African Regional Workshop & Training on Clean Buses

Development of Guidelines for Procurement & Financing of Soot Free Buses for Africa

By Nico McLachlan, Managing Director ODA
The frequently asked question

Where do we apply for funding?
The not so frequently asked question

What should we do to qualify for funding?
Bus fleet modernization: Financing issues & options

- In most cases, **diesel and CNG buses** are currently funded through a combination of equity and loans.

- For the **electrification of bus fleets**, conventional financing schemes may prove to be insufficient due to the high upfront costs, mainly due to the cost of the battery, thus requiring innovative instruments, a more effective distribution of risk, and tight cooperation between key stakeholders.

- Beyond pilot projects, **full in-house funding of electric buses** is not viable for most bus operators.
The main challenges

- **High upfront costs** of electric buses;

- **Lack of access to finance** (due to insufficient commercial revenue, unsustainable business models, low recovery ratios, among others), and the predominance of CapEx considerations rather than lower operating costs of electric buses in relation to conventional bus technologies;

- **Scalability problems**, **non-existent support infrastructure** (such as charging and maintenance facilities) and **limited knowledge** about the benefits and operation of electric buses are additional deterrents for fleet.
## Overview of financial mechanisms

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Non – reimbursable funds
Grants and concessional loans

- **Concessional loans** (*below market rates and or long grace periods*) and grants for the purchase of buses and/or infrastructure can be made available by a variety of actors, including governments, national and international development banks and international environmental funds (such as the Green Climate Fund and the Global Environmental Facility).

- In addition to grants targeting the acquisition of vehicles and supporting infrastructure, these financial instruments can also have other purposes, such as subsidies for operational costs.

- As farebox and other sources of revenue are often unable to cover operational and maintenance costs, electric vehicles can reduce fuel and maintenance costs.
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A typical grant application process
A typical grant application process

**Requirements**
1. Project presentation
2. Resource planning
3. Project organisation & project schedule

**Evaluation Criteria**
1. Number of buses & energy supply
2. Reduction of GHG
3. Transferability of results

**Application checklist**
1. OEM delivery promise
2. OEM environmental compliance certificate
3. Financing Plan & credit check
Tax breaks

• Tax breaks can include reduction or exemption from Value Added Tax (VAT) or registration tax, reduction or exemption from import duties for OEMs, and reduction in insurance costs.

• The provision of tax breaks is, however, a political process that must involve both local and national authorities, depending on the fiscal competences of the public stakeholders involved.
Transport authorities can make use of their budgets to support the procurement of soot free and or e-buses.

Investments can both be directed to the (partial or total) acquisition of soot free or electric buses or for support infrastructure (charging and maintenance).

However, public transportation budgets cannot, in many cases, act as the main source of funding.

In many cities, the costs of providing public transport are higher than the revenues generated.

This deficit thus requires the provision of subsidies by public authorities, which further constrain their ability to use the public transport budget for additional investments.
Farebox revenue represents **one of the main sources** of commercial revenue available to operators **to cover both operating costs and investments in rolling stock**.

Currently, operators purchase vehicles with a **mixture of own capital and loan funding**.

As already mentioned, **these sources are not sufficient**, especially for the acquisition of electric buses.

The extent to which commercial revenue (farebox and non-farebox) can be used for procuring soot free & electric buses depends on **the systems financial performance**.

In contexts where operating expenditures are higher than revenues, operators will face greater difficulties in using **this funding source** for any kind of investment.
Another potential source of revenue that can be made available for bus operators in order to incentivize the shift to soot free and or electrification of their fleets is to allow the operators to collect revenue from the advertising space provided in and on the buses.
Bus scrapping schemes

• National or local governments can make use of bus scrappage schemes to incentivize the uptake of Soot Free or electric buses.

• Through scrappage schemes public authorities will not only make the retirement of older buses compulsory (causing the operators to eventually replace these buses with newer ones), but they may provide additional financial support to operators undergoing such processes.

• A standard instrument within such programmes is to provide a fixed amount of money for every bus scrapped (this value can also vary according to the specifications of the buses being scrapped), which in turn can be used by the operators to procure newer vehicles.
Investment Capital / Reimbursable Funds
Market Loans & Green Bonds
Market Loans

- **Loan funding alone**, either through market or concessional loans, is an option for the acquisition of Low Carbon buses but **has had limited to no success in the purchase of electric vehicles.**

- This is **due to predominance of CapEx over operating and maintenance costs in investment decisions**, low knowledge of technology, poor financial conditions of operators.

- **Market maturity, reduced battery prices**, increased knowledge and **available charging and maintenance infrastructure** will eventually make loan-funding more suitable for the purchase of electric buses.
Green bonds

• A green bond can be issued by bus operators or local governments to finance the shift to soot free buses and or the electrification of the public transport fleet.

• Green bonds operate under the same logic as normal bonds, in which issuers raise revenue by selling the bonds to investors at a fixed interest rate and for a defined period of time.

• The difference, besides the latter being earmarked for environmental projects, lies in tax incentives, such as tax exemptions and tax credits for green bonds, which make them attractive.
Leasing schemes
Leasing

• Leasing as an innovative business model relies on a **basic principle**: some, or all, components of the buses are not procured by the public transport operator, but by a **third-party company**, which then leases the purchased components to the operator.

• In the case of e – buses the leased components can be either the **batteries or the whole bus**.

• The **operator then pays a fixed monthly sum** to the lessor based on specific terms, which can pair the monthly payment sums to mileage conditions.

• Vehicle leasing “**removes the capital burden of the outright ownership model**”, allowing fleet operators to **treat vehicle acquisition as an operational expense**.
Financial (leasing) and operational model for e-buses in Shenzhen, China

Source: Adapted from C40 Cities (2016)
Pay-as-you-Save (PAYS) Model - a leasing scheme for acquiring e-buses

- The Pay-as-you-Save (PAYS) Model, developed by Clean Energy Works, a nonprofit organization, represents an innovative mechanism that bestows a central role on the energy service company.

- The PAYS model can be regarded as an elaborate institutional arrangement based primarily on the leasing of batteries and charging infrastructure.
Pay-as-you-Save (PAYS) Financial Model

Source: Abramskiehn and Clark (2018)
How the PAYS concept works

Bus Operator orders electric buses from a manufacturer and only pays for the equivalent of a diesel bus.

Capital Provider finances the bus battery and charging infrastructure through the (Electricity) Utility or local municipality.

The Utility charges the Bus Operator a fixed payment (called the PAYS tariff) on their normal electricity bill. A portion of this tariff goes to the Utility / Muni and portion to the Capital Provider to recover its costs.

The PAYS tariff is set at a level that ensures ops cost savings for the Bus Operator and a satisfactory ROI for the funder within the life-time of the battery and charging equipment.
What should we do to prepare ourselves?

1. Develop a clear understanding of your challenges as well as your unique opportunities;
2. Work hard at securing government (political) commitment to low carbon transport;
3. Prepare an enabling policy and intergovernmental fiscal framework;
4. Develop a transparent and well – balanced public transport regulatory and contracting environment;
5. Embark on a carefully planned and phased (soot free fleet) implementation program.
Thank you

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