BACKGROUND HANOI

Demonstration City | Hanoi - Vietnam

Overarching issues

Vietnam is experiencing rapid economic growth (6% per annum) and urbanization, which is also coupled by a rapid increase in transport demand. Study estimates that if policy measures are not implemented, the GHG emissions from the transport sector will triple by 2030, from the current level of 32 million tons Carbon dioxide equivalent (CO2e) per annum. The International Energy Agency (IEA, 2018) estimates that 97% of the transportation GHG emissions are from road vehicles. Essentially, road vehicles contribute 18.5% of the total fuel combustion-related GHG emissions in Vietnam. The per capita CO2e emissions from transportation is estimated to be 350 kg/year (IEA, 2018). Transportation has also been implicated as a major source of urban air pollution in Hanoi (Clean Air Initiative, 2010).

In 2017, there were 54 million registered motorcycles, 1.5 million cars, 154 thousand trucks, and 1.1 million trucks in Vietnam. From 2007 to 2017, passenger car registration has been growing at a rapid pace of 17% per annum, while motorcycle registration has grown at 10%. The bus fleet is growing by 6% per year, and trucks by 14% per year based on the data collected by the ASEAN-Japan Transport Partnership (AJTP, n.d.). About 96% of the motorbikes in Vietnam belong to the following brands: Honda, Yamaba, Suzuki, Piaggio (Ha, 2017).

E-mobility overview

The uptake of e-mobility has been slow in Vietnam. According to the VIR (2018, as quoted in Pastoor 2019), only 1,229 hybrid vehicles and 7 electric vehicles (excluding 2-wheelers) have been shipped to Vietnam from January 2010 and March 2017. The MoT's five-year plan aims to introduce 200 hybrid and 50 plug-in hybrid buses by 2020. It is interesting to note that there is a dedicated unit focusing on e-mobility within the MoT's Department of Environment (Bakker et al., 2017).

Honda, which currently dominates the motorcycle market (74% in the first 9 months of 2018), recently launched a hybrid model called PCX ("E-bike brands", 2018). Electric bikes from China are also imported and sold for 1,500 to 1,950 USD. There are also locally produced EVs such as Pega Aura (fitted with Bosch technology) which sell for approximately 630 USD ("E-bike brands",). VinFast (see section 3.E) is aiming to capture a significant portion of the local market, as it opens its manufacturing facility in Haiphong. VinFast aims to produce 250,000 motorbikes within a year. Together with the launching of its manufacturing facility, it also launched its electric motorbike model called Klara which retails for 913 USD (lead-acid) to 1,521 USD (lithium ion) ("E-bike brands", 2018). VinFast is also cooperating with PV Oil to put up 30,000-50,000 charging stations and battery leasing terminals throughout the country (Pastoor, 2019).

Current state and initiatives

Currently, the local capacity for EV manufacturing, operation and maintenance is limited in Hanoi. There is no organisation that provides courses on EVs yet. Universities in Hanoi do not have formal degree courses in EVs yet but EV is partly included in engineering degrees (e.g. Automotive engineering). University of Transport Technology (UTT) and other universities in Hanoi are highly interested to collaborate to start with organizing courses (including e-courses) on EVs and organizing workshops targeting different stakeholders.

Vehicle integration

The integration of shared e-scooters with buses and metros can result in easy route planning and payment through the Mobility-as-a-Service app. Existing apps are available for individual mode (e.g. Timbuyt for buses) while previous pilot projects on smart ticketing ended without further implementation (e.g. e-ticket system by Transerco with Viettel Group and MK Ticket Group). Under the SOLUTIONSplus, it is necessary to understand the functionality of the currently active application as well as lessons from the failed vehicle integration project and then develop appropriate Mobility-as-a-Service application for Hanoi city.

Charging infrastructure planning and technology

For the growing number of EVs in Hanoi, mainly Vinfast e-2 wheelers, a support on appropriate battery solutions, disposal and charging options are required. Some solutions have been explored in individual e-scooter and under SOLUTIONSplus suitable options for a shared system are needed. EV charging stations for public transport (E-buses) are limited in Hanoi. Besides a demo of ABB charging solutions in Vinfast E-buses, Hanoi city needs support on charging infrastructure planning and technology.

Business model development

EV is still too expensive compared to conventional vehicles for most of the Vietnamese population. The demo on a shared e-scooter system needs a good business case with the involvement of various stakeholders. Support on business model development on shared e-scooter is a need.

EV promotion

Vietnam/Hanoi has a potential of the EV market due to increasing imports as well as local production (Vinfast). Along with appropriate regulations and financial incentives, Hanoi needs supporting policies on communication, advocacy and promotion of EVs. A strategic planning on capacity building activities for various stakeholders on EV promotion is highly desirable. This can include disseminate cost-benefit analysis and reduced life-cycle cost , that shows market potential, environmental and health benefits.