

BACKGROUND KATHMANDU



Demonstration City

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Kathmandu - Nepal

Overarching issues

With the growing urbanisation and higher incomes, the demand for vehicles is increasing in Nepal. Vehicle registration – primarily private vehicles – is increasing tremendously, causing air pollution and health impacts. According to the Department of Transport Management (DoTM) 2019), during 1990-2018 the number of total vehicles registration yearly grew by 16% per year. In the same period, the number of motorcycles grew at an annual rate of 17%, which is higher than the overall vehicular growth rate of 14% per year (see Figure 1 and 2). According to DoTM records, as of March 2019 the number of motorcycles were 78.57% of the total number of vehicles registered. By March 2019 there were a total of 3,539,519 vehicles registered in Nepal. From the total vehicles registered in Nepal, a major share is concentrated in the Kathmandu valley.

In Kathmandu, the number of buses rose from 4000 units in 1990, to more than 35,000 units in 2015. This category includes full size buses, minibuses, microbuses and three-wheelers, called tempos. However, as a share of the total vehicle fleet, buses have declined from 11% of the total in 1990, to only 3% in 2015 due the rise of private vehicles (GGGI, 2018).

According to recent data, the national public and private vehicle fleet, excluding commercial vehicles (like trucks and mini trucks, construction machines), contributes about 4.5 million tonnes CO2 emissions per year, and 1.9 million tonnes in the Kathmandu valley.

E-mobility overview

E-mobility started in Kathmandu Valley in 1975 with the introduction of trolley buses along a 13 km route between Kathmandu and Bhaktapur. Battery powered 12-seater capacity (including driver) three-wheelers (named Safa Tempo) was introduced in Kathmandu in 1995 (project started in 1993) to ban and replace the city's diesel-run the worst polluter three-wheelers. With the support from Global Resources institute (GRI) from the USA, they were manufactured in Kathmandu by assembling imported components. The main body was built in Kathmandu and chassis was imported from India, while electric components such as the battery, converter, motor, controller, fuel gauge, connector contact, carbon brush, etc. were imported (GRI, 2006). More than 700 Safa Tempos still run in Kathmandu. Once the fossil-fuelled micro-buses were on the streets, Safa Tempos could not compete with the comparative comfort and speed of the micro-buses and thus, Safa Tempo manufacturing has slowed down. As a result, out of 7 Safa Tempo manufacturing plants and 38 charging stations, currently there are only 2 manufacturing plants and 28 charging stations. Some of those Tempos need refurbishment. To date, 25 of them have their battery replaced from lead acid to lithium ion (TKP, 2019).

Current state and initiatives

Currently, the local capacity for EV manufacturing, operation and maintenance is limited or weak in Nepal. Electric vehicles are not yet in the official curriculum in the university as well as there are very few or none that provide technical training locally. However, universities (e.g. Kathmandu University, Tribhuvan University) and local NGOs (e.g. CEN) are highly interested to collaborate to start with organizing e-courses on Evs and organizing workshops targeting different stakeholders. A collaboration with Global Green Growth Institute (GGGI) Nepal's Electric Mobility Program (EMP) phase III (2021-22) will be sought to support capacity building activities on Evs in Nepal.

Needs and opportunities

Technology, Operation and maintenance

The training on planning, technical specification, procurement, operation, and infrastructure of E-bus is the need in Kathmandu. Good knowledge of technology, operational, and maintenance set-up will support proper planning for Sajha before E-bus procurement. Besides a good understanding of differences between buses and providers, Kathmandu needs capable staff for regular maintenance too. The conversion of old diesel bus to E-bus is being carried out locally for the first time in Nepal. Technical support on this is highly desirable to guide the conversion and to increase the local capacity in the vehicle conversion.

Business model and financing

The current E-3 wheelers (Safa Tempos) are quite old and the redesign is highly necessary to increase vehicle efficiency, comfort, and safety. Local manufacturers will redesign upto 14 E-3 wheelers under SOLUTIONSplus. However, they would be comparatively costlier than conventional E-3 wheelers. The case is similar for forthcoming E-buses (new and converted) compared to conventional diesel buses. Therefore, a proper business model and financing options are needed to increase the share of Evs in Kathmandu, including developing frameworks that encourage private sector involvement.