

Indonesia Investment Opportunities on Pilot Projects of Charging System for E-vehicle

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Introduction

Indonesia needs to increase the use of environmentally friendly vehicles as an action to reduce pollution and fuel shortages. The development of electric vehicles is considered appropriate as a solution and the government's efforts to seriously apply it can be seen from the stipulation of Presidential Decree 55/2019. The development of the use of electric vehicles is growing rapidly with the largest market being China followed by Europe and the United States. The development of electric vehicles is very dependent on the policies issued by the country. Indonesia aims to become one of the centers of the world's electric vehicle industry. Regarding the acceleration of the electric vehicle program, one of the most important components of an electric vehicle is the battery. Batteries function as the main energy source in electric vehicles such as wheel drive motors, lights, and other electrical components. Due to the large use of electrical energy required by electric vehicles, these electric vehicles have the disadvantage of being charged for a long time.

One of the infrastructures to support electric vehicles is charging facilities. In Indonesia, public electric vehicle charging infrastructure is divided into three, namely SPLU, SPKLU, and SPBKLU. The Public Electricity Supply Station (SPLU) is a station that is also used for charging electric vehicles, especially electric motorbikes. The Public Electric Vehicle Charging Station (SPKLU) is a special charging station for electric cars. SPKLU can perform charging normally and charging quickly. As well as the Public Electric Vehicle Battery Exchange Station (SPBKLU). In 2020 the Ministry of Energy and Mineral Resources issued Permen of ESDM 13/2020 concerning the provision of electric charging infrastructure for battery-based electric motorized vehicles. This regulation discusses electricity charging infrastructure, electricity charging rates for electric vehicles, as well as the safety of electricity charging infrastructure.

The governments of Indonesia and the Republic of Korea agreed to sign a cooperation agreement on the Record of Discussion (RoD) Installation of Solar Charged E-vehicle System in Indonesia. Through this collaboration between Indonesia and South Korea, we can achieve the common goal of contributing to reducing greenhouse gases in the transportation sector and developing sustainable industries related to electric vehicles. The scope of this RoD project includes the construction of a service center for electric cars and e-scooters, the construction of a battery swab station equipped with a Solar Power Plant (PLTS) electric car charger; assistance in providing e-cars, e-scooters and e-scooter batteries, assistance in providing charging equipment, as well as curriculum development and technical or managerial training. The government continues to encourage the development of electric vehicles as a new trend in the

transportation sector. Encouraged through government programs both carried out alone and in collaboration with other countries.

Charging System for E-vehicle Development in Indonesia

Development of charging infrastructure aims to increase the reliability of the use of electric vehicles. Since 2015 the State Electricity Company (PLN) has built SPLU. In 2020 the number of SPLUs has reached 7,000 units. SPKLU development in Indonesia has increased significantly every year. The total number of SPKLUs available is 96 units, including 32 SPKLUs owned by PLN and 65 non-PLN SPKLUs. The SPKLU development target by the end of 2021 is 168 units.

In this SPKLU there are 5 charging electric vehicles consisting of: 1) Charging with CCS and CHAdeMO connectors, 2) Charging with 1 Mennekes connector, 3) Charging with 1 Mennekes connector and 1 J1772 connector, 4) SPLU, and 5) Special battery charging for Grab electric vehicles. On the SPKLU roof, PLN installed a rooftop PLTS with an integrated or on-grid capacity of 15 kWp with PLN electricity. Energy supply during the day is assisted by PLTS so that it can reduce supply from PLN. Electric charging at SPKLU is already connected to the charge.IN application so that usage and monitoring when charging can be done directly through this application. Charge.IN functions as the SPKLU application to find out the location of the SPKLU, pay electricity usage bills through LinkAja, and find out real-time information when charging.

Development of charging infrastructure aims to improve the reliability of the use of electric vehicles. Transportation companies, especially online taxis and motorcycle taxis are also supporting the battery-based electric motorized vehicle program by participating in building SPKLUs. The Blue Bird company has introduced an electric fleet of 29 units which have been operating in May 2019. The Grab Indonesia company has officially introduced the electric GrabCar service of 20 electric car units in January 2020. Automotive companies such as Mitsubishi have participated in building the electric vehicle ecosystem by building charging station infrastructure. Government agencies and BPPT participate in transferring technology that supports the establishment of standardization of SPKLU technology (in collaboration with BSN) as well as a pilot project for the development of SPKLU. The development of electric vehicle infrastructure targets the construction of 3,000 SPBKLUs in 2021, 17,000 units in 2025, and 67,000 units in 2030.

Indonesia's E-vehicle Market Potential

Indonesia's economic growth continues to increase coupled with a population of more than 260 million and a population of more than 60% of productive age, making Indonesia a potential market for automotive manufacturers. In 2019, car sales in Indonesia reached 1.02 million units, being the largest among ASEAN countries. Of this value, only 600 cars have been sold in the form of electric vehicles, but most of them are intended for transportation vehicles such as taxis. The government has issued a policy to capture the future development potential of the electric car market through Presidential Decree no. 55/2019, concerning the Acceleration of the Battery

Electric Vehicle Program for Road Transportation. In this policy, the government targets accelerating the development of the domestic battery-based electric vehicle industry, providing incentives, and providing electricity charging infrastructure. Finally, the government has just issued ESDM Regulation No. 13/2020 concerning Provision of Electric Charging Infrastructure for Battery-based Electric Motorized Vehicles.

The government's plan to build an electric vehicle ecosystem is supported by natural resources in the form of raw materials for electric vehicle batteries. Indonesia also has many automotive industries. Nickel sulfate production is 50,000 to 100,000 tons per year which can be used domestically and for export. Indonesia could become a global precursor and cathode producer with an annual output of 120,000 to 240,000 tons for export and domestic use. The Ministry of Industry targets domestic production of electric vehicles, including pure electric and hybrid, for four-wheeled and two-wheeled types, to be more than 2 million units by 2025. The target consists of 400,000 four-wheeled units and 1.76 million units two wheels. Then, in 2030 production will increase to 600,000 four-wheeled vehicles and 2.45 million two-wheeled units. The electric vehicle production target adjusts the government's target of reducing greenhouse gas (GHG) emissions by 29% by 2030. If Indonesia succeeds in producing electric vehicles reaching 600,000 four-wheeled vehicles and 2.45 million two-wheeled units, it will save imported oil significantly.

Several companies have brought Electric Motorized Vehicles (KBL) into the commercial sphere and plan to continue in the future. Local taxi company Bluebird has been using electric motorized vehicles in its fleet. This vehicle can travel up to 400 km on a single charge. Transportation booking service company Grab has also launched its first fleet of electric cars in early 2020, with a pilot service of 50 KBL cars based at Soekarno-Hatta International Airport. The industry has also attracted the attention of leading international automotive industry players. PT Electric Circle Optimum, a Hong Kong-based company, is also investing in this sector, for two-wheeled, three-wheeled, four-wheeled vehicles and many more. The company has also set up a factory in Surabaya, East Java. The Indonesian government provides investment incentive opportunities for potential investors in this sector.

Korea's Investment and Technology Prospects on E-vehicle Charging Industry

The opportunity for the electric vehicle market to grow in the domestic market has not escaped the attention of world automotive manufacturers. They competed to enter first by setting up factories. One of them is the Hyundai Motor Company (HMC), which will become the first automotive industry company in Indonesia to start producing electric vehicles in May. Hyundai has invested US\$ 1.5 billion in Indonesia, one of which is to build a car factory in Bekasi, West Java. Through its Indonesian subsidiary, PT Hyundai Motor Manufacturing Indonesia (HMMI), the South Korean automotive manufacturer will produce 1,000 units of electric vehicles per year in the first phase. Currently, Hyundai has sold two electric cars in Indonesia, the Ioniq EV and Kona EV, but these two products are still imported from South Korea.

Hyundai and LG also warmly welcome Indonesia's investment policy regarding electric cars. The two companies signed a memorandum of understanding to build an electric vehicle battery factory in Indonesia. The Indonesian government has agreed to provide incentives and rewards to support the construction of the plant. Construction of the factory already started in 2021 and is targeted for completion in 2023. The factory is expected to start operating in the first half of 2024. As a sign of its seriousness working on the domestic market, Hyundai has launched the cheapest electric car product currently available on the Indonesian market. The recently released Hyundai Iqonic and Hyundai Kona are in the range of IDR 640 million.

The Ministry of Energy and Mineral Resources, represented by Secretary of the Directorate General of New, Renewable Energy and Energy Conservation (EBTKE) and President of the Korea Institute for Advancement of Technology signed a Memorandum of Understanding (MoU) for the Electric Vehicle Charging System Pilot Project. The signing of this MoU was one of the deliverables at the Ministerial Meeting of the Joint Committee Meeting on Economic Cooperation (JCEC) between the coordinating minister for the Economy of the Republic of Indonesia and the Minister of Trade, Industry and Energy of South Korea (MOTIE). JCEC Indonesia - Korea is a meeting between the coordinating minister for the Economy of Indonesia and the Minister of MOTIE South Korea in the context of increasing economic cooperation. In the JCEC forum, the two Ministers discussed and agreed on cooperation in various fields which were reflected in the four Working Groups, namely investment and trade, industry, energy and mineral resources, and e-commerce. Cooperation in the development of electric vehicle charging stations is one of the concrete results of this JCEC forum.

Conclusion

Indonesia is considered ready to become a producer of electric vehicles. Even though they must cooperate with other countries that already have more advanced technology. In addition, Indonesia also has large reserves of raw materials in the form of nickel and cobalt to be developed into the lithium battery industry as the main component of electric vehicles. Indonesia certainly does not want to be importers of vehicles all the time, but we must be able to produce electric vehicles. In terms of technology, Indonesia has mastered it. Indonesia's desire and commitment to become a manufacturer of electric vehicles is stated in Presidential Decree No. 55 of 2019 concerning the Acceleration of the Battery Electric Vehicle Program for Road Transportation. MoU regarding Cooperation on Pilot Projects of Charging System for E-vehicle signed by the Director General of EBTKE with the President of MOTIE in the field of electric motorcycles, electric vehicles, and human resource development.

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