

Summary Report
Stakeholder Consultations on Informal Transport
Bangkok, Thailand
March 2023

1. Introduction

This report summarizes the findings of an exploratory focus group held in March 2023 aimed at understanding the current state of electric vehicle motorbike taxis in Bangkok in terms of technology, business models, and perceptions among motorbike taxi drivers. The 16 participants included leadership of the Motorbike Taxi Association of Thailand and the Electric Motorbike Taxi Association, electric vehicle (EV) battery and motorbike manufacturers, the power utility, the Bangkok light rail transit system (BTS), the power utility, an e-motorbike rental platform, a battery swapping network provider, academics, and a government regulator. Participants were chosen based on Chulalongkorn University's Transportation Institute's (CUTI) previous work and knowledge of the sector, and were invited via phone or email. CUTI researchers hosted and facilitated the focus group.

The lively discussion went beyond the 1.5 hour scheduled time period, and provided a novel forum for participants to interact in meaningful conversation, most of them for the first time. The outcomes of the focus group will help identify barriers and possible interventions to support EVM implementation in Bangkok, and guide CUTI's future research endeavors under the VREF grant.

2. Current status and business models

The Thai government policy "30@30" aims to advance the domestic production of EVs to comprise 30% of all automobile production by 2030, and to make Thailand a regional EV production hub. In 2022, the The government began a subsidy program for EVs, including purchasing discounts and tax incentives. This campaign will continue until the end of 2023 for imported motorbikes, and until 2025 for locally produced motorbikes.

However, the price of an electric motorbike remains significantly higher than the traditional internal combustion engine (ICE) motorbikes. Therefore several business models were developed in order to motivate motorbike taxi drivers to shift to electric motorbikes. From the discussion with study participants, we found that three possible business models are available:

1. **The conventional model:** Drivers directly purchase electric motorbikes. With this model, the drivers will have full ownership, but they must bear the burden of high upfront and long-term costs.
2. **Battery subscription model:** Drivers purchase only a motorbike but subscriber batteries on a weekly or monthly basis. In this model, drivers will own only the vehicles and borrow batteries from the battery-swapping station. One participant, who was part of a project to promote public motorbike taxis, said:

"This model will help to reduce drivers' investment and debt since battery costs may decrease by 30-50%. However, the drivers may think that they don't really own the vehicles, because without a battery, the vehicle itself can not be operated."

Current regulations by the Department of Land Transport (DLT) require all publicly-used motorbikes to obtain yellow commercial license plates. But the current regulations do not allow for vehicles without a battery to register. Also, finance companies or banks may not accept loan applications of vehicles without a battery. One participant mentioned that:

“Even though the authority allows us to register for a vehicle without battery, the auto finance company will reject our loan.”

One of the key success factors of this business model is that battery-swapping stations must be sufficiently available. Typically drivers go to swapping stations to change batteries in the morning before going to their motorbike taxi stands. A successful battery-swapping network needs to take into consideration the location and behaviors of motorbike taxi drivers, which could mean significant upfront infrastructure costs.

3. **Rental model:** In this business model, motorbike taxi drivers can lease electric motorbikes instead of owning the vehicles. This model can help reduce the drivers' upfront costs and expenses for long-term maintenance and repair, since the service provider will handle all of this. However, as one electric motorbike rental platforms cautioned:

“From our experience, we found that since the drivers did not own the vehicle, they did not take as good care as if they owned the vehicles.”

However, the drivers who participated in this focus group meeting argued that:

“The condition of the vehicles affects the safety of both drivers and passengers. The drivers put the first priority on safety. But they may not have enough knowledge on how to self-maintain the electric vehicle, even though they are really familiar with internal combustion engine motorbikes.”

3. Obstacles

According to focus group participants, the proliferation of electric motorbike taxis in Bangkok face a number of obstacles, including:

Current Vehicle Registration Regulations

Unlike other informal transport modes, Thai motorbike taxis have specific regulations, and are required to apply for “yellow plates” to operate as a public motorbike, and drivers must have a public motorbike taxi driver license. One driver can have only one registered motorbike, and if they want to change to a new motorbike, they must re-apply for a yellow plate for the new motorbike, and the old one will become obsolete.

As mentioned above, the electric motorbike rental model is hard to implement under current regulations. As one participant suggests:

“If the government wants to promote E-bike for motorbike taxi drivers, the regulation must be discussed seriously. We need to raise this issue and ask for an amendment.”

Previous policy and interventions neglected revenue opportunities

Even though the government has launched the subsidy program for purchasing discounts and tax incentives, those programs are part of a general campaign to promote EV purchases focused on cost reduction. However, commercial motorbike drivers need more opportunities to increase their own revenues to make electric motorbikes a worthwhile investment.

From the focus group discussion, participants agreed that one way to increase revenue for drivers is to form partnerships. For example, in commercial zones where merchants or shop owners have to order or deliver goods, they can collaborate with electric motorbike taxis to give them first priority. This can help maintain drivers' revenue, especially during off-peak times with low passenger demand.

Unclear definition of EVs and batteries, and redundancy of tax charges

The Excise Department considers EV batteries as equivalent to the fuel tanks in ICE vehicles. Therefore, vehicles without batteries and imported EV batteries are not included in the government subsidy programs. Participants agreed that:

“The definition of EVs, especially those without batteries should be clearly defined and the taxation should be reconsidered.”

Moreover, the excise tax for EVs are double counted. First, the imported batteries are subjected to custom duty, including excise tax. Then after assembling the vehicle and battery, it will be charged again for excise tax.

Insufficient battery swapping infrastructure

One of the concerns as the key obstacle to motivate drivers to shift to electric motorbikes is the limited number of battery swapping stations and the coverage of swapping stations. One of the participants told us that normally motorbike taxi drivers do not charge batteries at home but they do use a battery swapping service before going home or on the way to their motorbike taxi stands. Therefore, the drivers do not care much about charging time but are concerned about the availability of battery swapping stations.

In terms of battery capacity, the current capacity of the battery can reach more than 200 kilometers. Because most motorbike taxis make only short trips, the majority of participants agreed that current battery capacity is sufficient for drivers to swap for fully charged batteries 1-2 times per day. A representative from the biggest e-motorbike rental platform and battery swapping network provider told us that the company has approximately 100 stations in Bangkok. Combined with the number of stations owned by other companies' battery swapping stations, the total number of battery stations in Bangkok is still less than 200. Considering that Bangkok covers an area of 1,569 square kilometers, each station covers at least 15 square kilometers or more. This was a big concern for drivers in the focus group.

Drivers lack of knowledge about EVs

Even though motorbike taxi drivers are familiar with using a conventional motorbike, using an electric motorbike is totally different, particularly when it comes to maintenance. Participants from the academic sector who ran a pilot project to transform conventional motorbike taxis into electric motorbikes gave some suggestions to help drivers with routine maintenance and proper charging. Participants representing motorbike taxi drivers argued that the drivers do not have the proper knowledge about taking care of their electric motorbike. Drivers also said that they are aware that the battery needs to be swapped or recharged, but there might not be a charging station or battery swapping station nearby. The participants suggested:

“It would be great if there is a 24-hour service center, so the drivers can ask for help or ask for any questions and get the answers immediately.”

Finance, refinancing, and reselling

Because the official definition of a vehicle requires it to be equipped with a fuel tank, an electric vehicle without a battery is not recognized as a vehicle. Therefore, finance companies do not accept loan applications for new electric motorbikes or for refinancing, which participants identified as a key obstacle to motivate motorbike taxi drivers to shift to electric motorbikes. One participant pose this to the group:

“Is there a way to create a new loan package for motorbike taxi drivers to purchase new vehicles and to make sure that finance companies will approve the loans in practice? The authorities should consider implementing financing policy if they want to encourage drivers to shift to electric motorbikes.”

Traditionally, motorbike taxi drivers would resell their motorbike before purchasing a new one. However, since the use of electric motorbikes is still in its early stages, drivers are concerned about the resale value. This is unlike with conventional motorbikes where drivers can estimate the resale price based on years of use, brand, and model.

Insurance

Similar to financing, insurance is not available for electric vehicles without a battery. Even the current insurance package for conventional motorbike taxis is not satisfactory for drivers since the insurance coverage is quite low. Participants representing motorbike taxi drivers told us:

“Even though there are regulations regarding insurance coverage for motorbike taxis, in fact, insurance companies do not approve or allow full coverage for us since they consider motorbike taxis to be risky in terms of accidents. Despite our willingness to pay higher insurance premiums in exchange for increased coverage, they still do not accept it. Obtaining insurance for electric motorbike taxis would be even harder.”

4. Possible interventions to convert to EV motorbike taxis

Based on the focus group discussion, interventions to help facilitate the conversion of EV motorbike taxis include the following:

- **Strengthen drivers’ knowledge on maintenance and proper EV use**

Having knowledge on how to use electric motorbikes properly, such as battery charging and routine maintenance may not seem significant at first. However, a lack of knowledge can be harmful to the vehicle. For instance, overcharging or overusing. It is important to strengthen drivers’ knowledge to avoid potential damage to their motorcycles.

- **Shared batteries and/or standardize batteries across platforms**

Infrastructure like battery swapping stations require high investment upfront cost but seems to be one of the biggest concerns to change to electric motorcycles. Despite high upfront cost, each manufacturer and battery service provider has their own standard and technology. Standardization of battery and swapping station systems will help to reduce investment cost and encourage drivers to shift from conventional motorcycles to electric motorcycles. This would make electric motorcycles more affordable and stimulate higher EV adoption.

To standardize and establish shared battery swapping stations, several approaches can be taken which require coordination between private and public sectors. The authorities should set up policies to standardize batteries while the private sector, especially key players in the EV industry, should collaborate to jointly develop battery and swapping systems.

- **Engage drivers into partnerships with EV motorbike manufacturers**

One of the interventions that participants find interesting and challenging is the partnership between manufacturers and drivers. To motivate and persuade people to willingly change their minds from something they are already familiar with to something new, those individuals should be engaged and made to feel like they are part of the process. If there is any business model that can partner with drivers and make them feel that they also own the business, they will want the business to grow and be willing to shift to electric motorcycles. Additionally, there will be more chances that they will persuade other drivers to join the partnership which helps to increase the EV adoption rate.

- **Regulation amendments to enable electric motorbike taxi registration, financing and insurance coverage**

As discussed with the participants, one of the primary obstacles is the regulations, particularly the registration for publicly-used motorbikes. The participants agreed that the regulations should be amended to permit the registration of electric motorbikes without battery for yellow plates. Consequently, drivers will have options to purchase empty electric motorbikes and subscribe to battery rental service. This approach would effectively lower the investment costs for drivers. Furthermore, if the registration allows for no-battery vehicles, then the financing and insurance coverage will be able to improve.

- **Help support an alliance to advocate for new policy and regulations, funding, and training**

While focus group participants expressed a desire to work together to support electric motorbike taxis in Bangkok, they also voiced the need for supportive structures to help them change policies and regulations, to build a comprehensive battery charging and swapping network, and to educate drivers on bike maintenance. Participants underscored that this approach needs to be integrated throughout the entire ecosystem. CUTI therefore proposes acting as a convener to help build an alliance across these diverse stakeholders to help them advocate for necessary structural and institutional changes. CUTI's strong network and research skills can help shape new policies and regulations, help identify and design charging and swapping stations, investigate appropriate business models and funding sources, and connect drivers to trainings. CUTI can help support pilot programs to explore the most effective and efficient paths forward.

Concluding Remarks

This focus group enabled both CUTI researchers and participants to gain valuable insights to help shape future research supporting EV motorbike implementation in Bangkok. The conversations helped describe the current state of EV motorbike technology, business models, and regulations, and identified barriers and potential interventions. Moreover, the focus group provided a space for in-depth dialogue among stakeholders. Participants showed an interest in EV motorbikes, and a strong willingness to work together, but are in need of support for systemic, comprehensive institutional change. CUTI can provide this support through further participatory research activities like this focus group.