SUSTAINIBILITY OF INDONESIAN ECONOMIC ECOSYSTEM: ELECTRIC VEHICLE PERSPECTIVE

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ABSTRAK

Tujuan dari penelitian ini adalah untuk memberikan rekomendasi kepada pemerintah berupa penyelesaian permasalahan atas berbagai permasalahan tersebut sehingga Indonesia memiliki ekosistem ekonomi baru yang lebih baik dan berkelanjutan. Penelitian ini menyimpulkan bahwa ekosistem kendaraan listrik akan sangat berdampak pada kemajuan perekonomian Indonesia di masa mendatang sehingga Indonesia dapat memiliki ekosistem ekonomi baru yang lebih baik, terutama berkelanjutan, dan ramah lingkungan. Dimana hal ini dapat menjadikan Indonesia sebagai pemain kunci di dunia global dengan daya dukung sumber daya alam yang tersedia.

Kata kunci *:* perubahan iklim, covid-19, produk domestik bruto, tujuan pembangunan berkelanjutan, dan ekonomi.

ABSTRACT

The purpose of this research is to provide recommendations to the government in the form of solving problems on these various problems so that Indonesia has a new, better and more sustainable economic ecosystem. This qualitative research concludes that the electric vehicle ecosystem will greatly impact the progress of the Indonesian economy in the future so that Indonesia can have a new, better, especially sustainable, and environmentally friendly economic ecosystem. Where this can make Indonesia a key player in the global world with the carrying capacity of available natural resources.

Keywords: *climate change, covid-19, gross domestic product, sustainable development goals, and economy.*

INTRODUCTION

The Corona virus pandemic has greatly impacted various aspects of the world's people's lives (Bijulakshmi et al., 2020). As a result, the world economy was disrupted, especially countries that rely on exports and imports in their economic activities (Tasrif, 2020). Due to the negative value of Indonesia's GDP for two consecutive quarters, this has resulted in the Indonesian economy entering the brink of recession (Keegan et al., 2013).

Many developed countries experienced economic recession in the same year. The Covid-19 caused the global economy to experience its deepest recession since 1945. This should be a concern for how Indonesia must face and resolve these problems.

Another thing that should be a concern for the Indonesian economy in the future is climate change (Wahyuni et al., 2020). Today's climate change is mostly caused by greenhouse gases because when certain gases are in the layers of the earth's atmosphere, they will block sunlight from leaving the earth and will reflect it back to earth, moreover these gases survive semi-permanently in the atmosphere and do not respond to changes in temperature physically and chemically. Climate change has a detrimental effect on the environment (Walker et al., 2019).

The resulting impacts are shrinking glaciers, premature melting of ice in rivers and lakes, loss of sea ice, accelerated sea level rise, and longer and more intense heat waves (Pearce, 2019). This should also be a concern for Indonesia (Setya Budi et al., 2019), Indonesia is a tropical country with a large population and a high level of use of oil-fueled vehicles as well as an archipelagic country where if not addressed immediately, the Indonesian plains will slowly sink due to the effects of climate change caused domestically and globally (Junaidi, 2019).

Indonesia will experience a lot of losses both in terms of loss of natural resources, increased government costs in dealing with climate change, decreased economic growth, and an impact on the sovereignty of the sea boundaries of the outermost islands that have sunk and have not entered into border agreements with related countries. It is necessary to mitigate the prevention and handling of health and environmental problems (Heacock et al., 2016), plan a roadmap for a new environmentally friendly economic ecosystem for the future, as well as regular evaluations of every step taken by the government (Pfister et al., 2020).

Based on this background, this study aims to provide recommendations to the government where this can be used as an ingredient to solve problems against

various problems that occur so that Indonesia has a new, better economic ecosystem, especially sustainable, environmentally friendly, and becomes the key in developing economic power at the global level in utilizing existing natural resources. Therefore, we focus on the discussion in this study about the electric vehicle ecosystem; new navigation of sustainable economic ecosystem for Indonesia's future.

METHODS

This research uses descriptive-analytic method. This study uses secondary data obtained through the official websites of state and international institutions.

DISCUSSION

Crude oil reserves are a manifestation of the results of human exploration to meet the needs of life, especially transportation support needs (Nasri, 2009). The growing oil reserves found are an indicator that humans will increasingly use oil as a buffer for their transportation needs (Tran et al., 2018). So that the negative impact of using fuel oil will be even greater on climate change which is increasingly worrying.

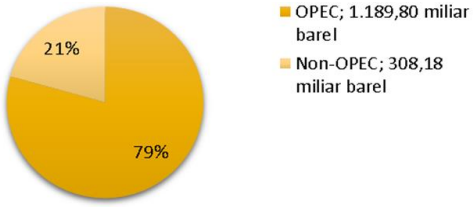


Figure 1. Percentage of Ownership of World Crude Oil Reserves

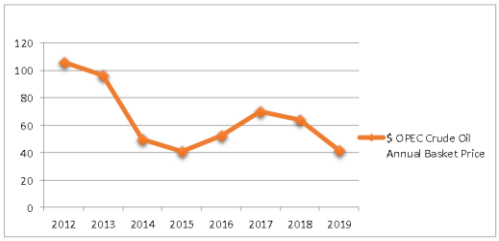
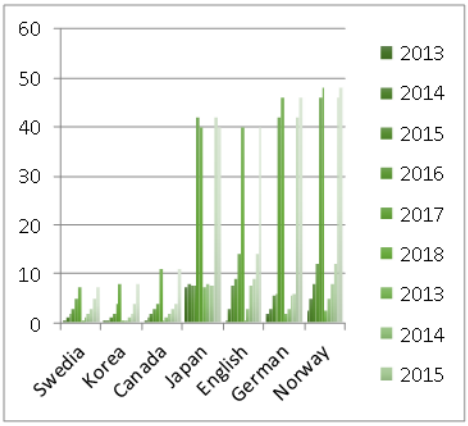


Figure 2. OPEC Crude Oil Annual Basket Price

Source: Organization of the Petroleum Exporting Countries



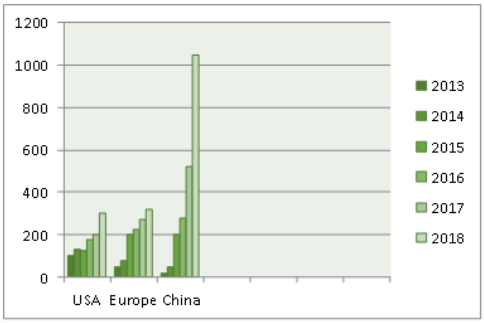


Figure 3. Sales and Market Share of electric vehicles

Source. Victor Tulus Pangapoi Sidabutar, 2020.

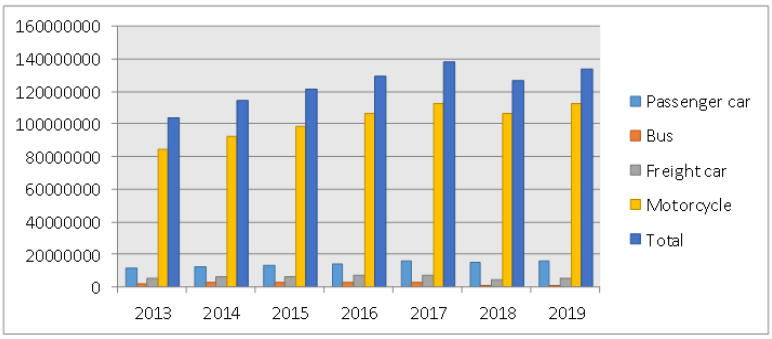


Figure 4. Development of the number of motorized vehicles by type, 2013-2017.
Source: Central Bureau of Statistics, 2021.

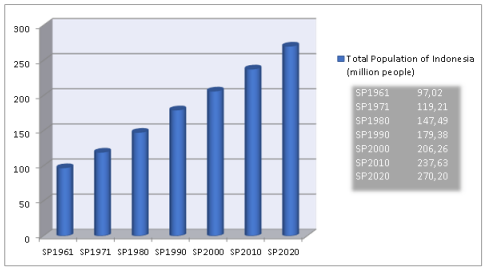


Figure 5. Total Population of Indonesia, SP1961-SP2020

Source. Central Bureau of Statistics, 2021.

Advantages of Electric Vehicles

The advantages of electric vehicles are:

1) *Low Exhaust Emissions*

Table 1. Comparison of emission factors of PLTU and PLTN Indonesia

Type	Fuel	Emission factor of CO_2 (kg/kWh)
PLTU	Coal	1,140
	Natural gas	0,678
	HSD	1,053
	MFO	0,876
PLTN	Uranium Fission Reaction	0

2) *Cheap Electric Car Cost*

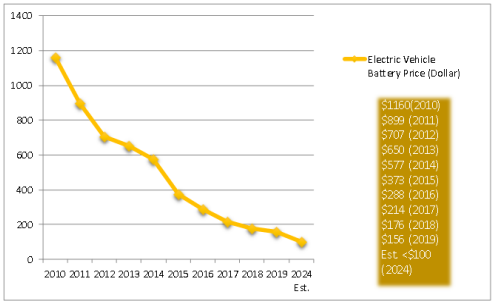


Figure 6. Electric Vehicle Battery Prices

Source: World Economic Forum, 2020.

3) *Indonesia is Rich in Nickel Resources*

Table 2. World Nickel Production

Country	Nickel Production		Nickel Reserve
	2019	**2020 est.**	
USA	13.500	16.000	100.000
Australia	159.000	170.000	20.000.000
Brazil	60.600	73.000	16.000.000
Philippines	323.000	320.000	4.800.000
Indonesia	853.000	760.000	21.000.000
Canada	181.000	150.000	2.800.000
Kuba	49.200	49.000	5.500.000
Rusia	279.000	280.000	6.900.000
China	120.000	120.000	2.800.000
Dominican Republic	56.900	47.000	NA
New Caledonia	208.000	200.000	NA
other	310.000	290.000	14.000.000
Global Quantity	**2.610.000**	**2.500.000**	**94.000.000**

Est. = estimate. NA = Not Available

Source. United States Geological Survey, Mineral Commodity Summaries, 2021.

Electric Vehicles Production Opportunities in Indonesia

This opportunity is an opportunity for Indonesia to build an environmentally friendly country both in terms of transportation infrastructure, upstream sector, downstream sector, new capital city and so on. The new capital city is one of the icons for the Indonesian electric vehicle ecosystem with the creation of an environmentally friendly city including infrastructure. So that the new capital is a real project of the electric vehicle ecosystem in the future. Plus Indonesia's demographic bonus makes this country attractive to investors.

The government has provided a very large area of land to be used as industrial sites, especially industries related to electric vehicles such as the Kendal Industrial Park. The government has made easy access to establishing business entities with Law Number 11 of 2020 concerning Job Creation.

In the field of nickel mining, the government has given a direction so that nickel can be used as added value and can be used domestically first.

The support of the international community for the creation of an environmentally friendly ecosystem has also been agreed with the Paris Agreement in 2015. From these various opportunities it is very important to be an opportunity for everyone to start shifting towards an environmentally friendly ecosystem such as changes in motor vehicles that cause changes climate at home and abroad (Chris Lang, 2011). So the prospect of this low-emission electric vehicle is very good in the future.

Market Reaction and Support of Electric Vehicles

Electric vehicles that have been produced. Here's a table of electric-powered vehicles that have been produced by the world's automotive companies.

Table 3. EV automotive companies

Company	Brand	Type
General Motor	Vue Green Line HEV Cadillac Escallade HEV GMC Siera hybrid HEV	SUV SUV *Pick up*
Allison Transmission	Allison Hybridbus HEV	Bus
Ford Motor	Ford Fusion HEV Ford Escape HEV Mercury Mariner HEV	Sedan SUV SUV
Audi	Audi Q7 Hybrid	SUV
Chevrolet	Chevrolet Tahoe HEV Silveredo Hybrid HEV	SUV *Pick up*
Mercedes	Mercedes S-Class HEV	
Toyota	Toyota	Sedan

Motor	Camry HEV Toyota Prius 3rd HEV Highlander HEV	Sedan *Pick up.*
Hyundai Motor	Hyundai Accent HEV	Sedan
Mitsubishi Motor	IMiEV EV	*City car*
Information; **HEV : *Hybrid Electric Vehicle*** **EV : *Electric Vehicle***		

Economic Impact for Indonesia

The wheels of the economy will move in these various sectors that involve all parties and have a positive impact on the Indonesian economy which is declining due to the Covid-19 pandemic and prepares a new economic ecosystem for Indonesia's future (Nuryakin et al., 2019). Especially having a positive impact on increasing Indonesia's GDP growth, which has a declining trend for the last 10 years.

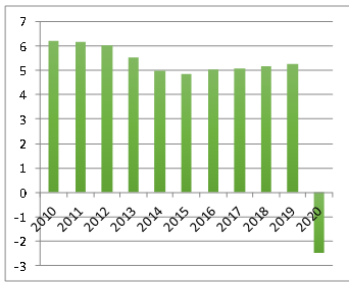


Figure 7. Growth of Indonesia's Gross Domestic Product (percent) *(est. Indonesia Investments.com)
Source. World Bank, 2020.

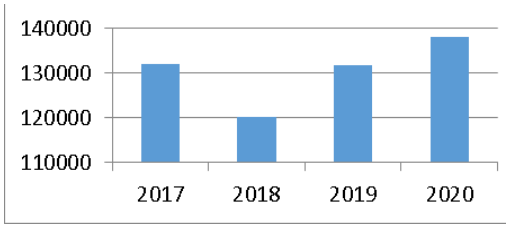


Figure 8. Indonesia's Foreign Exchange Reserves
Source. Bank of Indonesia

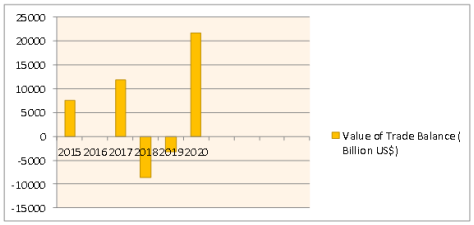


Figure 9. Indonesia's Trade Balance Value (Billion US$)
Source. Central Bureau of Statistics

CONCLUSION

The electric vehicle ecosystem has a very positive impact on the economic progress of the Indonesian nation in the future. Indonesia can have a new, better economic ecosystem, especially sustainable, environmentally friendly, and become a key global player in economic power in the carrying capacity of the

development of the electric vehicle ecosystem in the utilization of available natural resources. The researchers provide recommendations to the government to always support, start, and develop electric vehicles from upstream to downstream so as to create a new, comprehensive electric vehicle ecosystem for the sustainability of the environmental ecosystem and the Indonesian economy in the future.

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