy". However, this term began to be widely used during financial crisis raising world government awareness to the impact of economic recession through environmental protection. According to UNEP, Green Economy was defined as "One that results in improved human wellbeing and social equity, while significantly reducing Environmental risk and ecological scarcities. It is low carbon, resource efficient, and socially inclusive". As for the definition according to Indonesia Green Economy is "A development paradigm that based on resource efficiency approach with strong emphasizes on internalizing cost of natural resource depletion on environmental degradation, efforts on alleviate the overty, creating decent jobs, and ensuring sustainable Economic growth." Green Economy is the mindset transition of development and development which encourages economic and environmental sustainability while improving the quality of life of society [16].

There are several previous studies relevant to the topic of this research. The research explains the Net Zero Emissions policy made to solve the problem of high-carbon emissions. To support this policy, the Indonesian government is in collaboration with China in the field of electric vehicles. This study uses liberalism in analyzing China and Indonesia's cooperation in an effort to achieve Net Zero Emissions. However, this research has not discussed how the impact of collaboration on the domestic automotive industry sector in Indonesia.

Another relevant research is that discusses ev progress from China, where in 2022-2023 China (specifically byd) began mastering Chinese markets itself, so the Chinese market share that is majority of consumers buying German cars, volkswagens began turning to buy cars produced by China. Even Chinese EV cars began to master global markets, especially Europe. So, China is also reaping criticism from western countries as it makes overcapacity the result of substantial investment. China rejects charges from western countries for all production are done in large quantities due to profitable supply chains and innovation. The European industry must be catching up from the Chinese industry. Conventional cars (BBM) have to adapt to new reality and respond effectively to remain a supplier at the global level while the domestic market cannot fight attractiveness from the more economical car. However, the geographical coverage of this research is limited only to European countries, especially Germany, so this study will develop its Indonesian-focused analysis.

The rapid increase in China's electric vehicle exports from 2018 to 2023. In that period, the export of Chinese electric vehicles increased significantly, both in terms of quantity and value. In addition to the increasing volume, the quality of China's electric vehicles is also experiencing an increase, which is reflected in higher prices per unit as

well as an increase in exports to high-income countries. The main factor that encourages this growth is the easing of inventory rules in China and the improvement in the quality of electric vehicles produced by local manufacturers. On the other hand, although exports of Chinese electric vehicles to the United States did not grow significantly, competition on international markets has an impact on declining electric vehicle exports from America, especially Tesla, which is a serious rival for China, in some regions like the European Union. Despite touching the global market, the main discussion of this study was more focused on China, the United States, and the European Union, making it less portraying the market dynamic. There is no discussion of the environmental impact of increasing production from electric vehicles, which should be an important part in the development of the electric car industry. There is no discussion on how the export trend of China's Electricity vehicles will be further focused on historical data.

The electric car industry in Indonesia is developing rapidly, supported by the IK-CEPA agreement with South Korea and incentives from the government. Sales of electric cars such as Hyundai and Wuling increased in 2020 to 2023, show high interest in the Indonesian people. Indonesia also has the world's largest nickel reserves that can support the production of electric vehicle batteries. With government support and rising demand, the electric car industry in Indonesia has a bright prospect ahead. In addition to discussing the phenomenon of selling electric cars in Indonesia, research Ardiyanti, et al. also discusses Indonesia's international cooperation with Korea in the field of electric cars which are also the study of this research. However, this study does not discuss how the cooperation between Indonesia and China, especially in the development of electric cars, therefore, researchers will focus on reviewing China and Indonesia's cooperation.

The challenges and opportunities in the electrification of the automotive industry, especially how Indonesia can build competitive advantage in this sector. The study identified infrastructure of electric car production in several Asian countries, including Indonesia. Additionally, this study highlights the role of direct foreign investment (FDI), especially from China in developing the Indonesian EV industry and how the economic relations of the two countries affect this sector. Indonesia has the potential as a center for regional EV battery supply chain, given abundant nickel reserves. To realize this, the Indonesian government needs to increase investment in lithium-ion battery production to build a complete supply chain, including high-quality battery processing. With the right strategy, Indonesia can strengthen its competitiveness in the electric vehicle industry in Southeast Asia and the global market. However, this study has not yet discussed the influence of Chinese and Indonesian economic relations in the field of the EV industry on domestic automotive industries, especially regarding the Domestic Labor in Indonesia.

3 Methodology

This paper's quantitative research used a mixed-method approach [17], integrating both qualitative and quantitative methods to compare analyses and deepen the case study

through descriptive and numerical reinforcement. The research is conducted using secondary data sourced from national and international journals, books, official documents, and news related to Indonesia-China cooperation in the green economy within the digital era. Data collection is carried out through literature review and internet research, which are then analyzed and processed using both descriptive and numerical approaches. Thus, the researcher conducts a comprehensive and in-depth study on "China-Indonesia Electric Vehicle Cooperation: Transformation Towards Green Economy in the Digital Era."

4 Discussion

4.1 Electric car investment dynamics from China can support the Indonesian emissions neutral target

Today the world is facing a critical situation due to greenhouse gas emissions (GHG) leading to environmental issues, such as climate change. In responding to the issue, the United Nations Framework Convention on Climate Change (UNFCCC) carries several concepts into the basis of the agreement on the global climate [18], through Paris Agreement that is still below the UNFCCC target era, which manages the global temperature restrictions on Ccc 2 degris (Ccc Decrisy) under the target era. Paris Agreement stipulates a global basis on the transition to greenhouse gas neutral (GHG) which will have an impact on the economic and environmental sector that are more prosperous [19]. Countries also reached an agreement to reduce greenhouse gas emissions, resulting in total emissions generated from human activities to zero [20]. Therefore, many countries and institutions support zero emissions targets, such as the United States, China, the EU, Microsoft tech companies, as well as several airports that are in Europe [20]. Countries committed in Paris Agreement have responsibilities in degrading greenhouse gas emissions in accordance with the provisions that have been set, as greenhouse gas emissions contribute to increased global temperatures [21]. Indonesia is one of the countries that ratify Paris Agreement, as stated in Law Number 16 of 2016 concerning Paris Agreement to the United Nations Framework Convention Convention on Climate Change [22]. The concept of Zero Net Emission (ZNE) has finally managed and been adopted by several countries in its implementation, such as Indonesia, which has taken an ambitious target in achieving net zero emissions targets.

Indonesia set a zero emissions target in 2060 or as soon as possible, as an effort to reduce the negative impact of climate change [23]. One of the main aspects of Nationally Determined Contributions (NDC) is that Indonesia's the energy sector which is the largest contributor to greenhouse gas emissions (GHG) in Indonesia [24]. As part of the country that justifies Paris Agreement, Indonesia has a commitment and working to continue steps in degrading the resulted emissions. The net zero emissions program (ZNE) is part of a government's commitment to responding to a net zero emissions target by 2060, this was discussed by Arifin Tasrif, the Minister of Energy and Mineral Resources (ESDM), through the "Middle to COP26: Indonesia Net Energy Identification (20 Years) And according to Luhut Pandjaitan, the Coordinating Minister for Maritime Affairs and Investment, Indonesia is on track to reach the 29% reduction target of

gas emissions by its own efforts [25]. So, in this case study, the steps that must be taken include renewable energy and the electrification of the transportation sector. Indonesia has adopted the concept of Green Economy as a step towards Zero Net Emission, which was defined as the rise in environmental degradation that triggers the birth of the Green Economy as a solution in economic growth that preserves environmental sustainability without sacrificing its sustainability [26]. so that in practice, Green Emissions and Net Impacts.

The development of technology that is increasingly advanced in giving birth to innovations that also help in environmental issues, one of which is the birth of Electric Vehicles (EV) or electric vehicles that encourage charging with clean renewable energy that is environmentally friendly. In Indonesia itself, electric vehicles have begun to be widely used. At the 2022 G20 Forum, President Indonesia, Jokowi Widodo, stated that three main topics on issues: inclusive global health, digital-based economic transformation, and sustainable energy transition. This was also conveyed by the Vice President of Indonesia, Ma'ruf Amin, at the COP27 summit which emphasizes that Indonesia has implemented various acts of certification in an effort to reduce emissions, steps taken include a large-scale investment in the energy transition to a more environmentally and more sustainable resource, providing funds to support climate policies, and a more ambitious target in the 20th Republic of Indonesia (20) in the Vice Presidential Republic of Indonesia.

In implementing a green economy as an activity related to the economy by minimizing clean gas and energy emissions, Indonesia is working on downstreaming nickel as a real action in the green economic concept that encourages Zero Net Emission and clean energy. Nickel downstreaming in Indonesia has an important role in supporting Zero Net Emissions (ZNE), especially in the context of clean energy transition and the development of an electric vehicle ecosystem (EV). In practice, Indonesia cooperates with China through nickel downstreaming project investment in order to support green economic activities. Reporting from the Ministry of Energy and Mineral Resources of the Republic of Indonesia (ESDM), Indonesia has nickel reserves with 23% that makes Indonesia the "King Nickel" because the nickel reserves in Indonesia are the largest reserves in the world. Seeing the chances of the nickel sector that experiences the increasing trend of nickel needs will increase, making the Indonesian government initiate nickel downstreaming because Indonesia does not want to lose momentum to bridge the nickel industry that also increases the state's income. This is also supported by the Indonesian Government, which regulates the downstreaming policy regulated in the Minister of Energy and Mineral Resources of the Republic of Indonesia (ESDM) No. 17 Year 2020 aims to ban raw nickel exports and maximize nickel processing in the country, increasing added value and economic growth [27]. In processing nickel by increasing the number of smelters (purification), Indonesia needs assistance to improve nickel industry because of inadequate industries. So, Indonesia collaborates with China in nickel downstreaming steps [28]. In implementing the green economy, Indonesia needs Concrete steps in practice, which means not only through its budget but also some real action and supported by strategic policies. In order to achieve Indonesia free emissions by 2060, economic activity involving industrial sectors should reduce emissions and become the main focus in achieving these targets. Overall, downstreaming of nickel

in Indonesia has great potential to speed up the clean energy transition, but it still needs to be carried out with a more sustainable approach.

4.2 The Impact of China's Foreign Investment on Green Economic Development in Indonesia

China became a new economic power country [29] and made an ambitious project of the Belt and Road Initiative (BRI) in 2013 with the aim of driving the coordination of involved countries, while restricting regional cooperation with better standards [30]. With the initiative of the Belt and Road project, China plays an important role in making economic development policies [31] in countries involved in it [32], including Indonesia. Indonesia has achieved an agreement to collaborate on the Belt and Road cooperation project in 2016, this collaboration contains policy initiation and funding carried out by China through the Belt and Road project that strives to optimize the Indonesian economy [32]. Since its history, Indonesia and China have history in building bilateral political relations inaugurated on June 9, 1950 [33]. Although in the course of bilateral relations between the two still have some challenges such as maritime border disputes, but in the economic sector both of them still forge several cooperation and investments. In this case, globalization participates in the course of bilateral relations between China and Indonesia. The development of globalization and technology is increasing the standard of life that demands awareness of global competition, Indonesia's openness to foreign investments, one of which is being carried out by China, makes the Indonesian people as consumers have another choice. Products produced by China tend to be more affordable and quality, making it difficult to refuse investment from China because its products have attracted attention in the global market, including Indonesia [34].

The existence of the phenomenon of globalization is a factor driving change and unavoidable technological progress, and encourages market liberalization both nationally and globally. In this era of globalization, relations between countries that appear without barriers are making diplomatic relations in the economic sector, especially cooperation and foreign investments, are increasingly easy [28]. Thus, allowing various products and services to a country and access more options for consumers [35]. This, expand opportunities for countries to conduct free markets or international cooperation as well as foreign investments. For example, with the ASEAN China Free Trade Area (ACFTA) which brings fresh winds to Indonesia in attracting more foreign investments from China [36]. Investments carried out by China in Indonesia are one of the most effective ways to increase the rate of national economic growth and help Indonesia in driving economic wheels on current wave of globalization [37]. Foreign investment also goes hand in hand with industrial progress in the recipient country, but industrial development is also a threat to global security. Because the environment is a multidimensional and transboundary polemic. In addition to having a positive impact, foreign investments also have a negative impact on the environment. Environmental pollution will increase as industrial activity as a hand extension of the capital planted by foreigners [13].

The development of globalization is currently inevitable; this is in line with the development of technology that is so rapid fishing for foreign investments in the technology field also runs in tune. In order to implement green economics and create environmentally friendly technology that can reduce carbon emissions according to the contents of Paris Agreement, today's world develops electric cars. With current technological transformations, electric cars are evolving as an effort to reduce carbon emissions. The use of electric cars is designed to reduce carbon emissions since the use of electric cars does not result in exhaust gas [38]. The development of electric cars is developing rapidly in China, Europe, the United States, and several other developed countries [39]. With a rapidly developing electric car market trend in developed countries, it ultimately makes developing countries start following and using electric cars. Although in practice, there are still many challenges, but this changes globally in protecting environmental health. Like Indonesia which supports the transition of using electric cars by cooperating with several foreign investors, one of which is from China. The existence of energy transition supports the mining sector industry in Indonesia, nickel. As the country with the most nickel reserves in the world, Indonesia has succeeded in becoming a global supply chain related to nickel processed into batteries for electric vehicles [40]. With the Belt and Road, it makes it easier for both to achieve investment cooperation deals, one in the nickel and electric cars. This cooperation, joined in encouraging economic growth for both [28]. In addition, with Chinese investment entering Indonesia in the nickel sector, making Indonesia faster to experience energy transition and China will utilize nickel smelters to develop its electric cars.

Seeing the trend of developing electric cars significantly, leading China and Indonesia to take the opportunity to develop nickel industry sectors and electric cars. The existence and development of electric vehicles succeeds in attracting the interest of the Indonesian people so that they cannot be ignored again, this encourages the development of the green economy implemented through electric vehicles because they have high economic value and support protection for the environment in Indonesia [21] in order to reduce CO2 carbon emissions. Data showing a high enough enthusiasm for Indonesians towards environmental-friendly technological support transition, demonstrated through the total number of sales of Chinese brand cars in Indonesia in 2024 of 101,654 units, with details of the sale of Chinese electric cars (Jan-Nov) 2024 as displayed in table 1.

Table 1. China’s car sales data in Indonesia in 2024. [41]

Product Name	Total sales (unit)
BYD M6	4.824
Wuling Binguo	4.720
BYD Seal	4.671

Table 1(Continued). China's car sales data in Indonesia in 2024. [41]

Product Name	Total sales (unit)
Chery Omoda E5	4.269
Wuling Air EV	3.760
BYD Atto 3	3.214
Wuling Cloud EV	3.159
MG 4EV	2.315
BYD Dolphin	1.217

Reporting from Table 1, overall, the number of sales of electric vehicles in January to November 2024 has recorded sales of 37,302 units, and the total sales of Chinese branded electric vehicles from January to November 2024 have recorded sales of 32.149 units. With a comparison of that is almost more than 90%, Chinese-brand electric cars have succeeded in mastering electric car markets in Indonesia. From the above data shows significant enthusiasm for the transition of energy and support sector to decarbonization of CO₂ which is the fresh wind on the green economy. Although, Indonesia and China benefit in developing the new industrial sector, but cannot deny that if in its implementation there are still several things that are still obstacles and challenges in it.

4.3 Challenges and Opportunities for China's Cooperation (Investment) Against Green Economic Development in Indonesia

The implementation of the Green Economy in Indonesia provides fresh air for changes in steps and awareness of Indonesia will be important for environmental safety, even so, in its implementation, green Economy in Indonesia often faces serious and contrary to the green economic concept itself. Such as the focus of the researchers on the study that will be discussed regarding the challenges and opportunities for downstreaming in Indonesia. Nickel oreization, which is an activity for nickel ore processing, is still using coal that includes fossil energy (non-renewable), in practice it requires to minimize the resulting negative impact, both for the environment and for people's welfare. The nickel reserve location for Indonesia and Nickel ore is located in eastern Indonesia, which includes the regions of Central Halmahera and East, South Sulawesi, Central Sulawesi, and Southeast Sulawesi [43-45] Al. Judging from the survey results conducted by Rynaldi et al., (2024) indicating that the downstreaming program, which is pioneered by private parties and governments still have more negative impacts on ecosystems, public health, human rights violations, threats of local public livelihoods, and reduced natural resources [42]. In terms of the challenge company faced related to licensing, which is weakened (Yudhoprakoso & Fristikawati, 2024), licensing in mineral mining activities, including nickel, plays a crucial role in ensuring the legality and sustainability of the

company's operations [45]. The permission obtained allows the company to carry out mining and official development activities.

In addition, Indonesia is still dependence on fossil energy, so it has the potential to hamper the achievement of Indonesia's Net Zero Emissions (NZE) target in 2060 due to a considerable dependency on coal mining. Therefore, downstreaming nickel and green economic implementation in Indonesia still needs to be reviewed so that Indonesia can achieve the Zero Net Emissions target in 2060 in supporting emissions in the global level according to Paris Agreement's commitment, as well as encouraging environmentally friendly economic growth. For this reason, the next topic to be discussed is the opportunity in balancing between the Indonesian targets in 2060 and is in line with its economic growth. Even though, in implementing the Green Economy in Indonesia still faces various challenges, this cooperation also opens up opportunities to speed up energy transitions, develop green technology, and improving the electric vehicle industry, so it supports the goals of Net Zero Emissions (NZE) Indonesia.

Battery industry is an important component for the electric vehicle industry with nickel playing an important role as one of the main ingredients in batteries, so that it makes the nickel industry increase as the electricity vehicle industry grow, one of which is electric cars. The need for nickel is soaring due to high demand for environmentally friendly technology which is also directly proportional to the new and renewable energy sector (NRE) [46]. This also encourages Indonesia which has the world's largest nickel ammunition reserves to start managing nickel with qualified technology to be profitable for Indonesia [47]. Through investment cooperation carried out by China in nickel, it can make it easier to process nickel into clean energy as well as sophisticated technology transfers for speeding up development. With technology transfers, Indonesia can adapt and adopt the technology transferred by China through a cooperation of this investment. Therefore, during the digital transition period, Indonesia still needs a long process towards Net Zero Emissions target in 2060, accompanied by the advancement of clean energy and qualified technology, as well as the progress of the use of electric cars that are really sourced from new and renewable energy (EBT) and also supported by fair and non-performing regulations.

4.4 Indonesia's government response in managing this investment to align with the national interests and green economy

Political economic interests often hinder the energy transition [48]. Therefore, to ensure this investment is in accordance with the national interests and principles of green economy, the Indonesian government has implemented various policies and regulations. Listed in Undang-Undang Republik Indonesia Nomor 30 Tahun 2007 concerning Energy which emphasizes the energy diversification and increases the utilization of renewable energy resources and Peraturan Pemerintah (PP) Nomor 22 Tahun 2021 concerning Environmental Protection and Environmental Management which emphasizes environmental standards. Then, the Indonesian Government support regarding the development and use of electric cars in Indonesia which play a role in reducing emission gas. As stipulated in Presidential Regulation No. 55 In 2019 concerning electric cars that reflect the government's commitment to supporting the development and use of

domestic electric cars, this policy provides intensive to consumers and manufacturers as well as developing charging infrastructure and technical standards. The intensive stated is that the tax deduction comply with those regulated in the Ministry of Finance Regulation Number 38 of 2023 according to TKDN through the cut of Value Added Tax (VAT) [49]. The development of electric cars soars significantly along with the government's development and support for environmental-friendly technology [50] which this phenomenon is closely related to the green economy. This investment also affects local automotive industries and sustainable energy policies in Indonesia, this is regulated in the Regulation of the Minister of Industry (Permenperin) No. 27 In 2020 is an initial regulation that stipulates the basis for the development of electric vehicles in Indonesia and is refined through the Minister of Industry Regulation (Permenperin) Number 6 of 2022 concerning Foreign Development, Roadmap Development, and Regulations regarding Motorized Vehicle Protection (T), at least 4% Land Unit (T) and Information Commission Protection (PMDN) efforts to provide.

5 Conclusion and Recommendation

China's electric car investment has great potential to support Indonesia to achieve emissions-neutral targets (Net Zero Emissions) by 2060. Through co-operation in nickel, Indonesia can utilize the world's largest nickel reserves to develop an electric vehicle battery industry, which is in line with Indonesia's commitment in Paris Agreement. However, challenges such as dependence on fossil energy in the downstream process need to be overcome. Indonesia has adopted the concept of Green Economy as a step towards Zero Net Emissions, which is defined as the rise in environmental degradation that triggers the birth of the Green Economy concept as a solution in economic growth that preserves environmental sustainability without sacrificing its sustainability.

China's investment through the Belt and Road Initiative (BRI) project has brought a positive impact on green economic growth in Indonesia, especially in the development of the nickel and electric cars. However, this investment also poses challenges such as environmental impact and dependence on foreign technologies. The existence of the phenomenon of globalization is a factor driving change and unavoidable technological progress, and encourages market liberalization both nationally and globally. In this era of globalization, relations between countries that appear without barriers are making diplomatic relations in the economic sector, especially cooperation and foreign investments are increasingly easy. Thus, allowing various products and services to a country and access more options for consumers.

Cooperation with China opened a big opportunity for Indonesia in developing green technology and enhancing electric vehicle industries. However, challenges such as dependence on fossil energy, the environmental impact of nickel downstreaming, and the complexity of licensing needs to be overcome. Battery industry is an important component for the electric vehicle industry with nickel playing an important role as one of the main ingredients in batteries, so that it makes the nickel industry increase as the electricity vehicle industry grow, one of which is electric cars. The need for nickel is soaring

due to high demand for environmentally friendly technology which is also directly proportional to the new and renewable energy sector (NRE).

The Indonesian government has implemented various policies and regulations to ensure that investment is in line with national interests and green economic principles, such as energy diversification, the development of electric cars, and environmental protection. However, the implementation of this policy still needs to be strengthened to ensure its effectiveness. Political economic interests often hinder the energy transition. Therefore, to ensure this investment is in accordance with the national interests and principles of green economy, the Indonesian government has implemented various policies and regulations. Listed in the Law of the Republic of Indonesia Number 30 of 2007 concerning Energy which emphasizes the energy diversification and increases the utilization of renewable energy resources and Government Regulation (PP) Number 22 of 2021 concerning Environmental Protection and Environmental Management which emphasizes environmental standards.

To support the sustainable development of Indonesia's electric vehicle and renewable energy sectors, the government is encouraged to enhance local industrial capacity. This can be achieved by promoting the transfer of technology and conducting training programs that emphasize green technology and renewable energy, thereby reducing reliance on foreign expertise. In addition, it is crucial to implement strict environmental standards for all investment projects, particularly in the nickel downstreaming process. These standards should cover aspects such as waste management, emissions control, and the social impacts on local communities. Strengthening international cooperation is also vital—not only with China but with other countries and institutions—to facilitate technology transfers, joint research, and access to funding for clean energy initiatives.

Furthermore, accelerating the development of electric vehicle charging infrastructure across Indonesia is essential to promote EV adoption among the public. The government must also foster the development of local technology in the EV and battery industries by funding research and development and encouraging collaboration between universities, research institutions, and private industry. Lastly, regulatory frameworks must be supportive rather than restrictive; policies should be designed to promote innovation and investment without impeding the growth of these emerging sectors. Through these strategic steps, Indonesia can build a robust, sustainable, and self-reliant clean energy ecosystem.

References

1. Woo, E.-J., Kang, E.: Environmental Issues as an Indispensable Aspect of Sustainable Leadership. *Sustainability*. **12**(17), 7014 (2020). <https://doi.org/10.3390/su12177014>.
2. Sharna, L.P.: Role of International Relations to Solve Environmental Issues: An Emerging Discourse. *Journal of Environment Sciences*. **10**(1), 163–176 (2024). <https://doi.org/10.3126/jes.v10i1.67300>.
3. Latifah, E., Abdullah, R.: Perspektif Maqashid Syariah: Peran Ekonomi Hijau Dan Biru Dalam Mewujudkan Sustainable Development Goals. *JISEF: Journal of International Sharia Economics and Financial*. **2**(1), 1–22 (2023). <https://doi.org/10.62668/jisef.v2i01.1128>.

4. Yin, S., Liu, L., Mahmood, T.: New Trends in Sustainable Development for Industry 5.0: Digital Green Innovation Economy. *Green and Low-Carbon Economy*. **2**(4), 269–276 (2023). <https://doi.org/10.47852/bonviewglce32021584>.
5. Nur, A.I., Kurniawan, A.D.: Proyeksi Masa Depan Kendaraan Listrik di Indonesia: Analisis Perspektif Regulasi dan Pengendalian Dampak Perubahan Iklim yang Berkelanjutan. *Jurnal Hukum Lingkungan Indonesia*. **7**(2), 197–220 (2021). <https://doi.org/10.38011/jhli.v7i2.260>.
6. Yanwardhana, E.: Ini Dia Hasil Lengkap Pertemuan 3,5 Jam Jokowi dan Xi Jinping, <https://www.cnbcindonesia.com/news/20230728155151-4-458210/ini-dia-hasil-lengkap-pertemuan-35-jam-jokowi-dan-xi-jinping>, (2023).
7. Negara, K.S.: Presiden Jokowi dan Presiden Xi Jinping Saksikan Penandatanganan Sejumlah Nota Kesepahaman, https://setneg.go.id/baca/index/presiden_jokowi_dan_presiden_xi_jinping_saksikan_penandatanganan_sejumlah_nota_kesepahaman, last accessed 2025/06/12.
8. Altarikh, D.A.: Kerjasama the Content Overseas Distribution Association (Coda) Dengan Amerika Serikat Dalam Penanggulangan Pembajakan Anime Di Tahun 2014-2022. *Global Insights Journal: Jurnal Mahasiswa Hubungan Internasional*. **1**(1), (2024). <https://doi.org/https://doi.org/10.36859/gjj.v1i1.2496>.
9. Aisyah, A.A., Ardiawan, A., Bachtiar, F.R.: Menilik Tantangan dan Potensi Kerjasama Selatan-Selatan Dalam Meningkatkan Pertumbuhan Ekonomi Di Indonesia Era (Pasca) Covid-19. *Review of International Relations*. **3**(2), (2021).
10. Moosa, I.A.: *Foreign Direct Investment*. Palgrave Macmillan UK, London (2002).
11. Paul, J., Feliciano-Cestero, M.M.: Five decades of research on foreign direct investment by MNEs: An overview and research agenda. *Journal of Business Research*. **124**, 800–812 (2021). <https://doi.org/10.1016/j.jbusres.2020.04.017>.
12. Barizi, M.H., Triarda, R.: Rantai Pasokan Global Dan Nasionalisme Sumber Daya Alam: Kajian Terkait Hilirisasi Nikel di Indonesia. *Indonesian Journal of International Relations*. **7**(3), 312–338 (2023). <https://doi.org/10.32787/ijir.v7i2.466>.
13. Shao, W., Yu, X., Chen, Z.: Does the Carbon Emission Trading Policy Promote Foreign Direct Investment?: A Quasi-Experiment From China. *Frontiers in Environmental Science*. **9**, (2022). <https://doi.org/10.3389/fenvs.2021.798438>.
14. Mikhno, I., Koval, V., Shvets, G., Garmatiuk, O., Tamošiūnienė, R.: Green Economy in Sustainable Development and Improvement of Resource Efficiency. *Central European Business Review*. **10**(1), 99–113 (2021). <https://doi.org/10.18267/j.cebr.252>.
15. Prabawati, M.A.: Konsep Green Economy Pada Pola Produksi Dan Konsumsi Sebagai Sustainable Development Goals (SDGs) Berkualitas Berbasis Ekologi. *Jurnal Sains Edukatika Indonesia (JSEI)*. **4**(1), (2022).
16. Zhang, L., Xu, M., Chen, H., Li, Y., Chen, S.: Globalization, Green Economy and Environmental Challenges: State of the Art Review for Practical Implications. *Frontiers in Environmental Science*. **10**, (2022). <https://doi.org/10.3389/fenvs.2022.870271>.
17. Almeida, F.: Strategies to perform a mixed methods study. *European Journal of Education Studies*. **5**(1) 137-151, (2018).
18. Rogelj, J., Schaeffer, M., Meinshausen, M., Knutti, R., Alcamo, J., Riahi, K., Hare, W.: Zero emission targets as long-term global goals for climate protection. *Environmental Research Letters*. **10**(10), 105007 (2015). <https://doi.org/10.1088/1748-9326/10/10/105007>.
19. Lützkendorf, T., Balouktsi, M.: On net zero GHG emission targets for climate protection in cities: More questions than answers? *IOP Conference Series: Earth and Environmental Science*. **323**(1), 012073 (2019). <https://doi.org/10.1088/1755-1315/323/1/012073>.

20. Rogelj, J., Geden, O., Cowie, A., Reisinger, A.: Net-zero emissions targets are vague: three ways to fix. *Nature*. 591(7850), 365–368 (2021). <https://doi.org/10.1038/d41586-021-00662-3>.
21. Ali, H., Saputra, F., Mahaputra, M.R.: Penerapan Green Economy: Analisis Kendaraan Listrik, Pariwisata dan Batu Bara (Studi Literature). *Jurnal Humaniora, Ekonomi Syariah dan Muamalah*. 1(1), 1–14 (2023). <https://doi.org/10.38035/jhesm.v1i1.2>.
22. Ghaniyyu, F.F., Husnita, N.: Upaya Pengendalian Perubahan Iklim Melalui Pembatasan Kendaraan Berbahan Bakar Minyak di Indonesia Berdasarkan Paris Agreement. *MORALITY: Jurnal Ilmu Hukum*. 7(1), 110 (2021). <https://doi.org/10.52947/morality.v7i1.196>.
23. Van Soest, H.L., den Elzen, M.G.J., van Vuuren, D.P.: Net-zero emission targets for major emitting countries consistent with the Paris Agreement. *Nature Communications*. 12(1), (2021). <https://doi.org/10.1038/s41467-021-22294-x>.
24. Ardiansyah, H., Wahyuni, E., Ekadewi, P.: Bridging the Gap between Policy and Net-Zero Realization in Indonesia: An Outlook of Available Approaches. *Journal of Physics: Conference Series*. 2828(1), 012003 (2024). <https://doi.org/10.1088/1742-6596/2828/1/012003>.
25. Rohid, A., Rahman, D.R., Darmawan, T.R., Mujiyanti, S.F.: Pemanfaatan penangkapan emisi gas menjadi energi listrik berbasis elektrokimia sebagai inovasi industri untuk mencapai net zero emissions. *Lomba Karya Tulis Ilmiah*. 4(1), (2023).
26. Akram, F.M., Kasih, I.C., Adzany, J.T.J., Sawalani, N., Firmansyah, B.: Kesadaran Mahasiswa Mengenai Green Economy: Menuju Net Zero Emission Tahun 2060. *Journal of Economic, Business and Engineering (JEBE)*. 6(1), 30–40 (2024). <https://doi.org/10.32500/jebe.v6i1.7051>.
27. Purwanto, N.P.: Kebijakan pemerintah dalam memaksimalkan potensi nikel di Indonesia, https://berkas.dpr.go.id/pusaka/files/info_singkat/Info%20Singkat-XVI-20-II-P3DI-Oktober-2024-235.pdf.
28. Fauziyyah, P.Z., Paksi, A.K.: Dampak Kerja Sama Indonesia-China Dalam Proyek Investasi Nikel Terhadap Pertumbuhan Ekonomi Kedua Negara. *Jurnal Ilmiah Dinamika Sosial*. 7(1), 86–105 (2023). <https://doi.org/10.38043/jids.v7i1.4279>.
29. icaksa, A.: China dan Politik Penanganan Pandemi Covid-19. *Interdependence Journal of International Studies*. 2(2), 80–87 (2021). <https://doi.org/10.54144/jjis.v2i2.38>.
30. Vakulchuk, R., Øverland, I., Aminjonov, F., Abylkasymova, A., Eshchanov, B., Moldokanov, D.: BRI in Central Asia: Overview of Chinese projects. *Central Asia Data-Gathering and Analysis Team (CADGAT)*. (2023).
31. Wahyuni, A.S., Amin, K.: One Belt One Road dan Upaya Hegemoni Regional China di Asia Tenggara. *Sospol*. 9(1), 114–128 (2023). <https://doi.org/10.22219/jurnalsospol.v9i1.25621>.
32. Yudilla, A.: Kerjasama Indonesia Cina dalam Belt and Road Initiative: Analisa peluang dan ancaman untuk Indonesia. *Journal of Diplomacy and International Studies*. 2(1), 52–65 (2019).
33. Munatama, A., Zhaidah, K.: Analisis Kerjasama Bilateral Sosial Politik China dan Indonesia dalam Masa Kepemimpinan Joko Widodo. *Jurnal Artefak*. 10(1), 77 (2023). <https://doi.org/10.25157/ja.v10i1.9283>.
34. Amanda, R.: Hegemoni Dibalik Hubungan Bilateral Tiongkok-Indonesia. *Jurnal Pamator: Jurnal Ilmiah Universitas Trunojoyo*. 14(1), 34–39 (2021). <https://doi.org/10.36859/gij.v1i1.2496>.
35. Yuniarto, P.R.: Masalah globalisasi di Indonesia: Antara kepentingan, kebijakan, dan tantangan. *Jurnal Kajian Wilayah*. 5(1), 67–95 (2016)
36. Adam, L., Negara, S.D.: ASEAN-China free trade agreement: Tantangan dan peluang bagi Indonesia. *Masyarakat Indonesia*. 36(2), 1–24 (2017)

37. Nawiyah, N., Puar, Z.M.: Pengaruh Investasi China Ke Indonesia, Ekspor Indonesia-China, Dan Tenaga Kerja Terhadap Pertumbuhan Ekonomi Nasional. In: *Prosiding Seminar Nasional Manajemen Industri dan Rantai Pasok*, 1, 151–159. (2020)
38. Artika, K.D., Syahyuniar, R., Priono, N.: Perancangan Sistem Kemudi Manual Pada Mobil Listrik. *Elemen: Jurnal Teknik Mesin*. **4**(1), 01–06 (2017). <https://doi.org/10.34128/je.v4i1.1>
39. Khaleel, M., Nassar, Y., El-Khozondar, H.J., Elmnifi, M., Rajab, Z., Yaghoubi, E., Yaghoubi, E.: Electric vehicles in China, Europe, and the United States: Current trend and market comparison. *Int. J. Electr. Eng. and Sustain.* **2**(1), 1–20 (2024). <https://doi.org/10.62668/jisef.v2i01.1128>
40. Barizi, M.H., Triarda, R.: Rantai Pasokan Global Dan Nasionalisme Sumber Daya Alam: Kajian Terkait Hilirisasi Nikel di Indonesia. *Indonesian Journal of International Relations*. **7**(2), 312–338 (2023). <https://doi.org/10.32787/ijir.v7i2.466>
41. Kompas.com: Analisis penjualan mobil listrik Indonesia: Januari–November 2024. <https://otomotif.kompas.com/read/2024/12/30/080200315/analisis-penjualan-mobil-listrik-indonesia--januari-november-2024> (2024)
42. Rynaldi, A., Sinaga, E.H., Sitorus, J.R.: Kajian Kriminologi Hijau Terhadap Studi Kasus Hilirisasi Tambang Nikel. *Jurnal Lingkungan Kebumihan Indonesia*. **1**(3) (2024). <https://doi.org/10.47134/kebumian.v1i3.2572>
43. Syarifuddin, N.: Pengaruh industri pertambangan nikel terhadap kondisi lingkungan maritim di Kabupaten Morowali. *Jurnal Riset & Teknologi Terapan Kemaritiman*. **1**(2), 19–23 (2022). <https://doi.org/10.25042/jrt2k.122022.03>
44. Nugroho, A.D., Supriyadi, I., Thamrin, S., Boedoyo, M.S.: Integrasi Sumber Energi Terbarukan dalam Pemanfaatan Sumber Daya Nikel di Luwu Timur. *Journal of Electrical and System Control Engineering*. **7**(1), 1–10 (2023)
45. Yudhoprakoso, P.W., Fristikawati, Y.: Peran pemerintah daerah dalam penambangan nikel: Masalah perizinan dan perlindungan lingkungan. *Gloria Justitia*. **4**(2), 158–175 (2024)
46. Arif, I.I.: *Nikel Indonesia Menuju Transisi Energi*. Gramedia Pustaka Utama, Jakarta (2023)
47. Naibaho, S.S., Simangunsong, S.R.: *Indonesia Gudang Nikel, Indonesia Memimpin Transisi Energi*. Bangkit Perkasa. 2, 49 (2022)
48. Fauzi, P.R.: Peluang dan Tantangan Transisi Energi: Implikasi Kebijakan Pasca Presidensi G20 Indonesia. *Journal of Tax Policy, Economics, and Accounting (TAXPEDIA)*. **1**(1), 16–34 (2023). <https://doi.org/10.61261/muctj.v1i1.14>
49. Ramadhani, S.F., Dewi, I., Anindra, N.P., Issanti, N., Muhammad, J.A.: Analisis Komparasi Kebijakan Subsidi Pajak Mobil Listrik Di Indonesia Dan Thailand. *Nova Idea*. **1**(2), 58–68 (2024)
50. Hidayat, A., Sumariyanto, I., Rahman, M.H.: Optimisasi Energi Melalui Pelatihan Mekanisasi Sistem Kontrol Mobil Listrik: Sebuah Pendekatan PkM. *Teknovokasi: Jurnal Pengabdian Masyarakat*. **1**(3), 310–314 (2023). <https://doi.org/10.59562/teknovokasi.v1i3.1020>

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