UK PACT

This report will outline the business models, Structured financing scheme, and contractual frameworks for Transjakarta's first phase of large-scale electrification

Building a Regulatory and Financial Basis for Transjakarta's First Phase E-bus Deployment

Task 4.6: Business models, Structured Financing Scheme, and Contractual framework of Transjakarta first-phase of large-scale electrification

December 31, 2022

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List of Abbreviations

ADB	Asian Development Bank
APBN	Anggaran Pengeluaran dan Belanja Negara
APBD	Anggaran Pengeluaran dan Belanja Daerah
APM	Agen Pemegang Merek/Sole Distributor
BAPPENAS	Badan Perencanaan Pembangunan Nasional
BRT	Bus Rapid Transit
BUMD	Badan Usaha Milik Daerah / ROE
BUMN	Badan Usaha Milik Negara / SOE
CEF	Credit Enhancement Facility
CKD	Completely Knocked Down
CPI	Consumer Price Index
CSP	Charging Service Provider
DAK	Dana Alokasi Umum / General Allocation Fund
DAU	Dana Alokasi Khusus / Specific Allocation Fund
DP	Down Payment
DPRD	Dewan Perwakilan Rakyat Daerah (Regional People's Representative Council)
DSCR	Debt Service Coverage Ratio
DFI	Development Finance Institution
ECA	Export Credit Agency
EIRR	Economic Internal Rate of Return
ESCO	Energy Supply Company
FIRR	Financial Internal Rate of Return
GOI	Government of Indonesia

GOJ	Government of Jakarta
HIMBARA	Himpunan Bank Milik Negara / State Owned Banks
IFC	International Finance Corporation
IFI	International Financial Institution
IRRE	Internal Rate of Return Equity
ITDP	Institute for Transportation and Development Policy
KPI	Key Performance Indicator
KOPAJA	Medium Bus Operator Cooperation
KfW	KfW Development Bank of Germany
KWK	Micro Bus Operator Cooperation
LLCR	Loan Life Coverage Ratio
MCA	Multi-Criteria Analysis
MCC	Millennium Challenge Corporation
MDB	Multilateral Development Bank
MIGA	Multilateral Investment Guarantee Agency
MOF	Ministry of Finance
MOT	Ministry of Transport
NHSFO	Non-Honouring of Sovereign Financial Obligations
NPV	Net Present Value
OECD	Organization for Economic Co-operation and Development
OEM	Original Equipment Manufacturer
O&M	Operation and Maintenance
PIU	Project Implementation Unit
PMOC	Project Management Oversight Consultant
PPP	Public Private Partnership

PT SMI	PT Sarana Multi Infrastruktur (Persero)
PII	PT Penjaminan Infrastruktur Indonesia (Persero)
PLN	Perusahaan Listrik Negara (State Electricity Company)
SLA	Service Level Agreement
SPV	Special Purpose Vehicle
UKEF	Unite Kingdom Export Finance (UK Export Credit Agency)
USAID	United State of America Aid
UITP	International Association of Public Transport
VfM	Value for Money
VGF	Viability Gap Funding

Executive Summary

It is evident from the market consultation that the new technology of electric bus implementation needs to challenge the status quo, which includes the way the system is operated, procured, and financed. The key challenge of the current business model of Transjakarta services is it does not have the flexibility to allow new players to participate. Furthermore, the upfront costs of e-bus is also another challenge since majority of the operators do not have the financial capacity to provide the require down payment.

There are quite a range of potential source of finance that can be utilised to finance the e-bus implementation, from public financing, private financing and credit support and enhancement facilities. Additionally, the financing mechanisms to allow stakeholders to participate in the e-bus deployment are also available, ranging from non-reimbursable grants, loans, leasing, etc. These mechanisms are discussed in this report to give an overview and how they are applicable to finance e-bus deployment.

Through the market consultations and desktop study, it is found that there are a few potential business models that could be implemented for the e-bus implementation. The study also suggests that there is a need to separate the business models between large/medium buses and microbuses as the operation of the 2 bus types are significantly different where the microbuses do not have depot to locate the charging infrastructure and they are also operated by individuals. In addition to business-as-usual model, which face significant challenges in its implementation, concessional finance and leasing model can be implemented to finance large and medium e-buses.

The concessional financing for large/medium buses is implemented where Transjakarta would acquire the e-buses and allots them to each operator. Tranjakarta would also enter into an arrangement with the APM/OEM where Transjakarta would pay monthly for providing the maintenance. Operators would just operate the buses based on the contract and SLA. In addition, operators would also need to invest in their own depot charging infrastructure. As for terminal charging infrastructure, Transjakarta would need to arrange it through PPP with CSP where they would get paid by Transjakarta for the initial investment and by operators for the energy used. The oeprators would keep getting paid on the basis of Rupiah/km for the public bus services.

In contrast, leasing model is implemented where Transjakarta do not own the buses but acquire them from a Leasing company (Lessor) and then allots them to operators. Lessor would then arrange the maintenance contract with APM/OEM. Similar to concessional financing, operators would also need to invest in the depot charging and Transjakarta in terminal charging through PPP with CSP. In this case, Transjakarta would need to pay for the lease of the buses to the Lessor and to CSP for the initial investment.

As for microbuses, the business model suggests that the cooperatives' role is shifted to leasing company, where they would need to arrange the procurement, financing and ensuring charging and maintenance of the buses. The operators will only operate the buses. For this case to work,

Transjakarta need to enter into a framework agreement with lessors through a competitive process. The framework agreement would provide for operational aspects, bus quality requirements, escrow arrangement guarantee to make payment of lease, targeted fleet deployment and provision for substitution of operators in case of poor performance.

Every business model has their own benefits and drawbacks as well as potential risks, which would need to be assessed further in order to determine the most suitable model to be implemented for Transjakarta electrification program. Hence, Government of Jakarta and Transjakarta have to carefully consider all aspects to make an informed decision.

Another intervention that could be used to improve access to financing and provide innovative solutions to financing challenges is fund channelling scheme. Hence, the study also developed several fund channelling schemes that could have potential to implement. Furthermore, the fund channelling schemes that are developed in this study are then to provide alternatives for the Government of Jakarta and Transjakarta that can be executed for the fund channelling mechanism for the implementation of e-bus.

The main characteristics of the fund channelling schemes in this study are that they can be replicated and scaled, attract various types and size of private capital/investors and also add flexibility to the business model. The key objective of the fund channelling schemes is to provide proof of concept where the costs of fund of each scheme will be evaluated in separate report of this study.

The fund channelling schemes are largely divided into 2 main sources of financing, which are from public loan and private loan. The first three schemes (Scheme A-1, A-2 and A-3) will maximise the use of regional loans that need support and commitment from the Government of Jakarta. Scheme A-3 will also enable the participation of ECAs/DFIs yet will need National Government support in the form of Government Guarantee Letter. While the rest of the schemes will utilise loans from private sector. Scheme B-1 will be implemented using loans from foreign commercial banks to also allow the option of having ECAs/DFIs participation in the scheme. Loan from commercial bank could also be exploited in the same scheme.

Scheme B-2 is similar to B-1, however, Scheme B-2 will be getting loan through the securities that are issued by private sector. The security is explored in this study is Limited Participation Mutual Funds (RDPT). This type of security is selected since it is relatively easier to implement compared to bonds or stocks since it does not require complex steps such as getting financial rating of the company.

The project structure is undeniably a complex problem because it involves changing the entire infrastructure of the transportation system, given limited operators with sufficient creditworthiness. Together with charging infrastructure, vehicle supply, and personnel training, there are also associated costs involved in transitioning to electric buses, such as the cost of purchasing and installing the buses, charging infrastructure, and maintenance. Nevertheless, there

are social considerations to take into account, such as the impact on bus riders and the community at large. In order to successfully transition to an electric bus fleet, governments and other stakeholders must consider all of these factors and develop a comprehensive strategy.

Furthermore, in order to progress the financing aspects and enable the full deployment of electric buses, there are some aspects and steps that should be done first. These include further assessment of the selected business model and fund channelling scheme in terms of its cost and benefits, deep collaboration with both existing and potential stakeholders and performing deeper technical assessments, among others.

1. Introduction

1.1 Background

It is evident that there are new players in the bus industry considering the transition to zero emission vehicles. However, findings from market consultations with the relevant stakeholders in the e-bus industry suggest that the current business model of Transjakarta needs to be revisited as it does not allow for new players to participate. Furthermore, the current business model is not suitable to continue for e-bus deployment since the existing operators do not have sufficient capital power to afford the high up-front costs. Hence, it is important to evaluate the current model and suggest potential business models that can be implemented.

The market consultation also suggests that there is a high interest from foreign funds to participate in the electrification program. However, the challenge is that the current model does not have the flexibility to do so. Hence, fund channelling schemes are developed as part of this study to accommodate this aspiration. The fund channelling aspect will also help address the gap that relates to the need to lower the up-front costs and add more flexibility.

All these aspects are important to boost the process of Transjakarta electrification as it will provide a broader perspective and understanding on how to involve more players and mitigate the potential risks related to new technology.

1.2 Business Models, Fund Channelling, and Contractual Frameworks

The main objective of this report is to evaluate a range of potential source of financing and financing mechanism that could be utilised to finance the e-bus implementation for Transjakarta services. It also discussed the potential business models and fund channelling schemes to allow for more flexibility and more access to the range of financing sources that are available in the market.

Business model is broadly defined as a way/framework for a company to make its revenue and profit. It also dictates how one organisation creates and delivers their values to the general market in social and economic context. In this study, for Transjakarta context, business model refers to the commercial arrangements and provision of assets for the electrification program. The current business model within Transajakarta service is that all assets are arranged and owned by the operators and they are paid in the form of Rupiah/km that is pre-arranged in the contract. This model will be difficult to implement in the context of electrification due to the high upfront costs. As a result, business model will affect the contractual framework that exist between all parties involved the model. Hence, a modification to the business model translates to amendment of contractual framework as well.

On the other hand, fund channelling is a financing mechanism by which the fund that is sourced for something is being used for that particular thing only, not a wider thing. In other way, it is to ensure the immediate realisation of one project using a certain source of funds. In Transjakarta

context, fund channelling scheme is also inter-related to the business model where fund channelling scheme is aimed to add more flexibility to the project to allow new players to participate and increase access to a range variety of financing sources.

1.3 Objectives of The Report

The report will largely discuss the financing aspects of Transjakarta electrification program to better understand the current condition, gaps and potential solutions. The report is also intended to provide more knowledge in this aspect and overview the possible fund channelling schemes that can be utilised further. In particular, this report will:

1. Provide overview of the current business models, source of financing and financing mechanism of Transjakarta operations
2. Provide overview of available financing mechanism that can be utilised to finance Transjakarta electrification
3. Evaluate the gaps and challenges in terms of financing aspect of the electrification program
4. Discuss the potential fund channelling schemes that can be utilised by Government of Jakarta and Transjakarta to help accelerate the electrification program.

1.4 Scopes of The Report

The scope of this report is limited to the overview of current condition of Transjakarta business model and also an overview of potential financing mechanisms and source of financing that are available to be utilised further. The report will also discuss the alternative business models to accommodate the potential new players and funds from international institutions. Pursuant to this, fund channelling schemes will also be discussed and evaluated further in other report in terms of its cost of funds.

1.5 Outline of The Report

This report is structured in a way that it can inform the readers about the background of the current business model and financing of Transjakarta. It is then followed by a brief overview of potential source of financing that is available to support the electrification program. Furthermore, potential financing mechanism will also be discussed in the following sections as well as the potential alternative business models and its associated opportunities and risks.

The possible fund channelling schemes will also be evaluated against the challenges that were gained from the market consultations. The report will end with conclusions that can be drawn and provide some actions as a way forward.

2. Current Business Models, Contractual Framework, Source of Fund, and Financing Mechanism of Transjakarta Operations

As of December 2022, Transjakarta provides BRT, Non-BRT, and other services through 4,600 buses owned mainly by the bus operators under a "Buy the service" (BTS) scheme. The operators procure the buses by making a down payment of 20-30% of the bus commercial price and the remaining amount is financed through a bank loan typically for a 5-year duration. The depot is either owned or leased by the operator that is typically located outside the city centre area.

The contract for bus services is for 7 years and could be extended by 10 years for articulated bus in case the kilometres production is not achieved by the end of year 7. Excluding the 10% of the reserve buses, the targeted daily operating kilometres varies depending on the type of bus for example 237 km for single/maxi buses, 200 km for microbus etc. for 335 days in a year. Thus, the agreed volume is 237 x 335 x 7 kms per bus during the contract period.

Transjakarta provides the schedule of operations to operators based on the contracted number of buses and operational requirements. In the case that Transjakarta is unable to utilize the agreed volume during the contract period, the contract is then extended until the remaining kms are utilised. However, Transjakarta must utilise or pay for at least 100 kms/bus/day. Transjakarta also has to pay for the dead kms (depot to starting point of route and vice-versa) but only limited to 20 km/day/bus.

Although the prices for the BTS is competitively determined, Transjakarta must only utilise the services of the operators who have a sanctioned and unfulfilled quota from the Jakarta Transport Agency (Dishub). This puts restrictions on whom Transjakarta contract with. For example, the medium and mikro-bus services quotas are allocated to cooperatives which are owned by individuals who procure buses on their own and ply it under the contract of the cooperative either themselves or through drivers appointed by them. The cooperatives find it difficult to get bank financing as well as to raise their own down payments due to their limited financial capacity. Due to this reason the quotas of most cooperatives remain unutilised and Transjakarta is unable to expand the services despite having approval from the Dishub.

Considering that the electric buses cost more than the diesel buses and further investments is needed for charging infrastructure, the cooperatives and operators who do not have financial strength will find it difficult to procure and operate the e-buses. Hence the current business model for diesel buses is not suitable for the e-bus adoption planned by Transjakarta/Dishub.

On the other hand, large institutional investors, who may want to invest in providing the e-buses and necessary infrastructure, look for bankability and payment security. Transjakarta meets over 80% of its annual expenses from the subsidies granted by the DKI Jakarta government which are agreed annually in advance and disbursed in instalments during the year. For diesel buses which do not cost as much as the e-buses and have ready alternate market, this is not a big concern. However, for e-buses where the initial investment is significantly higher and there is high cost and

risk of alternate deployment and uncertain residual value in case the contract fails, the investors would like to have a contract with a bankable counter party which has adequate financial strength and is not dependent on government subsidies which are also not guaranteed beyond one year.

2.1 Market Consultation

A market consultation was also conducted to better understand the current landscape of the bus ecosystem, the aspirations from all players as well as potential challenges in shifting to e-bus ecosystem. It is also important to understand the market's risk appetite and their ability to provide the project with necessary financial and technical resources. Furthermore, the regulatory environment of the project and possible risks associated with the project were also assessed through market consultation. Finally, it is also necessary to assess the market conditions to determine the expected return on investment for investors or providers in order to ensure the viability of the project.

2.1.1 Bus Manufactures, Importers, Incumbent Operators Consultation

A series of consultations were conducted with the current bus manufacturers, importers, and bus operators to understand their conditions and appetites. These consultations were done offline in the respective offices. The dates and findings from each consultation are presented in the table below.

Table 1 Date of Consultation for Bus Manufacturers, Importers, Bus Operators

INSTITUTION	CATEGORY OF INSTITUTION	DATE OF CONSULTATION
Bakrie Auto Parts	Bus Importer	October 13, 2022
Mobil Anak Bangsa (MAB)	Bus Manufacture	October 12, 2022
Kopaja	Medium Bus Operator	October 14, 2022
KWK	Micro Bus Operator	October 13, 2022

Source: ITDP Analysis

They key findings from the consultations are summarised in the table below.

Table 2 Consultation Findings

TYPE	CONSULTATION FINDINGS
Microbus Cooperatives	• No depot; • high battery price; • Private owned fleet; • APM for Micro electric bus that can provide a full warranty until the contract period is over; • KUR 30% Down payment;

TYPE	CONSULTATION FINDINGS
	• huge upfront fleet investment costs IDR 600M (> KUR 6% limit IDR 500 million); • Transport Agency / Dinas Perhubungan Jakarta, Government wants the limit price to be IDR 250 million. • Lack of profit information and analysis in operating the electric microbuses; • Financial struggling arises in switching the vehicles to Mikrotrans AC.
Medium Bus Cooperatives	• Financial capacity is less than 20% down payment, therefore they can't fulfil the 35% for procuring the fleets; • Currently a lot of wasted kilometres, resulting profit downfall from IDR 7.1M was reduced to IDR 2.6 billion per unit per month; • cooperative leases are not available. (Are there any leasing company takes cooperative as lessee?) • Current offer from BRI bank loan, with interest rates ranging from 9.5 to 11%; most banks avoid cooperatives;
Large bus	• Operators' financial capacity in providing 30% down payment for fleet is inaccessible (except Mayasari Bakti); • Additional charger investment, energy supply.
Contract and Regulations	• Utilization of km-production agreed-upon the contracts are far from implementation • Utilization of fleets that have been rejuvenated but have not been absorbed to be integrated and operated, the number of fleets that have just entered Jaklingko is only about 25% of the existing fleets (about 5,000 units; • Utilization of Medium bus, out of 320 in contract, only 50 can operate; • When operation is on a mixed road, resulting high in penalty risk. • Bulk electricity prices that can reach 3 times higher (2,200 per 1 kWh) • Tax that should be paid for imported items depends on the country. ASEAN-China charged 5%, Korean 0% or 5%, CKD buses are higher (could be up to 40%), but if the company imports rolling chassis, they could get 0% tax.

Source: ITDP Analysis

Vehicle manufacturers prime interest is to have a buyer for the acquisition of their products. They confirmed there is no finance lease available for electric buses.

2.1.2 Financiers

Several financiers, both local and international, were also consulted to get their appetites and risks and return level that are relatively attractive in the market. The financiers that were consulted ranging from banks, Special Purpose Vehicle (SPV), Credit Enhancement Facility (CEF) and foreign aid agency. The consultations were done both online and offline with the relevant team members.

Table 3 Date of Consultation with Financier

INSTITUTION	CATEGORY OF INSTITUTION	DATE OF CONSULTATION
UKEF	Exporting Credit Agency	August 15, 2022
Bank BNI	Local Commercial Banks	August 18, 2022
Bank BSI	Local Commercial Banks	August 22, 2022
Bank Mandiri	Local Commercial Banks	August 31, 2022
PT SMI	Sovereign Financial Institution for Infrastructure Financing	September 2, 2022
PT PII	Sovereign Guarantee Institution for Infrastructure Financing	October 24-25, 2022 November 15, 2022
MCC	US Foreign Aid Agency	November 16, 2022
BAPPENAS	National Planning Agency	October 24-25, 2022 November 16, 2022
Asian Development Bank (ADB)	Development Financial Institution Private Sector Division Sovereign and Green Financing Division	September 2, 2022 December 1, 2022
PT Danareksa	Fund Management and Securities	November 28, 2022 November 29, 2022

Source: ITDP Analysis

The main findings from the consultations are summarised in the following table.

Table 4 Financial Institutions Consultations Findings

INSTITUTION	CONSULTATION FINDINGS
ADB Sovereign Loan	• Sovereign & ASEAN Catalytic Green Finance Facility (ACGF) • need a government guarantee from the Ministry of Finance • Size max USD 300 Mio or 25% of total project cost • Currency risk > swap add cost of funds • Tenor up to 50 years • Additional grants for project preparation or capacity building

INSTITUTION	CONSULTATION FINDINGS
	• Financial intermediaries: Foreign banks, PT SMI > add cost of funds
ADB Private Loan	• Size max USD 250 Mio or 25% of total project cost • Currency risk > swap add cost of funds • Tenor up to 20 years
ECA-UKEF	• Product: Guarantee • Require a government guarantee from the Ministry of Finance • There has never been a transaction in Indonesia • Financial intermediaries: Foreign banks > add cost of funds • The repayment period for electric bus projects can be up to 14 years, an add-on from the repayment delivery period

DFI-MCC	• Credit Support through the Blended Finance Mechanism:
	  ○ Purchase Guarantee for project bond issuance
	  ○ Mezzanine Loan Funding
	  ○ Guaranteed minimum income purchase
	  ○ Payment of interest subsidies to borrowers of funds
	  ○ Purchase Interest swaps and currency swaps
	• Financing:
	  ○ Credit rating and debt issuance record
	  ○ Sell-side transaction advisor
	  ○ Legal, regulatory, policy, and institutional reforms,
	  ○ Increasing the capacity of investors, market players, and regulators

PT SMI Public Sector	• Municipality Loan (Pinjaman Daerah /PINDA) • need approval from DKI Jakarta Provincial Government and DPRD • Plt. Governors cannot make policies related to Regional Loans because they relate to the Regional Budget. The submission process can still be carried out, but can be budgeted through the APBD after the new Governor + DPRD are appointed (taking advantage of the grace period).
PT SMI Private sector	• Loan, CEF, Mezzanine • Financial capacity of Transjakarta • Sponsors of SPV • Market rates
PT PII	• Guarantee for PPP

INSTITUTION	CONSULTATION FINDINGS
	• Guarantee for BUMN, BUMD[1] • Scope of Project
Local Commercial Banks: BNI, BSI, Bank Mandiri	• Operators' financial capacity to provide 30% DP for fleet, • market interest rate • comply with OJK regulation (e.g., 2 years' operating profit) • The typical gearing expected is 70-80%
Fund Management and Securities	• limited fund size/issued (< IDR 2Trillion) for local market investors
Leasing Company	• comply with OJK regulation • Cooperation Credit worthiness • Concern for Implementation risk • 30% DP

Source: ITDP Analysis

2.2 Potential New Players in E-Bus Ecosystem

During the consultations supported by desktop study, new market players were identified that are different from the business as usual (BAU) scheme that may enter the e-bus ecosystem. Since it is a new technology, it is not possible to simply replace the buses only. It requires more collaborations from the different stakeholders that are involved in developing the ecosystem for e-bus implementation. Hence, it is imperative to identify those potential players to inform the development of the potential fund channelling in the coming section of this report. The table below presents the potential new players and their type of participation to support the e-bus deployment.

Table 5 Potential New Players in E-Bus Ecosystem

CATEGORY	SUPPORT / PARTICIPATION TYPE
	INTERNATIONAL
Private Equity Funds Crowdfunding	• provide funding to the electrification program • attractive return on investment • Grants • Sponsors
	LOCAL

[1] https://jdih.kemenkeu.go.id/download/3c6c7898-af0c-4ef2-9f75-db5216cb6ce8/148~PMK.08~2022.pdf

Fund Management	• Financing instrument issuer • book building • provide funding to the electrification program • attractive return on investment
Leasing Co	• provide leasing to operators
Capital Provider	• attractive return on investment • acting as SPV / Asset Owner • Capital and financing • Energy Service Companies (ESCO) operator
PLN	• Energy Service Companies (ESCO) operator • Electric supplier
PERTAMINA	• Energy Service Companies (ESCO) operator
Private	• Capital and financing • Knowledge and resources

Source: ITDP Analysis

2.3 Investment Opportunity

Through the market consultation, it was found that the e-bus ecosystem offers investment opportunity for the market. These include:

1. **Investors and capital providers**: Investors could consider investing in the e-bus sector through venture capital, private equity, or debt financing. They could also consider investing in infrastructure to support electric buses, such as installing charging stations and charging infrastructure or energy storage solutions.
2. **Operators**: Operators could consider leasing arrangements with manufacturers or private financiers, which would allow them to maintain similar income and operations conditions with reduced and smaller upfront down payment. Additionally, private financier contract term demands operators in setting up a contract with a third-party service provider for maintenance and repair of the e-buses.
3. **Manufacturers**: Manufacturers could offer discounted pricing or other financing options (such as long-term payment plans) to help make purchasing e-buses more viable for operators. Manufacturers can offer incentives to operators such as discounts on the purchase price, extended warranties, or other benefits to make purchasing e-buses more attractive.

2.4 Key Challenges

During the series of consultations with different market players mentioned above, a variety of challenges were identified. These challenges will help the team in developing a robust regulatory

framework and fund channelling schemes in order to help accelerate Transjakarta electrification. The challenges identified are as follows:

1. Electric buses procurement: finding a reliable source of electric buses with the required specifications and at competitive prices.
2. Charging infrastructure: deployment of electric charging infrastructure is a major technical and operational challenge as it requires careful planning, detailed analysis of the existing electrical supply to the site and installation of the required equipment. It also requires detailed analysis of the route network to inform the charging strategy that will dictate the infrastructure requirements.
3. Maintenance of electric buses: maintenance of electric buses requires specialized knowledge and expertise and training of personnel.
4. Operation of electric buses: can be challenging because of the current quota scheme in the public bus service landscape in Jakarta.
5. Regulatory framework: the regulatory framework needs to be adapted to create a level playing field for electric buses. The current regulations make it strenuous to deploy electric buses.
6. Financial challenges:
    a. High upfront costs of assets
    b. Access to cost of financing, considering that many operators have limited credit history and most (but not all) consider the current financing options for fleet replacement is expensive – compounded by high upfront costs
    c. Related infrastructure including charging require considerable investment from government or other players as the operators do not have the financial capacity to invest in infrastructures that are required.

3. Potential Source of Finance, Financing Mechanism, Business Models, and Commercial Arrangements

3.1 Potential Source of Financing

Financing would require capital resources to implement a project or to extend an existing one before the project-implementing agency generates the necessary revenue to generate an investment return. Sources of financing for E-Bus project are classified into two broad groups, namely private and public.

An alternate definition of public and private finance is related to the recognition of obligations on the government's balance sheet. From a national accounting and reporting perspective, private finance means financing that is not regarded as public debt. It is not, for example, consolidated in the government's balance sheet for the sector. Public finance is recognized in the government's balance sheet for accounting purposes, regardless of who provides the financing (ADB et al. 2016).

3.1.1 Public Financing

Budget allocations

The application of budget allocations has undergone significant changes include the revenue sources used to fund allocations (including general public debt as well as taxation revenue), the impact of public sector reforms (such as accrual accounting and output-based budgeting), trends in fiscal policy (such as fiscal responsibility policies), and the increased use of special (standing) allocations in financing government spending. Budget allocations remain the major source of finance for public infrastructure investment.

Public debt

Public debt is another source of funds for budget allocations. The total cost of debt finance includes the rate of return on government bonds, administration costs associated with debt issuance, and the contingent liabilities of the project, which with financing by budget allocation, remain wholly with the government.

Specific-purpose bonds

The term "specific-purpose securitized borrowing" describes the public sector's issuing of debt instruments like bonds and unsecured bonds to finance certain infrastructure. These loans are typically secured by the asset or the income stream that results from the asset.

Particularly for modest investments, transaction fees can be rather substantial. It costs up to 1% to involve market participants in the risk assessment and underwriting of a bond issue. Therefore, for specific-purpose bonds to be the most effective financing tool, market-related incentives for better project design and management must be strong.

3.1.2 Public and Semi-Public Debt Financing

Multilateral Development Banks

Public multilateral development institutions, including the World Bank, can support the financing of transport projects. Generally, these institutions finance public sector contributions through long-term loans guaranteed by the national government. MDBs help to finance construction works, equipment, and planning, design, and technical studies by providing loans (to both national and subnational governments). They also provide financial guarantees that reduce the risk of projects and loans, improving access to credit, reducing interest cost, and extending financing terms. Loans to governments may be used in conventional procurement (government borrows to make payments to contractors).

In addition to financing, MDBs also provide technical assistance and capacity building on institutions and governance, engineering, social and environmental risk mitigation, and technical, economic, and financial structuring of projects through grants (non-refundable) and reimbursable advisory services.

Involving MDBs in the financing of projects can add value by strengthening technical, fiduciary, environmental, and social due diligence and monitoring during implementation. The value brought about by MDBs is greater when they are involved from an early stage in the project and when project-implementing agencies consider the requirements from these financiers in project planning and design.

Bilateral Finance – Official Development Assistance

Certain national governments provide financing of transport projects through loans from development or export-import banks. Loans from bilateral development institutions are considered official development assistance and are provided at concessional rates with longer terms to maturity.

Development Finance Institutions

Multilateral and bilateral development finance institutions (DFIs) are specialized development banks or subsidiaries set up to support private sector development in low- and middle-income countries. Multilateral DFIs are private sector arms of international financial institutions, such as the IFC of the World Bank Group, and ADB.

The role of DFIs have an important role to play in supporting sustainable transport infrastructure investment in developing countries. Experiences to date highlight key policies for DFIs to support sustainable transport, including:

- Shifting their transport portfolio towards sustainable investment, by incorporating sustainable goals in their transport portfolio selection criteria (e.g., for grants and loans). This is particularly important given the current constraint on the banking debt market,

likely to require further reliance on development to bring liquidity in those markets. In particular, eight development banks, led by the Asian Development Bank (ADB), committed USD 175 billion to scale up support to more sustainable transport systems in developing countries over the next decade.

- Using their resources and high credit rating to leverage private capital through commercial bank lending, mitigate financial risk, and support private operators.
- Allocating a larger share of their sustainable transport portfolio to risk-mitigating instruments such as loan guarantees, private risk insurance tools rather than direct loans, to maximise the use of their limited resources while addressing investment barriers.
- Promoting PPPs by identifying bankable projects and sharing good practices (e.g., competitive tendering; sustainable goals included in procurement procedures).
- Provide support to PPP financing by means of credit enhancement products, such as guarantees. They offer a partial credit guarantee that serves to improve the credit of bonds and loans issued by private borrowers. For example, under a partial credit guarantee, the IFC could make an irrevocable commitment to pay principal, interest, or both on debt issued by a private project company up to a predetermined amount. This commitment on the part of an AAA-rated institution allows beneficiaries to gain access to cheaper and longer-term financing.
- Mainstreaming the use of impact evaluations of their investments and technical assistance in terms of emissions and climate resilience. DFIs can also strengthen their existing activities, including: best practice sharing; assistance to recipient countries to integrate sustainable transport goals in development strategies; capacity building and technical assistance; and help for local finance institutions access infrastructure markets.

DFIs can be an important partner in the development project. They can help mobilize commercial financiers in support of complex projects. DFI financing is provided to private enterprises under commercial terms and at market rates; it is not intended to replace commercial banks' willing to finance a project, but rather is intended to crowd in commercial financiers that are new to the country or sector and that can benefit from the implicit credit protection in hard currency–denominated cross-border financings.

Export credit agencies (ECAs)

Export credit and investment insurance agencies can help leverage private investment toward sustainable transport infrastructure and relevant transfer technologies, by increasing the provision of credit support to providers of sustainable transport infrastructure, vehicles and technologies (Sakamoto et al., 2010a). Export credit agencies also have a role to play in designing an international monitoring system on the level, nature and impact of export credits on environmental sustainability, as well as in expanding the work led by the OECD in developing a shared "Arrangement on Officially Supported Export Credits" to account for climate change concerns.

OECD countries have recently agreed new rules to:

- strengthen environmental and social due diligence processes of officially-supported export credits;
- create financially prudent incentives to support business projects with low-carbon emissions; and
- encourage support for advanced climate-friendly technologies.

Export-import bank financings are tied to project delivery by companies originating in the countries of these government entities. Countries such as UK, China, France, Germany and Japan are large providers of financing for the development of transport projects in low- and middle-income countries.

3.1.3 Private Financing

Unlike public financing, private financing comes with an expectation of a reasonable return. Rational, profit-maximizing developers and investors are prepared to take potentially high risks only if they expect to earn commensurate rewards (Mandri-Perrott and Menzies 2010). When considering the use of private resources for the projects, it must take into account the planned commercial arrangement for the project.

Project implementing agencies need to have a clear understanding of how private developers will make the expected returns through development and implementation of the project. This will help them to anticipate and understand the revenue-making objectives of private partners and the sources and cost of private financing potentially available to them. In particular, governments proceeding with a PPP need to be familiar with common sources of private financing (discussed in the subsections below) when structuring the project to ensure financial viability.

Private financing may come in the form of debt, equity, or quasi-equity.

- Debt may be in the form of loans or bonds that have a higher repayment priority than the dividends expected by equity investors in return for their capital investment (senior debt).
- Equity may take the form of pure equity or capital shares and quasi-equity products (junior or subordinated debt). Subordinated debt has a higher repayment priority than (is senior to) equity, but it is paid only after senior debt.
- Senior debt may be structured in different tranches with different levels of seniority.

Equity Investors

Equity investors can be divided into two groups: (1) sponsors or developers with an interest in construction, equipment provision, construction, and O&M of infrastructure assets and (2) financial investors with a focus on infrastructure sectors—typically, infrastructure funds or other risk capital investors, including, in some cases, institutional investors—that may co-invest with project developers.

Commercial banks

Commercial banks are the primary source of financing for transport projects due to their ability to tailor disbursements to match schedules and their sufficient understanding of project risks. This source of financing also includes banks that, although government owned, operate commercially and provide loans at market rates.

Multi-finance

Multi-finance (or leasing) company is a company that operates by leasing funds to a debtor to perform a transaction of materials or services. In recent times, multi-finance companies are vital to many business ventures such as micro, small, and medium enterprises (MSMEs) that rely on fund leasing activities to finance their daily activities.

3.1.4 Credit support and enhancement instruments

Project-implementing agencies have used credit support and enhancement instruments to leverage limited government resources and tap into new public or private financing sources. The use of credit enhancement instruments is to access new financing sources or lower the cost and increase the tenor of financing, relative to the conditions they would be able to obtain, should they try to access the market on their own.

Credit support and enhancement instruments can be provided through certain provisions included inside project contracts (PPP or loan agreements) or provided by third parties that are not signatories to the contract, but have a development finance mandate to support the project.

Governments and project developers may also opt for instruments “outside of the contract”—such as direct and explicit guarantees to lenders, partial payment guarantees, or public loans—that not only provide additional means of financing, but also increase the project’s credit rating. These outside-contract credit enhancement instruments can be provided by governments, development finance institutions, or export credit agencies as credit support or third-party guarantees.

Third-Party Guarantees

Project-implementing agencies and governments should explore in advance the availability of these instruments and ensure that they can be secured in time to be offered to potential lenders and investors. MDBs and DFIs providing these types of credit-enhancement mechanisms need to be called early to ensure that all due diligence and structuring can be done prior to the solicitation of bids.

KPBU regulation have restricted eligibility for VGF and IIGF guarantee, therefore third-party guarantees can be benefit for private financing.

Export Credit Agencies (ECA)

Export credit agencies (ECAs) promote and facilitate foreign investment and export of goods and services of their particular nation's companies.

Export credit agencies (ECAs) provide non-concessional loans to promote exports and project finance abroad, as well as sometimes investment insurance and guarantees (Miyamoto and Muzenda, 2012). ECAs have played a substantial role in driving private capital flows such as foreign direct investments (FDIs) towards transport infrastructure projects, particularly in developing countries. They can provide financing and guarantees for the benefit of private companies involved in a project as part of a private finance PPP or provide export financing for the benefit of a supplier of a project delivered via traditional public procurement.

Most ECAs from OECD member countries bear by the Arrangement on Officially Supported Export Credits, which sets upper limits on the amount of assistance that foreign governments can offer in support of their exports.

ECA financing may be particularly useful when local credit markets are underdeveloped or when sovereign risks reduce the attractiveness of private finance. When used as part of project finance structures, ECA financing can lower the interest cost and extend the term of the financing to a level that otherwise would not be available to project sponsors. In this sense, a project requiring private capital in the form of the provision of equipment and rolling stock can achieve a more efficient financing structure.

All protection will benefit private concessioner by providing access to funding, lowering borrowing cost and increasing tenor.

- *Political Risks*

Political risks are unavoidable risks associated with international trade and transactions for which the parties involved are not accountable. These include, for instance, the restriction or prohibition of exchange transactions, an increase in taxes, the restriction or prohibition of imports, acts committed by parties other than the parties in question, such as war or revolution, or extraordinary events such as natural catastrophes. Trade insurance will cover the losses if you are unable to export owing to political risks, are unable to collect export earnings or prepaid funds, or have stocks obtained through overseas investment confiscated due to political risks.

- *Commercial Risks*

Commercial risks are risks for which the foreign counterpart to an international trade transaction is liable. The losses will be covered by trade insurance, for instance, when it is unable to receive export proceeds or loans because the counterpart of export contracts went bankrupt or the borrower does not repay the loan, or when it is unable to export or import because the counterpart went bankrupt prior to exporting or importing.

Political risks are not the responsibility of the party in question, but commercial risks are the responsibility of the counterparty to an international transaction.

- *Trade Insurance*

Business entities looking to safeguard their receivables from loss due to credit risks like protracted default, insolvency, or bankruptcy may purchase trade credit insurance, business credit insurance, export credit insurance, or credit insurance from private insurance companies and governmental export credit agencies.

Political risk insurance, which is provided by the same insurers to cover the risk of non-payment by foreign customers owing to monetary problems, political upheaval, expropriation, etc., can include a component of trade credit insurance.

This underlines the crucial part that trade credit insurance plays in promoting global trade. As an alternative to prepayment or cash on delivery terms, suppliers give trade credit to their clients, giving them time to make enough money from sales to cover the cost of the good or service.

The financing methods for electrification projects that have been identified are described in the parts that follow. These methods include public and private resources as well as those that are readily available and come from the development banking industry.

3.2 Financing Mechanism Options

Potential financing options and assumptions should also be considered and explored at this stage to secure the successful and sustainable implementation of the project. Even though the TCO of electric buses, which includes the up-front procurement cost, financing costs, operation and maintenance costs, and the residual value of bus scrappages, is often comparable to that of diesel buses (BNEF 2018), the up-front cost of e-buses is much higher. Transit agencies and bus operators should therefore use the entire lifespan of electric buses as their primary financial unit of measurement. They should also explore innovative financing options and procurement models to reduce the risks of up-front costs.

Modernizing the ICE bus fleets into electric buses involves significant funding requirements, which is connected to several financing mechanisms and relevant stakeholders. Currently, equity and loans are the options that the operators select to fund diesel and CNG buses. Whereas due to the high upfront costs, primarily associated with the battery, conventional financing schemes for the electrification of bus fleets may not be adequate in both developing and industrialized countries, necessitating the use of novel instruments, a more effective risk distribution, and coordination between key stakeholders.

Given the high initial cost increase compared to fossil technologies, in-house finance of electric buses may not be preferable for operators post pilot projects. Particularly, the inability to assume the high upfront costs of electric buses, lack of access to finance due to inadequate commercial

revenue, unsustainable business models, low recovery ratios, among other things impede electrification deployment. Additionally, the other main reason is operators are still stuck on the huge CAPEX requirement rather than looking at the lower operating costs of electric buses compared to conventional buses.

This section will then overview the potential options and fund sources for financing the Transjakarta e-bus program.

3.2.1 Grants

International organizations and national governments provide support through grants as a complementary mechanism to loan funding. Grants are non-reimbursable funds or subsidies that are made available either through government budget allocations and/ or by international financial institutions/ donor funds. Grants may target different issues and thus take different forms.

Green Climate Fund (GCF)

The government of Indonesia has compiled a Country Programmed that will serve as the primary reference for its NDA in assessing the conformity of any proposed projects/programs with national priorities. The national priorities outlined in this Country Programmed are summarized from Indonesia's National Medium-Term Development Plan (RPJMN), Presidential Regulation on National Action Plan for Greenhouse Gas Emission Reduction (RAN-GRK), Indonesia's Nationally Appropriate Mitigation Actions (NAMAs), and Indonesia's Nationally Determined Contribution (NDC).[2]

The Ministry of Finance classifies climate finance in Indonesia into several categories according to its source and the users (Table 2.1). This classification is used in development of national financial strategies for climate. The category in grey colour has the potentials to leverage climate finance through sourcing from the private sector and financial market.

Table 6 Climate Finance in Indonesia Based on Its Types of Sources and User

Source of Finance	Indonesia's Government Budget	Foreign Government Budget	Private Company	Financial Market and Bourse
Users of Finance				
Indonesia Government Civil Service	Domestic Public Climate Finance through Fiscal Policy	International Public Climate Finance through ODA And OOF And Direct Transfer	Corporate Social Responsibility	Corporate Social Responsibility

[2] Indonesia Country Programme | Green Climate Fund

Private Company	Incentives Through Fiscal Policy such as Guarantee,	Incentives such as Guarantee, Equity Fund	Private Investment	Dividend
Financial Market And Bourse	Incentives Through Fiscal Policy such as Equity Fund	Incentives such as, Equity Fund	Dividend	Market Mechanism

Source: Indonesia's Ministry of Finance

Millennium Challenge Corporation (MCC)

Through the Joint Green Finance Pilot Program, the Millennium Challenge Corporation (MCC) and the U.S. Agency for International Development (USAID) of the U.S. government will collaborate to increase the use of green financing in low- and lower-middle income nations. [3]

MCC and USAID have the ability to open up billions in additional climate finance for poor nations by expanding the types of technical tools available to enable the use of green bonds and other blended finance products. With the help of a collaboration and taking into account market potential and experience, MCC hopes to jumpstart green financing in developing nations with a potential leverage of more than $1 billion.

The MCC's role is to put up the institutions, carry out the reforms, and deliver the training required to develop long-term climate financing options. This will open up opportunities for the private sector to finance climate solutions in developing nations with promising economies.

In line with the Joint Green Finance Pilot Program, MCC will discuss green financing options with a few countries who are developing compacts, including Zambia, Mozambique, and Indonesia. Financial models show that by investing between $50 and $80 million in the pilot program, MCC can reap up to $800 million in additional project finance, even though the agency has not decided the size of its investment.

[3] Indonesia | Millennium Challenge Corporation (mcc.gov)

Transport Sector Grants

According to the financial statement of Transjakarta, currently there is a portion of the budget that comes from sponsor/grants as shown in the table below.

Table 7 Grants for Transjakarta

Sponsor					
	2017	2018	2019	2020	2021
Sponsor (in IDR billion)	9.970	10.978	10.881	13.271	9.574
% Sponsor	0.6%	0.4%	0.3%	0.4%	0.3%
Source: Financial Statement of Transjakarta, ITDP Analysis					

Source: Financial Statement of Transjakarta, ITDP Analysis

3.2.2 Public Transportation Budgets

Taxes

Transport authorities can make use of their budgets to support the procurement of e-buses. Investments can both be directed to the (partial or total) acquisition of electric buses or for support infrastructure (charging and maintenance). However, public transportation budgets cannot, in many cases, act as the main source of funding as these budgets are set up to meet a variety of functions, ranging from investments (infrastructure, fleet, ticketing systems, among others) to operations and maintenance. Thus, financing E-Bus will necessarily compete with other tasks that need to be fulfilled by public authorities. In DKI, public budgets experience additional financial strain, as the costs of providing public transport are higher than the revenues generated. This deficit requires thus the provision of subsidies by public authorities, which further constrain their ability to use the public transport budget for additional investments.

Public funding dependent on annual government budgets is subject to appropriation risk and is, therefore, neither predictable nor stable from one year to another. Reliable funding from public sources requires multiple-year budgeting arrangements, given most of PT. Transportasi Jakarta's revenue stream is subsidy of public transportation service. In 2021, it accounted for more than 90% of TJ's revenue.

Table 8 Subsidy for Public Transport Service

Subsidy					
	2017	**2018**	**2019**	**2020**	**2021**
Subsidy for Public Transport Service (in IDR billion)	1,291,088	2,078,093	2,588,066	2,723,417	2,764,842
% Subsidy for Public Transport Service	73.9%	79.5%	78.3%	88.7%	90.2%

Source: Financial Statement of Trans Jakarta, ITDP Analysis

Subsidy allocation for Transjakarta is normally given on annual basis. The process involves government proposing the subsidy allocation to Regional People's Representative Council (DPRD) for their approval. Hence, it requires commitment from the government to maintain the sustainability of the subsidy to ensure the public transport service runs smoothly. Moreover, the necessary commitment by political decision makers can facilitate the allocation of additional funds for the procurement of electric buses.

Transjakarta's non-operator expense is mainly payment to directors and employees. On average, over the last 5 (five) years, Transjakarta's non-subsidy revenue can only cover 76.3% of payment to directors and employees. The percentage is lower than 50% in 2021. Hence, Transjakarta does not have sufficient cash flow to service debt solely relying on non-subsidy revenues.

Table 9 Payment of Non-Operator Revenue and Expenses

Payment of Non-Operator Revenue & Expenses

(In IDR billion, otherwise stated)	2017	2018	2019	2020	2021
Payment received from customers	446,349	426,614	774,140	414,653	310,604
Payment to directors and employees	(416,416)	(567,398)	(784,779)	(784,129)	(651,484)
% Payment received/Disbursement	107.2%	75.2%	98.6%	52.9%	47.7%

Source: Financial Statement of Trans Jakarta, ITDP Analysis

The schedule for submitting the budget plan for the approval of the subsidy is carried out in the 4th quarter of the previous year. Based on our interview with Transjakarta, 20% of the budget will be made available to Transjakarta in the first quarter of the current year and the average amount of subsidies approved is 80% of that proposed by Transjakarta.

Table 10 Transjakarta PSO Receivables

PSO Receivables

(In IDR billion, otherwise stated)	2017	2018	2019	2020	2021
PSO Receivables	67,971	198,283	1,377,529	1,819,113	1,167,912
Revenue from PSO	1,293,088	2,078,093	2,588,066	2,723,417	2,764,842
Days Receivable Outstanding	19.2	34.8	194.3	243.8	154.2

Source: Financial Statement of Trans Jakarta, ITDP Analysis

Based on the analysis of days receivable outstanding, the average amount of days required for TJ to receive PSO payment in the last five years is 129 days or more than 4 (four) months. However, the receivable days increases over the last 3 (three) years with an average of 197 days or more than 6 months. Nonetheless in 2021, the receivable periods improved to 154 days or

approximately 5 (five) months. The longest period for receiving the payment is in 2020 that took TJ more than eight months to receive the payment. This might have to do with the COVID-19 pandemic.

3.2.3 Commercial Revenue

Operators may acquire commercial revenue from 2 streams, namely farebox revenue and non-farebox revenue. Farebox revenue is usually the key revenue stream that is utilised by the operators to pay for operational expenses and rolling stock improvements. Currently, operators buy automobiles using a combination of their own money and loan. As discussed in previous sections, these sources are not currently sufficient for the purchase of electric buses.

Non-farebox revenue comes from advertising on and in the electric buses that could potentially be used by the operators to incentivise the electrification of the fleets. The system's financial performance determines how much commercial revenue (farebox and non-farebox) may be used to buy electric buses.

Keeping tariffs low and affordable and encourage demand may not allow the funding of investments in capacity and service-level improvements that can have a more positive effect on demand and farebox revenues than low tariffs. In addition, when tariff levels are not adjusted frequently to keep up with the rising costs of service (labour and electricity costs mainly), they fall in real terms and eventually generate larger deficits that need to be covered by one-off increases that are politically costlier. Government authorities need to define early a tariff structure and adjustment mechanisms that promote financial sustainability. Tariff setting and adjustment become more difficult once the system is in operation, especially if tariffs are not revised frequently.

Table 11 Farebox Revenue

Ticket Sales

	2017	2018	2019	2020	2021
Public Transport Service Farebox Revenue (in IDR Billion)	446,350	524,730	675,139	303,585	234,885
% Public Transport Service	25.5%	20.1%	20.4%	9.9%	7.7%

Source: Financial Statement of Trans Jakarta, ITDP Analysis

3.2.4 Loans

State-Owned Enterprise Financing

Capital injections are on-budget and subject to parliamentary scrutiny, unlike SOE borrowings which are off-budget. Where SOEs raise finance from the capital markets, their financial performance and the viability of the investment are subject to market scrutiny.

Debt finance may make the SOE more sensitive to the cash flow implications of the investment. The greater the government commitment to independent and accountable governance the greater incentive SOEs have to manage the project risks of their investments, regardless of the financing arrangements. Hence, whether a SOE is a good instrument for infrastructure investment depends very much on the quality of its governance.

Table 12 Transjakarta Loan

Loan

	2017	2018	2019	2020	2021
Bank Loan (in IDR Billion)	150,000	94,500	94,500		
Debt-to-Equity Ratio	0.06	0.03	0.02	0.28	0.25
Effective Interest Rate		8.1%	4.7%	16.9%	8.5%

Source: Financial Statement of Trans Jakarta, ITDP Analysis

3.2.5 Public private partnerships

Public-Private Partnerships of investment in public infrastructure in Indonesia have been heavily used as financing instrument and part to the scope to bring in private sector management skills, the opportunity that bundling design, construction and operation, or parts thereof, provide to improve efficiency and the ability to bring forward the provision of the infrastructure service. There can also be less scrutiny from off-budget financing.

Public-Private partnerships work best where government has considerable skill in contract negotiation and management, and where there is adequate competition for the projects. The costs of tendering, negotiating and managing contracts can be considerable – with tendering costs alone estimated at up to 5 per cent of the project cost. And while risks may be transferred to private partners, the cost of risk will be factored into the cost of finance. The main advantage of PPPs comes from the scope for lowering the total cost of the project through improving project risk management. And while project preparation and contract negotiation can be lengthy, PPPs provide a more flexible, and potentially timelier source of finance for important infrastructure investments that might otherwise be constrained by public debt pressures.

While PPPs may assist in improving productive efficiency, they are no guarantee that the investments are optimal, and the off-budget treatment of future funding obligations related to some PPPs may reduce the scrutiny applied to the investment.

Public Co-financing

Public co-financing is intended to support economically justified projects that are not financially viable. PPPs often incorporate a public capital grant or co-financing to offset the private partner's initial capital investment and associated debt repayment obligations.

The main objectives of public co-financing are (1) to catalyse private finance when the size of the capital investment cannot be completely repaid or recovered from project cash flows and (2) to reduce the overall cost of capital for the project, making the project more affordable. Public capital contributions may come from national or subnational government budgets, and portions of these payments can also be financed with loans provided by international and national development banks.

- Public co-financing may come in the form of a grant, often known as viability gap financing (VGF). VGF grants are only disbursed after project investors have committed equity to the project, thereby putting their capital at risk. Alternatively, VGF disbursements may also track debt disbursements to align the interests of the provider of VGF (the government) with those of lenders who provide due diligence and monitor performance.
- Public co-financing may also come in the form of periodic payments made to the private partner as repayment for a portion of the capital expenditure required to construct infrastructure or provide equipment. The payments are usually tied to the attainment of project implementation milestones (contractor reaches a scheduled delivery stage or completes a specific construction deliverable).

VGF criteria and eligibility Presidential Regulation Number 38 of 2015 concerning Government Cooperation with Business Entities (KPBU) in the provision of infrastructure are:

- KPBU solicited proposal,
- economic feasibility but not yet financial feasibility,
- fund resource: APBN,
- given in form of cash to SPV /Project Co.,
- the portion is not dominate from all Project Construction cost minus cost associated to land acquisition; and tax incentives,
- Regional government can contribute with approval from DPRD.

3.2.6 Leasing

A fundamental tenet of leasing as a cutting-edge business strategy is that a third-party firm, rather than the public transportation operator, purchases some or all of the bus components. The third-party company then leases the purchased components to the operator. Batteries or the entire bus

could be among the leased items. The operator then makes a fixed monthly payment to the lessor in accordance with agreed-upon conditions, which may link the monthly payment amounts to mileage requirements.

As quoted from Electrification Coalition 2010, 83, vehicle leasing "removes the capital burden of the outright ownership model, allowing fleet operators to treat vehicle acquisition as an operational expense. Lessors that include maintenance and other services in the lease price can help reduce labour costs for large fleet operators, and lessors may also be able to secure significant volume purchasing discounts from vehicle OEMs, lowering costs for their lessees."

The lease agreement may include a performance warranty for the original batteries as well as new batteries at the halfway point to ensure optimal performance in the case of battery leasing. The battery lessor must consider other uses for the batteries after they have served their purpose in the vehicle in order to maintain the viability of the business model. The third-party company, the lessor, will typically be the battery manufacturer or the OEM, depending on the circumstances, but specialist financial companies can also take on this position. Most of the time, the lessor will also be responsible for providing charging stations and maintenance services, and they will both be paid for doing so.

There is a number of advantages that the leasing model offers to aid in the market adoption of electric vehicles. The initial costs of the electric bus will be significantly decreased to a price level comparable to a traditional diesel bus if the concept just depends on leasing the batteries. As a result, the operator will be able to buy the buses for little to no additional cost, which will lessen the need for funding.

However, by leasing the buses, the private sector will cover the associated expenses, freeing up money that the city and/or operator can use to meet its lease obligations. In any case, the operator's transfer of operational and technological risks to the lessor's shoulders will assist reduce some of the obstacles to the fleet's electrification because the risk distribution will be carried out by the parties most qualified to do so.

Leasing programs are used in conjunction with other instruments, such as grants and loans, rather than serving as the exclusive source of funding. The quantity of loans and/or grants needed will depend on a number of variables, including the expenditures involved and the financial capacity of the stakeholders involved. Additionally, depending on the circumstances, leasing agreements involve a number of public and private players in addition to the operator and the lessor.

Given the current e-bus contractual framework is a gross-cost contract where the operators buy all the assets needed for running the electric bus without leasing it, the commercial local banks do not have a problem if the lease scheme applied for separating the components' provision. However, it is to be noted that in the case of asset separation (bus and battery), the lease scheme needs to be implemented in parallel, otherwise there is a big risk to it when one is not going ahead.

In Indonesia, the asset separation practice is uncommon where the bus manufacturers and bus importers provide the assets in one package. As for the charger, it can be procured from the same manufacturer or any other available vendor.

There are several types of leasing:

1. Operating Lease

   In an operating lease, the asset's user does not acquire ownership of the asset at the end of the lease. In this regard, it is also crucial to keep in mind that operating leases are often seen as a type of off-balance-sheet financing because they are not capitalized at the end of the agreed-upon term.

2. Finance Lease with option

   A leasing company as a lessor is a party that finances the provision of capital goods. The lessee usually chooses the capital goods needed and on behalf of the leasing company, as the owner of the capital goods, orders, inspects and maintains the capital goods which are the object of the leasing transaction. During the leasing period, the lessee pays the residual value. It will include the return on the cost of the capital goods financed and the interest, which is the revenue of the leasing company.

3. Leveraged Lease

   According to this technique, besides involving lessors and lessees, it also involves long-term creditors in financing a leasing object. It is these long-term creditors who have the largest portion in financing this leasing transaction. The portion of the lessor's financing is usually around 20% -40% of the total financing, the rest is provided by the creditor.

The creditor can be a bank or other financial institution. The status of the creditor here is only as a provider of funds to the lessor, while the guarantee is usually the object of the leasing itself. The difference with the direct lease scheme lies in the amount of financing provided by the lessor 100%. Therefore, the lessor is directly responsible to the creditor in accordance with the amount of financing.

Consultations were also done with the bus operators under Transjakarta system to gauge the appetite with regards to e-bus deployment and its necessary financing mechanisms. Generally, the response given are quite positive and open for any alternative financing. Currently, as mentioned previously that the operators are required to provide 20% - 30% down payment to acquired credit facility from the banks and it is already relatively difficult for them. In some cases, even providing the down payment is already a road block for small operators/cooperatives.

Moreover, microbus operators currently utilise KUR (Kredit Usaha Rakyat) or National Micro Credit Program, which is a credit facility provided by the government where the rate is only 6%. The maximum credit that can be obtained using this facility is IDR 500 million. According to

consultation conducted with the operators, KUR can not be utilised to purchase electric microbus since the price is more than IDR 500 million.

Hence, for the purchase of e-buses where the capital requirement is quite high compared to ICE buses, an alternative financing mechanism is certainly needed.

3.2.7 The Pay-as-you-Save (PAYS) Model

Clean Energy Works developed an innovative business model, Pay-as-you-Save, that is mainly implemented by energy service companies. Despite being new to the transportation industry, utilities company have already started using this strategy to increase investment in climate solutions, particularly in the energy sector. The PAYS model can be viewed as a complex institutional arrangement that relies heavily on leasing infrastructure for charging batteries.

Utilities companies can help support electric buses by investing in infrastructure for bus charging in depots and on routes, by developing special rate structures to help make charging buses more economical, by helping to finance the upfront purchasing costs of electric buses, and by introducing smart charging systems to help maximize integration of renewable energy.

3.2.8 Financing Infrastructure

Generally speaking, all of the aforementioned financing options may be used to finance the infrastructure needed for public transportation in order to enable the electrification of the transportation fleet. The related infrastructures of electrification are largely for charging and maintenance. However, some agreements need to be taken into account independently since they are particularly well suited for funding infrastructure. An argument to justify the investments made by the government is the high benefits of environmental and economic coming from zero emission public transport fleet. It is evident from the discussions above that some financing mechanisms require involvement from the government that may be in the form of grants, tax breaks, as guarantor, and so on. The most common source of funding for charging stations are still government support, which may be in the form of grants that is intended to cover all or some costs. The beneficiary of these grants varies depending on the contexts but they are mostly Energy Service Companies (ESCOs) who are usually the main players on the electrification landscape.

The costs associated with charging infrastructures can be assumed by ESCOs that could be through loan financing, own funds, or with the help of grants. The end user, which is fleet operators, can be charged for the use of the infrastructure to recoup the investment costs. These businesses typically possess the financial strength and stability to bear the full expenses and risks associated with investing in this kind of infrastructure, thus ESCO funding is particularly advantageous. Through shared usage, such as with other heavy-duty vehicles, the ESCO can further strengthen

their business case. Furthermore, the government may guarantee payments under a contract for the supply of services, reducing some risks[4].

Nevertheless, most studies suggested charging facilities should not be operated by bus operators, because the existing bus operators have limited knowledge and the operation of charging facilities is not their domain of business, it is recommended that a third-party operator be appointed. The third-party operator should have the necessary infrastructure, expertise, and experience in the operation of electric vehicle charging facilities. Furthermore, the third-party operator should be able to provide an efficient and reliable service for the customers. The third-party operator should also be able to provide technical support, maintenance, and repair services for the charging facilities.

Potential ESCO

1. **PT. PLN (Persero)**

State-owned electricity company PT PLN has recently built 47 Public Charging Stations (SPKLU) in Indonesia to support the increasing number of electric vehicles in the country and there will be an additional 67 units. PLN's Electricity Supply Business Permit (IUPTL) for businesses that are interested to cooperate, supply electricity and support the Charge.IN application in managing the charging station.

Partners can be the provider for charging station, land and properties, and also operational and maintenance services. The appointment of PLN Certification Centre's as the first and only institution permitted to grant Indonesian National Standardization (SNI) to SPKLU is expected to accelerate the licensing process to develop new charging stations.

PLN also provides Home Charging Services (HCS) in an effort to facilitate consumers using electric vehicles. HCS is a one-stop service for customers who buy vehicles from dealers cooperating with PLN. Through the HCS program PLN will provide additional power service, which will allow electric vehicle users to charge their vehicles using their home electricity.

The HCS will also provide customers with home charger devices, charger device installation, and integration to the Charge.IN system that will provide a 30% discount if customers charge their vehicles between 10 PM to 5 AM Western Indonesia Time.

Based on the roadmap made by the Ministry of Energy and Mineral Resources, the projected number of electric cars are 2,2 million units. The roadmap also predicts 13 million electric motorcycles and 31.859 units of SPKLU will be present in 2030. The predictions are expected to reduce fuel imports' cost by 6 million kilolitres in the same year.[5]

[4] *https://www.changing-transport.org,* accessed 2022.
[5] PLN Constructs 47 Public Charging Stations, More to Come - News En.tempo.co

2. PT. Pertamina (Persero)

PERTAMINA (Persero) aims to become a World Class Energy Company by gradually preparing an energy transition towards renewable energy. One of which is in the electric vehicle battery energy sector through the formation of a joint venture company Indonesia Batterai Corporation (IBC). PERTAMINA is also preparing the infrastructure for charging electric vehicle batteries on its downstream side including the development of the SPKLU

PERTAMINA continues to encourage clean energy and accelerate the growth of the electric vehicle ecosystem in Indonesia by developing a Fast-Charging Public Electric Vehicle Charging Station (SPKLU) at strategic points. Currently PERTAMINA owned 14 public electric vehicle battery swap stations (SPBKLUs) this year. The number of stations is planned to increase to 137 units in 2022, to 239 units in 2023, and to 391 units in 2024. The number of SPBKLUs will follow the development of public interest in the electric vehicle trend.

PERTAMINA stated that SPKLU development needed government support, such as waiving fees or providing installation discounts for new customers, including for the electricity supporting service business license (IUJPTL) of gas stations. The permit is expected to be provided with a one-stop service at PERTAMINA to facilitate partners. This is a consideration for PERTAMINA gas station partners (DODO partners) who are sensitive to prices and the economy. Another incentive is the exemption from subscription fees for a minimum of two years accompanied by the provision of SPKLU bulk rates. [6]

PT Pertamina Power Indonesia convey their interest at providing the necessary technologies and expertise in order to support electric bus's development of the charging infrastructure.

3.3 Sustainable Finance

3.3.1 Sustainable Finance Roadmap

Currently, OJK established a Sustainable Finance Task Force, which aims to serve as a forum for cooperation and coordination with industries to respond to the development of sustainable finance at national, regional, and global fora.

To accelerate the implementation of sustainable finance, OJK's main focus are on several areas of activities related to Sustainable Finance Roadmap Phase II, including: (1) finalizing the Green Taxonomy; (2) preparing carbon exchange operations in line with government policies; (3) developing the FSS reporting system including green financing/instruments in accordance with Green Taxonomy; (4) developing risk management framework for FSS and risk-based supervisory

[6] Pertamina Operasikan 6 Battery Charging Station dan 14 Unit Battery Swapping Station (suara.com)

guidelines for supervisors in order to implement climate related risks; (5) developing innovative and feasible financing schemes or projects; and (6) increasing awareness and capacity building.

The Financial Services Authority (OJK) has not issued the Green Credit Guidelines which provide guidance on how banks can identify and manage green loan, which provides incentives for banks to expand their green financing activities. Through this program, banks are eligible to receive tax incentives for their green loan originations and borrowers receive priority and lower interest rate consideration for their green loan applications.

The guidelines ought to provide guidance on how banks can differentiate between green loans and conventional loans. Banks can use the green credit guidelines to identify green loan projects and differentiate them from conventional loans. The OJK also ought to provide technical assistance to banks to help them implement the green financing program. Banks can obtain technical assistance from the OJK to develop their green financing programs, assess their green loan portfolios, and improve their risk management practices related to green loans.

In addition, the needs of various seminars and workshops to promote green financing and to provide banks with the necessary knowledge and skills to effectively implement green financing programs. Through these seminars and workshops, banks and borrowers can gain a better understanding of the green financing program and how to differentiate green loans from conventional loans.

3.3.2 Green Financing

Central Government has implemented various initiatives to encourage governments, industry players, corporations and financial institutions (including banks) to allocate more funds for green financing. Ministries ad SOEs also have been encouraged to implement the sustainable operations.

The Financial Services Authority (OJK), one of Indonesia's authorities, is undoubtedly responsible for carrying out the pledge through the sustainable finance program. In order to generate financial support for institutions using sustainable finance principles, the initiative is put into action in collaboration with a number of stakeholders. The goal of a sustainable finance program is to raise funding while also boosting the competitiveness and resilience of financial services organizations.

The approach taken to increase resilience and competitiveness is based on the understanding that sustainable finance presents new opportunities and challenges for financial services institutions as they expand and stabilize their operations. Furthermore, OJK collaborated with a number of relevant institutions to establish the Sustainable Finance Roadmap in an effort to achieve it through methodical approaches.

The roadmap aims to set up and create a milestone of improvement for sustainable finance as well as to explain about targeted conditions in relation to sustainable finance in Indonesia for the medium-term period (2015-2019) and long-term period (2015-2024) for the financial services industry under OJK's supervision. This roadmap will serve as a resource for OJK, financial services

professionals, and other parties interested in promoting sustainable development, particularly the government, business leaders, and international organizations.

Sustainable financing program will give priority to efforts to create new and renewable energy sources and energy conservation in early 2019 to address the increased demand for energy to support development. Indonesia needs a sizable energy supply in order to escape the middle-income trap and achieve the demographic bonus that the country needs for economic growth. The development of priority economic sectors, or those with significant multiplier effects, such as general agriculture, the processing industry, infrastructure, micro, small, and medium-sized companies (UMKM), and energy, would also receive support.

Long-term sustainable economic growth is anticipated to be boosted by funding strategic industry sectors utilizing the sustainable finance concept, which will eventually result in a larger market for the financial services sector. A larger market will develop in tandem with the economic growth it brings about. It is anticipated that this will eventually have a favorable effect on the financial services sector's viability and reduce Indonesia's balance of payments deficit.

Banks have not yet established a distinction between green loans and conventional loans because there are no derivative provisions for banks to use while implementing the green financing program. In reality, green loans provided by local banks and PT SMI do not always result in lower funding costs than traditional loans.

It is anticipated that a variety of incentives for industry participants and consumers would further improve green finance practices, including easier regulation of corporate operations and appreciation for institutions who use green finance. The reputation and credibility of institutions that use green finance concepts are thought to be enhanced through appreciation in the form of incentives.

Liquidity

PT Bank Negara Indonesia (Persero) Tbk (BNI) disbursed a loan to PT Gunung Raja Paksi (GRP) worth USD 32 million or equivalent to IDR 500 billion through a sustainability linked loan (SLL). GRP became the first steel mill to receive SLL. BNI's green financing portfolio reached IDR 170.5 trillion in the first quarter of 2022., value accounts for 28.9% of BNI's total loan portfolio. Green financing is provided for community social economic development through MSMEs (UMKM) of IDR 115.2 trillion, the rest for the needs of green energy ecosystem development of IDR 10.3 trillion and pollution management of IDR 6.8 trillion, and waste water management Rp. 23.3 trillion.

Until the end of 2021, Bank Mandiri's Sustainable Portfolio has reached IDR 205 trillion, or around 25% of total lending, with the highest growth in the renewable energy sector. The growth in Bank Mandiri's renewable energy sector portfolio reached 68.6%, with a value of IDR 4.3 trillion at the end of 2021.

OJK Records Realization of Indonesia's Green Financing Reaches IDR 877.4 T The green financing recorded is IDR 500 billion by PT SMI, IDR 27.4 trillion by PT BRI, IDR 4.2 trillion by PT Bank Mandiri. Also, IDR 809.75 trillion green loans and IDR 35.6 trillion blended finance.

Several types of incentives are expected, namely ease of regulation in conducting business and appreciation for banks that apply green finance. Appreciation in the form of incentives is considered to be able to increase the reputation and credibility of banks that apply green finance principles.

3.3.3 Green Bonds

Green bonds have been gaining popularity as an extra revenue stream for the funding of projects in the environmental sector such as clean water, renewable energy, energy efficiency, climate change mitigation, etc. However, the same tool is not very common in the transport sector. A green bond may be issued by the public transportation fleet, local governments, financial institutions, asset aggregators, or bus operators to help fund the electrification efforts.

The same principles that apply to conventional bonds apply to green bonds as well. Issuers generate income by offering the bonds to investors at a fixed interest rate and for a predetermined length of time. The distinction between the two lies in tax incentives, such as tax exemptions and tax credits for green bonds, which make them appealing to a wider range of investors as well as for the issuers since green bonds lower borrowing costs and thereby lower total expenditures. The latter are also designated for environmental projects.

Electric buses, batteries, and/or infrastructure for charging and maintenance can all be purchased with green bonds. However, because green bonds bear the same credit rating as the issuers' other financial obligations and are guaranteed by the issuers' balance sheet, they may only be viable for major operators in addition to being a desirable vehicle for local governments. Due to the fact that green bonds are typically asset-backed, in the case of fleet modernization, they must be approved by an independent party who assesses whether the assets qualify to be financed with green bonds.

Liquidity

Until 2021, the government will dominate green bond issuance by 63%. This is due to its capability in issuing green bonds with a large size. The size homogeneity of Indonesian green bonds issued is only in the range of 500 million-1 billion USD when compared to ASEAN countries which issue a lot of various sizes.

The lack of diversification is affected by the large issuance costs that apply equally to all sizes, such as fees for third-party reviewers, obtaining credit ratings, preparation of bond prospectuses, and legal fees. The value is insignificant for large companies, but it will be a problem for small companies.

Furthermore, liquidity which is in line with trading volume in the secondary market of developing countries is lower when compared to developed countries. The low attractiveness of green bonds in Indonesia is reflected in the fact that 30 large Indonesian companies market their bonds overseas. In fact, this value represents 74% outstanding bonds on the IDX.

Investors' doubts about the uncertainty of Indonesia's green bonds are caused by several things. First, guarantees as high creditworthiness due to the risks and volatility of emerging markets. Second, the difference in interest rates in each currency makes the cost of hedging unpredictable. Third, transaction costs by market participants are associated with higher trading volumes for less liquid markets. Fourth, the future value is unclear due to the uncertain fluctuations in the rupiah exchange rate. Fifth, the emergence of liability costs that have not been realized by foreign exchanges.

Taking a closer look at the existence of green bonds globally, the complexity of currency risks is unavoidable, such as exchange rate fluctuations that affect investment value and ultimately change the cost of return.

Therefore, in maintaining the stability of traded securities, the needs to optimize hedging tools to mitigate currency risk and target financing policies. The presence of green financing in Indonesia cannot be separated from external roles. The Asian Development Bank (ADB) once coloured the first issuance of green bonds by allocating US$269.47 million to mitigate issuance risk (Climate Change Financing Project, 2021).

Low Awareness

Potential market players get discouraged from issuing or investing in green bonds due to low awareness. From a policy perspective, POJK No.51/POJK.04/2017 in Article 8 states that at least 70% of green bonds must be used to finance Environmentally Friendly Business Activities / Kegiatan Usaha Berwawasan Lingkungan (KUBL). That is, 30% has the potential for public use and is not environmentally sound, awareness of the importance of green financing is an internal obstacle for developing countries such as Indonesia (CBI, 2022).

Market Context

PT Bank Negara Indonesia (Persero) Tbk (BNI) will issue green bonds of up to IDR 5 trillion to finance projects in the category of environmentally sound business activities (KUBL).[7]

Based on the prospectus issued by BNI, Tuesday (10/5/2022), green bonds will be issued in three tenors, namely Series A with a three-year tenor and will mature on June 21, 2025. Series B with a five-year tenor will mature in 2027 and Series C. with a tenor of seven years which will mature in June 2029. BNI has not set interest rates for each tenor of the BNI Environmental Bond I.

[7] *BNI akan terbitkan Green Bond hingga Rp5 triliun untuk danai KUBL | IDNFinancials*

Meanwhile KUBL projects include energy efficiency projects, waste-to-energy management and waste management, natural resource management and sustainable land use, terrestrial and water biodiversity conservation, environmentally friendly transportation, sustainable water and wastewater management, climate change adaptation, green building and sustainable agriculture.

Underwriters for the issuance of these securities include PT BNI Securities, PT BCA Securities, PT BRI Danareksa Securities, PT CIMB Niaga Securities, PT Mandiri Securities, and PT Maybank Sekuritas Indonesia.

3.3.4 Infrastructure Funds

The government and regulator realize the importance of improving public financial literacy, especially in industry is highly dependent on banking industry. Therefore, the opportunity to shift Indonesia from investing in traditional banking products to capital market products, especially mutual funds, is still huge and promising. Institutional investors are generally pension funds, social/health security funds, life insurance, companies and banks.

However, the number of listed infrastructure funds is still limited even though the opportunity is very huge. The regulator aims to develop this class asset by aligning with the government's program to finance Indonesia's infrastructure development. One way to attract investors is thought the issuance of alternative investment such municipality bonds, infrastructure funds. The government issued regulation that requires financial institutions such as pension funds, insurance, and social/health security funds to invest in alternative products that invest in government infrastructures projects. The industry believes that alternative investments, private assets and infrastructure fund will be an important growth area. One of the key features of mutual funds in Indonesia that is attractive for investors is that their return is net of tax, as it is already taxed as fund level. This creates the opportunity to structure a product for tax efficiency purposes by securitizing assets under mutual fund products.

Infrastructure and Market Context

One of example is RDPT, investing in debt securities issued by PT Danareksa Finance (DF) and the proceeds from the fundraising will be used to support the financing of infrastructure projects carried out by state-owned infrastructure. PT Danareksa Investment Management offers Limited Participation Mutual Funds Danareksa BUMN Fund 2012 – Infrastructure. (RDPT Infrastructure). Danareksa Finance is a subsidiary of PT Danareksa (Persero) whose main business is engaged in financing institutions by conducting business activities in the form of leasing, factoring, credit cards and consumer financing.[8]

Sources of funds used are long-term in nature, including pension funds, especially life insurance, sovereign wealth funds both domestic and foreign. Many projects have been worked on, such as toll roads with Waskita Karya, power plants with PP Energy, fibre optic networks with PT LEN, and

[8] https://market.bisnis.com/read/20120520/190/77695/danareksa-investment-rilis-rdpt-infrastruktur.

cooperation with Nusantara Infrastructure. Another innovation is the issuance of Perpetual Securities by PT PP Tbk to fund the PLTU in Meulaboh, in collaboration with Cipta Dana Assets Management and PT CIMB Niaga Tbk.

The government, in this case Bappenas, realizing the limitations of the APBN/APBD capacity, took the initiative to form a government facilitation team to finance non-government budget investments (PINA) in 2017. PINA provides a facility scheme that aims to accelerate private investment financing in national strategic infrastructure projects with sources its funding comes from non-government budgets and is fully supported by government policies.[9]

3.4 Bankability

Mobilizing private resources in a cost-efficient manner requires an important up-front effort to design a financing structure that mitigates key risks and taps into different sources of capital according to their suitability for financing different project components.

Project-implementing agencies should plan project funding and financing requirements early to ensure that their project is bankable, while at the same time keeping the right level of incentives for the private partner to perform. Bankability is defined as the ability of a project to be accepted by lenders as an investment or the ability of the project to raise long-term finance on account of the project's creditworthiness, given the expected sufficiency and reliability of future cash flows (ADB et al. 2016).

Finalizing a project's financial structure usually occurs during later stages of planning and procurement—after many key decisions have already been made. Revisiting public approval processes and contractual arrangements along the way can result in substantial delays and lost confidence when amending earlier decisions. Therefore, it is imperative for early decision making to take into account such requirements and their impact on a project's future financial and commercial structure. "Road shows" and other events designed to test market interest can help planners to get a sense of the market's perception of proposed risk allocations and other project features.

When considering corporate or municipal financings, the bankability of a project is determined by the borrower's balance sheet. Bankability becomes more complex in project finance structures where the capacity of the borrower to service debt depends on the effectiveness of contractual arrangements and creditworthiness of third parties and where repayment ultimately depends on the ability of the project sponsors to complete the project and to put it into service for the benefit of paying users.

The term "bankability" summarizes investor-lender sentiments and their willingness to commit debt or equity capital toward a project. Equity investors look at their expected return, which is driven by their ability to mobilize as much debt as possible. Lenders look at the balance between

[9] Pendanaan Infrastruktur (kemenkeu.go.id)

sponsor equity and debt financing (gearing). Although project financing aims to maximize gearing (debt is typically cheaper than equity), equity requirements should nevertheless be substantial enough to ensure that the sponsor's commitment makes it too costly to withdraw when the project runs into problems. The maximum gearing that is accepted by banks is conditioned by the uncertainty associated with the project cash flows, such that projects with riskier cash flows due to economic, credit, or legal risks demand more equity.

From the point of view of lenders, bankability is determined by the ability of the project to meet debt service payments after fulfilling O&M obligations, which depend on the size and volatility of revenues and costs. This ability is measured through the debt service coverage ratio, defined in broad terms as the ratio of project revenues net of operating expenses over debt service (principal and interest) owed in a given period. Projects that can demonstrate a sufficient debt service coverage ratio can access debt at a relatively lower cost. Having a lower quantum of debt will generally result in an acceptable debt service coverage ratio.

Lenders and investors evaluate each of these criteria in order to assess a project's bankability and determine their level of interest in the project. Below list of the key questions that financiers might ask to improve their understanding of these four criteria.

Table 13 Factors Influencing Bankability

PROJECT ASPECT	QUESTIONS OF DETERMINING FOR BANKABILITY
Creditworthiness	• Do project developers have adequate capacity and incentives to deliver sustainable operational performance? • Can the grantor meet its financial obligations to the project? • How certain are project revenues? • Who bears ridership and farebox risk, and how realistic are ridership forecasts? • Are project cash flows sufficient to support envisaged levels of debt? • Does the project benefit from any grantor or sovereign guarantees; does the project benefit from guarantees or insurance on its debt (for example, partial risk or credit guarantees and political risk insurance)?

	• Is there sufficient equity cushion to protect lenders if the concession's value decreases? Do project developers have sufficient "skin in the game"? • In the event of termination, what mechanisms guarantee debt repayment? • Do the project's financial ratios meet lender expectations (for example, principal and interest cover ratios, debt service cover ratio, loan life ratio, and debt-equity ratio)?
Legal Viability	• Does the grantor have the authority to grant the concession or PPP? • Will the project require any additional legislation (for example PERDA)? • How strong are the project's contractual arrangements with input suppliers (such as manufactures and suppliers)? • What legal protections or channels for recourse do investors have in the project's jurisdiction (for example, access to international standard arbitration)? • Are legal decisions enforced in the project's jurisdiction? • Is there potential for regulatory "claw back" if numbers exceed estimates and revenues are well above forecast?
Economic Viability	• Is there a market for the project's services? • Are there threats from competing services or technological obsolescence (for example, ticketing systems)? • Is the system's route aligned with target markets or population centres? • Does regulation protect against the threat of new market entrants? • How stable is that regulatory environment? • Are project inputs (for example, electricity) available at reasonable prices?

	• How stable are input supplies? • Will new services require dedicated input suppliers (for example, a dedicated power plant)? • How stable is the project's macroeconomic environment? • How would changes in inflation, foreign exchange, and interest rates affect project cash flows? • How will such risks be mitigated in the contract? • Have any standby credit facilities been arranged to deal with potential lags between financial shocks and tariff adjustments?
Technical Feasibility	• Does the project use proven technology? • Are costs reasonable and realistic? • Is the timetable realistic? • Does the project rely extensively on proprietary technology? • Is the proposed technological solution appropriate for local conditions and the availability or scarcity of skilled labour?

Source: World Bank 2018

3.5 Potential Business Models and Commercial Arrangements

3.5.1 Transforming Business-As-Usual (BAU)

There are many doubts and questions on how to finance the transition given the high upfront cost of E-buses. Investors, bus operators, manufacturers, and government have to collaborate for the implementation. In general, operators within more formalized and integrated bus system are most "ready" to e-buses, yet to transition to e-buses, operators must overcome key financial challenges of accessing upfront capital, mitigation of the operational risk of switching to new technology, repayment to investors, amongst others. Transition to e-bus requires strong organization and viable commercial arrangement.

In order to have a commercially and financially sound project, there are necessary lists that a new business model for electrification projects should have, which includes but not limited to:

1. Investment components

    - Tangible assets: Assets that exist in physical form. Varies dependent on technology. Examples include Land, charging stations, buildings, buses and batteries.
    - Processes: It refers to the activities that must be carried out throughout the project, for example, planning and feasibility studies, construction and installation of infrastructure, operation and maintenance of infrastructure and buses, and maintenance of batteries (in case of electric buses).
    - Intangible assets: are those goods and rights that are not physical or tangible as such, for example: security, efficient location between stations, reputation of project stakeholders, affordability

2. Sources of resources

    - Revenues: user fares, capture of yard and station land value, station and infrastructure advertising and operational savings.
    - Incentives: such as national, local, and international subsidies, fiscal and differential prices.
    - Other sources: such as resources from other areas of government, dedicated taxes, and the sale of assets and the sale/scrappage of owned assets.

3. Implementation Mechanisms

    - Contracts: purchase contracts, rentals, leasing for purchase and concessions.
    - Legal entities: public, private, and mixed.
    - Enabling frameworks: plans and goals, regulations and requirements and enabling laws.

4. Financial products

    - Capital: through public capital or private investors.

- Debt: either through public or private bank loans, international loans, and bonds.
- Risk reduction: such as contingency funds, provision contracts, risks related to foreign currency conversions and concessional financing

3.5.2 Possible Solutions to Address the Challenges

It is evident from the market consultation that the status quo of the business model does not allow much flexibility for new players to enter and participate in the business. In the case of electrification, another key challenge is that the significant high upfront cost that makes the bus operators unable to acquire financing through traditional model. Hence, all these challenges suggest that there is a need to discover a different business model so that new players from e-bus industry can also participate. There are several ways to address the challenges i.e. lowering the upfront costs and adding more flexibility into the business model.

1. **Concessional finance for asset owners**

Cities with publicly-owned fleets and financial borrowing power have an opportunity to mobilize concessional financing from development finance institutions. This way, cities can gain access to more favorable lending terms, grace periods, lower interest rates, and first-loss capital to support a proof-of-concept and catalyze future investment from commercial lenders.

Public and private financial institutions provide concessional/blended financing to bus system asset owners (operators, cities, or third-party asset owners) to access E-Buses. This arrangement provides attractive financing terms (such as through longer grace periods or lower interest rates) to asset owners which facilitates the purchase of electric buses.

The key actors in such scheme are:

a. Finance provider(s)

I/DFIs, MDBs, DBs, donors, and private sectors provide capital at varying tranches; for instant, private sectors and Commercial Banks provide capital at more commercial rates while certain DFIs, and donors provide “first loss” capital (e.g., grants). Multi-lateral, international or national development banks can provide partial credit guarantee and the appropriate government structure can provide minimum revenue guarantee for the asset owner. Both elements help lower costs

The main role of this actor is to provide financing to buy E-Buses component, with focus on creating proof-of concept that could be further scaled.

b. Guarantor(s)

The guarantor(s) in this scheme is Government of DKI Jakarta /Transjakarta for revenues and I/DFIs for credit enhancement facility (CEF). The main role is to provide guarantees to reduce

risk/help access financing. Additionally, guarantor(s) should also lobby national government for policy reform to support the purchase and operation of e-buses.

c. Asset owner(s)

The asset owner(s) in this case is operators or third-party asset owners who lease the assets to the operators. The key role is to access e-buses component though concessional/blended financing.

2. Separation of asset ownership

The second potential solution that may help reduce the upfront costs and add flexibility to the model is separating the asset ownership. In contrast, this solution suggests the assets do not have to be owned by one party hence one do not have to have strong capital to access those assets in the first place. This also offers flexibility for a new player to come and participate in the electrification.

For cities with privately-owned fleets operated by smaller operators, separated ownership of the asset and the bus system operation can mitigate the financing barriers associated with the transition. It also spreads risk between stakeholders. In this case, a third-party asset owner with good borrowing capabilities and expertise in asset management leases the vehicles and infrastructure to the operators.

Third party asset owners purchase all e-bus components or partially (chassis/body, battery, and charging station) to reduce upfront cost and risks for operators.

The key actors of this scheme are:

a. Third party asset owner(s)

The asset owner(s) could be any third party who has the borrowing capabilities and good asset management. Additionally, the asset owner will then lease it to the operators hence reducing the risk of the operators. Thus, the main role is to own and lease e-buses component for operation.

b. Financiers

Financiers is one who can provide financing to asset owners for the purchase of e-bus components.

c. Operators

Bus operators are ones who are in charge of operating the buses. They will have a lease agreement with the asset owner(s)

d. Public Transport Authority (PTA) / Transjakarta

The regulator of public bus services is the Transport Authority, Dishub, and Transjakarta is overseeing the bus operators on behalf of Dishub ensure interoperability and quality. Their main role is to support leasing contracts and also can provide revenue guarantees.

3. **Support and financial assistance**

Other than changing the business model itself, another potential solution that could be done is through intervention to the current business model. The study has identified the main actors and the assistance that could be provided in order to support the electrification program as follows:

a. The Government of Indonesia: GOI could provide incentives for municipalities such as policy reform to support the purchase and operation of e-buses, offering financial assistance for infrastructure improvements to support electric buses, tax breaks for the purchase of electric buses, and the installation of charging infrastructure, also create public education campaigns to raise awareness of the benefits of electric buses and encourage the adoption of these technologies.
b. The Government of DKI Jakarta: The GOJ could provide incentives for operators to purchase e-buses, such as offering subsidies, financial and support assistance. They could also provide infrastructure improvements to support electric buses, such as installing charging stations and charging infrastructure.
c. Transjakarta: To mitigate counterparty risk, Transjakarta could reform contracts and payment structures are often required to ensure that these projects are viable contract by both parties. Additionally, they could offer financial and support assistance to operators to help cover the cost of e-buses.

4. **Credit support and enhancement instrument CEF)**

There are several financial institutions (ECAs and DFIs), both from local and international, that could provide credit support and enhancement instrument. This type of support may help the private sector to acquire flexibility and maybe cheaper cost of funds. Additionally, these institutions may participate in a range of roles namely providing loans, providing equity in fund channelling, and become the guarantors.

ECAs and DFIs are expected to provide low cost of funds and loan tenors to asset suppliers through back-to-back Guarantee Letter for foreign banks, so that the final price of assets (electric buses, batteries, and charging infrastructure) becomes cheaper.

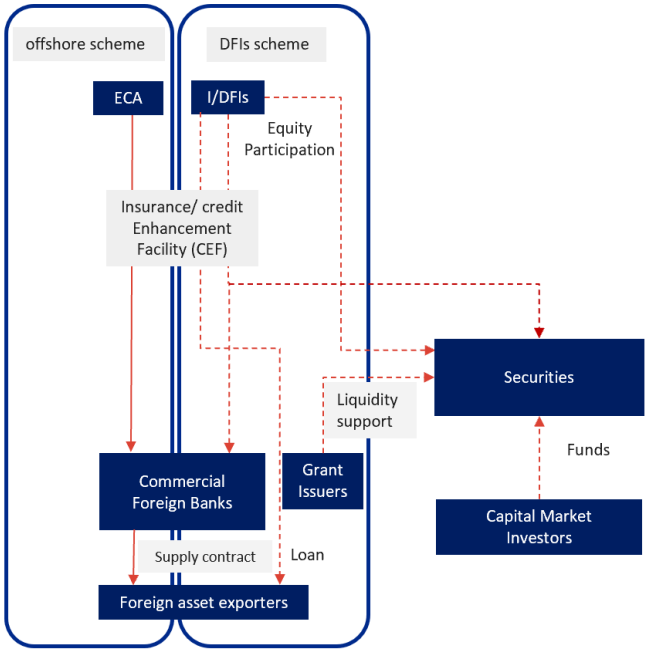

Figure 1 Typical CEF scheme for Public and Private Financing

However, there are certain challenges that may arise when involving ECAs and DFIs into the model. The potential challenges and its solutions were identified in order to enable the involvement of ECAs and DFIs, which is presented in the table below.

Table 14 Challenges and Solutions of CEF Scheme

CATEGORY	CHALLENGE	HOW WOULD THIS WORK?
PUBLIC FINANCING		
International ECA Sovereign Loan	• Needs a government guarantee from the Ministry of Finance. • Government of DKI Jakarta and Transjakarta (BUMD), under current regulation are not eligible as a borrower.	1) Government of DKI Jakarta requests GGL to MoF, 2) DFI loan to BUMN. 3) Transjakarta needs to enter into a joint venture or form a SPV with a BUMN (or other agency) to get support from the Ministry of Finance (MOF)
International DFI – Sovereign Loan	• Needs a government guarantee from the Ministry of Finance. • Government of DKI Jakarta and Transjakarta (BUMD), under current regulation are not eligible as a borrower. • Currency risk might occur	1) DFI loan to MOF 2) 2 step loan to Government of DKI Jakarta, 3) Government of DKI Jakarta channels fund via Transjakarta as equity participation or

		1) Government of DKI Jakarta requests GGL to MoF, 2) DFI loan to BUMN 3) Transjakarta needs to enter into a joint venture or form a SPV with a BUMN (or other agency) to get support from the Ministry of Finance (MOF)
PT. SMI – Municipal Loan	Need Regional People's Representative Council (DPRD) approval	1) Government of DKI Jakarta enters into loan agreement with PT SMI to finance E-bus 2) Government of DKI Jakarta channels fund via Transjakarta as equity participation
PRIVATE FINANCING		
International DFI - Private Sector Loan	• Transjakarta is BUMD, under current regulation Transjakarta is not eligible as a borrower. • Project is highly dependent on subsidy • Currency risk might occur	1) DFI loan to BUMN 2) Transjakarta needs to enter into a joint venture or form a SPV with a BUMN (or other agency) to get support from the Ministry of Finance (MOF) 3) Support letter from Government of DKI Jakarta
PT. SMI	Project is highly dependent on subsidy	1) PT SMI loan to Transjakarta 2) Support letter from Government of DKI Jakarta

Source: ITDP Analysis

3.5.3 Potential Business Model Approach

Innovation and trial and error over the years by pioneering cities with aggressive electric bus targets has shown that reforms to existing models, concessions, contracts, and payment structures are often required to ensure that these projects are viable. Considering the best practices and findings from the market consultation, a proposed business model was proposed that is believed to work in Transjakarta electrification context. The bigger picture of the proposed solution is shown in the figure below where it accommodates the flexibility for new players mentioned in previous sections to also participate in the electrification efforts. It would also help operator to reduce the burden of providing high upfront costs as well as spread the risks since the ownership and financing are distributed among the actors. Additionally, the approach also

considers GEDSI aspects where the alternative models would open opportunity to all stakeholders to participate while not neglecting the existing stakeholders, i.e. operators, who will still be able to participate in the e-bus deployment in this model.

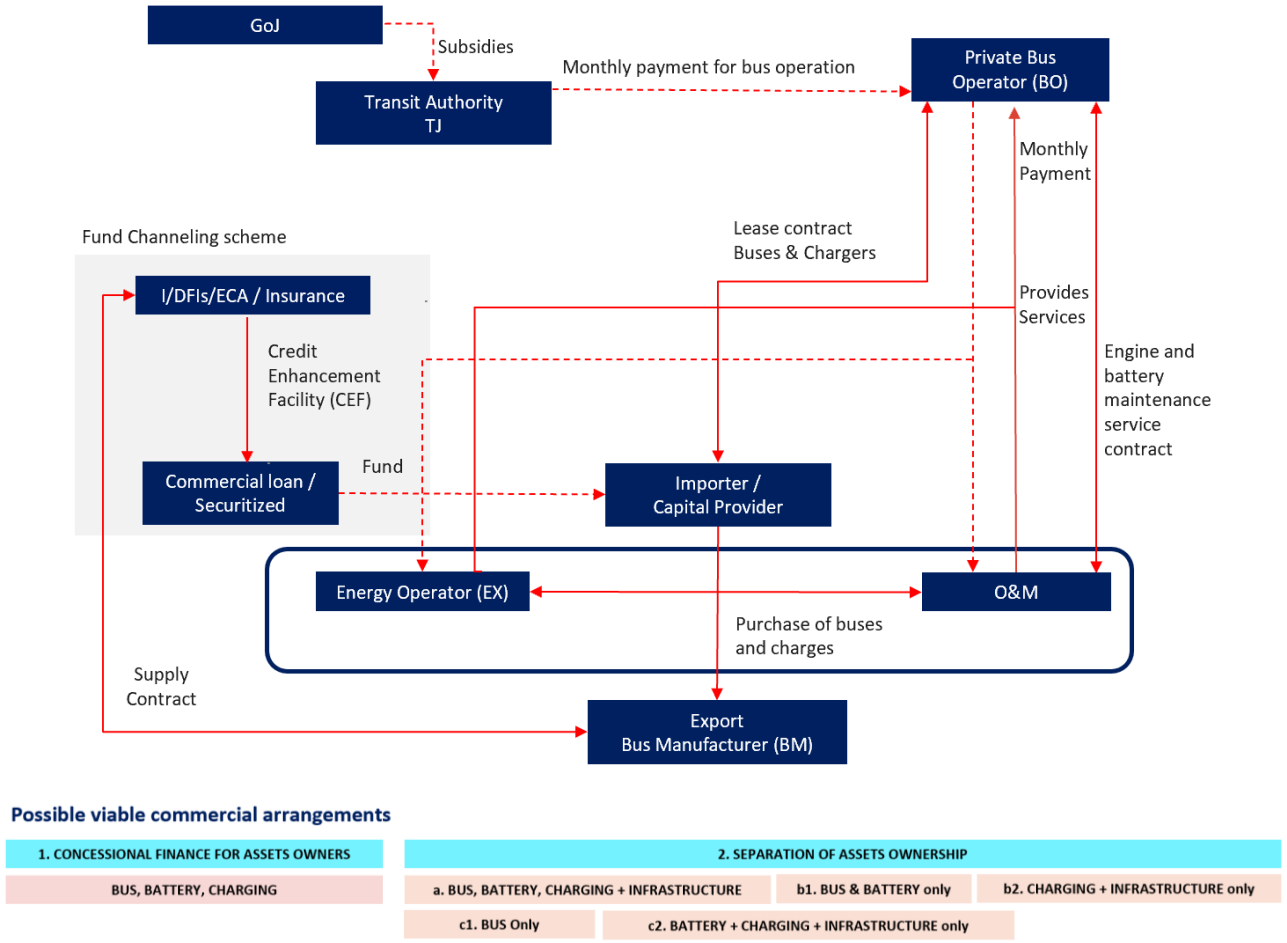

Figure 2 Proposed Overall Solution

As shown in the scheme above and also have been discussed in previous sections that there are 2 business models that might potentially be explored. The first one is concessional finance where there is one asset owner and the second is separation of asset ownership.

In terms of the composition, the Capex requirements for the electrification of the fleet can be divided as under:

i. Bus including battery: Depending on the type and size of the battery, it can contribute up to 40% of the cost of the bus[10]. Further, there are uncertainties in terms of the life of the battery and when it needs to be replaced. Hence, in some cases, the ownership of the bus and the

[10] Electric Bus Market (reportlinker.com)

battery is separated. Given that the bus performance depends critically on the battery performance, the separation of ownership may introduce additional risks. Hence for the early stage of Transjakarta fleet electrification, it is recommended that the bus and the battery are owned by the same entity.

ii. Charging infrastructure (CI): Depending on charging strategy, the cost of charging infrastructure varies. Charging may include both overnight charging at the depot as well as opportunity charging at the bus terminals. In addition to the bus owner, additional players may be roped in to share this investment cost and provide charging services since this is not a core activity of the bus operators at present. However, it should be noted that the life of the charging infrastructure can be much longer than the life of the e-buses. Further, in case the e-bus contract is terminated, depending on the contractual and ownership situation, it may or may not be possible to use the charging infrastructure by the new e-bus service provider. Hence the ownership of the land, depot, buses and charging infrastructure are intricately linked. In order to minimise the risks, the following approach towards ownership of charging infrastructure is proposed:

   a. At the depots owned/leased by Operators – the CI will be arranged by the operator
   b. At terminals build on Government land – Either Transjakarta or an agency appointed by it shall invest in and manage the CI.

iii. Depot Infrastructure: E-bus typically require more depot area than the diesel buses due to charging requirement. Whereas the current depots may be able to accommodate most of the diesel buses being replaced, for augmentation of bus fleet, new depots would need to be created. Further, the petrol microbuses presently do not have dedicated parking space and in case of electrification, there is a need to provide a dedicated space of night time parking/charging of the microbuses.

iv. Electricity Provision: Although this an integral part of operation of e-buses, typically the onus of arranging and providing electricity for e-bus charging lies with the utility companies. In case of Jakarta, it is PLN which is the state-owned monopoly. However, the cost of obtaining or upgrading the connection needs to be borne by the e-bus ecosystem.

3.5.4 Business Models for Terminal Charging Infrastructure

The bus terminals are owned by the regional government of Jakarta. Transjakarta (or other Government entity) may either invest in creating the charging infrastructure. However, since financial support to Trasnjakarta from Government of Jakarta for e-bus deployment is in the form of Rp/km, to invest in charging infrastructure, TJ will have to borrow. Due to up-front funding requirement, it is likely that the deployment of infrastructure will get delayed.

Alternatively, Transjakarta can appoint a Charging Service Provider (CSP) for setting up, operating and maintaining the charging infrastructure for 20 years. Compensation to CSP can be either by way of single-part tariff or two-part tariff

1. Single part tariff
   - TJ or Operator pays to the CSP based on energy consumed as per agreed rate
   - Risk to CSP – Inadequate use of the charging facilities
   - Change in electricity prices
2. Two-part tariff
   - Fixed Charge – fixed amount per month for making infrastructure available
   - Energy Charge – Energy cost plus a markup to be paid by the Operator or TJ (and recovered from operator)

3.5.5 Business Models for Large and Medium E-Buses

The various options and international practices for financing the e-buses has been discussed in detail in earlier UKPACT and UNEP reports and the same are not repeated here. Based on the same as well as discussions with various actors (such as Transjakarta, Financing entities, manufacturers, operators, Jakarta Transport Agency), the following relevant business models for Transjakarta are evaluated.

1. **"Business As Usual" or "Buy the Service" Model**

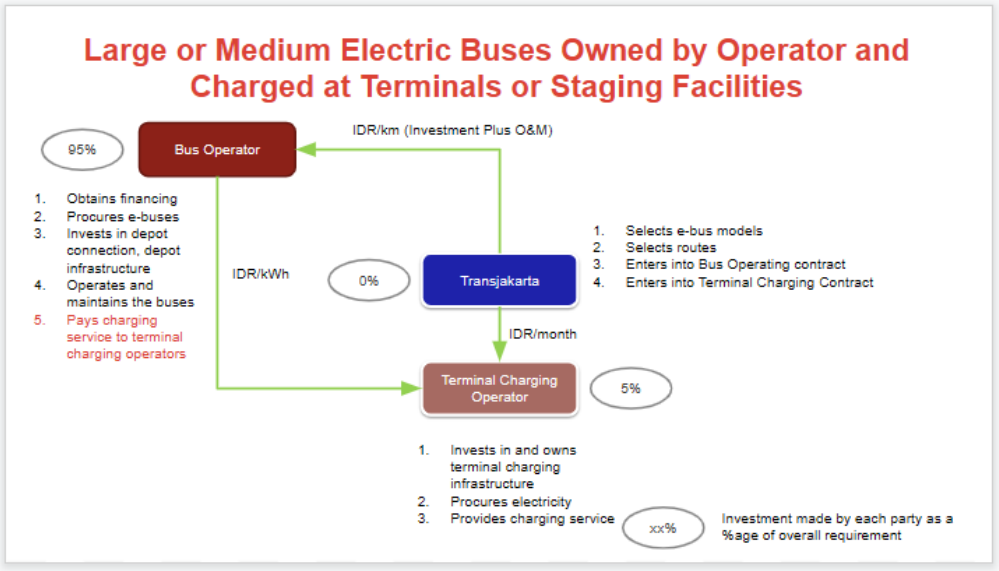

Figure 3 Buy the Service Model for Large and Medium Bus

In this business model:

a. The Operators acquires the e-buses and invests in depot charging infrastructure

b. Transjakarta arranges for terminal charging infrastructures, needed, if any through a public private partnership model where its investment requirements are minimum.
c. The Charging Service Provider (CSP) invests in the terminal charging infrastructure and operates and maintains it. It receives compensation from:
   - Transjakarta for making the infrastructure available – agreed amount per month
   - the operator to the extent of energy used
d. Transjakarta pays to bus operators on the basis of Rupiah/km rate agreed.

The advantages and disadvantages of this model are summarised in the table below:

Table 15 Advantages and Disadvantages of Buy the Service Model

Pros	Cons
Regulatory and institutional mechanism already exist	Operators also need to invest in charging infrastructure
Simple Model	Banks are hesitant to extend finance towards new technology
All parties are already familiar with the process	Not all bus operators have financial capability to arrange down payment

2. Buses Acquired by Transjakarta using Concessional Finance

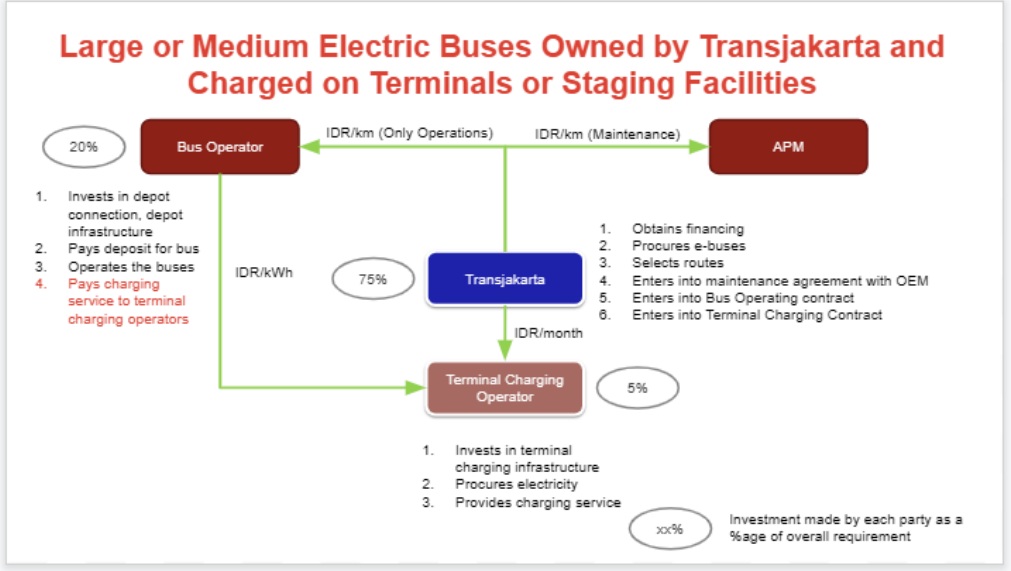

Figure 4 Concessional Finance Model for Large and Medium Bus

Typically, the cost of funds for private operators is more than that of Government entities. This advantage of government funding is exploited in this proposed business model which works as follows:

a. Transjakarta acquires the e-buses and allots them to the Operators
b. Transjakarta ensures maintenance of buses through a long-term contract with APM/OEM
c. The operator invests in depot charging infrastructure
d. Transjakarta arranges for terminal charging infrastructures, needed, if any through a public private partnership model where its investment requirements are minimum.
e. The Charging Service Provider (CSP) invests in the terminal charging infrastructure and operates and maintains it. It receives compensation from:
    - Transjakarta for making the infrastructure available – agreed amount per month
    - the operator to the extent of energy used
f. Transjakarta pays to bus operators on the basis of Rupiah/km rate agreed for operating the buses.
g. Transjakarta also arranges for funds for interest and repayment of principal

The advantages and disadvantages of this model are summarised in the table below:

Table 16 Advantages and Disadvantages of Concessional Finance Model

Pros	Cons
Lower effective cost of financing	Transjakarta prefers asset-lite model
Easier for operators to adopt new technology	Government of Jakarta have indicated reluctance to arrange/guarantee debt financing for Transjakarta
Transjakarta have full control over the assets	Operators do not take care of the assets when these are not owned by them

3. E-buses acquired through leasing mechanism

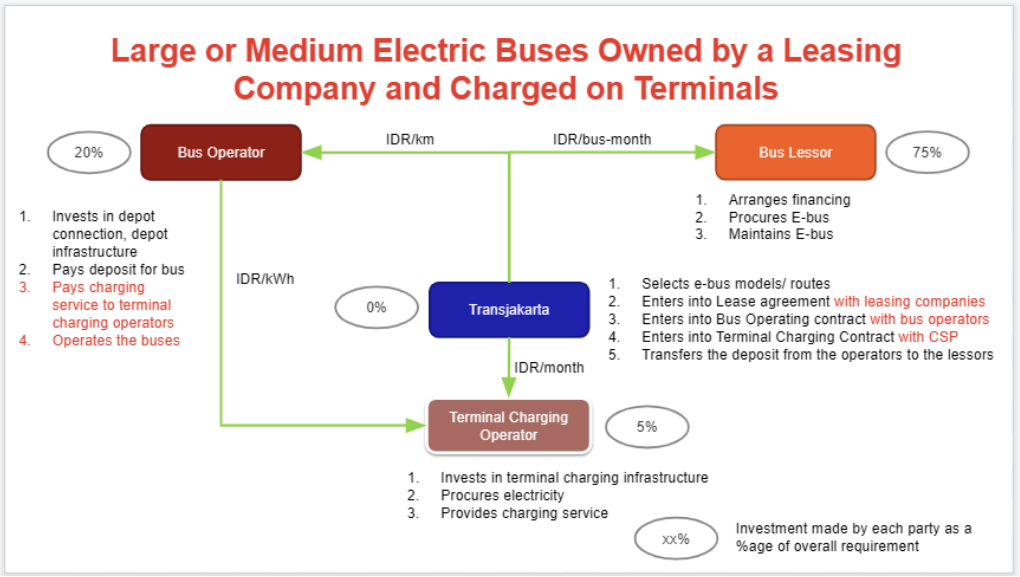

Figure 5 Separation of Ownership and Operations through Leasing Model

Large institutional investors and green funds are interested to invest in environment friendly technologies like electric buses. Such entities also have the advantage of lower cost of funds. This model proposes to use their funding by way of a leasing model as follows:

a. Transjakarta acquires the e-buses from Lessor and allots them to the Operators
b. The operators (through Transjakarta) make a small security deposit for leasing of the buses
c. The Lessor ensures maintenance of buses through a long-term contract with APM/OEM
d. The operator invests in depot charging infrastructure
e. Transjakarta arranges for terminal charging infrastructures through a Charging Service Provider (CSP) which invests in the terminal charging infrastructure and operates and maintains it. It receives compensation from:
    - Transjakarta for making the infrastructure available – agreed amount per month
    - the operator to the extent of energy used
f. Transjakarta pays monthly lease charges to Lessor
g. Transjakarta pays to bus operators on the basis of Rupiah/km rate agreed for operating the buses

The advantages and disadvantages of this model are summarised in the table below:

Table 17 Advantages and Disadvantages of Leasing Model

Pros	Cons
Neither Transjakarta nor the operators need to invest in procuring **the e-buses**	Transjakarta prefers asset-lite model
Lower cost of funds as compared to the operators owning the e-buses	Government of Jakarta have indicated reluctance to arrange/guarantee debt financing for Transjakarta
Such models have been used for intermediate public transit	Operators do not take care of the assets when these are not owned by them

3.5.6 Business Models for Micro E-Buses

The following unique situation of the Microbuses require a separate business model for these as compared to the larger buses which are owned by corporate bus operators:

a. Individual Ownership - limited ability to raise higher upfront investment and loan
b. Contractual relationship – Transjakarta's contractual relationship is with the cooperative and not directly with bus owners/operators
c. Bus owners have no experience of electric bus maintenance

d. Unavailability of depot for night time charging
e. Being similar to passenger vehicles, Micro-electric buses can be charged at public charging stations as well

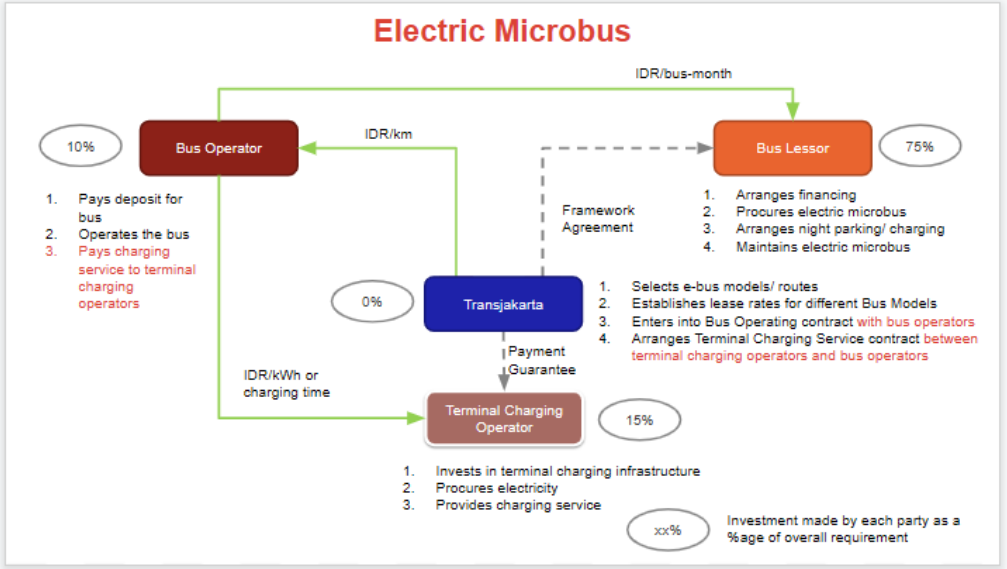

Figure 6 Business Model for Micro E-Buses

Considering the large number of microbus operators and not so successful results from the cooperative mode of operation, the role of cooperatives is proposed to be shifted to leasing companies who in addition to procuring, financing the e-bus, will also ensure charging and maintenance of the buses. The operators will only operate the buses.

The model works as follows:

a. Transjakarta shortlists the suitable mikro-bus models based on operational suitability and cost competitiveness.
b. TJ enters into a framework agreement with lessors selected through a competitive process. The framework agreement, inter alia provides for:
    - Targeted fleet deployment
    - Escrow arrangement guarantee to make payment of lease charges from the operators' fees
    - Bus quality requirements
    - Operational aspects including daily running and charging
    - Provision for substitution of operators in case of poor performance
c. Transjakarta appoints operators who have to obtain the e-buses on lease from the leasing companies pre-selected by Transjakarta
d. The operators make a small security deposit for leasing of the buses
e. The Lessor ensures maintenance of buses
f. Transjakarta pays to bus operators on the basis of Rupiah/km rate agreed.

3.6 Potential Finance Risks & Its Mitigation

Even though the concessional finance may offer attractive loan rates and tenure, it is thought to be more challenging to implement in the context of Transjakarta electrification as it requires strong financial power of the entity to be able to acquire all the assets related to electrification including buses, battery, charging infrastructures and its facilities. It also requires support from the government as the guarantor, which would be difficult since it would need political commitment. Furthermore, in this case, Transjakarta would be the asset owner, which through market consultation, is not preferred. Transjakarta would want the asset ownership to be either with the operators or third party.

The asset separation model is believed to be more practical to adopt in Transjakarta context as it offers more flexibility to allow new players to participate and is in line with Transjakarta preference of not owning the assets. However, this type of scheme would need some further analysis in terms of contractual framework that is done in Output 2 Report.

Each option offers different benefits and drawbacks and should be carefully evaluated to determine the best option for a particular project. Ultimately, the most financially sound BRT electric bus system is one that is tailored to the specific needs of the local community and the financial capabilities of the local authorities.

Depending on the specific needs and goals of the project, the best option should be chosen to ensure that the system is both cost effective and financially sustainable in the long run. For example, funding through grants, fare box revenue, and tax incentives can all be used to finance the project. Additionally, long-term financing options such as bonds and loans can be used to ensure that the project is able to continue providing service in the future. Ultimately, it is important to use the right mix of financing tools to ensure that the project is not only cost effective, but also financially sustainable in the long run.

Furthermore, the table below summarises how the 2 schemes, concessional finance and asset ownership separation, would address the main barriers that were identified.

Table 18 Business Models Addressing Main Barriers

Main Barriers	Concessional Finance for Asset Owners	Separation of Asset Ownership
High up-front cost	Increases access to capital, helping access e-bus	Reduce up-front cost for operators because components (bus, battery, charging) are owned by third party owners

Access and cost of financing	Reduces financial costs, by providing beneficial terms	Large players have access to better financing options, compared to bus operators
Limited access to financial guarantees to de-risk operations	Operators can be part of the solution, but are not given	Risk asset ownership is shifted to third party asset owner
Limited investment in infrastructure	Provide means to invest in infrastructure	Large players may attract more capital for infrastructures

Source: adopted from www.c40knowledgehub.org

As shown above that the barriers may be addressed by the new business models, it may not mitigate the risks yet. There are several risks that still exist. The figure below shows the type of risks and potential mitigations in order to reduce, if not eliminate, the risks.

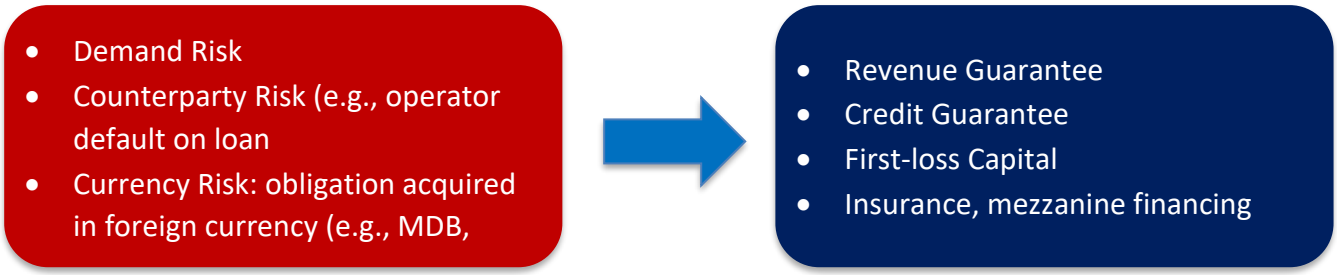

Figure 7 Potential Risks and Its Mitigations

Mitigation of financial risk can be accomplished by utilizing a variety of methods, such as credit guarantee, revenue guarantee, also first loss capital. First loss capital is a type of financial instrument that is designed to absorb losses in the event of a default on a loan or other financial obligation. First loss capital is typically held by a lender as a form of collateral to protect against losses due to borrower default. Other methods include hedging, diversification, portfolio insurance and risk management. By utilizing a combination of these methods, BRT electric bus systems can be made financially sustainable. The table below shows how this would work in the Transjakarta electrification context.

Table 19 Risk Mitigation in E-Bus Deployment

Credit Guarantee and Revenue Guarantee Can Help Mitigate Counterpart and Demand Risk		
TYPES	**OPTIONS**	**HOW WOULD THIS WORK?**
Credit guarantees	**Partial Credit Guarantee (PCG)**: cover part of debt if operators or asset purchases default on repayment	MDBs/I/DFIs or national development finance institution agree to pay certain portion of principal and/or interest in case of default; would be structured at portfolio level (e.g., across many operators)
Revenue guarantee	Creations on new-city level government trust	Dedicated government resources to set up city-level trust can guarantee certain types of payment, where they do not already exist
	Structuring of other guarantee	Structure e-bus guarantee pools with MDBs/I/DFIs
First-loss capital can also mitigate financial risk for more senior investors		
Revenue guarantee	Direct minimum revenue guarantee: guarantee revenues to operators and/ or income to investors, mitigating counterparty risk for investors	• Analyze operators' path cash flows and demand • Government grants to operator a minimum level revenue for contract period • This can be structure as a put option, but and call option, or put and call option with limitation
Others	Insurance	Credit insurance company insures the savings promised to operators by guaranteeing a payment if promised saving are not meet
	Mezzanine finance: offer different repayment method for investors	Change repayment terms so that inventors receives a certain percent operator revenues for certain period of time – until the debt is repaid (revenue sharing models)
	First-loss capital: agrees to step in resulting from investment, decreasing risk for more senior investors	Donors or The Government of Jakarta/ Transjakarta step-in in case that investment is not profitable/ counterparty cannot repay obligations.

Source: www.c40knowledgehub.org

Additionally, risk allocation could also help in mitigating the risks associated with the electrification of the fleets. Political risk can be allocated by having an agreement that defines the responsibilities of each actor in the event of political changes, such as changes in government, laws and regulations. This agreement can also define the specific rights and obligations of each party in the event of political changes.

Technology and operational risk can be allocated by setting up a detailed service level agreement that defines the quality and reliability of the services to be provided. This agreement can also include provisions for regular maintenance, monitoring and upgrades to the technology used.

Financial risk can be allocated by setting up a payment structure that includes a detailed payment schedule and penalty clauses for non-performance. This agreement can also define the scope of the financial risk, including the total amount of money that can be at risk, and the conditions under which the money can be returned or refunded.

Table 20 Risk Allocation in E-Bus Deployment

Type of risk	Description	TJ PTA	Asset owners	Manufacturers	Financiers	Credit guarantees	Financial Intermediary	Operators
Political	Change in contracts (1)		2					1 2
	Change in government (2)		2					1 2
Tech & operational	Availability risk (3)	1 2		1 2				1 2
	Battery risk (4)			1 2				
	Falling prices		2					1
Financial	Demand risk (5)	1 2						
	Counterparty risk				1 2	1 2	1	
	Currency risk (6)		2		2	1 2	1	

1 Actor take on risk in concessional finance commercial arrangement (1)

2 Actor take on risk in separation of assets commercial arrangement (1)

Source: adopted from www.c40knowledgehub.org

4. Fund Channelling & Contractual Framework Options

4.1 Fund Channelling Background

E-bus implementation fund channelling involves the use of financial resources to support the implementation of electric bus systems. This includes the purchase of electric buses, installation of charging infrastructure, training of personnel, and other related activities. The funds may come from government or private sources, and can be used to cover the entire cost of implementation or just a portion thereof.

The cost of financing for E-bus Implementation can vary depending on the type of funding source used. For example, grants from government agencies, private financing, or public-private partnerships may all have different costs associated with them. Additionally, the length of the financing agreement and any interest rates associated with it will also affect the total cost.

Fund channelling schemes are usually developed to meet the objectives as follow:

a. Improve accessibility to financing
b. Provide innovative solutions to financing challenges
c. Improve access to affordable financial services
d. Create sustainable financing solutions
e. Increase the speed of E-bus deployment
f. Provide certainty and transparency
g. Create a system of accountability
h. Increase efficiency
i. Build capacity and strengthen institutional structures
j. Stimulate economic growth and development

Furthermore, fund channelling schemes **proof-of-concept** ought to have characteristic below:

a. Procurement model that can be replicated and scaled
b. Attract various type and size of private capital/investors
c. Add flexibility
d. Based on Government Decree 1053/ 2022 on Transjakarta's BEV acceleration programme, the service **contract between Transjakarta and bus operators will still be in a form of Rp/km**.
e. The fund channelling schemes aim to **reduce the dependency of The Government of Jakarta's PSO**, that, as of now, act as a dominant and sole source of Transjakarta's revenue (80%), aside from the farebox revenue.

Fund Channelling Possibilities

E-bus implementation fund channelling possibilities will explore various financing schemes and structured finance using financing instruments like Grants, Loan, Equity, etc.

- Grants: Governments around the globe are providing grants to promote the adoption of electric vehicles. Grants can be used to cover up to 100 percent of the cost of purchasing electric buses and charging infrastructure.
- Loans: Banks are providing loans to finance the purchase of electric buses and charging infrastructure. The terms and conditions of such loans vary according to the bank, but mostly they are offered at competitive interest rates.
- Equity: Equity financing is also an option for funding the purchase of electric buses and charging infrastructure. Investors can provide the required capital and take a stake in the business.
- Tax Incentives: Many governments are providing tax incentives for the procurement of electric buses and charging infrastructure. These incentives can reduce the upfront cost of electric buses and charging infrastructure and make them more affordable for buyers.

Fund channelling possibilities for the implementation of electric buses could include government subsidies or direct investment, public-private partnerships, crowdfunding, and private investment. Government could provide grant funding to cover the upfront costs of electric bus implementation. Public-private partnerships could enable local authorities to partner with private companies to fund and implement the electric bus program. Crowdfunding could allow individuals to donate to a project to help fund the electric bus implementation. Private investors could invest in the electric bus program, either directly or through venture capital.

The fund channelling schemes that are developed in this study are divided into 2 types, public sector and private sector loan as describe below:

A. Public Sector Loan
    1. PT. SMI Provides Regional Loan to the Government of Jakarta.
    2. The combination Regional Loans and financing products issued by PT. SMI.
    3. Development Financial Institution (DFIs) Loan to Government (2 step Loan).
B. Private Sector Loan
    1. Loan from Commercial Bank Loan to Private Sector.
    2. Private Sector issues financing products to finance the project.

The fund channelling schemes that are developed in this study are then to provide alternatives for the Government of Jakarta and Transjakarta that can be executed for the fund channelling mechanism for the implementation of e-bus.

The alternative of fund channelling schemes archetype is detailed on the **Table 21** below.

Table 21. Initial fund channelling scheme - summary and archetype

Scheme	Source of loan or fund		Need GGL?		Need to establish SPV?		Need to issue other financing instruments?	
	Public sector	Private sector	Yes	No	Yes	No	Yes	No
A-1								
A-2								
A-3								
B-1								
B-2								

The main actors involved—including their roles, as well as challenges, concern, and advantages of each scheme will be discussed in this report. In particular, SPV (Special Purpose Vehicle) is a legal entity that is created to isolate the financial risks in relation to the electrification program. It could be a new established company or a subsidiary of Transjakarta. The reason of introducing SPV in this context is due to the aspiration from Transjakarta, in which owning or managing assets is not favourable. Hence, this role is then transferred to the SPV.

Moreover, the legal feasibility analysis and process that needs to run through on each scheme is being analysed on **Output 2 Report**.

All the fund channelling alternatives are therefore being detailed in following sections.

4.2. Scheme A-1: PT. SMI Provides Regional Loan to The Government of Jakarta

Through the scheme A-1, PT. Sarana Multi Infrastruktur (PT. SMI)—a Special Mission Vehicle under the Ministry of Finance—will issue regional loan (*Pinjaman Daerah,* "Pinda") to the Government of Jakarta. Previously, the Government of Jakarta already has an experience in getting the regional loan from PT. SMI in a form of National Economic Recovery Fund (*Dana Pemulihan Ekonomi Nasional/ dana PEN*) to build Jakarta International Stadium, flood management, and The Government of Jakarta's housing program[11].

Through this scheme, The Government of Jakarta initiate the issuance of regional loan to PT. SMI. The regional loan issued by PT. SMI will be used by The Government of Jakarta to finance the Transjakarta electric bus program. The Government of Jakarta will use the loan as a capital injection to Transjakarta, as they will become the project implementer of the e-bus programme.

Further, Transjakarta needs to own or form a Special Purpose Vehicle (SPV) company to utilize assets for running the Transjakarta e-bus programme. The SPV could be a Transjakarta's subsidiary or a joint venture between Transjakarta and other companies. The capital injection gained from

[11] "Alokasikan Dana PEN untuk Proyek JIS dan TIM, ini Alasan Pemprov DKI". https://news.detik.com/berita/d-5228573/alokasikan-dana-pen-untuk-proyek-jis-dan-tim-ini-alasan-pemprov-dki. Accessed 2022

The Government of Jakarta could be utilised as equity injection to the SPV. Further, the SPV will provide the maintenance service for the assets.

Since the status quo of the business model still applies, Transjakarta will have a contract with private bus operators to operate the bus and pay monthly payment for bus operation. As the asset provided by the SPV, Transjakarta will also pay monthly payments for leasing the assets from the SPV. Transjakarta will still receive the subsidy from the Government of Jakarta for providing the transportation service. A detailed scheme—including the steps taken to make this scheme works—provided on **Figure 8** below.

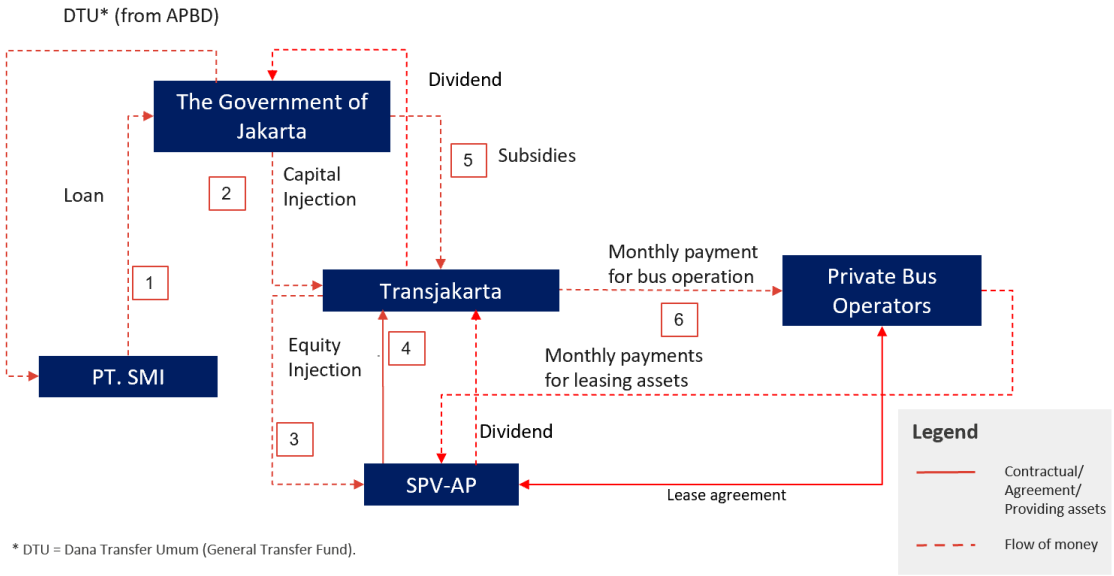

Figure 8. Fund Channelling Scheme A-1: Regional Loan from PT. SMI to The Government of Jakarta

The advantages and challenges of this scheme is documented on Error! Reference source not found..

Table 22. Advantages and challenges of Fund Channelling Scheme A-1

Advantages	
1	PT. SMI has managed the Government of Jakarta loan portfolio, so that the Provincial Government has gone through the Know-Your-Customer (KYC) process by PT. SMI.
2	The Government of Jakarta is familiar with the mechanism for issuing, distributing, and paying regional loan from PT. SMI.
3	The roles of main actors are optimised without changing the roles that have been carried out so far.
4	The bus operators will only operate the bus whereas the bus maintenance will be carried out by another party.
5	The risk to the public sector is distributed.
6	Cost of fund of municipality loan is relatively lower compared to market loan for private sector.

7	The tenure of municipality loan can be longer (up to 20 years) compared to market loan from private sector.
8	In case the Government of Jakarta is not being able to pay the loan, PT. SMI will use
Challenges	
1	Transjakarta must request the Government of Jakarta to issue the Regional Loan**.** Government of Jakarta must also have commitment for this scheme to work.
2	A regional regulation (*Peraturan Daerah* or *Perda*) needs to be issued and approval from the Regional People's Representative Council needs to be obtained to for the regional loan issuance. The process is medium time consuming.
3	With the current scheme, Transjakarta already obtained PSO (public service obligation or subsidy) from the Government of Jakarta. Getting regional loan dedicated for e-bus programme under the Transjakarta service may potentially create issue or conflict because Transjakarta will get supported from two kinds of fund (regional loan and PSO).
4	The operators may not take care of the buses properly as they are not the owner. This might need further mitigation in the form of contract.

4.3. Scheme A-2: The combination of Regional Loans and financing products issued by PT. SMI

This scheme is similar to the scheme A-2. The Government of Jakarta will get regional loan from PT. SMI. The difference is that PT. SMI will also use green fund to the stock market. The green fund will be used as a source of fund for the loan to The Government of Jakarta. The capital market investors will invest to the green fund issued by PT. SMI.

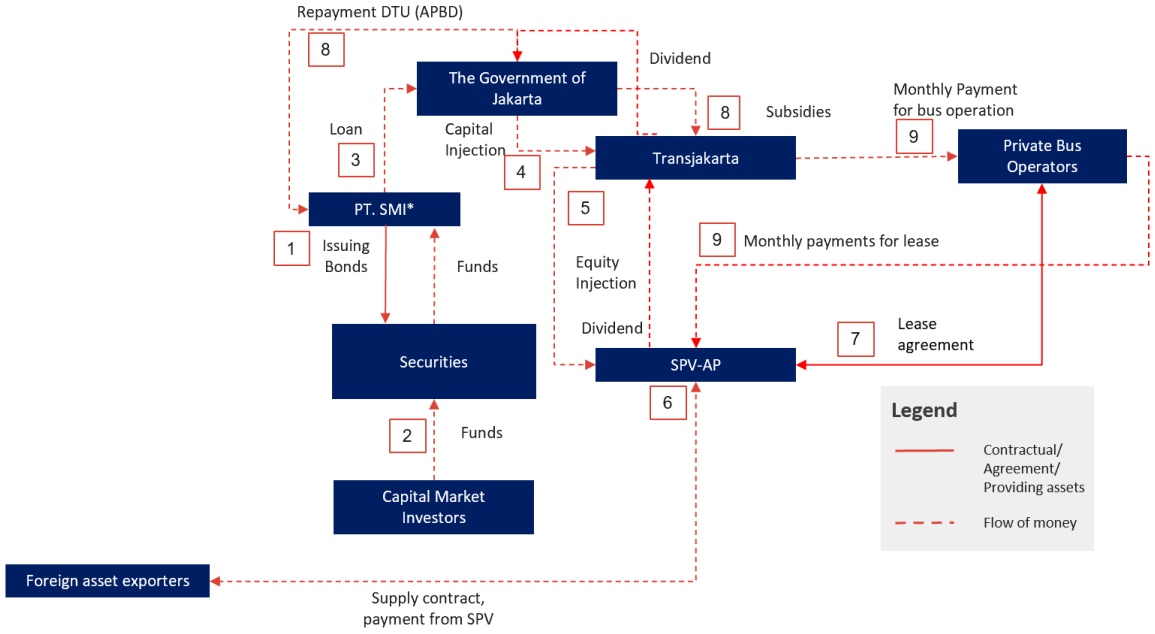

Figure 9 Fund Channelling Scheme A-2: The combination of Regional Loans and financing products issued by PT. SMI

DFIs or ECA could provide equity participation to the green fund issued by PT. SMI, even though this is an optional option and will involve the offshore institutions a lot. The ECA or DFI could also provide Credit Enhancement Facility (CEF) to the commercial foreign bank. The asset could be provided by the foreign manufacturers and having a supply contract with SPV. Similar to the scheme A-2, the SPV will provide assets to Transjakarta. However, the involvement of DFIs or ECA is optional.

The issuance of green funds has the potential to be one of the sources that PT. SMI could use to provide the regional loan to Transjakarta. However, the issuance of green funds in order to reduce the cost of fund still needs to be assessed further. Based on the market consultation with PT. SMI and local commercial banks, currently the benefits of green funds are not that attractive and rather it would require more efforts and costs to satisfy the due diligence that are required to make one project eligible as a "green project".

Since the issuance of regional loan's advantages and challenges are quite similar to scheme A-1, **Table 23** only highlights the additional advantages and challenges if PT. SMI also issues green fund.

Table 23. Advantages and challenges of Fund Channelling Scheme A-2

Advantages	
1	PT. SMI has collaborated with several Development Financial Institutions (DFIs), such as Asian Development Bank (ADB) and World Bank (WB).
2	The role of DFIs is maximized because they can participate as lenders, provide equity supports to PT. SMI for issuing the green funds, or fund guarantors.
Challenges	
1	Compared to scheme A-2, the structured financing is more complex because the issuance of green fund is taken into account.

4.4. Scheme A-3: Development Financial Institutions (DFIs) Loan to Government (2 Step Loan)

This is the only scheme discussed on this report where the **Government Guarantee Letter (GGL)** from the National Government (Ministry of Finance or The Indonesia Infrastructure Guarantee Fund (IIGF) is required. To utilise loan from Export Credit Agencies or Development Financial Institutions, the Ministry of Finance/ IIGF and The Government of Jakarta will have a regress agreement. After that, the GGL is obtained to guarantee the ECA or DFI about the Transjakarta electrification program. Similar to the previous fund channelling schemes, Transjakarta needs to own or establish an SPV as an asset owner or asset aggregator, as well as the e-bus programme implementer. Transjakarta could provide equity support to the appointed SPV.

ECA or DFI is not providing the loan directly to beneficiaries. They need partner with commercial banks they are working with and provide them with a guarantee. After that, the commercial banks

will provide loan to an asset aggregator or an SPV. The asset aggregator or SPV need the loan to purchase the assets and pay a regular payment for assets maintenance.

If ECAs participate on the program, there needs to be an agreement regarding the local contents that will be incorporated under the program. For example, UK Export Finance (UKEF) requires 20% of UK contents if they invest on the Transjakarta's e-bus program. In this case, UKEF will do a supply contract with asset exporters from its origin countries. The asset exporters will export the asset to an APM.

Moreover, the APM will provide the assets and develop an assets maintenance service agreement with the SPV. As usual, the Government of Jakarta will provide subsidies to Transjakarta for running the mobility services. Transjakarta will provide monthly payments to SPV for leasing the assets and to private bus operators for bus operation in Rp/km basis (Gross-Cost Contract scheme), discounting SPV lease payment.

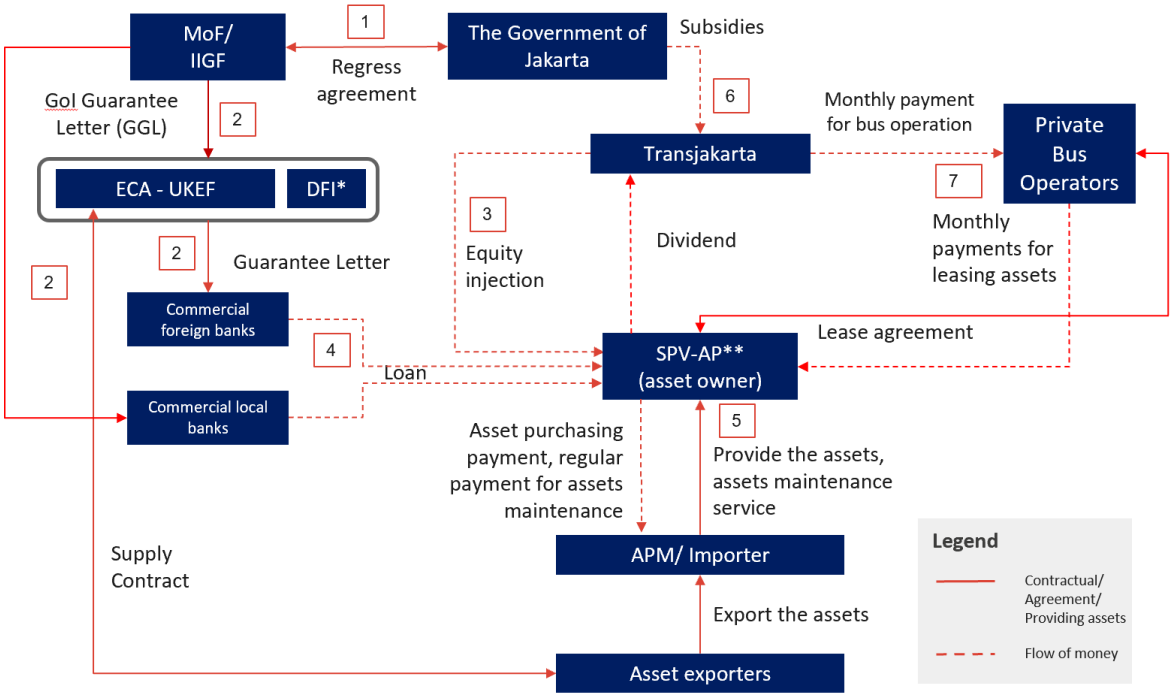

Figure 10. Fund Channelling Scheme A-3: Development Financial Institutions (DFIs) Loan to Government (2 Step Loan)

The advantages and challenges of this scheme is presented at **Table 24**.

Table 24. Advantages and challenges of Fund Channelling Scheme A-3

Advantages	
1	Cost of fund of sovereign loan is relatively lower compared to market loan for private sector.
2	Tenure of sovereign loan can be longer than 10 years.
Challenges	

1	ECA-UKEF requires a GGL from the Ministry of Finance. The UKEF Committee has never issued guarantees replace the GGL from the Ministry of Finance (MoF-GGL) to guarantee letter issued by IIGF.
2	It is difficult to obtain MoF-GGL unless the Transjakarta e-bus programme is included in National Strategic Projects (*Proyek Strategis Nasional,* PSN).
3	There is no precedent that IIGF provide Guarantee Letter to BUMDs for non-PPP scheme.
4	The provincial government and BUMD are not allowed to get loans directly from abroad.
5	Based on OJK Regulations, Local banks only allow to lend money for company with at least 2 years operation. Therefore, newly establish SPV, as default, will most likely be not qualified as a borrower.
6	In the case of UKEF, no local bank has yet qualified to be an ECA.
7	Full financial risk to the public sector.
8	**Under this scheme**, SPV-AP should be formed as State-owned Enterprise (SoE) **to enable access to the loan** . Transjakarta has to join with BUMN, and BUMN in total has to be majority of shares.

4.5. Scheme B-1: Loan from Commercial Foreign Banks to Private Sectors

This scheme points-out a heavy involvement of private sectors. Private sectors as importers, buyers, capital providers, or assets aggregators—to simplify, terminilogy “the private sector” will be used on this section of report. The private sector will obtain commercial loan from **foreign** banks. Additionally, the involvement of ECAs and DFIs are optional where they could provide Credit Enhanchment Facility to the foreign bank. Moreover, the foreign bank could have a supply contract with foreign assets exporters.

The foreign assets exporters will provide the assets to the private sector. Different from the previous schemes where the establishment of SPV is needed, in this scheme, the private sector could sale or lease assets directly to bus operarots, as well as providing maintenance services.

The Government of Jakarta will provide subsidies to Transjakarta, and Transjakarta will provide monthly payment for bus operation to bus operators in Rp/km basis.

Private bus operators will provide regular leasing & O&M payments to the private sector. The private sector will pay loan to the foreign banks to as they provide commercial loan to help procuring the assets.

The scheme B-1 is illustrated on Figure 11, while the advantages and challenges of this scheme is presented on Table 25.

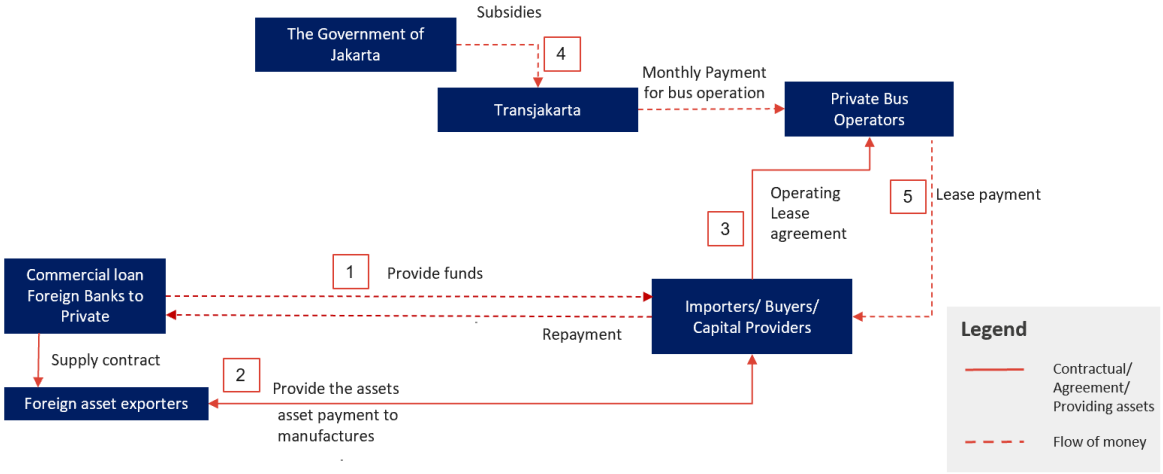

Figure 11. Fund Channelling Scheme B-1: Loan from Commercial Foreign Banks to Private Sectors

Table 25. Advantages and challenges of Fund Channelling Scheme B-1

Advantages	
1	The risk will be fully borne by private sectors.
2	The bus operator will operate the bus, while the maintenance will be carried out by another party[12].
3	The role of the main actors will be optimised without changing the roles that have been carried out so far.
Challenges	
1	Candidate of the private sector should have experience in the public transportation field with a strong balance sheet.
2	Potential resistance from existing operators that is afraid of private sectors will replace their current business or become competitors.
3	This might need higher Government financial support or subsidies to increase the level of confidence of the private sector
4	The process is medium time consuming since it might require tender process for to select asset owner

4.6. Scheme B-1A: Loan from Commercial Foreign Banks to Private Sectors - Business as usual (BAU)

Similar to Scheme B-1, in this scheme, private sector also gets commercial loan from foreign banks to buy and own the assets. However, in this scheme the private sector will then sell the assets and maintenance services directly to bus operators. Hence, bus operators, who do not have the

[12] This point, in fact, could become either an advantage or a challenge. While the bus operators are not required to own the asset, there is no ownership transfer. This could potentially make the bus operator do not have a willingness to operate/maintain the asset properly the asset compared to when they are owning the asset or if there is ownership transfer at the end.

financial capacity, will take capital loans from local bank in order to own the assets. Furthermore, operators will also need to pay regular maintenance fees to the asset owner.

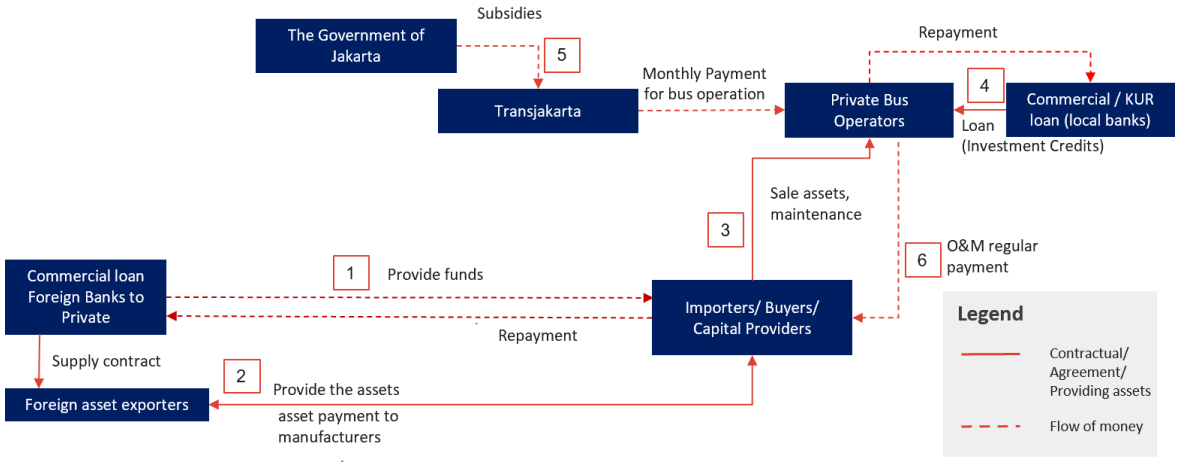

Figure 12 Fund Channelling Scheme B-1A: Loan from Commercial Foreign Banks to Private Sectors – Business as Usual (BAU)

Table 26 Advantages and challenges of Fund Channelling Scheme B-1A

Advantages	
1	The risk will be fully borne by private sectors.
2	The bus operator will operate the bus, while the maintenance will be carried out by another party. There is a sense of ownership by bus operators.
3	The role of the main actors will be optimised without changing the roles that have been carried out so far (BAU)
Challenges	
1	Zero mitigation on current financial barrier, high upfront cost
2	May have higher cost of fund due to limited credit history
3	Less flexibility. Operators will be required to prepare down payment since they will be the asset owner
4	Financial capacity and bankability of operators are relatively low

4.7. Scheme B-2: Private Sectors Issue Financing Products to Finance the Project

Through this scheme, the private sectors will issue the financing products (green fund or other financing products) to capital markets. The private sectors will raise the fund from the capital market investors and utilise the projects.

Scheme B-2 is quite similar to the Scheme B-1, the difference is that the source of fund for the Scheme B-1 is the loan from foreign bank whereas the Scheme B-2 gain the fund from the capital market.

The participation of offshore ECAs and DFIs, investment credits loan from local commercial banks to bus operators, and liquidity support from PT. SMI will only be optional in this scheme. The scheme is demonstrated on Figure 13 below, while the detailed structured financing and financing instrument used of this scheme will be analysed further.

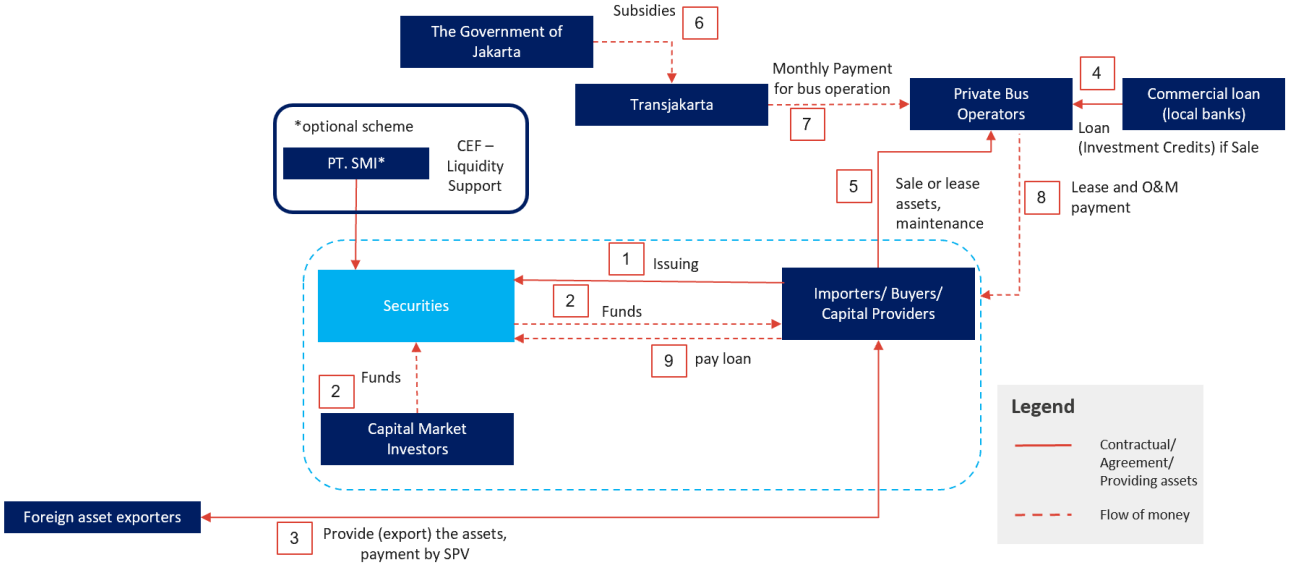

Figure 13. Fund Channelling Scheme B-2: Private Sectors Issue Financing Products to Finance the Project

As seen in the figure above in blue box that the main source of funds for this scheme is "Securities", which is one of financing products that is issued by the capital provider or any other private sector who would participate in the project. Amongst securities (shares, bonds and mutual funds) that are available in the market, it is thought that mutual fund is the most viable one to be utilised in the context of Transjakarta electrification. In particular, the mutual fund that will be looked at further is **Limited Participation Mutual Fund** (*Reksa Dana Penyertaan Terbatas,* "**RDPT**").

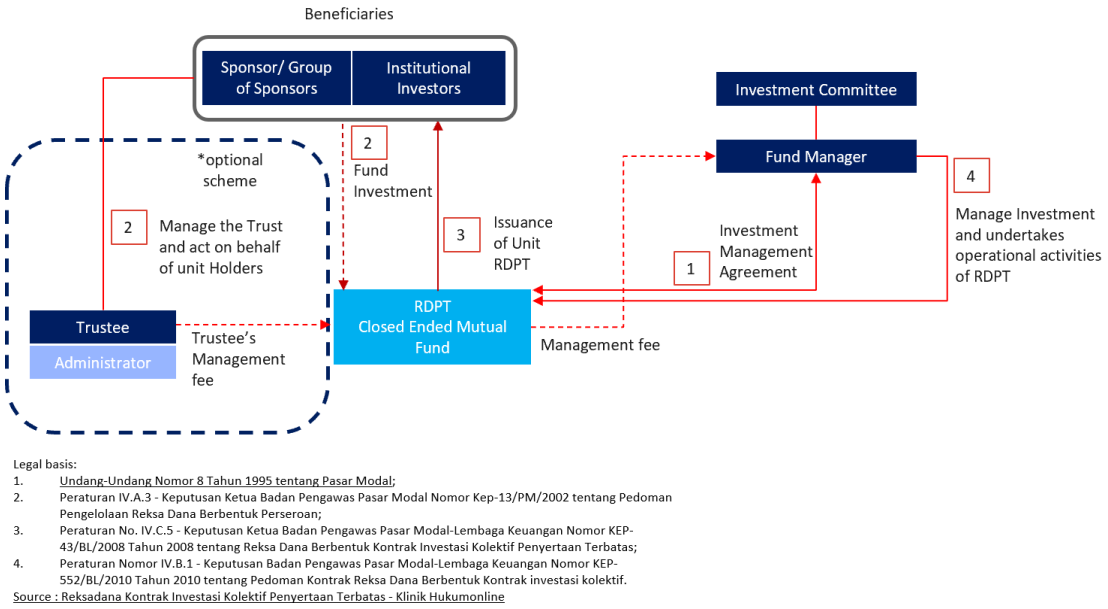

Figure 14 Typical structure of RDPT

Limited Participation Mutual Funds (RDPT) are investment instruments specifically offered to professional investors with a high minimum purchase value. The Limited Participation Mutual Funds are then placed by investment managers into securities portfolios as well as capital for various sectors. Professional investors are owners of capital with the capacity to buy Participation Units as well as make risk analysis of Mutual Funds in the form of Limited Participation Collective Investment Contracts.

The regulations for Limited Participation Mutual Funds have been regulated by OJK. The provisions are specifically offered in limited quantities to professional investors and may not be sold through a public offering. In addition, it may not be controlled by 50 or more Parties. RDPT provides open information to the public regarding the composition of assets and investment portfolio instruments, the risks that accompany them, and various costs that arise. In addition, the bookkeeping procedure must also be carried out by an independent party outside the Investment Manager, namely the Custodian Bank and is required to be audited by a Public Accountant registered with the OJK.

In general, there are several parties that are involved in RDPT structure, which are:

1. **Fund manager and investment committee**
   The fund manager is an entity who will manage the fund pooled from the RDPT. Before managing the fund, the fund manager will develop an investment management agreement with trustee & investors/ sponsors. Investment committee, on behalf of the fund manager, will ensure the fund managed by the fund manager is in accordance with the RDPT issuance agreement—in this case is for financing the Transjakarta e-bus programme. The investment committee is at the same institution with the fund manager itself. There

will be a management fee for the fund manager compensate their services of managing the fund pooled on the RDPT.

2. **Investors and sponsors (or group of sponsors)**
   Investors and sponsors are the ones who will invest their fund to the RDPT. There is no limitation regarding the kind of parties that are be able to participate as sponsors, group of sponsors, or institutional investors. The investors could be foreign or local financial services institutions, both public and private companies.
   The investors and sponsors will issue the RDPT unit, after they conduct the investment.
3. **Trustee**
   Trustee is a party who represents the interests of the RDPT holder. The trustee has an important role for creditors because it will provide up-to-date information on the conditions and developments in the use of RDPT funds for the specific project. The government (OJK) has stipulated entities that could carry out the trustee's activities. There will be trustee's management fee for the trustee on behalf of providing the trustee's services.
4. **Administrator**
   The administrator of the issuance of RDPT will manage the trustee and act on behalf of the unit holders.

Infrastructure and Market Context

RDPT is quite attractive product for investors with the basic asset is infrastructure which is being massively worked on by the government. Investor interest in infrastructure project-based RDPT is still high because it is currently a priority for the government.

The yield on RDPT also varies depending on the type and location of the project which is the underlying asset. However, it is not uncommon for yields to match or even slightly outperform conventional stock-based mutual funds. Up to now, the generally attractive infrastructure assets are toll roads and airports. In terms of risk, RDPT investors are not exposed to market risk, but to liquidity risk and business risk. Investors are threatened with loss if the infrastructure projects that are assets of the mutual funds are not realized along the way.

At the end of March 2018, two BUMN subsidiaries, namely Bahana Investa Kapital and Danareksa Capital, together with 27 other BUMNs engaged in the financial intermediary sector, have signed the formation of a Private Investment Fund. To complement infrastructure project development support, the presence of this investment fund will be one of the infrastructure funding solutions, as well as optimizing the management and utilization of BUMN funds, including their pension funds to invest in projects or securities portfolios.

Based on the disclosure of the Indonesian Central Securities Depository (KSEI), an official investment manager has recorded the issuance of the infrastructure RDPT instrument. One of example, the Transjawa Equity Infrastructure Mandiri RDPT. This RDPT product from Mandiri Investment Management (MMI) has received an effective license from the Financial Services

Authority. As the name implies, this RDPT has the basic assets of three Transjawa toll roads, namely the Solo-Ngawi toll road, the Ngawi-Kertosono toll road, and the Semarang-Batang toll road, issued on July 15, 2018. The three toll roads are projects worked on by PT Jasa Marga Tbk (JSMR). Through this IDR 3 trillion RDPT, they acquired part of Jasa Marga's share ownership through these toll roads. PT Jasa Marga Tbk stated that the option to issue Limited Participation Mutual Funds (RDPT) as an instrument for funding is one of the right options to be implemented at this time[13]. In addition to the easy process, the company has the option to buy back shares when it has better liquidity, so that the share ownership of the toll roads remains the property of the company.

Table 27 Historical Return of RPDT Mandiri Infrastruktur Ekuitas Transjawa

RETURN						
1 month	YTD	1 year	3 years	5 years	10 years	Inception
-0,11%	9,94%	9,94%	39,04%	-	-	43,81%

Source: Investasi RPDT Mandiri Infrastruktur Ekuitas Transjawa - Reksadana Online | Bareksa

Several limited investment mutual funds (RDPT) have also been issued to finance infrastructure managed by Investment Management companies. One of them is the construction of Kertajati Airport which has been tested recently. Another example is the infrastructure-based RDPT for toll roads built by Waskita and other state-owned construction companies, the Trans-Java toll road, and so on.

In the development of RDPT as one of the viable alternatives for Transjakarta electrification, there are further 3 possible variations thereof. The main difference lies within the role of SPV in the structure that will be discussed further below.

4.7.1. Scheme B-2, Alternative 1 Structured Financing

Within alternative 1, the **SPV** will act as an **asset aggregator** who owns the assets associated with the programme, such as the e-bus fleets, charging infrastructure, etc. They will enter into an operating lease agreement and O&M contracts directly with bus operators, and enter into a purchasing agreement with associated OEMs, APMs, or charging infrastructure providers.

[13] Ini Alasan Jasa Marga Pilih RDPT Ketimbang Opsi Pendanaan Lain (indopremier.com)

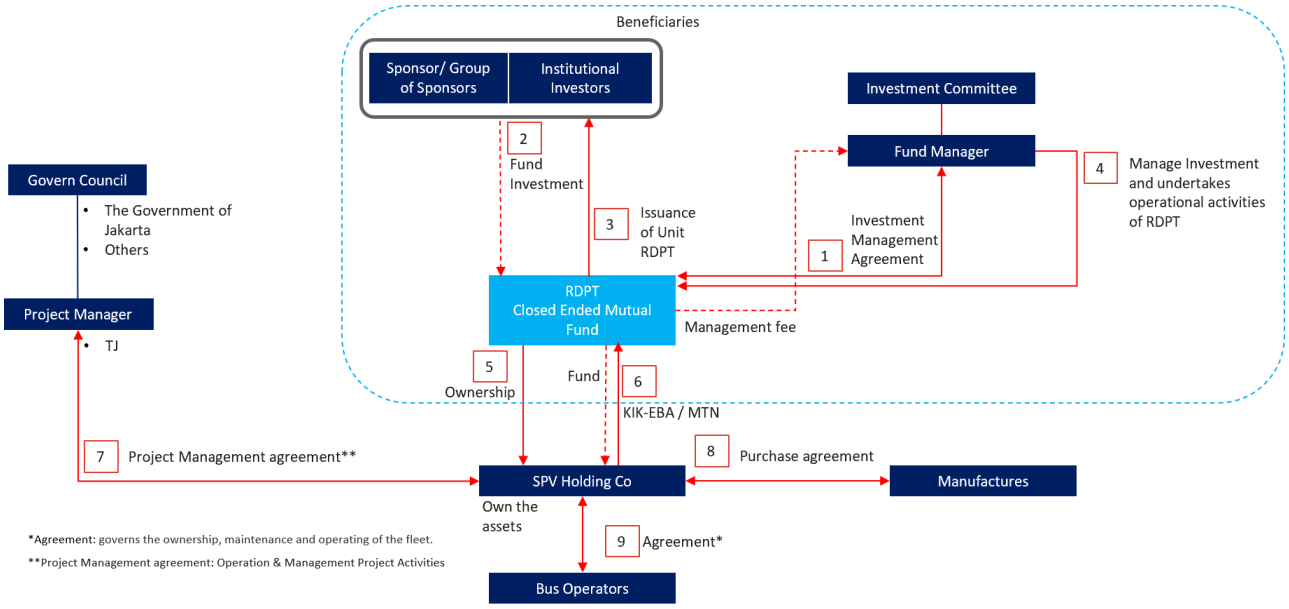

Figure 15. Scheme B-2, Alternative 1 Structured Financing

The implementation of such scheme could be realised in 4 main stages:

1. Stage I
    a. Fund Manager have corporation collaboration agreement with Transjakarta for E-bus deployment projects
    b. Transjakarta rank and select eligible routes and operators (Financial and Commercial Perspectives)
    c. Fund Manager and Transjakarta conduct feasibility E-bus deployment eligible project
2. Stage II (RDPT Issuance)
    a. Fund Manager (Manager Investasi / MI) issues RDPT
    b. Beneficiaries purchase RDPT units of Issuer
        i. Institutional Investors purchase RDPT units of Issuer: Promissory notes,
        ii. Sponsors purchase RDPT units of Issuer: Quasi Equity, Equity
3. Stage III
    a. Sponsors establish SPV Holding Co (assets ownership)
4. Stage IV
    a. Transjakarta contract agreement with operators
    b. Sale agreement between SPV Holding Co and Bus manufacturers
    c. Rental (Operation Lease) between SPV Holding Co and Operators
    d. O&M agreement between SPV Holding and O&M Co.
    e. Government of DKI Jakarta provide operation subsidies for buy the service from Operators

The advantages and challenges of this scheme are shown in the table below.

Table 28 Advantages and challenges of Fund Channelling Scheme B-2, Alternative 1

Advantages	
1	Opportunity of collaboration between Fund Managers and Transjakarta (SOE – ROE synergy) that may increase the level of confidence as well as simplicity of the process
2	The role of the main actors will be optimised without changing the roles that have been carried out so far
3	SPV as asset owner with operating lease to operator
4	The risk is fully borne by private investor
5	The cost of fund may be cheaper than bank loan – would depend on the financial product rating
Challenges	
1	Resistant may come from existing operators that are afraid of capital provider take their business or become competitor
2	The scheme is quite complex and involve a lot of players hence may create a long and time-consuming process
3	The cost of fund is not necessarily cheap
4	The assets may not be used/maintained properly by operators since they are not the owner

Furthermore, this scheme is also quite flexible to open the opportunity for foreign funds to participate in raising the funds to support the electrification as shown in the figure below. In this scheme, the SPV may have a sale agreement with foreign asset exporter as well as currency swap with foreign CEFs.

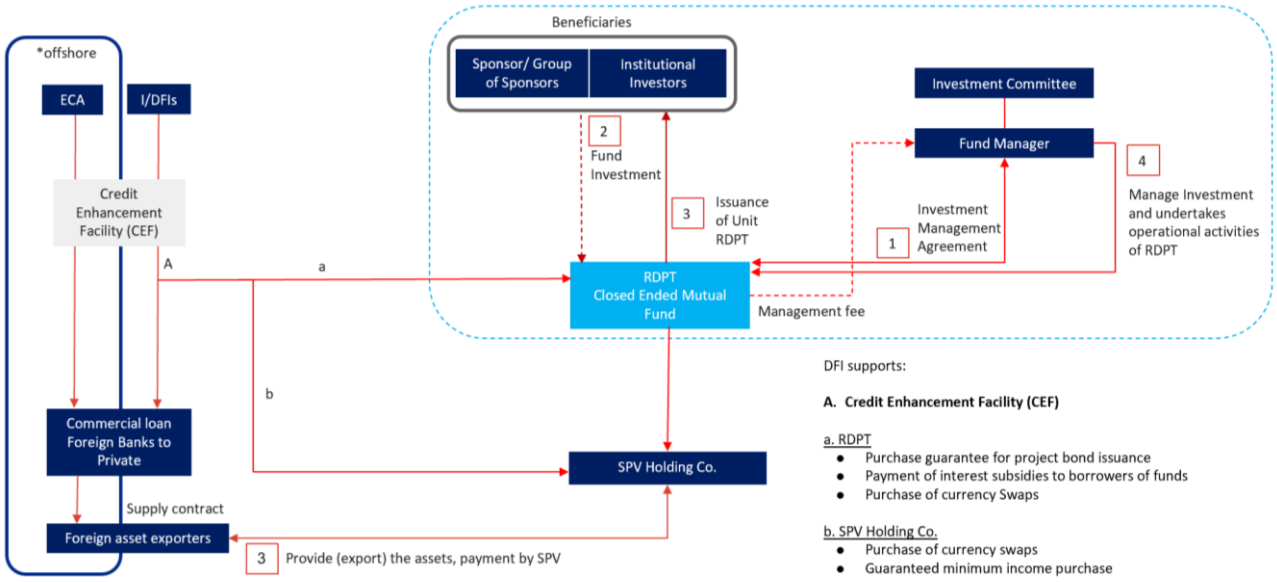

Figure 16 Scheme B-2, Alternative 1 Structured Blended Financing

In addition to advantages and challenges shown in Table 28 above, this particular blended scheme also creates bigger opportunities in a way that the role of DFIs is maximised because they can participate as lenders, equity in fund channelling and fund guarantors. Furthermore, ECAs and DFIs are expected to provide low cost of funds and loan tenors to asset suppliers through back-to-back GL for foreign banks so that the final price of assets (electric buses, batteries and charging infrastructure) becomes cheaper.

4.7.2. Scheme B-2, Alternative 2 Structured Financing

The main difference with alternative 1 is the existence of Leasing Company who will provide finance lease to the operators. The SPV will have an agreement with the Leasing company and the Leasing company will be acting as a brokerage where they will enter into a purchase agreement with the OEM to buy the assets on behalf of the SPV since the ownership of the assets still lies with SPV. The assets are then leased to the operators through finance lease agreement. In turn, bus operators will pay for the lease to the SPV through the Leasing company.

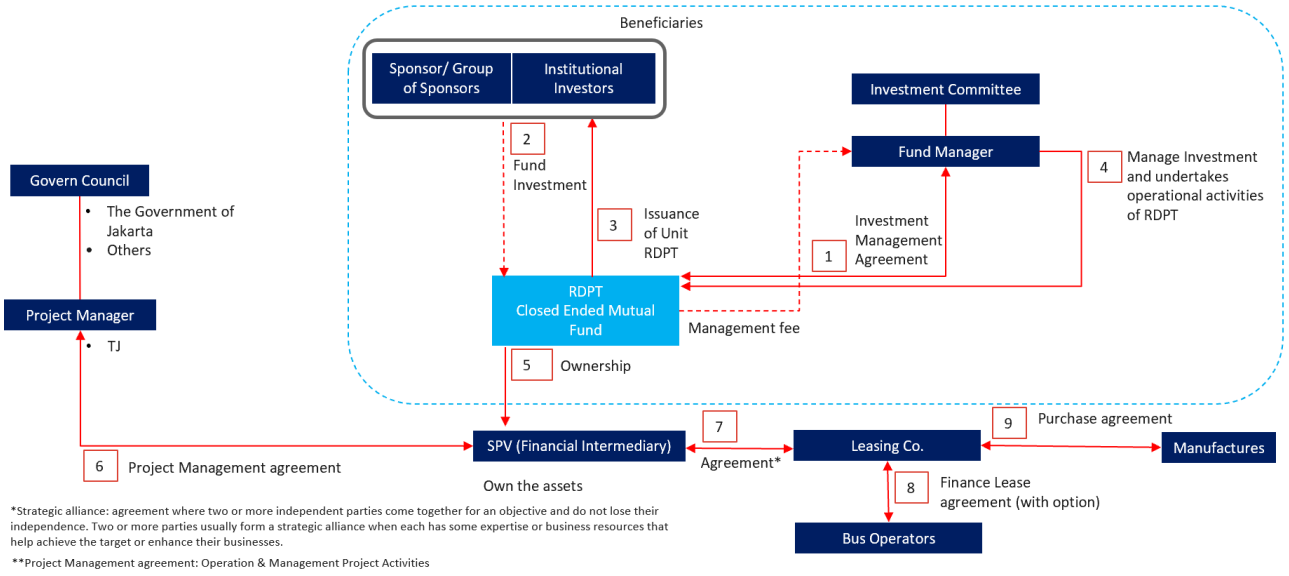

Figure 17. Scheme B-2, Alternative 2 Structured Financing

The stages of implementation of this scheme are as follows:

1. Stage I
   a. Fund Manager have corporation agreement with Transjakarta for E-bus deployment projects
   b. Transjakarta rank and select eligible routes and operators (Financial and Commercial Perspectives)
   c. Fund Manager and Transjakarta conduct feasibility E-bus deployment eligible project
2. Stage II (RDPT Issuance)
   a. Fund Manager (Manager Investasi / MI) issues RDPT
   b. Beneficiaries purchase RDPT units of Issuer

   i. Institutional Investors purchase RDPT units of Issuer: Promissory notes,
   ii. Sponsors purchase RDPT units of Issuer: Quasi Equity, Equity

3. Stage III
   a. Sponsors establish SPV (Financial Intermediary)
   b. SPV issued debt instrument such as: KIK-EBA or Medium-Term Notes (MTN)
   c. SPV have strategic alliance agreement: fund channelling lease agreement with Leasing Co to Operators

   Strategic alliance: agreement where two or more independent parties come together for an objective and do not lose their independence. Two or more parties usually form a strategic alliance when each has some expertise or business resources that help achieve the target or enhance their businesses.[14]

4. Stage IV
   a. Transjakarta contract agreement with operators
   b. Finance lease agreement between Leasing Co and Operators
   c. O&M agreement between Operators and O&M Co.
   d. Government of DKI Jakarta provide operation subsidies for buy the service from Operators

The advantages and challenges of this scheme are shown in the table below.

Table 29 Advantages and challenges of Fund Channelling Scheme B-2, Alternative 2

Advantages	
1	Opportunity of collaboration between Fund Manager, Leasing Company and Transjakarta (SOE – ROE synergy) that may increase the level of confidence as well as simplicity of the process
2	The role of the main actors will be optimised without changing the roles that have been carried out so far
3	SPV as asset owner have strategic alliance agreement (fund channelling) with Leasing Company (2 step) who have financial lease agreement with bus operators
4	The risk is fully borne by private investor
5	The cost of fund may be cheaper than bank loan – would depend on the financial product rating
Challenges	
1	The scheme is quite complex and involve a lot of players hence may create a long and time-consuming process
2	The 2-step process that must comply with strict OJK Regulation adds to additional process and time to implement
3	The cost of fund is not necessarily cheap
4	The assets may not be used/maintained properly by operators since they are not the owner

[14] Source: Joint Venture vs Strategic Alliance | Top 6 Differences (with Infographics) (wallstreetmojo.com)

Similar to Alternative 1 above, this scheme can also be flexible by opening an opportunity to allow foreign funds to come in the structure. The main difference is that since the role of SPV is financial intermediary, not holding company, currency swaps facility from DFIs/ECAs could not be purchased. The role of DFIs is maximised because they can participate as lenders, equity in fund channelling and fund guarantors. Furthermore, ECAs and DFIs are expected to provide low cost of funds and loan tenors to asset suppliers through back-to-back GL for foreign banks so that the final price of assets (electric buses, batteries and charging infrastructure) becomes cheaper.

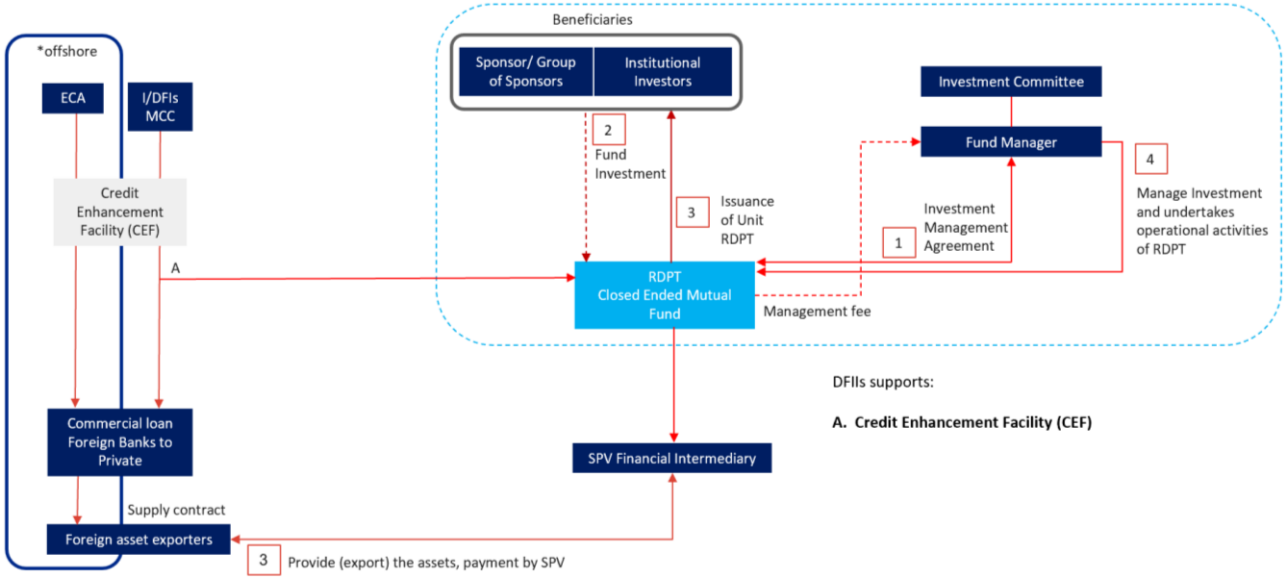

Figure 18 Scheme B-2, Alternative 2 Structured Blended Financing

4.7.3. Scheme B-2, Alternative 3 Structured Financing

This scheme is very similar with Alternative 2 Structured Financing above. However, in this scheme SPV is not the asset owner rather it is the bus operator. The SPV will have a leverage lease agreement with the Leasing Company who will purchase the assets from the manufacturers. The main point of this scheme is that the bus operators do not have to prepare the down payment to own the assets. Bus operators only need to have finance lease agreement (lease to own) with the Leasing Company for the monthly payment to the Leasing Company. Hence, the role of SPV is only for fund channelling to the Leasing Company.

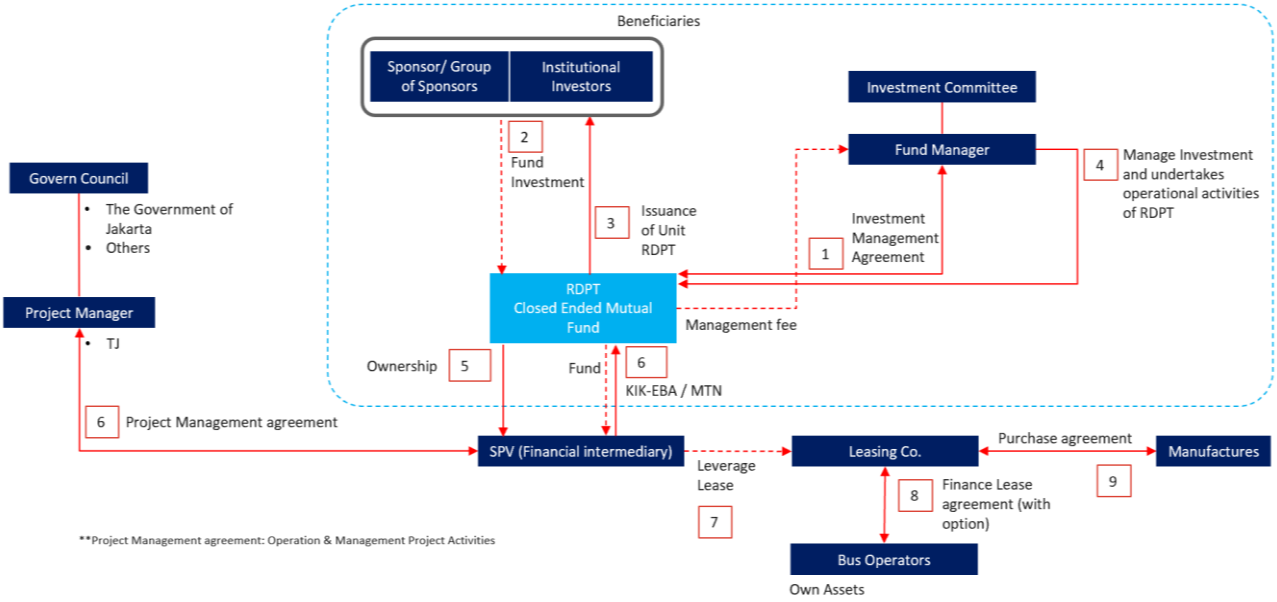

Figure 19 Scheme B-2, Alternative 3 Structured Financing

The implementation stages of this scheme is as follows:

1. Stage I
   a. Fund Management have corporation agreement with Transjakarta for E-bus deployment projects
   b. Transjakarta rank and select eligible routes and operators (Financial and Commercial Perspectives)
   c. Fund Management and Transjakarta conduct feasibility E-bus deployment eligible project
2. Stage II (RDPT Issuance)
   a. Fund Management (Manager Investasi/MI) issuing RDPT
   b. Beneficiaries purchase RDPT units of Issuer
   c. Institutional Investors purchase RDPT units of Issuer: Promissory notes,
   d. Sponsors purchase RDPT units of Issuer: Quasi Equity, Equity
3. Stage III
   a. Sponsors establish SPV (Financial Intermediary)
   b. SPV issued debt instrument such as: KIK-EBA or Medium-Term Notes (MTN)
   c. SPV have leverage agreement with Leasing Co
4. Stage IV
   a. Transjakarta contract agreement with operators
   b. Finance lease agreement between Leasing Co and Operators
   c. O&M agreement between Operators and O&M Co.
   d. Government of DKI Jakarta provide operation subsidies for buy the service from Operators

The main advantages and challenges of this scheme are as follows:

Table 30 Advantages and challenges of Fund Channelling Scheme B-2, Alternative 3

Advantages	
1	Opportunity of collaboration between Fund Manager, Leasing Company and Transjakarta (SOE – ROE synergy) that may increase the level of confidence as well as simplicity of the process
2	The role of the main actors will be optimised without changing the roles that have been carried out so far
3	SPV have strategic alliance agreement (fund channelling) with Leasing Company (2 step)
4	The risk is fully borne by private investor and Leasing Company
5	Bus operators have financial lease agreement (lease to own) to own the assets, which will be maintained/utilised properly.
6	The cost of fund may be cheaper than bank loan – would depend on the financial product rating
Challenges	
1	The scheme is quite complex and involve a lot of players hence may create a long and time-consuming process
2	The 2-step process that must comply with strict OJK Regulation adds to additional process and time to implement
3	The cost of fund is not necessarily cheap
4	The assets may not be used/maintained properly by operators since they are not the owner

The blended version of this scheme is also the same as Alternative 2 above. The currency swaps facility from DFIs/ECAs could not be purchased and the role of DFIs is maximised because they can participate as lenders, equity in fund channelling and fund guarantors. Furthermore, ECAs and DFIs are expected to provide low cost of funds and loan tenors to asset suppliers through back-to-back GL for foreign banks so that the final price of assets (electric buses, batteries and charging infrastructure) becomes cheaper.

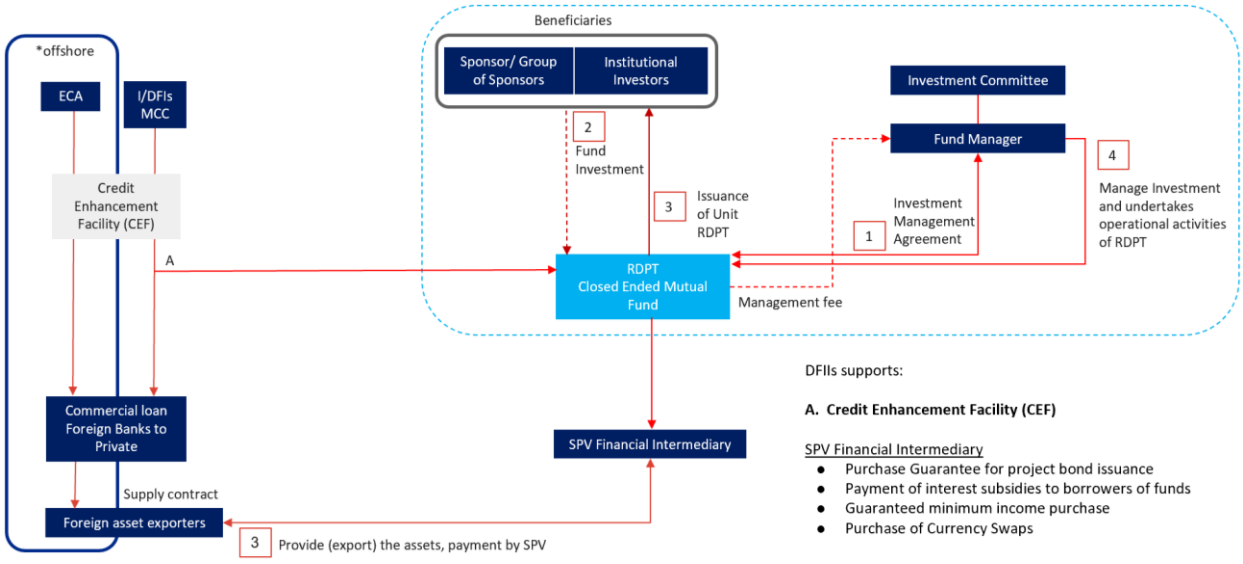

Figure 20 Scheme B-2, Alternative 3 Structured Blended Financing

4.7.4. Collaboration in Fund Channelling (SOE – ROE Synergy)

SOE – ROE synergy is being encouraged as a step to improve the economy. BUMN Minister revealed that this could create economic growth both nationally and regionally. He encouraged the local government to be more active in this endeavour. "Efforts and initiatives from the centre are not enough. Local government involvement is needed, which of course understands the characteristics of the area better. And in that case, the role of BUMD is important to become a partner and increase business activity in the region," said Minister.

In DKI Jakarta, this cooperation has taken place in several sectors. For example, PT Tjipinang Food Station, which is a BUMD owned by the Government of DKI Jakarta and PT Sang Hyang Sri (Persero), a BUMN engaged in agriculture. In addition, BUMN and BUMD in DKI Jakarta are building a joint ventures and integrated transportation systems in Jabodetabek.[15]

Through Government Regulation (PP) Number 113 of 2021 concerning Amendments to PP Number 25 of 1976 concerning the Republic of Indonesia State Equity Participation for the Establishment of a Limited Liability Company (Persero) **"Mutual Funds"** on November 10, 2021, PT Danareksa (Persero) was appointed as the holding company which oversees several sub-clusters, namely **financial services**, industrial estates, water resources, construction services and construction consulting, manufacturing, media and technology, as well as **transportation** and logistics. The formation of this holding is part of the transformation of BUMN management through consolidation and simplification of the number of BUMNs.[16]

In addition, there is also an opportunity for Transjakarta to collaborate with other SOEs who is in the utilities sector such as PLN, the electricity company. Collaboration allows for the development of interconnected E-bus systems that operate more efficiently than if either entity were to attempt to create a system on their own. PLN can provide expertise in the field of power technical aspects of the system.

The development of an electric bus system involves the installation of charging infrastructure along designated terminal and depot. PLN could also provide technical advice and expertise to Transjakarta regarding to the best practices for the installation charging that are powered by the PLN's power grid.

[15] Sinergi BUMN-BUMD Harapan Baru Ekonomi RI : Okezone Economy
[16] Tentang PT Danareksa (Persero) - PT. Danareksa (Persero)

5. Conclusions & Next Steps

The way to design and finance public transport projects depends largely on the situation and capacity to develop and the relationship with the different actors involved in the projects. In order to make on point decisions, it is important to consider, for example, the design of the business model and to decide whether to separate the investment from the capital of the operation in order to increase competition, distribute risks and have the capacity to disengage from ineffective providers.

Potential investors or providers predominantly used bank loans as a financing product, followed by equity investment. Local investors indicated that they are not used to guarantees, grants or sovereign financing. Loans were cited by IFIs/DFIs, commercial banks and operators, whereas equity investment was cited by IFIs/DFIs, investment funds, vehicle manufacturers and operators.

Only investment funds and commercial banks focus on the financing elements of projects; no operator or vehicle manufacturer has the interest to finance. Conversely, the latter category is preferred to participate in the O&M elements. There was no preference on the use of IFIs/DFIs facilities.

Government could provide and explore financial incentives to encourage private operators to invest in electric buses, such as grants and subsidies, tax breaks or low-interest loans to help operators purchase electric buses. Operators and potential investors can also explore alternative financing options such as leasing which can allow them to spread the cost of the vehicles over time, financing instrument which can allow them in obtaining cost-effective way and add flexibility.

In order to overcome financial challenges for electric bus deployment, governments can partner with other public and private stakeholders to secure the necessary infrastructure and resources to support the transition to the use of electric buses and to develop innovative financing solutions that de-risk electric bus operations and make them more attractive to lenders.

When it comes to the purchase of electric vehicles, loan funding alone, whether through market or concessional loans, has had little to no results. This is caused by a number of the previously described issues, including the investment decisions' preference for CAPEX above operating and maintenance costs, investors' limited technological understanding, and operators' precarious financial situations, among others. In the medium to long term, loan financing will become appropriate for the purchase of electric buses due to market maturity, falling battery prices, increasing expertise, and accessible infrastructure for charging and maintenance.

The project structure is undeniably a complex problem because it involves changing the entire infrastructure of the transportation system, given limited operators with sufficient creditworthiness. Together with charging infrastructure, vehicle supply, and personnel training, there are also associated costs involved in transitioning to electric buses, such as the cost of

purchasing and installing the buses, charging infrastructure, and maintenance. Nevertheless, there are social considerations to take into account, such as the impact on bus riders and the community at large. In order to successfully transition to an electric bus fleet, governments and other stakeholders must consider all of these factors and develop a comprehensive strategy.

Hence, the fund channelling schemes that are developed in this study are then to provide alternatives for the Government of Jakarta and Transjakarta that can be executed for the fund channelling mechanism for the implementation of e-bus.

In order to progress the financing aspects and enable the full deployment of electric buses can include the following aspects to develop a more comprehensive implementation plan:

1. Perform Ranking and Selection for Eligible Routes and Operators (Financial and Commercial Perspectives)
    a. Routes and fleets categorization
        - Routes with unattractive IRR(s), high risks for private (capital) investors might need structured supports (including capital funding) from the Government of DKI Jakarta to Transjakarta under PSO assignment.
    b. Prioritized routes that are:
        - Unlikely be changed, have higher demand, with no/ little risk of the reduction of km production.
        - Electric Charging infrastructure readiness
    c. Suitable operators from each route should be selected
        - Operator's scoring combined with the feasibility result of each route could deliver an attractive IRR(s) that can be the interest of prospective private capitals or investors.
    d. Further analysis on operators that need 'financial kick support' which will be offered for Transjakarta Support Assistance (TSA) program.
2. Collaboration with Fund Management and Multi Finance (BUMN-BUMD Sinergy)
    a. Collaboration between MI (Fund Manager), Transjakarta (and or others) is one of the aspects in the TSA model
    b. Based on selected route project financing (Instruments issuance could be utilized for one or several routes, depending on the financial need size through a book building between MI and Transjakarta).
    c. Size of project within moderate capital market size.
    d. Each project financing should cover end to end investment, with thorough feasibility analysis that mitigates counterparty risk & reduce financial risk, implementation risk, and other risks.
3. Collaboration with BUMNs for Charging Infrastructure (BUMN-BUMD Sinergy)
    a. Often the single most variable expense when retrofitting a depot is the cost of getting electricity from a local high-voltage access point to the "gate" of the depot. ESCOs can provide the necessary infrastructure and resources.

   b. Operators need to gained experience of electrifying depots will be offered under TSA program
4. Lowering Implementation on the E-Bus Project Risks by:
   a. Conducting Feasibility Studies (end to end) projects, representing each type of the buses (1 low-entry buses route, 1 single buses route, 1 medium buses route, 1 microbuses route),
   b. Procurement using private-funding scheme: structured finance (SF) with blended financing **to verify the commercial, operational & financial arrangement** of commercial E-bus routes projects.

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