IFC Transport
INSIGHTS

ELECTRIC VEHICLES 101

A series of transport notes on electric vehicle trends and opportunities from IFC

Twists and Turns: New Business Models

January 2020

IFC International Finance Corporation
WORLD BANK GROUP

Creating Markets, Creating Opportunities

The global bus fleet consists of about three million vehicles, mostly powered by diesel and compressed natural gas. By comparison, the global e-bus fleet remains small, with approximately 385,000 units in circulation, or about 13 percent of the total.

Nevertheless, electric buses have been the fastest-growing electric vehicle segment over the past five years by a wide margin. The market is changing quickly as both national and local governments make new commitments to address climate change and the horrific air quality conditions that plague some cities. Well-intentioned initiatives such as the C40 Fossil-Fuel-Free Streets Declaration, the Zero Emission Bus Rapid-deployment Accelerator (ZEBRA), and other sustainable urban transport initiatives are also attracting followers, and the targets for fleet conversion are ambitious.

To convert these ambitious commitments into reality, we need investable and bankable business models that work on a standalone basis. The state-heavy model, complete with lavish subsidies, won't work for developing countries. So the marketplace needs to invent the wheel here.

Based on our early work on electric vehicles, what are some of the business models taking shape?

BUSINESS MODELS

- ***Electrifying the Status Quo***: In general, cities have complicated bus systems (aside from some places in Asia, like China, where new cities are being developed from the ground up). These typically have incumbent operators who have the right of first refusal if you're planning to change their business prospects. In such cases, there is generally no regulatory "stick" to push operators into electrics. Instead, this audience needs to be presented with "carrots" to make the leap.

  In developed markets, the carrot has been grant-based funding or other state support to subsidize the outsized, upfront cost of electric vehicles. In IFC markets, where this is generally not the case, there are a few ways to make this happen faster. First, development banks and development finance institutions can work with operators to provide concessional resources and blended finance to improve the economics of procuring electric vehicles. Longer tenors and better pricing can help amortize the cost of the electric vehicle over longer periods and lighten the additional financial carry that comes from purchasing more expensive equipment. Second, aside from the vehicle cost, the infrastructure needs to be in place. For e-buses, well-structured municipal finance could help municipalities put the infrastructure and power structure in place so that operators don't have to manage these risks and absorb the cost.

- ***Splitting Asset Ownership and Operation***: For those municipalities with the appetite to restructure their transit programs, the "unbundling" of bus ownership and operations is gaining traction. These models

have been borrowed from the airline and railway sectors, where rolling stock operating companies, or *ROSCOs*, own and maintain the assets while leasing them to operating companies. In the bus sector, the ROSCO model could be replicated with a fleet company that owns and maintains the assets while retaining the risks related to vehicle and battery performance. Meanwhile, the buses are operated by concessionaires that provide drivers and manage day-to-day performance.

Going further, municipalities can separate the provision of power and infrastructure into concessions and tender each under long-term contracts. These models are most developed in places like London and Singapore, but we are now seeing new examples in Latin America, for instance, in Colombia and Chile. Another benefit is that large capital providers may be able to enter the space with fleet management firms, providing a combination of expertise on managing the equipment/technology, risk-sharing, and the capacity to scale.

The positive aspect of unbundling ownership and operation is that it allows everyone to do what they do best. Operators operate. Fleet providers own and maintain. Infrastructure providers make sure capacity is available. The downside is that these programs can be quite complex, and they rely on a high level of institutional capacity at the municipal level to manage the complex division of labor and interagency coordination necessary to make them work on the ground.

- ***Lease-Driven Models***: Given the substantial upfront cost and pace of technological change in electric buses (and batteries, in particular), leasing models are becoming more prevalent in the discussion. Leasing can be a way to manage the large discrepancy in upfront costs and spread the payments over time in a way that better matches the operations and maintenance savings of electric buses. Also, given that the technology is changing very rapidly, leasing entities (capital providers and equipment companies) can provide the equipment under reliable service contracts (complete with maintenance and warranties) that take some of the guesswork out of the bus, and the battery in particular. Given that batteries today have to be replaced somewhere in the middle of the useful life of the bus itself, a leasing program that guarantees a level of range and performance could be the way forward.

  In developed markets, leasing programs are being piloted for electric vehicles and batteries. One example is in the United States, where federal grant funding is available for bus acquisition but is not enough to pay the full cost of the more expensive electrics. In these cases, battery leases are designed based on the peculiarities of the grant funding: paying for the bus purchase at par with diesel but procuring the battery through a leasing structure that matches the lease costs with the operational savings of the electric. In markets where grants are not available, leasing would more than likely be for the entire bus, and we are starting to see some initial proposals along these lines.

  We have had many discussions with our regional colleagues about scaling one of these leasing models at a regional level to create economies of scale and more competitive costs for the buses. However, this is a tricky proposition because of country-by-country legal and accounting peculiarities surrounding leasing, as well as the importation of equipment. For now, our scaling efforts are focused on larger in-country markets where there may be enough municipalities or other users interested in electric vehicles to justify the creation of a leasing company.

ENTER IFC

At this early stage of the game, there have been few bankable or investible opportunities for IFC—or for anyone else for that matter. However, as electric proposals continue to gain traction and new concessions are bid, IFC is developing a toolkit to

accelerate the transition to cleaner vehicles. At present, there is a flurry of activity inside of IFC that includes advisory and investment activities.

As we are at the early stages of development, IFC has been most active providing advisory services offering technical, financial (bankability) and institutional support in places like Cali (Colombia), Lviv (Ukraine), and Ho Chi Minh City (Vietnam), to name a few. IFC is developing internal capacity to manage these engagements but is also getting a handle on the best external consultants and the best way to find technical assistance funding for electric vehicle development.

Converting these advisory opportunities into investment pipeline is a work in progress with early successes through IFC subnational loans, and some early leads on financing electric bus concessionaires. Concession opportunities to date have suffered from technical and bankability problems, but the market seems to be learning quickly from some of these early failures. We are starting to see more progress in terms of bankable structures, as well as solid technical and financial players entering the game. With a little persistence and risk appetite, we expect to see more green shoots from this early work.

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