# ABSTRACT

In recent years, electric vehicles (EVs) have become increasingly prevalent, especially in advanced countries, owing to their efficiency and technological advancements, as well as a growing environmental consciousness. However, in Indonesia, fossil-fueled vehicles remain the dominant choice due to their affordability and entrenched use over decades. Nevertheless, a transition to EVs is emerging, propelled by both governmental incentives and societal willingness to embrace cleaner and more sustainable transportation options. The Government of Indonesia is actively promoting electric vehicles, with President Joko Widodo's administration setting ambitious targets for EV adoption. The transition from conventional vehicles to electric ones aligns with global efforts to achieve Net Zero Emissions (NZE) by 2060.

Central to the operation of EVs is the Controller Area Network (CAN) Bus technology, which enables efficient communication between various vehicle components. This technology, originally developed by Bosch in 1989, has since evolved to streamline the interconnection of automotive devices, contributing to the modernization of in-vehicle networks. This means that through CAN-Bus, real-time monitoring and control of vehicle components are made possible. To further enhance the EV industry in Indonesia, Power Line Communication (PLC) technology is introduced. PLC leverages the existing electrical grid as a communication medium, offering advantages such as infrastructure compatibility. By combining CAN-Bus and PLC technologies, it becomes feasible to analyze and reprogram vehicle components, allowing for self-diagnosis and optimization. Several companies, including Continental Engineering Services (CES), Renault, Xingtera, and Star Charge, have developed gateway technologies to facilitate communication between CAN-Bus and charging stations. This research seeks to create a functional Electrical Vehicle Power Line Communication (EVPLC) system to bridge this communication gap and promote EV adoption in Indonesia. This document proposes the development of an EVPLC system in Indonesia to bridge the communication gap between EVs and charging stations, enhancing the reliability and efficiency of electric vehicles. It responds to the government's clean energy initiatives, aligns with global climate change efforts, and supports the rapid adoption of electric vehicles in Indonesia.