

Financing the E-bus Transition

IMPROVING PROJECT BANKABILITY AND ENABLING SCALE



FINANCING THE E-BUS TRANSITION: IMPROVING PROJECT BANKABILITY AND ENABLING SCALE

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COVER PHOTO:

La Rolita
charging depot in
Bogotá,
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SOURCE:

Iwona Alfred.

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INTRODUCTION

Electric-bus systems have the potential to make cities more livable by improving air quality, reducing emissions and noise, and improving the daily lives of millions of public transport users and drivers. E-buses are also cheaper for cities to operate over time compared to diesel buses.

However, urban bus electrification has progressed slowly because of the high upfront costs of buses and charging infrastructure as well as uncertainty around financial models and responsibilities. Compared to conventional bus systems, e-bus deployment introduces new assets—batteries, charging infrastructure, and digital management systems—that come with variable cost structures, technical requirements, and risk profiles. This means electrification is not simply about fleet replacement; it requires a broader transition in how public transport is financed, managed, and operated.

At the same time, a large share of climate investment continues to focus on private vehicle electrification rather than public transport, reinforcing the financing gap for e-bus systems. However, private sector investors are becoming more interested in the urban transport sector and specifically in electrification—this is because of a combination of technological improvements, falling costs, and emerging business models that yield adequate returns on investment. Private investors are also drawn to policymakers' prioritization of energy independence and interest in transport electrification as a strategy to reduce fuel imports and as an opportunity to support industrial development, job creation, and domestic manufacturing.

As climate and other investors increasingly view zero-emission mobility as a major opportunity for innovation, governments that successfully harness this influx of capital for bus electrification have the chance to accelerate e-bus deployment and scale up pilots to maximize air quality, access, and economic impacts.



This report helps governments, especially those with limited resources, understand how to make e-bus systems more financially viable and attractive to investors. It explains business models, financing tools, and risk-sharing approaches that can support bankability and successful project implementation. By providing this guidance, the report aims to help governments expand well-managed, zero-emission public transport systems.

E-bus from the BRT system in Salvador, Brazil.
SOURCE:
ThalesAntonio via Shutterstock.



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E-BUS SYSTEMS: THE FUTURE OF PUBLIC TRANSPORT

E-bus systems are integrated public bus networks that use battery-electric buses for some or all routes. E-bus systems encompass buses, batteries, charging infrastructure, and digital management systems. This means that electrification is about more than just vehicle replacement—it requires a significant shift in how bus networks are planned and operated as well as financed. Such a transition can improve service quality, strengthen system management, and unlock wider social and economic benefits.

E-bus systems present new opportunities to attract investment, especially from the private sector:

Higher ridership:

Cleaner, more comfortable, and safer experiences for users and drivers—alongside better bus tracking and management tools for operators—encourage more bus ridership. E-buses are typically air-conditioned, accessible for riders with disabilities, and equipped with digital fare-payment technology, improving comfort, access, and safety.

Bi-articulated e-buses
in Mexico City.

SOURCE: Pesado
y Albarran.



More direct benefits:

Compared to conventional diesel buses, e-buses—through improved service planning and delivery—can deliver safer, cleaner, quieter streets for everyone. They also can help strengthen national economies.



Low foreign-currency burden

Public transport electrification can significantly reduce both fuel imports and the outflow of foreign currency, increasing economic stability and growth.



Efficient, cost-saving operations

E-buses are cheaper to operate over time than diesel buses because of lower energy costs, reduced maintenance needs, and longer replacement cycles for key vehicle components. Electric drivetrains have fewer moving parts and experience less wear and tear, reducing maintenance frequency and operational downtime.

In addition, e-buses are often equipped with advanced operational management tools—like automatic vehicle location (AVL) systems, which enable real-time location tracking and digital fare-collection systems. These further improve service planning, fleet management, and operational efficiency. These technologies also offer greater reliability for riders, because they can more accurately plan for bus arrivals and do not have to carry cash for fares.



Informal transport improvement

Electrification can be an entry point to improve regulation of public transport systems, especially informal transport, which provides the majority of transport services (up to 95%) in many countries in Africa and Latin America (Nebrija et al., 2024). Introducing e-buses requires careful planning, creating an opportunity to redesign the business model, regulatory framework, and contracting terms under which informal systems operate. It can also support the creation of a more integrated public transport network, providing better service for all.

These opportunities enable a wider range of actors to finance, own, or manage different e-bus system components, such as vehicles, batteries, charging infrastructure, and digital tools. This can improve project viability by more efficiently distributing costs, responsibilities, and risks.

E-BUS SYSTEM INVESTORS

Three key groups play important roles in e-bus system investment, operation, and management: national and subnational governments, development finance institutions (DFIs), and the private sector (private investors and operators). Interest from multiple types of investors creates more opportunities to distribute costs, responsibilities, and risks across stakeholders.

Governments (public authorities) set the vision for the e-bus system, ensuring it is accessible and connected, safe, zero-emission, and financially viable. Governments must be willing and able to negotiate financing structures, working with banks and private investors to map out costs and risks and how they could be distributed. Governments may also need to provide support to backstop the credit quality of a transport authority as well as viability gap funding¹ to address cost gaps. Though government may be looking to reduce costs by avoiding asset ownership, it will need to be prepared to provide other key elements of the system, such as land for depots and construction or upgrading of stations and roads, which are less attractive to private investors.

Development finance institutions (DFIs) play a catalytic role in e-bus financing by helping reduce market barriers and attract (or “crowd in”) additional investment through low-interest loans to governments. DFIs, which include multilateral development banks (MDBs), bilateral banks, and national banks, view public transport electrification as key to achieving climate, economic, and air-quality goals, and they are increasingly financing e-bus projects to those ends. DFIs provide concessional capital, technical assistance, and risk-mitigation instruments—such as guarantees or blended finance structures—that improve project bankability. Because DFIs have higher risk tolerance and longer investment horizons than most private investors, they can help bridge early financing gaps and support market development. However, their capital is intended to catalyze broader investment rather than fully finance system deployment.

Though DFIs have the money and mandate to invest in public transport electrification, they need to see demand from countries and cities that want to implement these types of projects. The past decade has provided several proof-of-concept public transport electrification projects (e.g., bus fleet renewal with e-buses in Santiago, Bogotá, São Paulo, and India; the first e-BRT in Africa in Dakar) that have been implemented with development bank support and provide opportunities for evaluation and learning.

Private investment has begun to play a key role in financing, owning, operating, and maintaining different components of e-bus systems. Depending on the business model, private investors may purchase or lease vehicles, batteries, charging infrastructure, or digital systems. The asset-leasing model is particularly noteworthy, with more and more e-bus leasing companies emerging, such as BasiGo in Kenya and Rwanda, Kalista in Indonesia, and VG Mobility in Colombia and Costa Rica. In addition to

capital, private actors can bring technical expertise, operational efficiency, and innovation.

However, private investors typically seek to minimize risk and secure predictable returns, making project bankability and risk allocation critical to attracting private capital. For example, climate investors (e.g., via private equity funds, venture capital, etc.) can be more risk tolerant if it means getting innovative, climate-supportive projects off the ground, but the amount of financing available is limited and can very narrowly focus on the potential to reduce GHG emissions at the expense of other impacts. Climate investors are also focused on high, near-term returns. Institutional investors (e.g., pension funds, insurance companies, etc.) account for much larger pools of capital and tend to have a very low risk tolerance. Service providers, such as utility companies, bus operators, and OEMs², may be willing to accept longer return periods depending on their size and market position.

Beyond asset-leasing companies and international climate and institutional investors, other private investors—including utilities and charging infrastructure manufacturers and service operators—see opportunities for investment in e-bus systems (see **Table 1**).



New York City
e-bus.
SOURCE: Here
Now via
Shutterstock.

2 OEM stands for “original equipment manufacturers.” In transportation, OEMs are companies that assemble a final product (i.e., an e-bus) from individual components and sell that product under the OEM’s brand name. Major e-bus OEMs include BYD, Volvo, Yutong, and Tata.

Table 1. Potential Investors in E-bus System Components

Traditional Bus Investors

New E-bus System Investors

Components	Bus Operator (public or private)	Government	Bus OEM	Asset-Leasing Companies	International Investors	Utility Companies	Charging Infrastructure Manufacturers /Operators
Vehicle and Battery Ownership							
Vehicle and Battery Maintenance							
Vehicle Operation							
Depot Ownership							
Charging Infrastructure Implementation							
Charging Infrastructure Operation							
Charging Infrastructure Maintenance							

Adapted from IDB et al.,2022.

For example, utility companies see charging infrastructure as a strategy to stimulate electricity demand and thus they have an interest in accelerating vehicle electrification. They can help to make the economics of charging more attractive by developing custom rate structures and even investing in the e-buses themselves, as has been the case in Santiago (CCFLA, n.d.). In Ethiopia, state-owned telecommunications company Ethio Telecom began investing in EV charging infrastructure after the country’s ban on internal combustion engine (ICE) vehicle imports was implemented in early 2025.

STRUCTURING E-BUS PROJECTS FOR INVESTMENT

Successfully financing e-bus systems requires more than identifying sources of capital. It requires clear definition of asset ownership, allocation of responsibilities, and risks among stakeholders best positioned to manage them, as well as the creation of viable conditions for investment. This is shaped by three core components, each of which plays a distinct role in making projects financially viable and scalable:

BUSINESS MODELS define how asset ownership, capital responsibilities, and operational roles are structured across stakeholders.

CONTRACTING MODELS formalize these arrangements by setting service requirements, performance expectations, payment structures, and risk-sharing obligations.

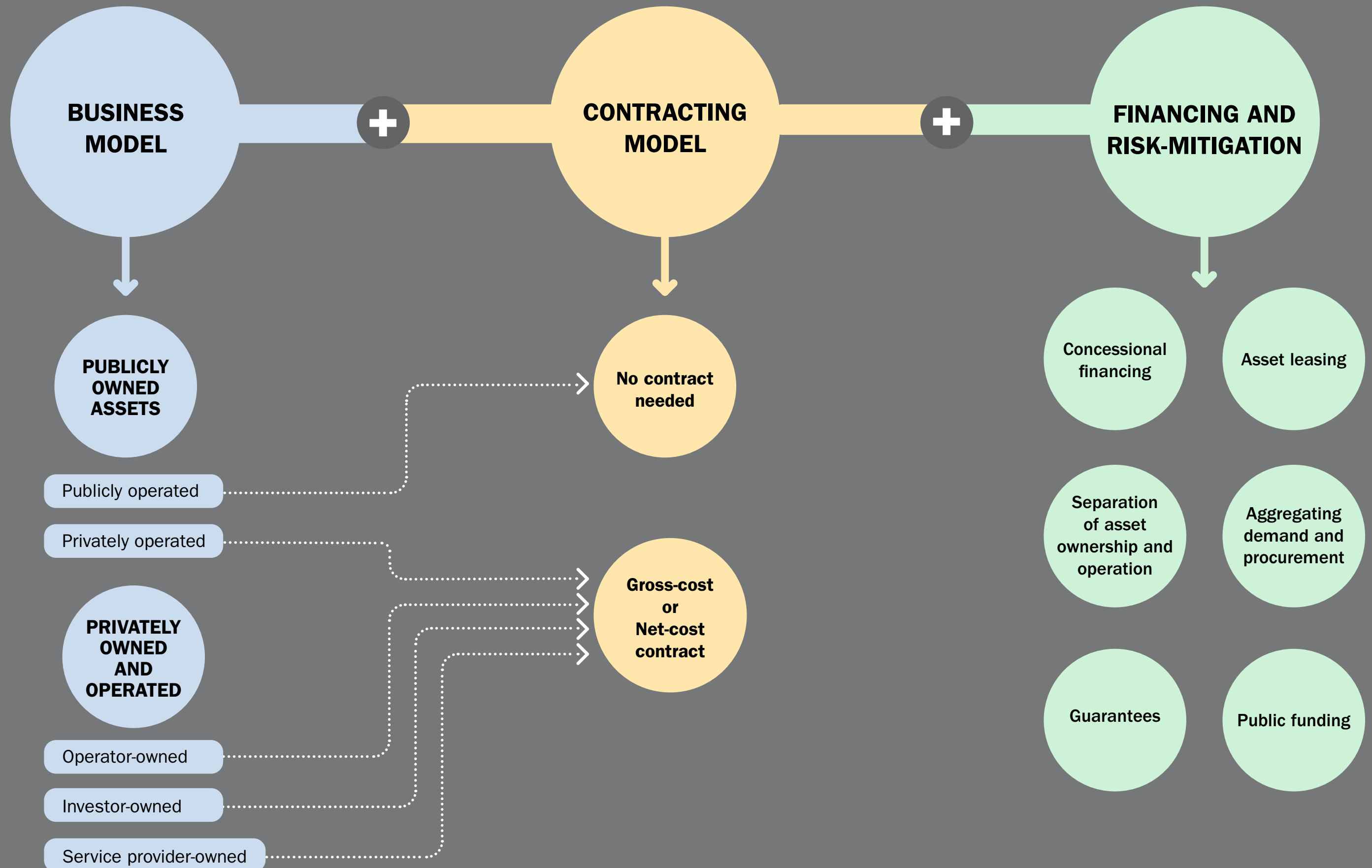
FINANCING AND RISK-MITIGATION TOOLS reduce specific financial barriers, improve bankability, and attract capital by mitigating perceived risks.

E-bus in Jakarta, Indonesia.
SOURCE: Aisyahcha2 via Shutterstock.



Figure 1

CORE COMPONENTS FOR INVESTMENT-READY E-BUS PROJECTS



BUSINESS MODELS

A business model explains how a company creates and delivers value to customers while generating profit, including what it sells, who it serves, how costs are structured, and the roles of key stakeholders. A business plan builds on a business model by putting it into action, typically outlining revenue projections and demonstrating how the company will achieve profitability over a defined period.

In public transport, business models similarly focus on delivering value but must also meet government-mandated service standards. They require clear definitions of costs, revenue streams, asset ownership, risk allocation, and operational responsibilities to ensure long-term viability. Contracting models and financing mechanisms further refine these structures by assigning roles, setting performance requirements, and distributing financial and operational risks among stakeholders, as shown in Figure 1.

WHEN CHOOSING A BUSINESS MODEL, IT IS IMPORTANT FOR GOVERNMENTS TO ASSESS SEVERAL THINGS: THEIR OWN RESOURCES AND CAPACITY, CONFIDENCE IN THE PRIVATE SECTOR, AND RISKS, AS WELL AS THEIR DESIRE TO INVEST IN THEIR OWN INSTITUTIONS OR SHIFT OWNERSHIP OR RESPONSIBILITIES TO THE PRIVATE SECTOR.

Though governments, especially capacity-constrained governments, may prefer to shift many costs to the private sector, they need to have enough capacity and understanding of how e-bus systems work and what investment opportunities exist. This is crucial to be able to effectively negotiate for—including allocating risk and developing bankable structures—and oversee the implementation and management of a successful project. Even private sector-led business models should have government oversight to ensure that the public transport system delivers an affordable and equitable service for all users.

Governments should focus their limited funds strategically to unlock private investment.

Strategically mobilizing private investment can help accelerate deployment, distribute risks and responsibilities, and increase capital for scale. For example, construction of bus depots, road works, and stations has typically not been attractive for private sector investment because of limited potential for revenue generation. If governments lead the planning (and, where possible, provide land) for depots and road works (given how critical these elements are to the success of the e-bus system overall), this can open the door for external investment in other elements (e-buses, charging, operations), signaling that the government is committed to the system's long-term viability.

Business models and related financing tools for e-bus systems are still emerging, but there is more clarity than in previous years thanks to

developments in leader regions such as Latin America, India, and China. While no single business model fits all contexts, emerging models generally integrate more diverse private sector participation and approaches to financing and service delivery. Although many variations and hybrid arrangements exist, most e-bus systems fall into one of two models:

PUBLICLY OWNED MODELS

Governments or transport agencies own major system assets. Operations can be provided by the government or by a contracted operator.

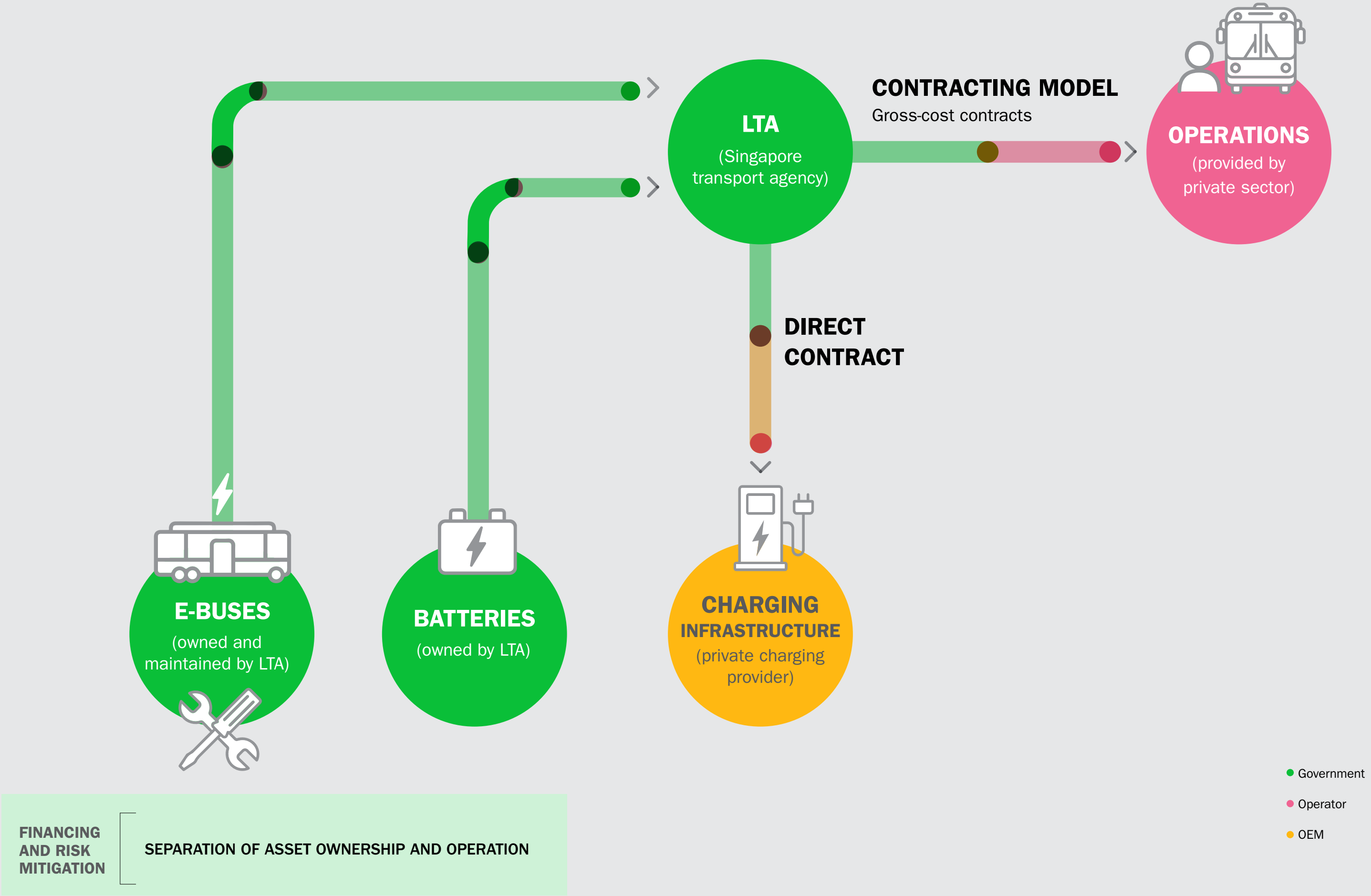
PRIVATELY OWNED MODELS

Private actors finance and own some or all major system assets, taking on a greater role in capital provision and, in some cases, operations or service delivery. Governments provide oversight and land for stations and depots.

	PUBLICLY OWNED MODELS					
	 E-bus owner	 Battery owner	 Charging infra owner	 Operations	 Bus maint. provider	 Depot owner
Publicly operated	Govt/ agency	Govt/ agency	Govt/ agency	Govt/ agency	Govt/ agency	Govt/ agency
Privately operated	Govt/ agency	Govt/ agency	Govt/ agency	Operator	Operator	Govt/ agency

In a **publicly owned model** (sometimes referred to as “outright purchase” or “government owned and operated” model), the government or relevant transport agency purchases the assets (e-buses, batteries, chargers) and is typically also responsible for e-bus maintenance and providing land for and maintaining depots. In most cases, the government or public agency contracts with an operator to provide operations and/or maintenance, but in some cases the government also operates the buses. In both cases, this model requires strong government capacity and centralization of authority because the government takes full financial and operational risk. This model is typically used in cities with high resource availability and capacity to finance and manage public transport assets, such as Singapore, as shown in Figure 2.

Figure 2: Publicly owned, privately operated business model in Singapore



	PRIVATELY OWNED MODELS					
	 E-bus owner	 Battery owner	 Charging infra owner	 Operations	 Bus maint. provider	 Depot owner
Operator-owned assets	Operator	Operator	Operator	Operator	Operator	Govt/ agency
Investor-owned assets	Private investor	Private investor	Private investor	Operator	Operator	Govt/ agency
OEM-owned assets, public or privately operated	E-bus OEM	E-bus OEM	Charging OEM	Operator Govt/ agency	E-bus OEM	Govt/ agency

In a **privately owned**, public oversight model, assets are purchased or provided by the private sector—such as operators, investors, utilities, or other service providers—and the system is operated by a contracted operator. A common version is the operator-owned model, where the government or relevant transport agency contracts with an operator(s) to provide e-bus service using buses, batteries, and chargers purchased or run by the operator. An emerging version of this model sees operators leasing buses, batteries, or chargers from a third-party entity such as an asset-leasing company instead of purchasing them outright. This lowers upfront costs for operators and the government, but it requires strong contracts to ensure service quality.

Another version of this model sees private investors or service providers, such as electric utility companies or dedicated asset managers, owning the assets and leasing them to the government or relevant transport agency (or contracted operator). In some early-adopter markets, e-bus manufacturers have temporarily played this role to help accelerate deployment, though many OEMs generally prefer to focus on vehicle manufacturing and maintenance rather than long-term asset ownership. Because e-bus systems have many components to manage (chargers, batteries, depots), this model aims to leverage the service providers' specific experience owning and maintaining the assets they are providing (i.e., electric utility providing chargers or bus manufacturers providing buses and maintenance).

The operator-owned model has been used in India (under various national schemes, including PM Sewa and PM e-Drive) and Jakarta. The investor-owned model has been used in Dakar and Bogotá, as shown in Figure 3, and the service provider-owned model has been used in Santiago, as shown in Figure 4 (Batista and Bastos, 2023; Patel, 2023; World Bank, 2024; IFC, 2024; Galarza, 2020).

Mid-sized e-bus in Singapore.
SOURCE: Dr David Sing via Shutterstock.



Figure 3. Investor-owned, public-oversight business model in Bogotá

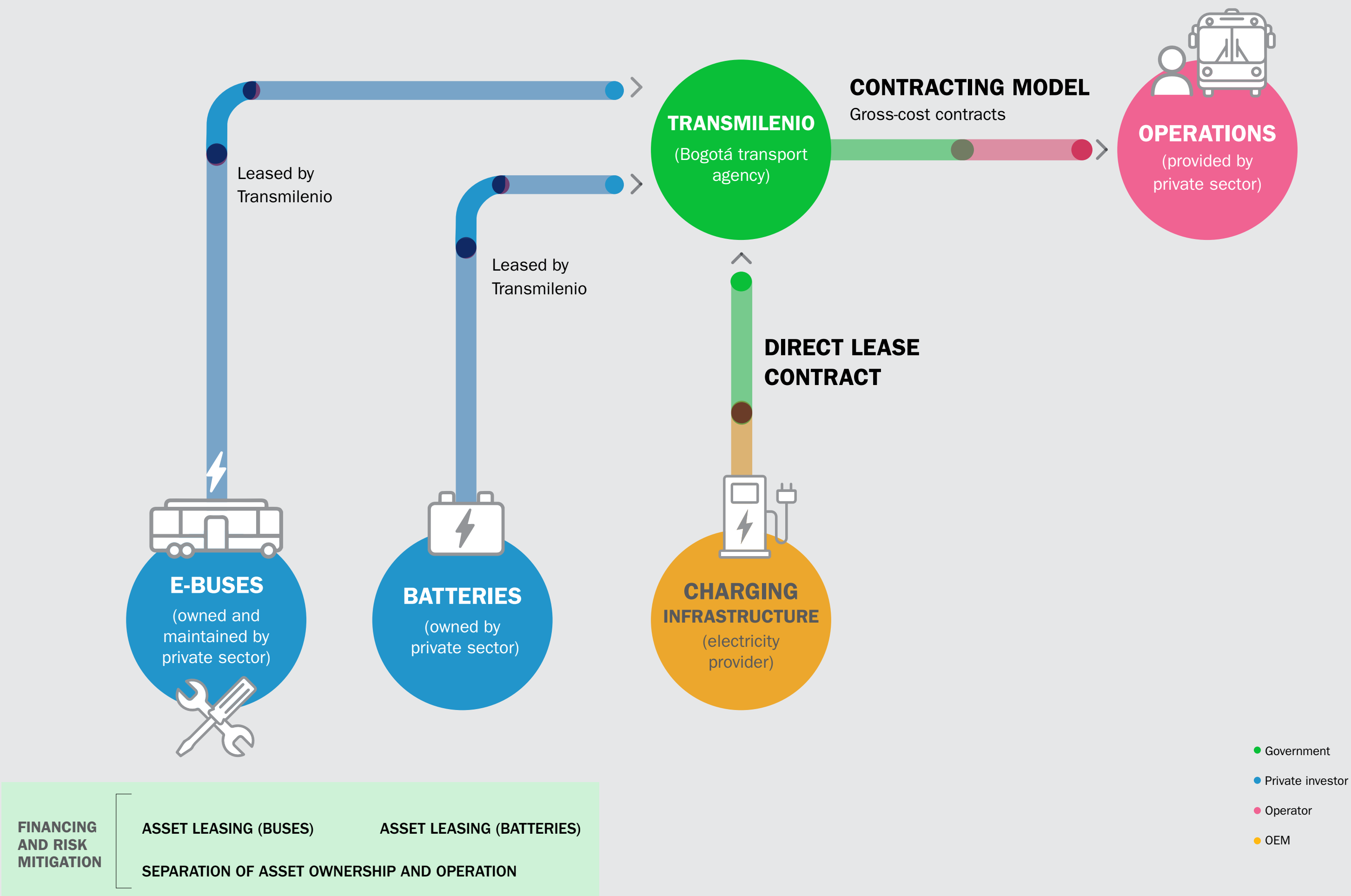
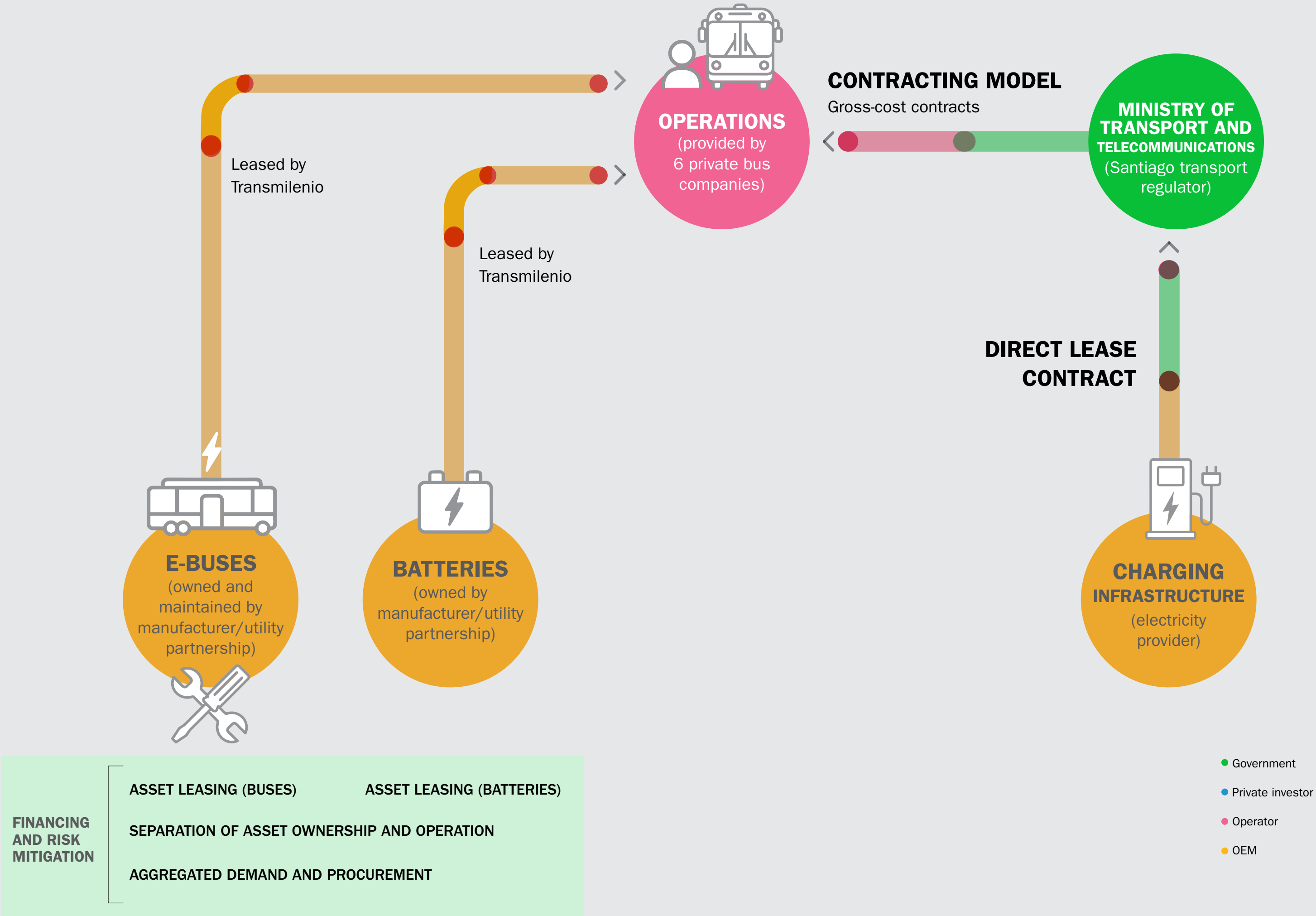


Figure 4. Service provider–owned, public oversight business model in Santiago



EVALUATING BUSINESS MODELS

Choosing a business model requires deciding how costs, responsibilities, and risks will be distributed across stakeholders. While both publicly owned and privately owned business models can be successful, each presents distinct trade-offs in terms of public control, private participation, and financial responsibility, as shown in Table 2. This can significantly shape project implementation.

Table 2. Comparison of Common Business Models for E-buses

E-bus System Considerations 	 	 
Upfront capital costs	Government/public agency covers capital costs (through public budgets, subsidies, etc.)	Private sector covers capital costs, with poten- tial support from public sector or risk-sharing mechanisms
Asset ownership	Government/public agency	Operators, leasing companies, utilities, or investors
Ability to attract private investment	Lower potential , private involve- ment usually limited to opera- tions or service contracts	Higher potential due to greater roles for direct investors, asset owners, and leasing providers
Government capacities required	Public procurement Asset management	Multi-stakeholder coordination Contract design and negotiation Regulatory oversight Risk allocation
Impacts on bankability	Creditworthiness and public fiscal capacity	Allocation of assets and opera- tional risks , payment security
Use of financing	Reducing upfront costs and other capital constraints	De-risking private capital to improve project bankability
Typical fit	Contexts with strong public institutions and fiscal capacity or the desire to build these	Contexts with constrained pub- lic capital but ability to provide financing or risk-mitigation tools

Publicly owned models typically concentrate financial and asset ownership risks within governments or public agencies. While this enables greater public control over service delivery and long-term planning, it also requires strong procurement capacity and greater ability to absorb upfront capital costs.

Privately owned models shift a greater share of capital and asset management responsibilities to private actors, reducing upfront public expenditure. However, this does not eliminate the government's role: Governments typically remain responsible for system planning, oversight, and enabling conditions—such as land provision, depot development, or electricity access—and may still need to absorb part of the investment risk. These models therefore require strong contractual frameworks and risk-mitigation mechanisms to attract investors and ensure affordable financing.

The most effective business models allocate responsibility (and risks) to the stakeholders best positioned to manage them while maintaining long-term project viability. Beyond asset ownership, revenue structures and payment mechanisms—such as fare collection, gross-cost contracts, availability payments, or subsidies—also play an important role in shaping project bankability and long-term viability. Once a business model is selected, contracting models help translate these high-level structures into clear contractual obligations, performance expectations, and risk-sharing arrangements.

E-bus depot in Santiago, Chile.

SOURCE:
Directorio de
Transporte
Público
Metropolitano.



CONTRACTING MODELS

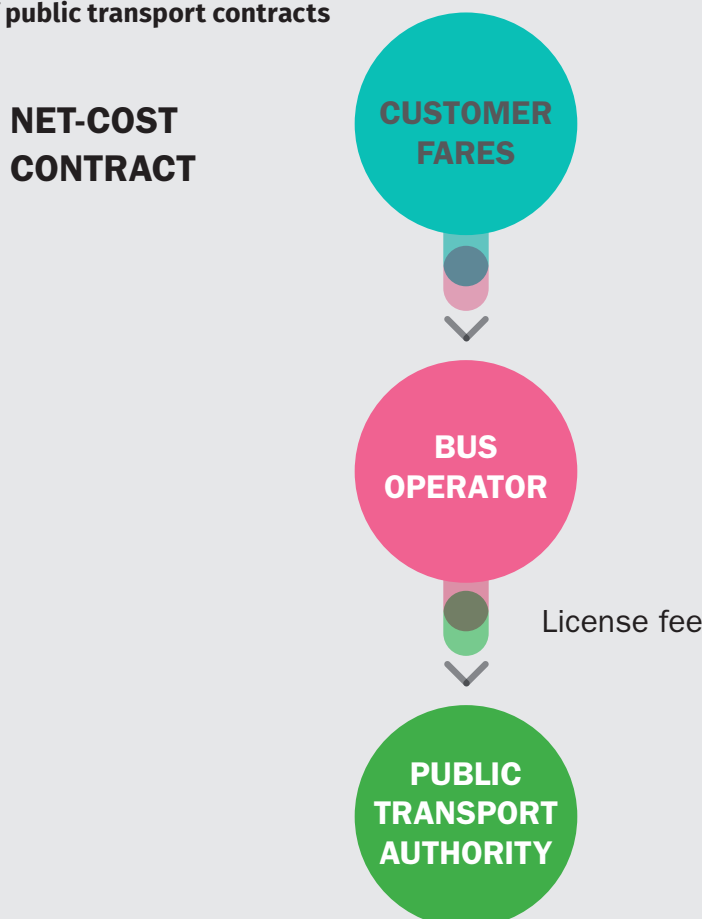
Whenever responsibilities for asset ownership, operations, or service delivery fall outside of the government, a contracting model is essential.

The contracting model designates the quality of service that needs to be provided, where it will be, how operators or service providers are compensated, who is responsible for collecting the fare revenue (and other non-fare revenues), and who bears the associated revenue risk. Compensation may be structured using farebox revenues, per-kilometer payments, availability payments, public subsidies, or a combination of these.

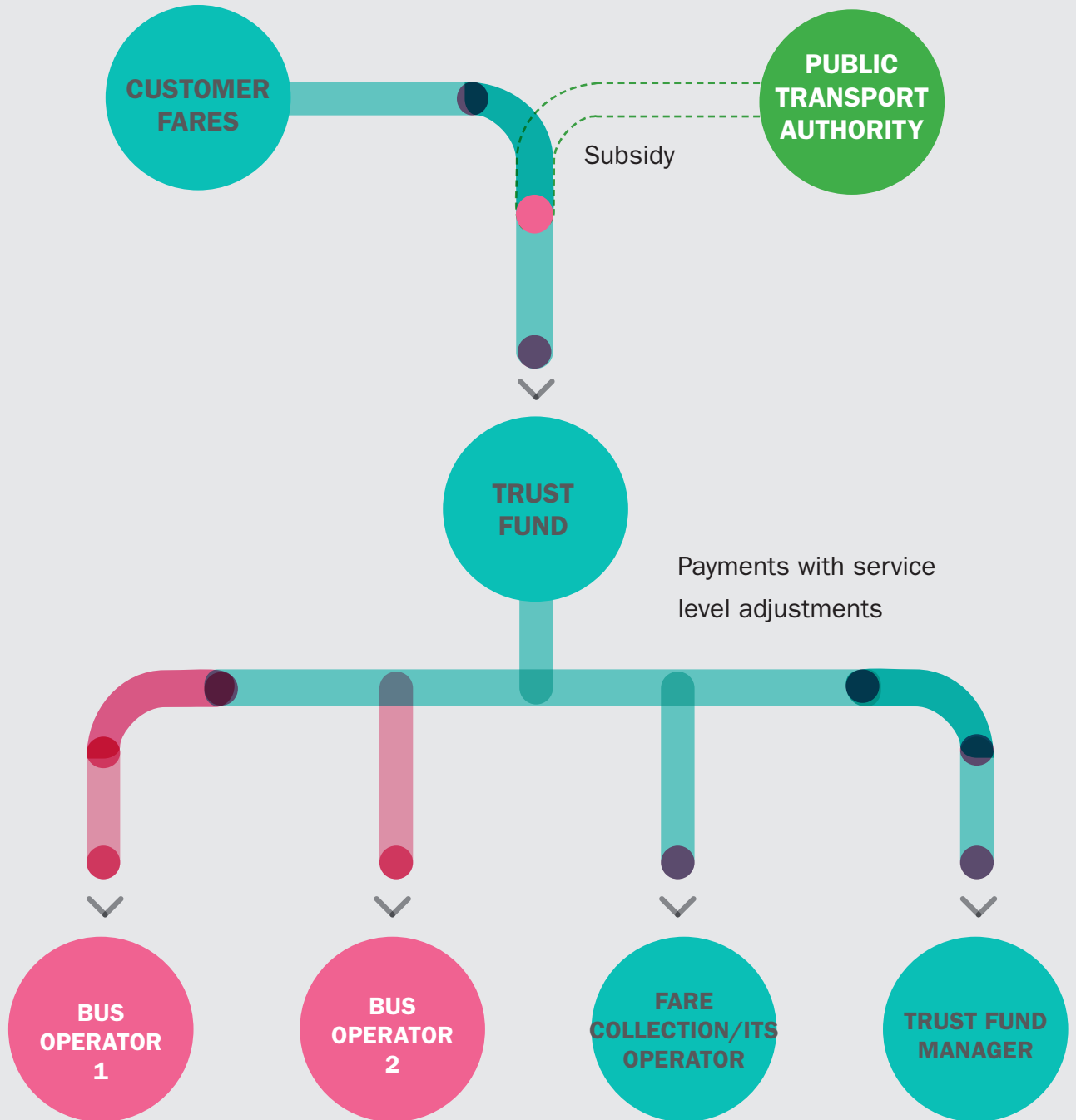
Contracts are a critical supportive element of the business model, and revising contracts is an early step governments can take to enable bus electrification. As soon as possible, governments should evaluate existing contracts and begin negotiations with bus operators and other stakeholders to identify opportunities for reform that could support not only fleet transition to e-buses but the introduction of a new business model that better distributes capital and operational risks. Waiting until existing contracts are up for renewal could delay e-bus procurement and implementation.

Two contracting models are used in public transport: gross cost and net cost, as shown in **Figure 5**.

Figure 5. Types of public transport contracts



GROSS-COST CONTRACT



Under **gross-cost contracts**³, fare revenue goes to the government directly or to a trust fund that compensates the operator(s) (per kilometer of service provided) and any other contracted stakeholders, such as a digital fare collector.⁴ In this model, the *government* assumes the financial risk of ridership fluctuations, since revenues that remain after compensating all contracted stakeholders will vary. Gross-cost contracts deliver high-quality, well-maintained transit systems because the government (or a third-party trust fund manager) retains oversight over system revenues, service levels, and service quality. Notably, since e-buses are equipped with GPS, it is easier for governments (or leasing companies) to monitor whether operators are meeting service provision requirements. Lease or concession agreements need to ensure that governments have transparent access to standardized GPS data.

Operators are incentivized to meet service levels to receive payment and can lose their concession for failure to provide quality service. Additionally, operators are not given exclusive rights to operate on a particular route or in a particular zone. The government therefore retains the flexibility to adjust services in response to demand changes without requiring complex contractual renegotiations. Gross-cost contracts can also reduce risk for private investors, since asset-leasing companies or other e-bus owners can depend on consistent revenue payments from the government so long as contractual operating terms of service are met.

E-bus in
Guangzhou,
China.

SOURCE: Runjie
Huang.



3 See ITDP's [BRT Planning Guide](#) and ITDP's [Quick Guide to Bus Sector Modernisation](#) for more on gross-cost contracting models.

4 Notably, in many LMICs, operators are compensated per passenger instead of per kilometer. This often leads to low service quality – operators may run fewer buses to limit costs and consequently those buses are overcrowded.

In **net-cost contracts**, the operator controls a certain set of routes, collects and retains fare revenue, and pays a license fee to the government. In this model, the operator assumes both operational and financial risk, with ridership fluctuations impacting operator revenues and bottom lines. Governments assume much less risk but may still provide access to depots and terminals and retain responsibility for some centralized functions, such as infrastructure maintenance or security, depending on the contract design. Net-cost contracts can make it difficult for governments to redesign routes to meet shifting demand, as these often require renegotiating contracts.

Net-cost contracts can lead to lower-quality, unmaintained systems over time if operators are not incentivized to meet minimum service levels. One way to do this is through a minimum ridership guarantee, ensuring operators are paid a minimum amount regardless of whether ridership falls below that threshold. This is the case in Dakar, where the government provides a minimum ridership guarantee as part of a net-cost contract with the private e-BRT operator.

While both contracting models can support e-bus deployment, gross-cost contracts often offer important advantages for electrification by improving revenue predictability, strengthening public oversight, and reducing financial risk for operators and investors. These features help to improve project bankability and mitigate enough risk to attract private investment. However, contract design alone will likely not fully address key barriers such as high upfront capital costs or technology-related risks, highlighting the need for complementary financing and de-risking tools.

FINANCING AND RISK-MITIGATION TOOLS

Even with strong business and contracting models, many e-bus projects still struggle to reach financial viability because of three common barriers: high upfront capital costs, limited access to affordable finance, and perceived risks that reduce project bankability. As discussed in previous sections, when risks are not clearly allocated or sufficiently mitigated, investors demand higher, quicker returns or may avoid investing altogether. Financing and de-risking tools help address these barriers by better distributing costs, improving financing conditions, and mitigating risks. These tools can also attract a wider pool of investors and strengthen the overall viability of the project.

This section focuses on a few key tools that have proven particularly relevant to improving e-bus project bankability and scaling e-bus deployment. While these tools can generally be applied across different business models, their design and effectiveness depend on how asset ownership, operational responsibilities, and financial risks are distributed across stakeholders.

Table 3. Financing and Risk-Mitigation Tools

	 Barriers Addressed	 Impact	 Key Players
			
Aggregating demand and procurement	• Fragmented demand • Limited market visibility • High cost of procurement	Improves pipeline visibility, reduces transaction costs, strengthens supplier and investor confidence, can lower capital/operations costs if procurement is well coordinated and standardized	• National governments • Subnational agencies • OEMs • National banks
Separation of asset ownership and operation	• Small operators' limited access to finance • Centralization of responsibilities	Shifts asset ownership and risks to stakeholders with stronger balance sheets or better access to capital, leaving operators to focus solely on service delivery	• Subnational governments • Operators • Asset owners
Asset leasing	• High upfront costs • Small operators' limited access to finance	Converts upfront capital costs into predictable periodic payments and can transfer technology or residual-value risk to more specialized asset owners	• Subnational governments • Operators • Asset owners
Concessional financing	• High cost of capital • Investment perceived to be too high-risk	Lowers financing costs through below-market interest rates, increases the pool of investors, or provides technical support to boost project bankability	• MDBs • National banks • National governments
Guarantees	• Investment perceived to be too high-risk	Transfers or mitigates specific risks, improving lender and investor confidence and unlocking private capital	• MDBs • Commercial banks • National banks • Export credit agencies
Public funding	• Essential infrastructure or service elements do not have revenue-generation potential	Fills investment gaps the private sector is unlikely to finance, improving overall project viability	• National or subnational governments • National banks

AGGREGATING DEMAND AND PROCUREMENT

Demand aggregation brings together e-bus demand from multiple potential buyers such as cities, regions, or operators and publicizes that demand OEMs. Aggregating demand enables e-bus and charging OEMs to better anticipate production and sales, thereby reducing costs and lead times.

Aggregated procurement (or pooled procurement) builds off aggregated demand with the goal of not just publicizing demand but formalizing a group of buyers to submit an aggregated order. Aggregated orders can be standardized across buyers (e.g., bus size, model, charging type) or not. Orders are typically submitted by a single entity (e.g., national government), which works with OEMs to negotiate prices, develop tenders, or coordinate group purchasing on behalf of members, depending on the design and level of coordination. The collective-bargaining power of the aggregated procurement can help to unlock lower prices while also reducing administrative costs, attracting private investment and cultivating more predictable markets. A bonus is that large, predictable orders can help stimulate domestic bus production, an increasingly important goal for many emerging-economy governments.

E-bus in New
Delhi, India.
SOURCE:
PradeepGaurs
via
Shutterstock.



National-level aggregated procurement has been successful in India, starting with the Grand Challenge launched in 2022 (WRI India, n.d.). This program went beyond just standardizing technical specifications (including charging type, bus size, etc.) across five cities. It established a Master Concession Agreement, where the concession template and contractual terms were standardized across municipalities so that investors did not have to mitigate risks for every municipality's contract separately. The program required 12-year gross-cost contracts with per-kilometer payments, assured kilometers per bus, and sequencing of charging infrastructure deployment. Together, these measures improved market visibility, reduced transaction and financing risks, and enabled procurement of more than 5,000 e-buses, with more than 45,000 e-buses tendered. Manufacturer bids were between 7% and 48% lower than if orders had been negotiated individually (UC Davis, 2025), reflecting improved production planning, lower transaction costs, and reduced commercial risk. Supported by FAME II subsidies, the resulting service costs per kilometer were found to be up to 35% lower (with subsidies; 27% lower without subsidies) than diesel or compressed natural gas (CNG) buses as a result of aggregated procurement.

Demand aggregation can be applied across both main business models described above. For the publicly owned model, local governments or transit agencies will own the buses and are the ones submitting orders to be aggregated. In the privately owned model, a national government or other entity may coordinate the aggregation (and procurement) process, as has been the case in India; however, orders may be submitted by private investors or service providers. Emerging models in Latin America are also exploring how financial intermediaries, such as commercial banks or dedicated marketplaces, could facilitate e-bus procurement and improve access to affordable financing for cities and operators.

Successful demand aggregation requires national (or state) governments to have a strong technical and institutional understanding of how financial transactions and procurement happen. Governments should have the capacity to define technical and contractual standards related to depot readiness and related infrastructure, including sufficient electricity supply, assured kilometers, payment security, and performance data. There also needs to be a clear demand for e-buses from local governments, agencies, or operators to support a regional or national program.



E-bus in Bogotá, Colombia.

SOURCE:

Alexander Canas Arango
via
Shutterstock.

SEPARATION OF ASSET OWNERSHIP AND SYSTEM OPERATION

Separating ownership of assets (the e-buses, batteries, or charging infrastructure) from the operation of the e-bus system distributes risk and can improve project bankability by allocating capital-intensive assets to stakeholders with strong balance sheets or greater technical capacity to manage them. Separating asset ownership from operation can be particularly effective where existing operators are not creditworthy enough to secure financing to purchase new assets. This is the case for many private operators of informal transport systems in emerging economies; separation improves the financial picture for private investors and governments.

Separating asset ownership from operations can also improve management of the e-bus system, enabling governments/agencies or operators (especially smaller operators) to focus on just one aspect of providing a high-quality transport service. This approach is particularly relevant in privately owned business models, where asset ownership and service delivery can be intentionally assigned to different actors. This separation can be structured in different ways, including government ownership or through private asset owners that lease to operators.

ASSET LEASING

Asset leasing is becoming more common in business models that separate asset ownership from system operations. It helps address one of the main barriers to e-bus deployment—high upfront capital costs—by shifting the upfront costs of e-buses or batteries from a one-time capital expense to an operating cost spread over time. Under this model, the assets (bus or battery) are owned by a third party and then leased to governments/agencies or private operators to use. Asset leasing can be either:

- **Financial**, where ownership of the asset will transfer to the lessee at the end of a designated period, or
- **Operational**, where the asset owner retains ownership of the asset.

E-bus from
asset leasing
company in
Kigali,
Rwanda
SOURCE:
Basigo
Rwanda.



Bus asset-leasing companies purchase or manufacture/assemble e-buses and lease them to operators at a per-kilometer price or through a revenue-sharing agreement. Examples of this can be seen in African cities such as Nairobi and Kigali, with companies like BasiGo purchasing e-buses and leasing them to operators through a “pay-as-you-drive” model (BasiGo, n.d.). Lease payments are deducted from operator revenues and cover the e-bus, maintenance, charging, and insurance.

Battery leasing can be an attractive way to reduce risk, especially when batteries are leased separately from buses. Because batteries are one of the most expensive components of an e-bus and carry uncertainties related to performance, degradation, and replacement timing, leasing them separately from the bus can substantially reduce both upfront capital requirements and technology risk (ITDP, 2025b). Batteries may be leased by governments/agencies or operators directly from the manufacturer or from another private company.

In some jurisdictions, legislation or proper authorization will be needed for asset-leasing companies to operate legally.

CONCESSIONAL FINANCING

Concessional financing is particularly useful when e-bus projects are financially viable in the long term but struggle to access affordable capital due to high interest rates, short loan tenors, or limited institutional capacity. Concessional financing typically reduces borrowing costs through more favorable lending terms, such as lower interest rates and extended payback timelines (ITDP Indonesia, 2023). It is also typically packaged with technical assistance to build institutional capacity to manage public-private partnerships (PPPs) and otherwise ensure successful project delivery.

Concessional financing has primarily been used to support governments or transport agencies in delivering infrastructure and, in some cases, purchasing assets. In Dakar, the World Bank International Development Association (IDA) financed BRT infrastructure (along with the European Investment Bank), land acquisition, road works, and capacity building. The IDA also supported the government to provide viability gap funding, covering the difference in upfront costs between e-buses and diesel buses, which enabled private infrastructure developer Meridiam to cover the cost of the e-buses (ITDP, 2025a).

E-bus for Dakar,
Senegal's e-BRT, the
first in Africa.

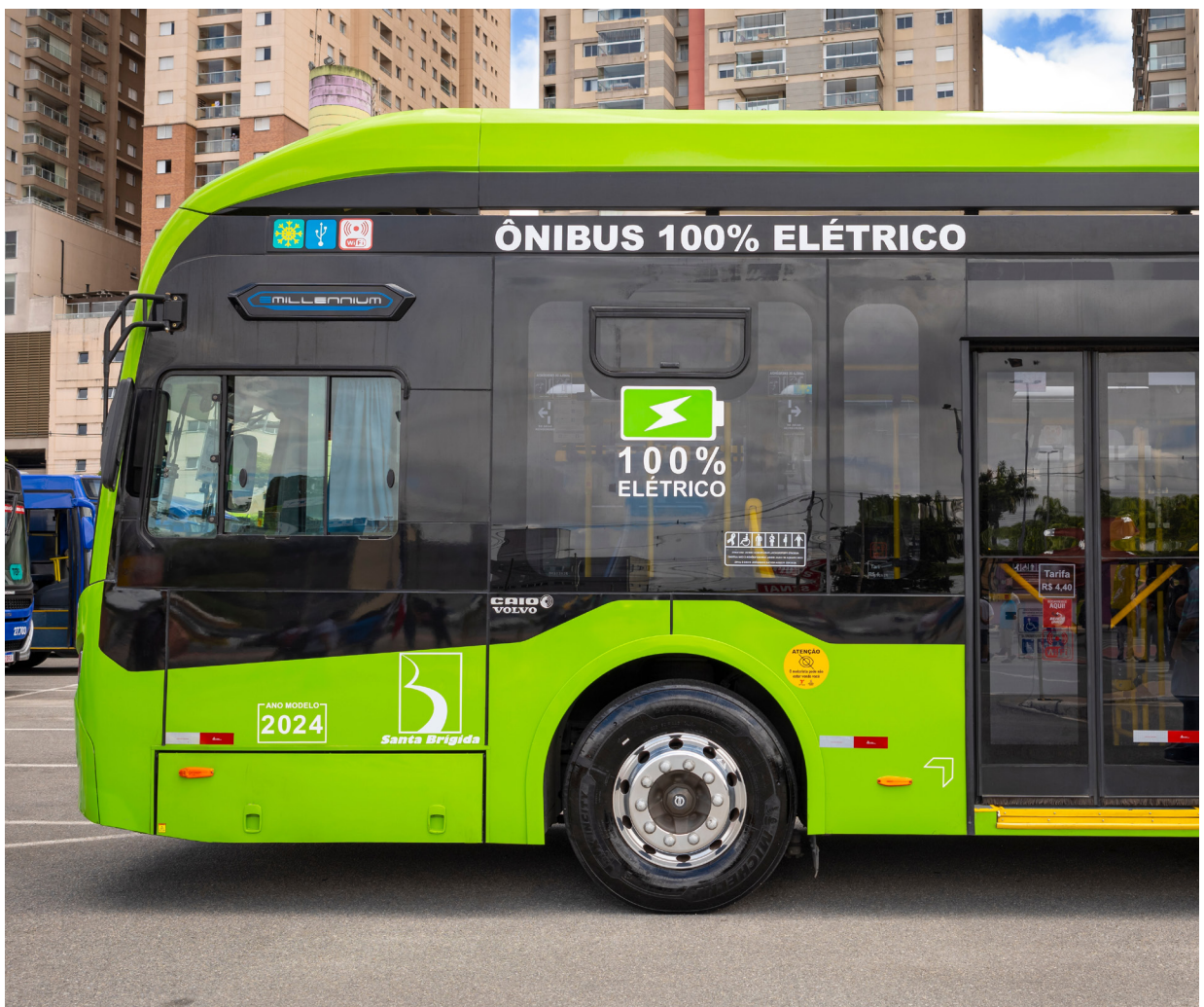
SOURCE: CETUD.



Concessional financing is often deployed through blended finance structures, which combine concessional and commercial financing to improve project bankability and attract private investment. In these structures, concessional capital absorbs higher levels of risk or accepts lower returns, helping to crowd in private investors that may otherwise be unwilling to participate. Blended finance can take different forms, including tiered capital structures, first-loss capital⁵, or the use of guarantees to protect investments. Development finance institutions often play a key role in structuring these facilities and signaling confidence to the market (IFC, 2025).

Concessional financing should be used strategically and may not be appropriate or available for all e-bus projects. It is meant to be catalytic, unlocking financing from other sources rather than serving as a complete financing solution. It is therefore most effective when used to advance otherwise viable projects and cannot compensate for poorly structured projects. Concessional financing also typically moves slowly, as projects can take a long time to move from concept to financial close, and often prioritizes large “ticket sizes,” meaning governments may need to agree to take on large loans, potentially straining foreign currency reserves needed for loan repayment. Finally, concessional financing has been declining in recent years as donor countries reallocate funds from aid to other spending areas citing fiscal constraints (OECD, 2025).

E-bus in São Paulo
SOURCE:
Marcelo.
mg.photos via
Shutterstock.



5 The guarantor agrees to bear losses up to an agreed percentage, thereby insulating other investors from losses if the borrower defaults on the loan.

GUARANTEES

Guarantees act as a form of insurance, helping to protect asset owners and operators from potential risks, thereby enabling private investment where it otherwise would not be viable. They are particularly useful when private capital is available but perceived risks prevent investment in e-bus projects. Guarantees from MDBs are estimated to be up to five times more effective at mobilizing private capital compared to loans (CCFLA, 2026). Issuing guarantees can also signal a borrower's creditworthiness and reputability, which can build confidence among a wider pool of co-investors. However, guarantees cannot compensate for poorly designed projects, limited data on borrowers, a clear risk-management strategy, or proper regulatory and legal frameworks (OECD, 2021).

Passengers
boarding
e-bus in
Jakarta,
Indonesia.
SOURCE:
Fadfebrian
via
Shutterstock.



Guarantees have been largely underutilized, especially by subnational governments, because they can be complex to design and implement. However, several transport infrastructure projects have successfully utilized guarantees to enable bankability. In e-bus projects, guarantees are particularly relevant for addressing four common risks: weak borrower creditworthiness, project delivery delays, regulatory or political

uncertainty, and foreign exchange exposure. Below are a few examples of guarantees used to mitigate these risks.

- **Credit guarantee:** A credit guarantee protects the lender (i.e., commercial bank) against loan or bond nonpayment by the borrower by distributing losses more evenly across the guarantor and the lender. This can be useful where operators or governments have limited creditworthiness and struggle to secure financing.
- **Performance guarantee:** Commonly used in infrastructure to ensure project completion, performance guarantees ensure that partial compensation is provided to investors even if the project is delayed, is completed below expected standards, or is not completed. In e-bus projects, this can help mitigate risks related to delays in vehicle delivery, charging infrastructure installation, or depot readiness.
- **Minimum ridership guarantee:** The stakeholder operating an e-bus system takes on significant risk, particularly if ridership falls below projections. Low ridership means lower revenues and could threaten long-term potential to operate the system. Therefore, the government can provide a minimum ridership guarantee to an operator—even if ridership drops below a specified level, the operator will receive payment.
- **Political risk guarantee:** Investors attribute greater risk to investing in low- and middle-income countries (LMICs) because of real or perceived regulatory, political, or social instability. A type of equity guarantee,⁶ political risk guarantees cover foreign investments in the case of local conflict, expropriation,⁷ sudden regulatory shifts, etc., instigated by the government. This can be particularly useful in stabilizing long-term public-private partnerships against future administrations' altering regulations or concessions.
- **Foreign exchange risk guarantee:** This covers the change in debt service cost that can result when a government borrows in a foreign currency but repays the loan in local currency. This is particularly relevant for e-bus projects in countries that import buses, batteries, or charging equipment.

6 An equity guarantee protects a private investor's—typically a private equity or venture capital fund—investment (i.e., shares, equity stakes in a capital investment) for a certain period of time (OECD, 2021).

7 Expropriation is the governmental seizure of property or a change to existing private property rights.

PUBLIC FUNDING

Public funding plays a critical role in improving the financial viability of e-bus projects, especially for assets or infrastructure essential to system performance that are less attractive for private investment because they do not generate revenue. By covering or reducing these costs, governments can improve project economics, signal long-term public commitment, and help crowd in private investment for vehicles, batteries, charging infrastructure, or operations.

Public funding helps close viability or affordability gaps through different mechanisms. Viability gap funding can be particularly useful for reducing the upfront cost differential between e-buses and diesel buses, making e-bus projects more attractive to investors. Operational subsidies can also be important, especially where fare revenues alone do not cover operating costs or ensure investor returns. In these cases, governments may provide recurring subsidies, availability payments, or performance-based payments to improve revenue predictability. Subsidies should be targeted and aligned with financial and policy goals. Poorly targeted subsidies may distort incentives or create long-term fiscal burdens.

In São Paulo, different forms of public support are combined to improve project bankability and operational sustainability, enabling e-bus deployment at scale. The city has long relied on municipal subsidies, alongside user fares, to maintain public transport service provision and affordability. More recently, São Paulo introduced a partial subvention model to address the additional upfront cost of e-buses: Operators acquire e-buses at the cost of diesel buses, while the city uses public funding to cover the additional capital cost of the electric bus (C40, 2024).

E-bus charging in
Santiago.

SOURCE: Directorio de
Transporte Público
Metropolitano.



CARGADOR
N° 27

NO

CARGA PLUG
ENTRE LAS
17:30 - 22:30
SABADO

CAUTION
DO NOT TOUCH
THE CHARGING CABLE

DISCUSSION AND CONCLUSION

A financially viable e-bus system requires clear allocation of roles, costs, and risks across stakeholders, supported by an appropriate business and contracting model. There is greater opportunity to attract private investment to e-bus systems compared to traditional public transport: Investors motivated to address the climate crisis see e-buses as aligned with that mission; simultaneously, e-buses have been shown to attract more riders willing to pay higher fares, meaning e-bus systems provide attractive revenue-generation opportunities. However, governments must still set the vision for the system, ensuring equitable access, safety, and network connectivity, as well as a bankable structure from the outset.

Though governments may not need to own every system asset, they remain central to enabling successful e-bus deployment. Governments need to understand the opportunities and constraints associated with investing in e-bus systems and be prepared to engage with DFIs and private investors to negotiate viable financing structures that support e-bus project implementation. In many cases, governments will need to invest in enabling infrastructure such as depots, stations, road works, or grid upgrades, which often generate limited direct revenue and thus are not a priority for private investment. Governments also play a key role in ensuring electricity access and sufficient generating capacity for e-bus charging. Knowing that private investors seek to minimize risk and secure predictable returns, governments must carefully consider which business models, contracting arrangements, and financing or de-risking tools will best support project viability.

This is an important moment for bus electrification in emerging economies.

Electrification of public transport is increasingly viewed by national governments not only as a climate strategy but as an industrial and economic development opportunity. Countries are looking for opportunities to expand domestic manufacturing, create jobs, and attract production-related investment. At the same time, battery technology continues to improve, e-bus costs are falling, and governments are increasingly adopting ambitious electrification targets. Early pilot and scale-up projects are proving the viability of e-bus systems, generating lessons for scaling and attracting growing private-sector interest through innovative asset and operations financing models.

Rather than catalog every possible financing or delivery approach, this report aimed to clarify business models, contracting approaches, and financing and de-risking tools that have shown promise for scaling urban e-bus systems. It also identified ways to reduce barriers to investment and clarify the roles of governments, development banks, and private investors to improve project bankability.

In short, the solutions and models needed to streamline and scale investment in urban e-bus systems are becoming clearer. Successful deployment will depend not on any single business model or financing mechanism but on coordinated action to align policy, infrastructure, finance, and operations. With stronger coordination across stakeholders, this momentum can deliver more e-buses on city streets and high-quality, clean, accessible public transport systems for everyone.

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