



From Santiago to Shenzhen:

Strategies on contracting and the procurement of electric buses

*Stanford Turner
ITDP Webinar | April 2022*

- Battery Electric Buses impact:
 - Environment
 - Health & Safety
 - Efficiency
 - Equity
- Why BEBs and why now?
 - Longer range
 - Cheaper
 - Improved understanding & decisions
 - More financing opportunities

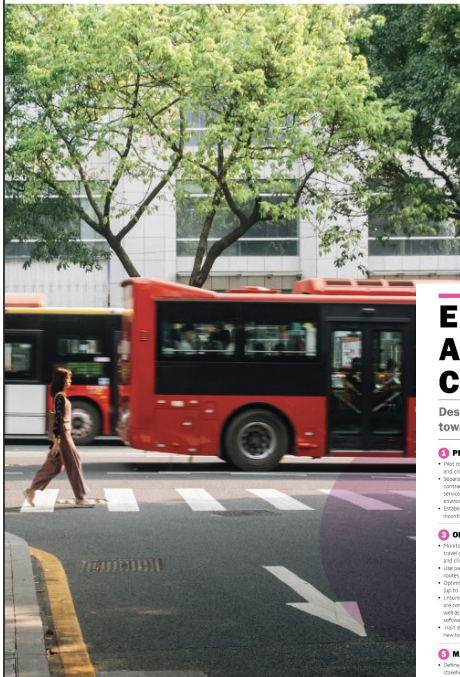


Passengers wait for a bus in Rio de Janeiro, Brazil. SOURCE: Stefano Aguilar ITDP Brazil, Flickr.



From Santiago to Shenzhen

HOW ELECTRIC BUSES ARE MOVING CITIES



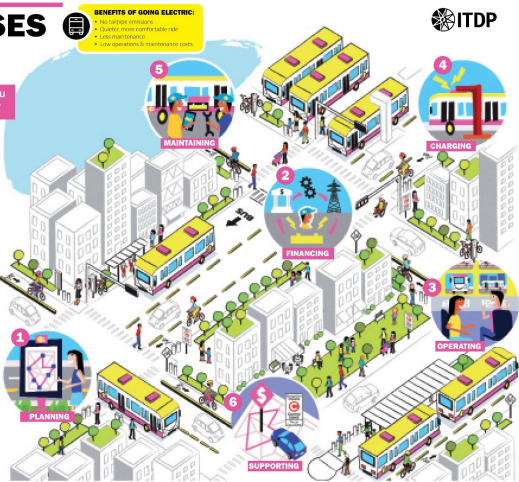
ELECTRIC BUSES ARE MOVING CITIES

Are you ready?

Design your pathway toward bus electrification

- 1 PLANNING**
 - Plan routes to maximize battery charge and reduce strain on full fleet transition
 - Secure financing and long-term contracts to encourage operator and public safety and align contracts with governmental legislation
 - Obtain contracts that require and incentivize new technology adoption
- 2 FINANCING**
 - Plan routes to maximize battery charge and reduce strain on full fleet transition
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- 3 OPERATING**
 - Maximize performance of fleet to suit local road network, topography, temperature, and climate
 - Use participatory planning to improve routes and build community
 - Optimize routes for optimal full range
 - Maximize the electrical needs of the fleet are compatible with the local grid, as well as compatibility of hardware and software with existing system
 - Hire staff, operators, and partners on a case-by-case basis
- 4 MAINTAINING**
 - Understand the needs of fleet, stakeholders and drivers to maintain the fleet and charging infrastructure
 - Compare and benchmark software
 - Compare repair payments compared to traditional fleets
 - Formulate maintenance plan of each stakeholder
 - Set up a battery depot or repair plan with the manufacturer
- 5 SUPPORTING**
 - Use local government policies and cost pricing to encourage transit use
 - Set performance and benchmarking standards for contracts
 - Build support by engaging the community and improve identification of potential and barriers to the public
 - Formulate bus routes with law enforcement
 - Integrate bus operators with existing and existing opportunities

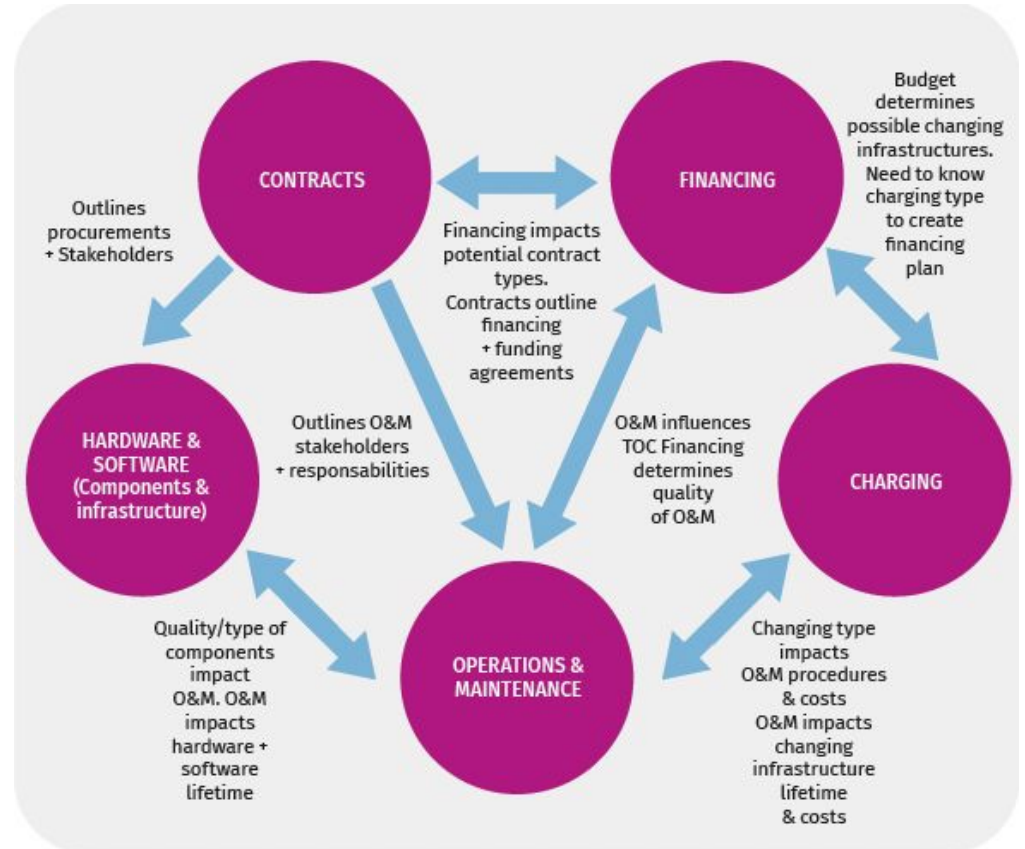
BENEFITS OF GOING ELECTRIC:
• Low operating costs
• Low maintenance
• Low emissions
• Quiet operation



The report investigates the planning and implementation of BEBs from the following aspects:

- Existing technology
- Charging
- Pilots
- **Contracts**
- Financing & Funding
- Operations and maintenance
- Supportive Strategies

- E-bus implementation is an iterative process that will involve traditional and new stakeholders



- Common Types of Operations Contracts
 - Service Contracts
 - Area Contracts (gross/net)
 - Route Contracts (gross/net)
 - Design Build Operate (DBO) Forms
 - Profit Sharing



An Olectra-BYD electric bus in Pune, India. SOURCE: ITDP India

- E-bus Adoption:
 - Add Adoption incentives in contracts
 - Consider creating different contract timelines for different Bus operations



A pantograph charging station in Warsaw, Poland. SOURCE: Wistula, Wikimedia commons.

- E-bus Performance & Protection:
 - Tie cost and Life cycle guarantees to bus and battery performance
 - Tie battery-life degradation to vendor payment or battery replacement
 - Stipulate data collection and sharing requirements



An electric bus charging station in Gothenburg, Sweden. SOURCE: Andrzej Otrębski, CC BY-SA 4.0, Wikimedia commons

- Ebus Environmental Goals:
 - Align environmental legislation and create environmental requirements
 - Monitor and Evaluate Environmental Impacts
 - Create Clear penalties for not meeting environmental requirements



A cyclist rides next to an e-bus in Shanghai, China. SOURCE: Flickr, Ludger Heide

- Ebus Infrastructure and Operability
 - Include charging infrastructure to interoperability requirements
 - Outline Bus depot requirements



An electric bus and plug-in charger in Shenzhen, China. SOURCE: ITDP China.

- Ebus Care and Battery Life:
 - Include specific training requirements for operators using Battery Electric Buses
 - Include Maintenance Incentives



Driver training in China. SOURCE: Linuxthink, CC BY-SA 3.0, Wikimedia Commons

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- Full report
 - English
 - Portuguese (*coming soon*)
- Executive summary
 - English
 - Spanish
 - Portuguese (*coming soon*)



Thank you



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