



CHARGING INFRASTRUCTURE POWERS THE ELECTRIC MOBILITY TRANSITION


*Insights on IFC's support for
market creation and early-
stage project development*



IFC

**International
Finance Corporation**
WORLD BANK GROUP

Creating Markets, Creating Opportunities

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Enhancing mobility for people and goods is a key driver of economic growth and access to opportunities in emerging markets. However, transportation is also a carbon-intensive activity that generates greenhouse gas (GHG) emissions and local pollutants. Making transportation sustainable will require scaling up public and private investment in transportation methods which use little or no fossil fuel. Electric mobility (e-mobility) offers an attractive solution in many regions. IFC supports the development and scale up of investments in e-mobility in emerging markets, bringing the world closer to a low-carbon future.

IFC seeks early engagement with both public and private entities to develop new private investment opportunities in e-mobility. Our partnerships help fill in market gaps and remove legal and regulatory barriers. Over the last two years, IFC has supported public and private clients through the implementation of multiple early-stage and pre-investment projects to develop investment opportunities in the sector. These e-mobility projects have encompassed a wide range of preparatory activities such as market assessments, identification of enabling reforms, and business model development. IFC has also supported investment project preparation and piloting.

This five-part Knowledge Series “Scaling Up E-mobility” illustrates IFC’s early-stage work to develop new private investments in e-mobility. The series presents IFC’s experience addressing market gaps and creating new investment opportunities in four segments of e-mobility: charging infrastructure, electric two-wheelers and three-wheelers, battery-electric buses, and last-mile transport services.

What is the market gap?

Whether shopping for a commercial fleet or a personal vehicle, buyers will not select electric vehicles unless they can charge them. Reliable, affordable, and accessible electric charging infrastructure is a prerequisite for the successful transition to electric mobility (e-mobility) in all regions and market segments.

Without the proper planning and deployment of charging infrastructure, electric vehicle (EV) growth will hit a bottleneck. EV charging infrastructure can be either private or public. Private charging equipment is used by a single owner or operator. Public charging stations are typically installed in parking facilities, next to shopping malls, or in other widely-accessible locations, such as highway rest areas. Scaling up EV adoption and promoting market growth requires widespread public charging infrastructure, both to overcome consumer “range anxiety” and to enable long journeys by private vehicles.

Deploying public charging infrastructure for electric 2-wheelers (E2W) and 3-wheelers (E3W) is not cost-intensive and business models may be economically viable. However, enabling physical access to charging stations is a major challenge in many emerging markets, where public parking and curbside parking are not organized and scarce.

Providing adequate public charging infrastructure for larger EVs, including cars and light commercial vehicles (LCVs), is more challenging. High upfront costs and limited demand make charging stations commercially unviable until there is a critical mass of vehicles in the market. However, a visible and reliable charging network is needed to boost demand for these vehicles and increase market penetration. This classic “chicken and egg” situation poses a challenge for attracting private sector investment in charging infrastructure when the market is in nascent stages, as is the case in most of the developing world.



Other challenges are also holding back the growth of charging networks in developing countries, such as the lack of enabling policy and regulatory frameworks and the limited availability of suitable land for setting up charging stations. In addition, deploying charging infrastructure at scale raises concerns about the capability and reliability of the electric grid. Utilities may face significant challenges assessing the implications of growing electricity demand while preparing for the increasing share of non-conventional renewable energy in the mix.

How is IFC promoting market development and helping create new investment opportunities in charging infrastructure?

IFC has engaged in a variety of market creation activities, promoted enabling reforms, and supported pioneer investment opportunities in emerging markets.

In **India**, IFC worked with the World Bank on a comprehensive range of activities across different e-mobility segments. The joint team assessed the market and identified barriers and investment opportunities. As part of the engagement, IFC conducted market assessments to evaluate the availability of public charging infrastructure and prospective market size. The study also assessed specific business models and implementation schemes for the provision of public charging infrastructure that could unlock investment opportunities. The study concluded that during early market development stages, public charging business models for cars and larger vehicles may not be viable due to low usage and uncertain demand. Government support may be needed to promote initial roll-out, ensure charging accessibility and attract private investors.

Initially, business models based on captive charging, such as those which provide charging services to fleet operators, may be an economically viable option for cars and larger vehicles, as these models benefit from a high charging station utilization rate. Hybrid business models could also be implemented by opening charging facilities to the public when fleets are in circulation.

The IFC-World Bank engagement identified some of the main barriers holding up the deployment of public charging infrastructure in India. It recommended specific policy and regulatory measures to address these barriers, such as subsidizing electricity tariffs and land leasing for setting up public charging infrastructure, including battery-swapping facilities.

In **Indonesia**, IFC assessed the market for charging infrastructure and different EV segments. The scope of the study included the analysis of the prospective demand for charging infrastructure and the assessment of different charging business models for private investment. IFC identified investment opportunities in battery-swapping infrastructure for E2Ws, public charging stations for E4Ws, and captive charging facilities for bus operators.

In addition, IFC identified enabling policy and regulation incentivizing the installation of charging infrastructure and mandating public-private partnerships (PPPs) for the procurement of public charging infrastructure projects.

In **Egypt**, IFC supported Infinity, a renewable energy company setting up a new EV charging business. IFC's support for Infinity included market analysis, evaluation of barriers limiting EV adoption, and the identification of supportive fiscal and non-fiscal measures that the government of Egypt could adopt to enable market growth. The study examined how best international practices gleaned from EV projects in different countries,

such as the Netherlands or Norway, could be applied in the Egyptian context.

As a result, different policy and regulatory measures were selected to enhance market development, including the implementation of EV infrastructure building codes, simplifying administrative requirements for charging infrastructure installation, standardizing permitting, and ensuring the interoperability of charging infrastructure and charging components.

In **Serbia**, IFC worked with the World Bank to provide technical assistance to the city of Belgrade as it transitions to e-mobility. IFC helped promote private sector participation in the deployment of public charging infrastructure.

IFC's recommendations included defining the roles and responsibilities of market players, such as charge point operators, electric vehicle supply equipment providers, roaming network operators¹, utilities, and users. The team also recommended establishing licensing procedures, as well as implementing subsidies and incentives for electricity tariffs and charging infrastructure installation costs.

IFC's engagement in Serbia highlighted the importance of implementing the right pricing strategy to boost EV uptake while simultaneously ensuring the commercial viability of charging stations. Tariffs must be set at a competitive level to ensure that infrastructure costs will be covered while encouraging EV adoption.

1. EV roaming network operators provide services to ensure data exchange via a roaming platform between multiple players involved in the charging procedure.

IFC is engaging in early-stage and pre-investment activities to originate and scale up investment opportunities in charging infrastructure in emerging markets. In addition to providing advice to governments on enabling policy and regulatory recommendations, IFC can leverage its experience to develop viable private participation schemes for deploying charging infrastructure at scale. IFC can support municipalities in the preparation and development of charging infrastructure projects and assist utilities in addressing the challenges of the growth of charging networks. Moreover, IFC can partner up with private players to conduct market analyses and develop viable business models to deploy charging infrastructure.

This series of notes on creating markets and investment opportunities in e-mobility also includes:

- **Creating an Enabling Environment for Private Investment in Electric Mobility**
- **Electric Buses: Finding the Right Business Model**
- **Starting Small but Aiming Big: Electric Two-wheelers and Three-wheelers**
- **Going the Last Mile in Electric Mobility**

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