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Correlation of Increasing Public Health Status with the Use of Electric Vehicles

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ABSTRACT

Climate change that occurs is caused by global warming. The impacts of climate change can be direct and indirect and can be felt by all countries in the world. Climate change can have an impact on changes in human health due to uncontrolled pollution. Efforts are needed to overcome health problems due to climate change due to global warming. This article aims to discuss the correlation of increasing public health status with the use of electric vehicles.

Keywords: Electric Vehicles, Public Health Status, Global Warming

1. INTRODUCTION

The environment is a determinant of health that can affect public health, as well as behavioral factors and medical services, genetics and population. At this time there has been a change in the environment including global climate change which has become a very important issue. Climate change is caused by global warming and the greenhouse effect. Climate change that occurs can be an increase in temperature, change in humidity and an increase in rainfall which are risk factors for the degree of public health caused by infectious diseases through air, water and vector [1]. These changes vary from one part of the world to another. Indonesia, which is located on the equator, experiences another impact with cold countries. The effects of climate change can be direct or indirect effects such as changes in temperature, increased UV radiation and air pollution, or increased incidence of food availability, infectious and non-communicable diseases and population movement. These effects can be exacerbated in Indonesia due to socio-economic factors such as population density, poverty, personal hygiene, clean water availability and unequal income distribution. Indonesia is also a breeding ground for endemic diseases such as malaria and diarrhea. Therefore, it is necessary to make various efforts to anticipate climate change caused by global warming and the greenhouse effect. One of the efforts intensified by the government is the use of electric vehicles [2].

The government strongly encourages the use of electric cars, this was conveyed in President Joko Widodo's speech at the annual financial services industry event in 2020 at the grand ballroom of The Ritz Carlton Pacific Place Jakarta that only electric cars will one day be allowed to pass in the new capital city. Jokowi wants to build a new capital city with a sophisticated environmentally friendly and transportation system based on autonomous technology. The statement is also accompanied by a ban on the use of conventional motorized vehicles in the new capital area of Indonesia ². In addition, the form of government support is stated in Government Regulation (PP) No. 55 of 2019 concerning the Accelerating battery electric vehicle programs for road transport, the government is ready to provide Fiscal incentives related to electricity-based use by providing import duty incentives on the import of electricitybased vehicles, sales tax incentives on luxury goods, import duty incentives on the import of machinery, goods and materials in the context of investment, incentives for making SPKLU equipment, export financing incentives and so on.

2. GLOBAL WARMING

The increase in exhaust gas pollution causes high air pollution which damages the ozone layer system which in turn causes global warming. Global warming is the process by which the average temperature of the



atmosphere and the Earth's surface rises due to increases in greenhouse gas concentrations as a result of human activity. Greenhouse gases are carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), chloro-fluoro-carbons (CFC), hydrofluorocarbons (HFC), and sulfur hexafluoride (SF6). These gases are called greenhouse gases because they act like glass in a greenhouse. This gas absorbs wave radiation from the sun and reflects it back to Earth, where heat accumulates on the Earth's surface. This happens repeatedly and leads to the fact that the Earth's average temperature continues to rise every year. The average increase in temperature is 0.6° C in the last century [3].

Global warming can lead to various kinds of impacts or consequences. Almost all impacts or consequences caused by global warming are negative consequences. There are so many negative impacts of global warming that can be felt by the earth, humans and even other living things in this world due to global warming. This impact can be felt in everyday life, both consciously and unconsciously by humans. One of the causes of global warming is very high carbon dioxide emissions. These emissions come from burning fossil fuels. Fuels, also called hydrocarbons, are made up of chains of carbon and hydrogen atoms, depending on their chemical structure. When these hydrocarbons are burned with oxygen, carbon dioxide and water vapor are produced. However, if combustion is not complete, it produces very toxic carbon monoxide. Smoke from factories contains a lot of carbon dioxide. There are two main sources of carbon dioxide emissions globally. First, coal-fired power plants waste twice as much energy as they produce. The energy used is 100 units, the energy produced is 35 units, and the energy loss is 65 units. For every 1,000 megawatts produced by coalfired power plants, 2.6 million tons of carbon dioxide are emitted annually. Second, car fire. A car that consumes 7.8 liters of fuel per 100 km and drives 16,000 km per year emits 3 tons of carbon dioxide into the atmosphere [4].

3. EFFECT OF CLIMATE CHANGE ON PUBLIC HEALTH

Natural or man-made climate change can affect public health in a number of ways. Some health threats will increase and new health threats will emerge, for example changes in temperature and rainfall increase health risks related to forest fires and ground level ozone pollution. Extreme increases in air and water temperatures are expected to shift exposure to water and food-borne diseases. With continued global warming, cold weather-related deaths are projected to decline and hot weather-related deaths will increase. As winters become shorter and summers lengthen, the frequency and severity of allergic diseases is expected to increase. Climate change is also expected to change

the geographic extent and distribution of insects and pests, potentially exposing more people to ticks and mosquitoes that carry pathogens such as the Zika virus, Lyme disease, West Nile and Dengue. For example, communities in the Southeast are particularly vulnerable to the effects of heat and flooding which can lead to mosquito populations and potential disease risks. Extreme weather and climatic events that occur can have an effect on the mental health of the affected communities, especially resulting in loss of livelihoods and relocation of areas [5].

Not everyone has the same risk consequences. The effects on health caused by climate change are place-specific and pathway-specific, meaning that the effects of climate change depend on where and to whom. There are varying degrees of climate exposure and differences in individual and societal characteristics that make them more vulnerable to the impacts of climate change, for example populations of the elderly, children, low-income communities and some communities of color are disproportionately affected and less resilient to the impacts of climate change. Adaptation and mitigation policies and programs help individuals, communities and countries to prepare for climate change and reduce injury, disease and death from the effects of climate on health [5].



Figure 1. The effects of climate on health

Climate change has far-reaching effects on health. The picture is an illustration of the very significant components associated with climate change (rising temperatures, more extreme weather, rising sea levels, and increasing carbon dioxide levels) [3].

4. ELECTRIC CAR

One of the efforts to reduce the impact of global warming is to use electric cars. The International Energy Agency has set a target to reduce energy-related greenhouse gas emissions by about 15 gigatons by 2050. This target would mean halving of the total greenhouse gas emissions produced in 2013 by 33 gigatons. The transportation sector contributes quite a lot of gas emissions, amounting to 23% of total greenhouse gas emissions (IES, 2015)³. The International Energy Agency says that by 2050, the global transport sector should contribute about a fifth of the reduction in greenhouse gas emissions from



energy use. Electric vehicles are expected to be the right solution for reducing greenhouse gas emissions in the transportation sector. Electric vehicles are expected to increase energy efficiency and reduce carbon dioxide emissions [6].

The development of electric cars is growing significantly. In 2015 the number of electric cars reached 1.2 million, up 50% from the previous year. So far, electric cars have only developed in countries that are members of the EVI (The Electric Vehicles Initiative), Created in 2009 by the Department of Clean Energy (CEM), the Intergovernmental Policy Forum is dedicated to accelerating the adoption of electric vehicles worldwide. 20 million electric vehicles by 2020⁶. 16 countries have joined EVI, including Canada, China, France, Germany, India, Italy, Japan, Korea, Netherlands, Norway, Portugal, South Africa, Spain, Sweden, United Kingdom and the United States. In Indonesia, the government has announced that electric cars will be available for the next 3 to 5 years. In contrast to conditions in the country, Norway has already implemented this policy. More than 50 percent of the cars in circulation have used hybrid engines, even electric ones. This is due to the convenience provided by the local government for environmentally friendly car drivers. Electric car users are taxed cheaper than gasoline-fueled cars. In fact, the Norwegian government plans to eliminate taxes for electric car owners. This is based on the financing for electric cars is smaller than gasoline engines. Interestingly, electric car owners do not have to pay for parking and toll fees. They are also allowed to use a special bus lane when the road is jammed [6].

The use of electric cars in Indonesia is supported by the government. This was conveyed in President Joko Widodo's speech at the annual financial services industry event in 2020 at the grand ballroom of The Ritz Carlton Pacific Place Jakarta that only electric cars will one day be allowed to pass by in the new capital city. Jokowi wants to build a new capital city with a sophisticated and environmentally friendly transportation system based on autonomous technology [2]. In addition, the form of government support is stated in Government Regulation (PP) No. 55 of 2019 concerning the Acceleration of the Battery Electrical Vehicle Program for Road Transportation, the government is ready to provide fiscal incentives related to electricity-based used by providing import duty incentives on the import of electricity-based vehicles, Exemption from sales tax on luxury goods, exemption from import duties on the import of equipment, goods and materials in the context of investment, exemption from production of SPKLU equipment, exemption from export finance, etc. Electric vehicles are expected to increase energy efficiency and reduce carbon dioxide emissions to reduce global warming affecting public health [7].

5. CONCLUSION

The increase in exhaust gas pollution causes high air pollution which damages the ozone layer system which in turn causes global warming. Global warming is the process by which the average temperature of the atmosphere and the Earth's surface rises due to increases in greenhouse gas concentrations as a result of human activity. The impacts of climate change can be direct, such as temperature changes, increased ultraviolet radiation and air pollution, or indirect, such as food availability, increased communicable and noncommunicable diseases, and population movements. The International Energy Agency says that by 2050, the global transport sector should contribute about a fifth of the reduction in greenhouse gas emissions from energy use. Electric vehicles are expected to be the right solution for reducing greenhouse gas emissions in the transportation sector. Electric vehicles are expected to increase energy efficiency and reduce carbon dioxide emissions.

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