



Institute for Transportation  
& Development Policy



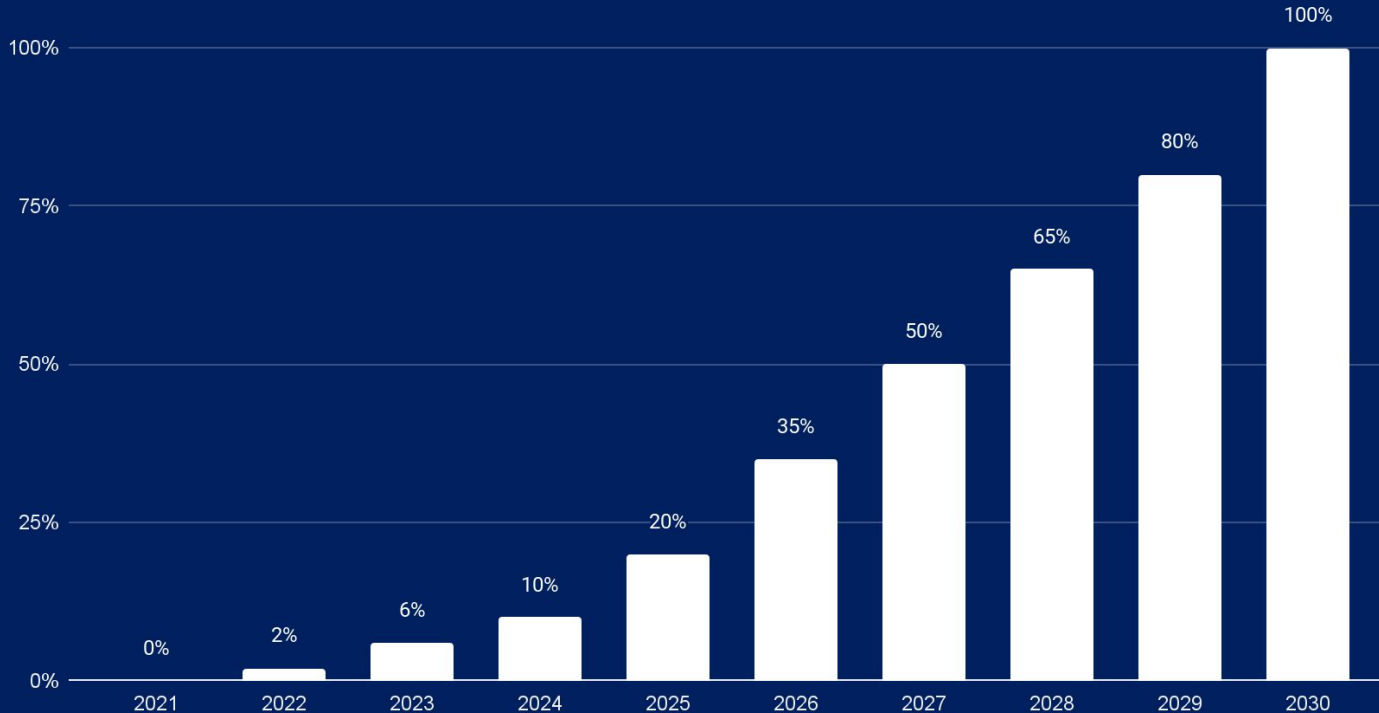
# Powering Change: Exploring Innovative Business Models for Transjakarta Electrification

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# Transjakarta Electrification Roadmap



10,047  
e-bus unit



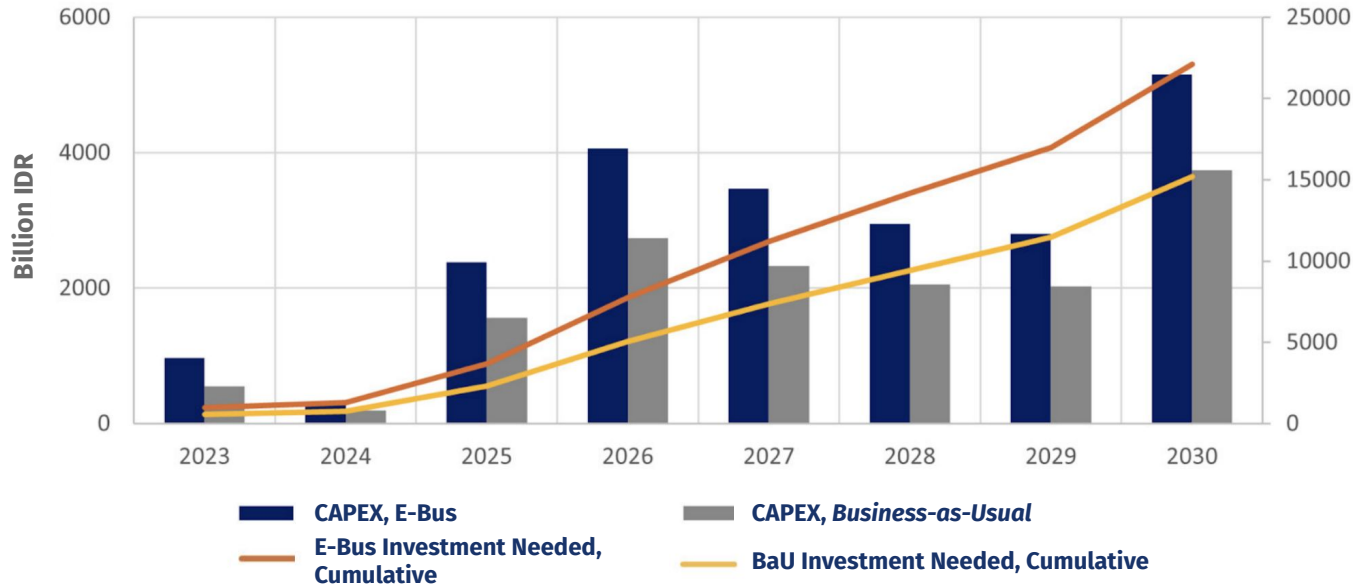
## 100

electric bus has already procured in 2022 is part of a comprehensive roadmap for electrifying **100%** of Transjakarta fleets in 2030.

52 12-meter low-deck electric buses are in operations on non-BRT routes.

# Estimated Investment Needed for Transjakarta Electrification

E-Bus CAPEX Comparison vs *Business-as-Usual*\*



Estimated total investment costs for electrification of 100% of the Transjakarta fleet (10,047 units), cumulative until 2030:

~IDR 22 T or  
**USD 1.43 B**

including e-bus fleets procurement and charging infrastructure needed to achieve the 100% electrification target.

\*The Business-as-Usual scenario assumes that Transjakarta will still have a fleet of 10,047 units in 2030, but all of them will be fueled by diesel or CNG.

## Transjakarta Electrification Challenges - Funding and Financing

**1**

### High upfront costs

High upfront costs of acquiring electric buses

Additional upfront costs for charging infrastructure and depot upgrade

**2**

### Lack of government supports

Lack of strong regulatory framework for commitment and target

Lack of incentives and subsidies

Lack of multi-years financing commitment and guarantee

**3**

### Inflexible business models & limited private sectors involvements

Highly dependent on inflexible conventional business model that relies on operators

Finance risks are highly centralized on operators

Lack of bankable operators

Certainty on financial attractiveness for private sectors

# Three important questions to address:

1

**How to lower upfront costs and add flexibility?**



2

**How to attract various type and size of private investors and add flexibility?**



3

**How to lower implementation e-bus project risks?**





New ways of thinking and doing are needed to expedite the electrification.



## 1

# How to Lower Upfront Costs and Add Flexibilities?

Possible Solutions:  
**Viable Commercial  
Arrangements**



# Analysis of Possible Commercial Arrangements

		Option 1	Option 2	Option 3	Option 4
		Buy the service (BaU model)	Concessional model	Fleet leasing <sup>1</sup>	Combination of scenarios
	<b>Fleet ownership</b>	Bus operator	<b>Transjakarta</b>	Bus lessor	<b>Single bus, low entry bus, medium bus: Buy-the-service model</b>  <b>Articulated bus: Concessional model</b>  <b>Microbus: Fleet and depot leasing</b>
	<b>Fleet operations</b>	Bus operator	<b>Bus operator</b>	Bus operator	
	<b>Fleet maintenance</b>	Bus operator	<b>OEM/APM</b>	Bus lessor	
	<b>Overnight charging Infrastructure</b>	Bus operator	<b>Bus operator</b>	Bus operator (bus lessor for depot leasing)	
	<b>Terminal charging infrastructure <sup>2</sup></b>	Charging service providers	<b>Charging service providers</b>	Charging service providers	
	<b>Source of financing</b>	Equity from investors and debt from local commercial banks	<b>Equity from The Government of Jakarta and debt from PT. SMI, commercial banks, financial instruments</b>	Equity from investors and debt from financial instruments	
	<b>ΔNPV with BaU scenario <sup>3</sup></b>	9.2%	<b>17.9%</b>	12.5%	<b>16.9%</b>
	<b>Remarks</b>	Regulatory and institutional mechanisms already exist	<b>Most financially attractive from NPV standpoint</b>	Most implementable (least capital cost from operators and Transjakarta)	<b>Optimises financial and implementation feasibility</b>

[1] = Also includes depot leasing  
 [2] = Terminal charging infrastructure is arranged through Public Private Partnership (PPP) with charging service provider where they would get paid by Transjakarta for the initial investment and by operators for the energy used  
 [3] = BaU = All ICE fleet scenario. as % of BaU (ICE fleet) NPV



## 2

## How to Attract Various Type and Size of Private (Capital) Investors and Add Flexibilities?

Possible Solutions:

**Procurement Model That can be Replicated and Scaled through Alternative Funding Schemes**



Scheme	Description	Government Guarantee Letter	Special Purpose Vehicle	Other investment/ financing instruments	WACC Simulation Result	Pros	Cons
A-1	PT SMI provides regional loans to The Government of Jakarta	✗	✓	✗	7.21%	The GoJ is familiar with the mechanism of issuing, distributing, and paying regional loan from PT. SMI.	Transjakarta must request GoJ to issue regional loan. The issuance needs a regional regulation
A-2	The combination of regional loans and financing products (PT. SMI)	✗	✓	✓	7.39%	PT. SMI has experienced on channelling funds from several DFIs	More complex than scheme A-1 because of the issuance of additional financing instruments
A-3	Development Financial Institutions (DFIs) or Export Credit Agencies (ECAs) Loan to Government (2-step Loan)	✓	✓	✗	6.86%	Longer tenor, low interest	GGL from MoF will be difficult to obtain, UKEF is not familiar with IIGF, full financial risk to public sector

Scheme	Description	Government Guarantee Letter	Special Purpose Vehicle	Other investment/ financing instruments	WACC Simulation Result	Pros	Cons
<b>B-1</b>	Loans from local and foreign commercial banks, including Exporting Credit Agencies (ECAs)/Development Financing Institutions (DFIs)	✗	✗	✗	10.08%	The risks are fully borne by private sectors	Need higher government financial support to increase the level of confidence of the private sectors
<b>B-1A</b>	Loan from commercial foreign banks to Private Sectors - Business as usual (BaU)	✗	✗	✗	10.18%	Status quo role of main actors	Less flexible
<b>B-2</b>	Bond as investment instrument to raise capital	✗	✓	✓	11.32%	Risks associated to private sectors	Corporate financing is used, need company rating
<b>B-2, Alt 1</b>	Utilises Limited Participation Mutual Funds ( <i>Reksa Dana Penyeretaan Terbatas</i> , "RDPT") as the investment instrument, SPV as the asset owner	✗	✓	✓	9.89%	Collaboration with fund managers will increase the confidence of private sectors and simplify the process taken by Transjakarta/Goj	Assets may not be used/maintained properly by operators since they are not the owner
<b>B-2, Alt 2</b>	Utilises RDPT, finance lease to operators	✗	✓	✓	10.03%	Financial leasing company will conduct purchase agreement with OEM and buy the assets on behalf of the SPV	The costs is higher and the process is more complex compared to the previous scheme
<b>B-2, Alt 3</b>	Utilises RDPT, leverage lease agreement between SPV and leasing company	✗	✓	✓	10.54%	Lease to own assets to operators through leverage lease agreement between SPV - leasing company, makes operators more careful on O&M the assets	The costs is higher and the process is more complex compared to the previous scheme

# 3

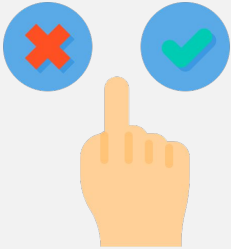
## How to Lower Implementation E-Bus Project Risks?

Possible Solutions:

**End-to-end feasibility project,  
collaborating with private sectors**

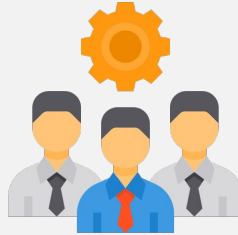






## Choose & prioritize

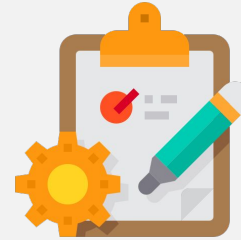
Alternative business models, funding schemes, and possible blended financing for the next tendering process.



## Collaborate

With fund management, multi-finance institutions, and other private sectors.

Guarantee from governments will strongly reduce the risks and enhance cost effectiveness.



## Conduct

End-to-end feasibility studies for representative bus types to test the commercial, operational, and financial arrangements.



## Explore

The combination of business models and financing scheme scenarios.

# Thank you

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