

# Correlation of Environmental Friendly Policies and Use of Electric Vehicles

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## ABSTRACT

The use of oil-fueled vehicles results in the production of emissions in the form of carbon and aerosol particles that can pollute the air. Vehicles that produce carbon in large quantities will interfere with environmental conditions due to oxygen contamination. The policy of using electric vehicles can minimize carbon emissions from the vehicles used. Electric vehicles have less emissions, are efficient and environmentally friendly

**Keywords:** *Policy, Friendly, Environmental, Electric Vehicle*

## 1. INTRODUCTION

Transportation is a need for all levels of society, both upper, middle and lower classes. In the 21st century transportation activities are actually colored by the unfriendliness of transportation itself as well as causing many casualties, property, time, noise, changing the face of the city and even worse environmental damage, on a large scale currently referred to as Global Warming. A development with an environmental or environmental perspective has been agreed upon by most countries in the world, including Indonesia as a concept, as a strategy and model that is expected to be able to maintain the preservation of environmental functions [1].

Smooth service and mobility are important in sustainable development. In Asian countries now is happening chaos and pollution. The rapid progress of the number of vehicles threatens the existence of Asian countries, the number of uncontrolled cars and motorcycles has threatened and affected public health, environmental quality in cities, economic productivity and social welfare in general [2]. Now the transportation sector has been categorized as a source of causes. The faster the process of forming the greenhouse effect, then Asian countries are predicted to be at the forefront of the wave of increased use of motorization, which of course is followed by increased gas emissions of motorized vehicles [3].

From the results of a study by the World Health Organization (WHO), 50% to 80% of Metro Manila's transportation has polluted the local urban air. Pollution originating from transportation activities is then associated with the emergence of several recorded complaints such as respiratory tract disorders and complaints of heart problems [2].

In European countries, the market share for electric vehicles (EV) is quite high. Norway is in the top position with a market share of 29%, followed by the Netherlands with 6.4%, and Sweden 3.4% [4]. A country in Asia that is quite progressive in using electric cars is China, where in 2016, 40% of global sales contributed by the country. This figure is more than double the number of electric car sales in the United States. The rapid development of EV technology makes consumers and potential consumers more confident to buy electric cars and motorcycles. The main concern is the issue of distance (range anxiety), which is answered by the increasingly sophisticated battery technology. Tesla Model S, for example, can be used for a distance of more than 480 km on a single charge. Other manufacturers' models, such as Nissan, are capable of traveling up to 250 km. This increase in battery power was also offset by a decrease in the price of battery [5]. Since 2010, battery prices have fallen by more than 40%. With the development of electric vehicle technology, ranging from batteries, wireless charging, to driverless cars technology; EV will be the dominant mode of transportation in the future [6].

In Indonesia, the use and development of EV itself has not been significant. When he became the Minister of SOEs, Dahlan Iskan pioneered the development of domestic electric cars. Along the way, the challenges that arise are the complexity of the licensing bureaucracy, regulations, and the lack of cross-sectoral cooperation. This year, EVs are being discussed again, where President Jokowi has issued written instructions asking for the development of electric cars to be fully supported by all relevant ministries and institutions. This instruction will be contained in a Presidential Regulation that regulates the type of infrastructure and EV tariffs, technical provisions for EVs and implementation of development, to domestic commercialization [7].

This article aims to find out the correlation between environmentally friendly policies and the use of electric vehicles

## **2. DISCUSSION**

### ***2.1 Asia's Green Transport Initiative***

Global warming is a phenomenon of natural change that is mostly triggered by the presence of Greenhouse Gas (GHG) emissions in the atmosphere, various sectors that are GHG producers must be addressed as carefully as possible to reduce the amount of GHG to a safe concentration limit. The transportation sector which is one of the sources of GHG in the form of CO<sub>2</sub> which is quite large, 25% of the CO<sub>2</sub> concentration in the atmosphere comes from transportation activities. To reduce the contribution of CO<sub>2</sub>, Environmentally Friendly Transportation (TRL) is implemented [8].

Environmentally Friendly Transportation can be applied such as determining the policy for the amount of transportation in an area by looking at the carrying capacity of the environment to accept pollution from motorized vehicles. Furthermore, to establish cooperation between the Ministry of Environment, Ministry of Transportation, Minister of Health and all departments related to transportation activities. Cooperation can also be applied to local and national stakeholders as well as various activities and programs from international organizations [9].

### ***2.2 Eco-Friendly Transportation***

The condition of transportation in Asian countries at the beginning of the 21st century is very important in development activities, but this priority must be balanced with a need to protect the surrounding

natural environment so that pollution and damage do not occur, this statement is the core of the management of environmentally friendly transportation. A good and sustainable management of course requires management that is oriented to the needs of the transportation community in the future. City people not only need safe, comfortable and efficient city transportation, but also environmentally friendly. Everyone knows that is the only inheritance that can be given to future generations [10].

In general, the definition of TRL by the Organization for Economic Co-operation and Development (OECD) is the fulfillment of transportation needs in the present without harming future generations in terms of meeting the needs of people's lives. Although there is actually no specific definition in TRL, the most important thing about TRL is the transportation system and transportation activities where the environment and people (children, mothers and women, disabled people, elderly people, the poor and the general public) can run in harmony and be useful to meet social, economic and other activities [11].

Transportation problems are getting worse day by day in various cities in this world. Therefore, the existing agenda is to develop a transportation management that is part of sustainable urban development. According to the World Resources Institute in Five Winds International, sustainable development is a relationship of environmental, social and economic dimensions that interact and influence one another for more details [12].

Eco-friendly transportation can also mean a collection of forms of transportation with a more sustainable model towards environmental development that is acceptable to urban communities with the characteristics of increasing productivity and profits from the application of the model in question. Environmentally Friendly Transportation can also mean prevention (mitigation) where prevention efforts are considered a lighter and cheaper effort than efforts to improve environmental conditions that have been damaged. For example, the pioneering Green Transportation which was implemented in various forms and conditions in Bogota, Curitiba and Seoul [13].

### ***2.3 Environmentally Friendly Transportation and Global Warming***

The earth is getting hotter which can already be felt in the city of Jakarta apart from the lack of shade

plants, the development of large-scale factories and the more obvious and passing traffic is the result of the increasing use of private motorized vehicles and tends to cause congestion, from traffic jams to highways the engine continues to run with rotation, which is not stable adds to the high emission of pollution from motorized vehicle sources (mobile pollutant sources). The transportation sector, which is dominated by motorized vehicles, has the potential to contribute 25% of greenhouse gas emissions in the form of CO<sub>2</sub> to the global warming process [9].

#### ***2.4 Electric vehicles can support emission reductions from the transportation sector***

Electric vehicles offer several advantages, including higher efficiency, lower operating costs, and lower emission contributions compared to oil-fueled vehicles. As an illustration, according to a comparison made by Ahmad Safruddin from the Committee for the Elimination of Leaded Gasoline, the operating costs of a small electric car compared to an LCGC type oil-fueled car can reach 1/3, while the contribution of greenhouse gas emissions is only 1/10. Regarding emissions, it should be noted that there are two categories of motor vehicle emissions: direct emissions and life cycle emissions [11].

Direct emissions result from the combustion of fuel from motor vehicles, which are dominated by carbon dioxide. These greenhouse gases produced from fossil fuels have a negative impact on health and contribute to global warming and climate change. Meanwhile, electric vehicles produce very little or no direct emissions. Vehicle life cycle emissions need to be considered because they consider the complete production cycle. In this cycle, emissions are calculated based on the entire process: vehicle production, fuel production, distribution, use, to disposal/recycling gasoline to the filling station, and when used as a motor vehicle fuel. For electric vehicles, life cycle emissions also include emissions from electricity production. If the electricity supply for this electric vehicle comes from a fossil fuel power plant, the emissions from this power plant must also be calculated [6].

Even so, electric vehicles are considered to have lower life cycle emissions than conventional vehicles because emissions from electricity generation are lower than direct burning of fossil fuels. Furthermore, the life cycle emissions of electric vehicles will be lower if the electricity used is generated by renewable energy, such as wind or solar [4].

#### ***2.5 Correlation of environmentally friendly policies with electric vehicles***

Currently, the growth of motorized vehicles in Indonesia continues to increase, with an average percentage of 11.5% per year for the last 10 years. The use of fuel oil for motor vehicles also increased by 5% a year, mostly using imported fuel. Both of these have contributed to the decline in the air quality index, where on average, major cities in Indonesia have an “unhealthy” air quality level. The air quality in DKI Jakarta itself is at an “unhealthy” level due to the high mobility within the city and the high volume of vehicles [15]. The Ministry of Energy and Mineral Resources views electric vehicles as having significant potential to increase energy security (reducing fuel imports), reduce carbon emissions, and therefore improve quality. air. Currently, the price of electric vehicles is still expensive because of the imposition of a luxury tax, so incentives for exemption from import duty and PPNBM are needed. Based on the General National Energy Plan (RUEN), there is a target number of vehicles and public electric charging stations (SPLU) for 2025 and 2050. The development of electric vehicles includes the development of electric vehicle prototypes until they are commercially ready, building electric transportation modes from upstream to downstream, to formulate incentive policies for the production of electric vehicles in accordance with statutory provisions. Due to its cross-sectoral nature, the development of electric vehicles according to the RUEN involves the Ministry of Energy and Mineral Resources, the Ministry of Industry, the Ministry of Transportation, the Ministry of Research and Higher Education, and the Ministry of Finance [14].

### **3. CONCLUSION**

Increased vehicles cause a lot of emissions that can pollute the environment. The existence of innovation in the field of transportation with electric vehicles can reduce emissions generated from these vehicles. Emission reduction is associated with a decrease in the number of existing pollutants so that electric vehicles can be an alternative as an environmentally friendly vehicle.

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