

# BACKGROUND PASIG



Demonstration City

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Pasig - Philippines

## Overarching issues

The International Energy Agency (IEA, 2018) estimates that 103 million tons of Carbon dioxide (CO<sub>2</sub>) was emitted by fossil combustion-related activities in the Philippines. Thirty percent (30%) of the CO<sub>2</sub>e emissions was contributed by the transportation sector, with road transportation contributing 85% of the sector's emissions (25% of the national total). Road transportation has also been implicated as the priority source of air pollutant emissions by the national air pollutant emissions inventory by the Department of Environment and Natural Resources (DENR) which estimates that road vehicles emit 65% of the emissions load (DENR, 2017).

Vehicle motorization in the country has primarily been driven by motorcycle growth in the recent decade. Between 2004 and 2017, the registered vehicle fleet in the country has grown at an annual rate of 15%, with motorcycles growing at an astounding 18% per annum, with the total registered motorcycles tripling in size within the period – 1.8 million to 6.1 million (see Figure 2). Such growth can potentially be explained by increased access (driven by economic growth and availability of financial schemes that require low down payment) to motorcycles, and also perhaps due to the state of congestion in many of the major urban agglomerations in the country. Recent analyses have pointed to Metro Manila as having one of the worst congestion levels in the world, and Cebu being the worst place in the world to drive in (Waze, 2015; Numbeo, 2019).

## E-mobility overview

The Land Transportation Office (LTO) registration data shows that the on-road electric vehicle fleet in the country is primarily dominated by electric tricycles (three-wheelers) and electric motorcycles (see Figure 3). Historical documentation of the growth in registered e-vehicles is not yet available as the rules regarding the registration of e-vehicles have varied over the years. LTO is yet to announce, for example, the adopted rules for registering e-motorcycles. These issues are related to the fact that the underlying national laws still pertain to vehicles as those having internal combustion engines. MMC et al. (forthcoming) has documented 15 models of e-jeepneys, 21 models of e-tricycles, 11 models of electric cars, and 61 models of other two to quadricycle models available in the Philippine market.

E-mobility has been slow in picking up in the country. In 2014, the Electric Vehicle Association of the Philippines (EVAP) forecasted that the e-vehicle fleet in the country would be at approximately 54,000. As seen in the registration figures, the actual registrations have been far off these projections. Multiple significant barriers (i.e. high acquisition costs, limited charging infrastructure, lack of social and technical familiarity, registration issues, lack of financial incentives) have contributed to such a slow uptake (MMC et al., forthcoming). There have been e-jeepney pilot projects in the past in several major cities (e.g. Makati, Pasig), as well as pilots involving e-tricycles. The most recent one, the ADB-DOE project, is discussed in Section 2.E. However, no significant levels of roll-out have been achieved to date.

## Technology, infrastructure and network planning

Much of the training needs of the local government unit of Pasig City and PHLPost Pasig relate to the EV technology, the use, troubleshooting and repair, and maintenance of EVs and to the set-up of charging infrastructure. As the technology is rather new to the target users, there are basic questions regarding its operation under certain conditions, such as flooding as well as battery consumption under hot weather. PHLPost also needs more information on electricity cost and maintenance of the units. As PHLPost motorcycles ply along narrow alleys, they also raised concern on EVs being silent while in operation.

Pasig City Transportation and Development Management Office (CTDMO) and PHLPost also need support in planning for the charging infrastructure, specifically in selecting the optimal locations. The objective of Pasig CTDMO is to have a charging infrastructure that would accommodate electric 2- and 3-wheelers, including the public transport electric 3-wheelers. Prior to the pronouncement of enhanced community quarantine in Metro Manila in mid-March 2020, Pasig CTDMO was supposed to conduct an ocular inspection for the location of eSakay, Inc. coin-operated charging infrastructure for the public transport electric 3-wheelers (e-trikes). Then, Meralco (the electric power distribution company) will investigate the feasibility of setting up the charging infrastructure at that location specifically looking at power lines.

There are also questions concerning the policies of the Department of Transportation's Land Transportation Office (LTO) regarding license and registration of new EVs. As of writing, government vehicles are granted red plates while EVs are granted orange plates, so there are uncertainties regarding government EVs.