

CitiesSHIFT webinar #2: unanswered questions
Accelerating electrification in public transport: Policy and financing framework
on 4 July 2019

Thank you for your active participation throughout the webinar. Although we are unable to respond to all questions during the Question & Answer section of the webinar, please read the responses that we have compiled. If you have any further questions, comments or feedback, please feel free to reach out to us at ecomobility@iclei.org.

To check out the webinar recording and download the presentations, please visit our web page: <https://ecomobility.org/citiesshift-webinar-accelerating-electrification-in-public-transport/>

Question for Jingyi Chen (Foshan)

- 1. If the city government for Foshan is instrumental in the shift to electric buses, what financing arrangements will be of help for cities in developing countries to imitate Foshan?**

Foshan: Financial support from national subsidies combined with funding from the city government has enabled the acceleration of electrification in the initial phase. As the electric vehicle industry matures, the national and municipal subsidies have reduced and will eventually be market-driven.

Questions for both Jingyi Chen (Foshan) and Yubing Shen (Shenzhen)

- 1. Regarding the initial capital for the buses, apart from the sustainable mobility advantages is the return on investment for the operator advantageous over the diesel buses in the short run?**

Foshan: For the time being, there isn't much study on the return on investment. Based on the current data of purchase cost, the construction cost of charging stations, energy cost and maintenance cost, the investment return of electric buses is lower than that of diesel buses. However, in order to accelerate the development of electric buses, the government can provide financial incentives for EVs, for instance, subsidies for purchasing EVs, constructing charging stations and electricity prices to help companies to reduce costs. There are various ways for companies to reduce operation costs: charge in non-peak hours, optimize bus routes and charging stations, increase passenger capacity, etc.

Shenzhen: Looking into Shenzhen's experience with the deployment of electric buses, the national government provided subsidies for local governments to accelerate electric buses in the initial promotion period. Shenzhen city government received up to CNY 425,000 (approximately EUR 55,002) for a standard 10.5-meter bus from the national government. Apart from that, the national government also provided subsidies for renewable energy sources. The price of purchasing a 100% electric bus is approximately the same as that of a diesel bus. Bus companies are more willing to switch to electric buses, considering that electric buses have advantages over energy consumption.

Based on the research of other cities, before the financial support from the national government reduced (2015 - 2016), national subsidies and municipal subsidies have enabled the acceleration of EVs. Also, the new service model, such as the provision of e-buses on a rental basis has alleviated initial capital outlays.

2. Is it the City government driving the electrification? Which role does the national government play?

Foshan: Both the National government and the local government are driving the electrification. Like what I mentioned in the presentation, the new energy buses are given funds by both the national government and the local government. Each local government has specific policies.

Shenzhen: 1) The national government has provided funding, subsidies, and tax incentives.
2) The national government has required prefectures and municipalities to increase the share of new energy buses, directly linking it with fossil fuel subsidies. In the case that the city fails to increase the share of new energy buses, fossil fuel subsidies will not be provided.
3) Social credit system: The manufacturing of new energy buses can be credited and such credit can be sold. Bus manufacturers are required to meet specific credit; otherwise, they will be fined or will be asked to stop manufacturing. To avoid such a situation, bus manufacturers have to buy credit from companies such as BYD, the largest Chinese electric vehicle manufacturer; or opt for manufacturing new energy vehicles. Such a policy provides incentives to the manufacturers to replace fossil fuel vehicles with electric vehicles.

3. How are Chinese cities supporting cities elsewhere in the world with their capacity in this area of electric bus procurement?

Foshan: As far as I know, the electric bus manufactures, Yutong Bus (宇通客车) and BYD (比亚迪) have exported electric buses to more than 130 countries and regions on six continents, including Russia, Saudi Arabia, Ghana, Sudan, Cuba, Venezuela, Peru, Israel, Macedonia and the United Kingdom, France, Singapore and the Philippines.

Shenzhen: 1) Shenzhen is happy to share its experience with the uptake of EVs in terms of enabling policies, business models, monitoring and evaluation.
2) Shenzhen works with new energy car manufactures to expand its overseas market

4. My question is regarding the battery life cycle for EVs. Is there consideration within the sustainable framework about their end of life cycle use, such as the issue of battery waste disposal?

Shenzhen: 1) In the case of Shenzhen, most electric bus batteries are estimated to start to reach their end of life cycle uses after 3-4 years. Currently, all bus companies have signed contracts with the manufacturer BYD, which says that new batteries will be provided for free within 8 years.
2) So far, Shenzhen has not yet faced any major problems with battery replacement. However, it is estimated that many EV batteries will reach its end of life cycle use in the next two years. The

city government has issued policies on battery recycling: car manufacturers are mainly responsible for battery recycle; they should keep track of the life cycle of batteries and should recycle them accordingly.

3) In terms of battery disposal, currently, BYD has disposed of a few batteries after extracting useful materials. It plans to recycle EV batteries as power sources in the future.

4) Other energy companies and electricity companies have also designed to recycle batteries for future use.

5. How do we look into promoting jobs for owners of IPT modes (i.e. auto-rickshaws, private buses other IPTs, etc.) who have already invested in the other previous types of modes and how do we create awareness & acceptance on utilizing, safety and maintenance of these EV vehicles by these owners?

Shenzhen: 1) Shenzhen city government has banned the use of motorcycles, restricted the use of fossil fuel vehicles in restricted time or routes; it has also set a cap for license plates for fossil-fuel vehicles, provided licenses for new energy vehicles (NEVs) and right-of-way to nudge the people to use new energy vehicles.

2) The city provides subsidies to those who get rid of old fossil-fuel vans ahead of its life cycle, and provides incentives to those who replace fossil fuel vehicles with new energy vehicles.

3) The city has built charging poles, invested in technologies to search for the charging points, and incorporated electronic payment for the use of charging infrastructure. This has made charging convenient in the city.

4) The city promotes NEVs and their environmental benefits through various media channels.

5) Raise the awareness of NEVs maintenance and repair; invested in capacity training.

6. Can PPP be followed in the implementation of charging stations on a larger scale both in magnitude and time; considering the policy amendments that will be made in the future?

Shenzhen: 1) There are dozens of charging point manufacturing businesses in Shenzhen. These companies will get subsidies after building new charging infrastructures.

2) One key aspect of building charging stations is land use. In Shenzhen, the city government is in charge of this and is coordinating land use for charging infrastructure among different parties. Bus companies have also invested in rapid charging technologies and smaller facilities to complement the land availability.

3) Charging infrastructure for electric cars is funded partially by the city government and partially by private companies.

7. I would be interested to know if there are any linking of renewable energy with the EVs and hydrogen production in the two cities and the share of renewable energy in the power mix, with the scale-up of the EVs.

Foshan: Electric buses in Foshan include both 100% electric buses and hydrogen fuel cell buses. Renewable resources do not fuel the 100% electric buses.

Shenzhen: In Shenzhen, the electricity is mainly provided by China Southern Power Grid (CSG). In the past two years, the CSG has increased the share of clean energy sources and reduced its carbon emissions by 20%; increased the share of renewable energy; and reduced the use of coal-fired power by 41%. Shenzhen aims to improve its air quality: to reduce its average fine particulate matter (PM 2.5) level to 25 µg/m³ and shut down one-third of the Mawan power station (妈湾发电站), which is a coal-fired power plant by 2020.