Buying and operating buses in Africa

A guide for urban mobility stakeholders

Codatu
Agir pour une mobilité soutenable dans les villes en développement

en partenariat avec

AFD
AGENCE FRANÇAISE DE DÉVELOPPEMENT

SYTRAL

BY THE WAY

The project of a guide to buying and operating buses in Africa was initiated by CODATU in July 2017 in partnership with the French Development Agency and SYTRAL. Based on the observed lack of long-standing effective bus acquisition projects in Africa, this project aims to learn the lessons of past failures and to propose practical solutions to African cities seeking to be part of this type of approach, in order to make it a success.

After an initial study phase from July to September 2017, whose main focus was to identify cases in 25 African cities that had carried out bus acquisition operations, a group of partners expressed their interest in collaborating as part of a work group.

Gathered together as part of a Task Force led by CODATU, the partners then agreed to join forces to put together some guidelines for setting up bus acquisition projects in Africa, aimed at transport and mobility decision-makers in Africa. The aim of this document is to provide operational solutions to local authorities undertaking this type of project in Africa, while putting them back at the centre of the global challenges in terms of mobility.

The guide provides all the elements and recommendations that these African decision-makers may need, in a well-argued, neutral way, based on documented cases. It offers additional information in the appendix*, e.g. examples of bus specifications or the CODATU-GART charter for donating refurbished rolling stock.

The guide was drafted in partnership with: AFD, *Agence d'Urbanisme de Lyon* (Lyon urban planning agency), ARTELIA, CEREMA, CATP, Grand Lyon, IVECO, KEOLIS, RATP, SCANIA, So*ciété des Transports de Lomé* (Lomé transport company), SYTRAL, TRANSITEC, Île-de-France Region, SUEZ and Raymond H. Maubois.

*Appendix available at guidebus.codatu.org

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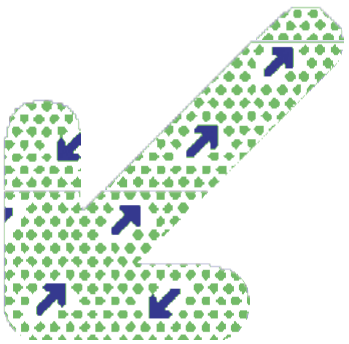


THE 10 QUESTIONS TO WHICH THE ANSWER MUST BE "YES" FOR AN URBAN BUS ACQUISITION PROJECT TO BE SUCCESSFUL

1. Do I have a clear plan of the **STAKEHOLDERS** (both institutional and non-institutional) concerned by my project and their respective skills and roles?
2. Have I identified the current SUPPLY gaps and future NEEDS in terms of network development, route creation, etc.) I need to establish my multi-year estimates of vehicle needs?
3. Have I drawn up a draft technical SPECIFICATION DOCUMENT; has it been validated by institutional and professional stakeholders?
4. Have I identified needs for adjustments and additions to the LEGISLATIVE AND REGULATORY TEXTS (vehicle approval, operating specifications, type of fuel, etc.) ?
5. Have I planned or do I already have the necessary DEPOT and MAINTENANCE infrastructures, as well as sufficiently developed organisation and maintenance methods?
6. Have I identified any needs for IMPROVING THE QUALIFICATIONS of the staff?
7. Have I included the development of *SYSTÈMES D'INFORMATION VOYAGEURS* (traveller information systems), new pricing (ticketing) and/or *Système d'Aide à l'Exploitation* (operations assistance system) in my project?
8. Was a pre-market consultation conducted on the manufacturers in order to assess THE STATE OF THE MARKET and adjust my technical specifications in particular?
9. Have I established a FINANCIAL PLAN that clearly defines an acquisition schedule (based on simulations, a resource mobilisation schedule and the respective contributions of the various stakeholders) and takes into account the operating and maintenance costs?
10. Do I now have all the elements to LAUNCH AN INVITATION TO TENDER?

If one of these criteria is not met, follow the "Buying and operating buses in Africa" guidelines

GOVERNANCE AND CONTEXT OF THE AGGLOMERATION'S "BUS" SYSTEM

Whether it is for the total or partial renewal of the bus fleet assigned to the existing routes, the needs related to the opening of new services or improvements to the offer on all or part of the network, the vehicle acquisition project will involve and gather together institutional stakeholders, transport operators (public, private and informal depending on the case) as well as technical stakeholders (maintenance of vehicles) and financial stakeholders (financial backers, banks, companies insurance, etc.). Such a project cannot be undertaken without an in-depth assessment of the following points:

The stakeholders, their respective prerogatives and roles, their interactions,

The transport offer and its outlook;

The existing fleet: inventory;

The features of the local context (physical environment) that can influence the choice of vehicles.

MAPPING OF URBAN MOBILITY STAKEHOLDERS

Drawing up a **map of all the stakeholders** involved and/or affected by the bus acquisition project. Identifying the stakeholders to be involved as a matter of priority. Identifying the place occupied by the paratransit sector within the urban transport system. Highlighting the shortcomings of the transport system, as well as the major issues (including the interaction between the stakeholders) in its development and modernisation.

Related Questions

- **Urban Mobility** : what are the stakeholders? What distribution of powers? What is the coordination between the various stakeholders ? What is the contracting authority for urban developments that could affect mobility ?
- **Organising authority**: who has the status of *Autorité Organisatrice des Transports Urbains* (organising authority for urban transport)? What are its main functions? How would the AOTU be involved in the bus acquisition project?
- **Financial backers**: do the traffic revenues (passengers) cover the operating costs? If not, are there any public contributions (state, communities, etc.) ?
- Who finances, in whole or in part, the vehicles (operators, public authorities, banks, international financial backers, etc.) ? Would the terms apply to new, more expensive vehicles?
- **Paratransit**: what is the proportion of independent informal transport, how is it organised and are there any consolidation and professionalisation initiatives?
- **Staff/social**: who defines the rules for access to urban transport professions (operators, drivers)? Should the bus acquisition project change/make them more stringent? What protection is envisaged for the different stakeholders?
- **Maintenance**: who performs the maintenance on a daily basis, and the cyclical servicing? What organisation could be put in place to improve vehicle availability and safety, and increase longevity?

Resources*

The next step: Clarification of the roles and interplay between the stakeholders
Operating experience: Decline of Dar es Salaam's traditional bus company, Usafiri Dar es Salaam (UDA), between 1984 and 2017

 *Resources available atguidebus.codatu.org

THE TRANSPORT OFFER AND ITS OUTLOOK

Having an **inventory of the transport offer for the urban and suburban services** that differentiates between the institutional offer and the informal offer. The urban transport offer should be compared to the mobility needs of the local population in terms of both quality and quantity. The delay in extending the offer to sectors experiencing population growth and/or increased activity can lead to the development of an informal offer that is often characterised by a low quality of service. In addition to the increase in supply made possible by higher-capacity vehicles, the acquisition of new buses is a factor in improving the operating productivity, profitability and quality of service.

Related Questions

- Does the current offer generally meet the **mobility needs of the local population**? If not, what are the causes of supply shortages (not enough hours of service and intervals that are too long, saturated offer, etc.) ?
- What is **the role of paratransit** (modal share, performance and geographic coverage)?
- Which routes should be **improved** first?
- Which developing areas urgently require a **structured offer** by extending or creating routes?
- Is the **network organised** according to structured routes and internal service routes within the districts?
- Is there already an assessment of the routes that could **get new vehicles**?
- Is there an appreciation of the modernisation that could be associated with **the acquisition of a significant tranche of new vehicles** (including methods for running routes)?
- What strategy should be adopted regarding the **informal offer** (synergies, professionalisation, transition plan)?

EXISTING BUS FLEET: INVENTORY AND OUTLOOK

Having an accurate diagnostic assessment of the vehicle fleet:

- number by type, age, availability for operations, bus downtime rate for maintenance, condition of bodywork and interior fittings, main causes of unavailability

Having an inventory:

- strengths to be consolidated/developed, the most problematic weaknesses for the running of the network, implying corrective measures should to be taken urgently.

Related Questions

- Are the strengths of the fleet strong enough to **improve the offer** on the current routes? If not, what actions are in progress or ready to start in addition to the acquisition of vehicles?
- Is there a **multi-year estimate of vehicle needs** for the current linear renewal of the network (including increases to the offer) on the one hand, and for route extensions and/or creations on the other hand?
- Are the weaknesses, that are damaging the productivity of the existing fleet of vehicles, also likely to pose problems for that of new vehicles? ; Is there a **corrective action programme** to be initiated at the same time (particularly with regard to maintenance)?

Resources*

The next step:: Between the institutional offer and the informal offer: the issues surrounding renewal **Operating experience**: The professionalisation of the informal independent sector in order to support the renewal of the fleet of "cars rapides" and "ndiaga ndiaye" in Dakar

CHARACTERISTICS OF THE LOCAL CONTEXT (PHYSICAL ENVIRONMENT)

The choice of rolling stock will depend on the characteristics of the local context. There are **specific features related to traffic conditions,** i.e. operating conditions, past projects that yielded unsatisfactory results or even had to be abandoned, the fear of change among operators as well as travellers (regarding profitability for the former, and not always finding a seat on the bus for the latter), etc.

Related Questions

- Have I already **identified elements about the local context** that could narrow down the range of possible vehicles:
  - from the point of view of the local climate (Sahelian, tropical, equatorial, etc.) and the resulting meteorological phenomena (extreme heat, dust, humidity, monsoon or flooding episodes, etc.),
  - from the point of the geographical context : plain, hills with or without steep gradients, etc.,
  - from the point of view of the urban environment: width of traffic lanes, sharp bends, road surface types and quality, etc.;
  - from the point of view of energy resources: what fuels are available (petrol, gas, etc.) and with what supply channels?
- Given this context, should certain **technical options** (suspension, drive train, etc.) be excluded?
- Conversely, should certain **security**-related options in particular be included?
- Has a preliminary **inventory of road improvements** been undertaken on the routes where the new vehicles will be assigned and, if not, how can this be done?

Resources*

The next step: Identifying features of the local context in order to adapt the choices made in terms of vehicles

*Resources available atguidebus.codatu.org

ACQUIRING NEW VEHICLES: OBJECTIVES? TECHNICAL CHARACTERISTICS? SUPPORT MEASURES

The outlook regarding the acquisition of new vehicles must target the development of urban transport with a structured offer, i.e. volumes that are aligned with demand and a higher standard of quality. This means that the following points must be clearly identified beforehand:

- **The development prospects of the agglomeration in the short, medium and long term, and their impact on the future demand for travel (potentially included in an urban mobility plan);**
- **Projects for the creation and/or extension of urban routes;**
- **The type of route (or even system) that is aligned with these changes and a comprehensive definition of the technical characteristics of the vehicles;**
- **Accompanying measures that guarantee the operational consistency and effectiveness of the investment.**

DEVELOPMENT PROSPECTS OF THE TRANSPORT SYSTEM

The new vehicle acquisition project can only meet a **need to renew the fleet of existing routes**. The offer could then be slightly improved, but the major gain will be improvement in the comfort, availability and safety of the new vehicles. That said, the life of a transport system is more complex, with new needs emerging in an unchanging network and, above all, new services to be created to support the changes in the demand for transport and urban development. This is why a vehicle acquisition project, while meeting immediate needs, must fit into **a medium/long term perspective.** In other words, it must meet the future needs that are emerging from the "mobility of the future" studies, the travel planning at the level of the agglomeration and the scheduling of extension projects, creation of routes and integration of the network formed by them.

Related Questions

Including the acquisition project within the outlook for urban development and new mobility needs

- Is there a **master plan for development and urban planning** as well as a programme of "mobility" projects to tackle the strategic development objectives?
- Do we have **recent survey data on current mobility** that can be used to make predictions of transport demand? Is there a sustainable urban mobility plan?
- Are these strategic documents operational? Do they effectively guide the decisions of the public authorities?
- If the project includes the deployment of a new institutional offer (in terms of coverage or density), has the question of **the potential competition with paratransit** been addressed? If applicable, are there plans in place for a transition programme and is the informal sector going to be taken into consideration?
- If the **vehicle acquisition project** responds to an increase in supply on current services or to route extensions/creations:
  - Are the estimates of the travel needs to be met adequate for defining the project's objectives?
  - Am I able to define the appropriate type(s) of vehicle(s) (capacities, vehicle routing constraints, etc.) as well as the overall fleet required for these new services?
- Is there a schedule for route extension and creation projects for the **phasing of the vehicle purchase project (number, calibration and objective calendar of the tranches)?**

Resources*

Tool: The MobiliseYourCity initiative to help cities in the south establish sustainable urban mobility plans
Operating experience: Overloaded buses, a cause of passenger discomfort (Lomé and Antananarivo)

*Resources available atguidebus.codatu.org

TECHNICAL SPECIFICATIONS

It is the responsibility of the **contracting authority for the bus acquisition project** to draft the technical specifications in accordance with the needs it will have identified (state of the fleet and the network, agglomeration and mobility development prospects, configuration and state of the roads, strategies of the public authorities with regard to the improvement of urban mobility and the modernisation of the transport offer, climatic context, etc.). Beforehand, it will also have taken note of **the bus manufacturers' offer**, for an initial assessment of the vehicles whose structural and technical characteristics could fulfil its needs (the price level will also form part of this initial assessment). The technical specifications will form the basis of the invitation to tender and the contractual commitment of the selected manufacturer.

Related Questions

- Have the draft technical specifications been drawn up? Has it been checked to make sure that it includes all the sections the manufacturers will need to **configure the vehicle**, including:
  - Structure: dimensions, weight, floor (structure and height above ground and interface with existing or future bus stops);
  - Chassis and bodywork: material, type of construction, number and location of doors, openings (windows, etc.),
  - Engine specification (power, maximum speed, type of fuel and adoptable EURO standard, matter of electric motor, tank capacity), drive train, cooling components, lubrication system, type of gearbox, etc.,
  - Suspension, and braking and retarder systems;
  - Tyres (type, supply, etc.), and hydraulic and pneumatic circuits;
  - Electrical systems: battery, alternator, exterior and interior lighting;
  - Facilities and ergonomics of the driving position;
  - Facilities in the "passenger" area: seats, standing areas, coverings, etc.;
  - Thermal elements: ventilation, vents, air conditioning, demisting, etc.;
  - Readiness (or on-board equipment) for ticketing systems, passenger information, operating and driving assistance, etc.;
  - Other elements dealing with safety, environmental protection, etc.
- Has this project been submitted to the **main institutional stakeholders and the urban transport profession** concerned? Is it validated?

Resources*

The next step: Putting together specifications that are in keeping with the needs and sourcing
Tool: Define the technical characteristics of the rolling stock
Example: The technical specifications for transport vehicles, (Antananarivo, Madagascar, 2011)
Example: SOTRAL bus specifications (Lomé, Togo, 2015)
The next step: Additional essential elements – an integral part of the specifications.

ADAPTATION OF THE LEGISLATIVE AND REGULATORY TEXTS

The development and operation of urban transport are governed by **legislative and regulatory texts** under the jurisdiction of the state (laws, decrees) and/or local authorities (decrees, etc.) to which can be added the charters and agreements of the professional, public or private sectors. Any project, that significantly modifies the organisation of the network, the methods used to run the routes, the relationships between stakeholders (institutional and professional), the volume and quality of the offer and, of course, safety, will necessarily require additions and updates to be made to the legislative and regulatory arsenal. In the past, the texts most often came under the responsibility of a single entity (the Ministry of Transport in particular). Today, the greater number of institutional and professional stakeholders must convey **the new issues of urban mobility in the texts.** In order to complete this step, the question of the role of paratransit must be posed as well as the place it will be given in the new framework. Where applicable, it may be useful or necessary to establish a transition plan for the sector.

Related Questions

- Do **the legislative and regulatory texts** (under the sole jurisdiction of the state and/or governing the relationship between the public authorities and the transport sector) need to be revised for the acquisition project of new generation vehicles to function properly, including:
  - vehicle approval,
  - granting of the operating licence, and the potential implementation of a transition plan for the informal sector;
  - defining the operating specifications;
  - the capacity of operators to finance vehicles, the participation of financial backers, financial incentives from public authorities (tax measures, scrappage scheme, etc.);
  - the qualification levels required for access to the profession and to jobs in urban passenger transport;
  - the obligation for the operator to service the vehicles so that they remain available every day and guarantee the safety of travellers and other road users;
  - Making changes to the periodic vehicle safety inspections (expanding inspection points, improving the skills of inspectors and the technical equipment of the centres)

Resources*

The next step: Incorporating the purchase transaction within the legislative and regulatory context
Tool: The different bus system options
Example: Operating costs (Antananarivo, Madagascar, 2012)

MAINTENANCE ORGANISATION

The **quality of maintenance** directly impacts the number of vehicles available for operations, the service provided to passengers and the profitability for the operator. It also determines their lifespan. This applies to current vehicles, but particularly to new generation vehicles, equipped with modern technologies, for which the maintenance practices in place would be unsuitable. The acquisition of new buses must therefore be accompanied by a **maintenance organisation** with new methods, new equipment and enhanced skills. A maintenance plan (with options, potentially) will have been established. In addition, there is the question of the depot and maintenance centre facilities (upgrade or creation) that will be needed for these operations.

Related Questions

- Are the **maintenance terms during the "manufacturer" warranty period** clearly specified in the vehicle acquisition contract?
- Will the manufacturer contribute to **implementing maintenance structures** and coordinating maintenance operations during the warranty period?
- Will the manufacturer's participation in this outsourced maintenance continue beyond the **warranty period**? If so, according to which specifications and which contractual provisions?
- If the decision is to go for **integrated maintenance** performed by the operator (or operators):
  - what principles and objectives have been adopted (pooling of the "maintenance" function: workshops and their equipment, central procurement office, etc.)? ? What legal status? What specifications? What are the financing methods? What are the relations with the manufacturer during the warranty period?
  - are the depot and maintenance centre facilities in need of modernisation and, if so, what are the terms and the financing?

Resources*

The next step: Maintenance

IMPROVING JOBS AND QUALIFICATIONS – NEW JOBS

By operating the routes with **new generation vehicles,** more efficient operating methods can be used that are more suited to the demand (intervals, service hours, etc.), to options for modernising the pricing system, to improving staff working conditions, etc. However, these developments could not be fully effective without improving the qualifications and skills. **Training initiatives** should enhance the qualifications of drivers (e.g. with the issuing of a specific licence for professional drivers of urban passenger transport vehicles), conductors (given that their job is changing to accommodate a new pricing system), maintenance personnel (cf. the amendments made to the legislative and regulatory texts), and all the other stakeholders involved in operating and developing the transport system. The recruitment policy issue (if required) is also dealt with upstream. This raises the question of the **treatment of workers in the paratransit sector**, particularly if a transition plan is being contemplated for the sector that takes paratransit into consideration.

Related Questions

- Have **training/proficiency programmes** been established for each category of staff?
- For certain professions, including those with a strong security component (drivers), is an official document to be issued at the end of the course that gives access to these professions?
- Is there **an inventory** of jobs with opportunities for advancement (e.g. conductors) and jobs to be created?
- The **public authorities** (e.g. ministry responsible for vocational training) are they involved in these developments and the related training needs?
- Regarding the professions with a large workforce that are to be mobilised as a priority, have the practical measures for implementing these training programmes been defined?
- What **recruitment policy** should be adopted (if applicable) and what role is to be given to the workers of the paratransit sector (if the project is accompanied by a transition and professionalisation plan for the paratransit sector)

Resources*:

The next step: Training
Example: Training and increasing the capacities of the carriers of Antananarivo, Madagascar, 2011

*Resources available atguidebus.codatu.org

SUPPLIER SELECTION & VEHICLE PROCUREMENT PROCEDURES - FINANCIAL ARRANGEMENT

The acquisition of new vehicles must fall within the national and international legislative and regulatory framework regarding the conditions for awarding contracts, including the invitation to tender obligation.

A competitive bidding process involving invitations to tender (based on specifications tailored to the specific requirements of the project) leads to technically reliable bids at market prices.

The institutional and technical assessments, technical specifications and accompanying measures have identified the needs, defined the objectives and specified the major components of the project (cf. "Governance and context" and "Acquiring new vehicles").

Based on this, the next step will be to:

- **start the search/selection process for manufacturers able to provide vehicles that meet the requirements of the technical specifications with acceptable price levels, lead times, warranty periods and maintenance support periods; add to the technical specifications, given the proposals made by the manufacturers, if necessary**
- **Setting up the invitation to tender procedure**
- **Building and validating the financial arrangement as well as mobilising the resources.**

SOURCING [1] AND ADJUSTMENTS TO THE TECHNICAL SPECIFICATIONS

This stage of the vehicle acquisition process must involve **comparing the needs identified with the options selected**, by matching up the technical specifications with the technical and economic bid of the equipment suppliers, as well as the supporting measures (maintenance, etc.) that they are able to offer. For the buyer, this **overview** should give rise to a "shortlist" of suppliers that can fulfil the request and the possibility of completing it in view of the technical characteristics and options of equipment on offer. The supplier's ability to respond also comes into play. If a vehicle seems perfect for the local context but, for technical, strategic or other reasons, the manufacturer cannot respond to the invitation to tender, it might as well not be included in the reflection.

Related Questions

- Was this step completed and if so by whom? Were any specialists from a central procurement office called upon to provide services?
- Have **manufacturers** with an offer that could fulfil my request already been identified?
- Have **opportunities for improving my technical specifications been identified**? If so, for which facilities?
- Does the sourcing push towards opting for **"high-tech" equipment** (ticketing, passenger information, etc.) ? Are all the elements needed to assess their operation and maintenance available?
- Have the services of **consultant technicians ("AMO") been called upon to complete and finalise the technical specifications?**
- Beyond the technical components, have decisions been made regarding the elements that will be included in **the negotiation and the contractual relationship**: prices, guarantees, after-sales service, etc. ?
- Are the specifications adopted both specific and broad enough to encourage **competition between manufacturers**, with a view to submitting technically compliant offers at the market price?
- Overall, has the **the specification document been validated?**

[1]Overview of the manufacturers present on the market and the equipment offered with regard to the needs and specifications of the technical specifications.

Resources*:

The next step: Definition of the need and sourcing

INVITATION TO TENDER PROCEDURE

In addition to the technical aspects, it is necessary **to define the regulatory field** governing the procurement process and set out the rules for superior transparency. What is the reference regulation; is the invitation to tender specific to the country where it is launched or is it part of an international procedure? What are the rules of the invitation to tender: who can bid, what is the planning for the invitation to tender, what rules govern the bid analysis, how are the prices presented? What arrangement is there for the financing? (cf. "Financial arrangement - Mobilisation of financing")

Related Questions

- Is the **regulatory field** clearly defined?
- Are the rules of the game rigorously defined? Do they ensure **transparency** such that the bidders have a fair chance?
- Are the **key features of the financial arrangement** defined and can they be communicated?
- In practice, do I plan to **use a national procurement office**?
- In the absence of a **central procurement office at state level**, is it possible to create one to support this vehicle acquisition project?

Resources*

The next step: Defining a procedure with the standard regulatory field (what is the procurement policy?)
The next step: The use of a central procurement office (when it exists)
Example: The *Centrale d'Achat du Transport Public* (public transport procurement centre) in France

FINANCIAL ARRANGEMENT - MOBILISATION OF FINANCING

The financial arrangement defines **the volume of investment required for the purchases and the capacity to raise the funds from financial partners**. This arrangement must be supported by simulations relating to the fleet management strategy and the impact of new vehicles on the operating account (small balance of resources/operating expenses and big balance of the operating account including the amounts charged to capital). The financial arrangement identifies **the stakeholders that can contribute in whole or in part to the financing of the investment**: public stakeholders, private stakeholders, financial backers. In most cases, the funds are raised through a combination of private or public equity, public subsidies and loans, that are associated with rigorous debt management. As for public-private partnerships, they can be used to contribute funds in the same way as a loan; but the operating concession granted to the private partner makes it responsible for the smooth running of the project.

The driving cost/km:

On the financial level, the bids of the manufacturers that refer to the technical specifications will be accompanied by a financial proposal for the investment (unit selling price and according to the volume/tranche and the number of tranches). The manufacturer must also communicate physical (and/or financial) elements for the calculation of the driving cost/kilometre and any variability of this value according to local traffic conditions (configuration and state of the road network, congestion, etc.). This is so that estimates of the driving costs, that will impact the operator's operating account (and its profitability), can be made for the purposes of comparison.

Related Questions

- Is the **renewal strategy** properly defined and validated (linear, rapid or total renewal)?
- Have the **simulations of the impact** (short, medium and long term) of the new vehicles on the "small balance" of the operating account been carried out?
- Have the **simulations on the "big balance"** to the "small balance" simulations (taking into account the amounts charged to capital) been carried out?
- Has the **total life cycle cost** of the new vehicle in the financial arrangement been included?
- Does the **financial arrangement** clearly define the procurement schedule, the calendar for the raising of funds and the respective contributions of the various stakeholders?

The driving cost/km:

- Do the operator(s) know the **driving cost/km** of the vehicles they currently operate?
- If so, on what basis is it calculated?
  - on fuel consumption/km (type of fuel, average price/L/year, etc.)
  - on routine maintenance charges: oil change, tyres, brakes, etc., and other components depending on the service life of the wear parts;
  - on the replacement/repair of doors, seats, etc.
- Have the tenderer manufacturers communicated the elements that are needed to calculate this **driving cost/km** for the vehicles they are proposing?

Resources*

The next step: Elements to take into account when putting together the financial arrangement
Operating experience : Urban transport fleet renewal programme in Dakar, Senegal
Tool: Online TCO (Total Cost of Ownership) calculator
Tool: Online TCO (Total Cost of Ownership) calculator
The next step: How to get funding?
Tool: The GART – CODATU bus donation charter
Operating experience: Donations of rolling stock to be supervised more effectively (cf. the experiences of Lomé and Antananarivo)
Operating experience: Active debt management: the example of SYTRAL in Lyon

OPTIMISING THE OPERATING ENVIRONMENT

The environment of the operation covers a set of measures, systems, equipment and installations for the use of passengers, and possibly other road users (including pedestrians) and the network operator. These include *Systèmes d'Information des Voyageurs* (passenger information systems), terminus layouts and stops, safety equipment, ticketing, as well as support systems for the design of the transport offer and operational assistance. Their optimisation is part of the transport offer development and improvement policy.

The renewal of all or part of the bus fleet with modern vehicles and the creation of routes facilitate these initiatives to modernise the operating environment. In addition, the opportunities associated with digital technology create new prospects for optimising operations and improving the service offered to users.

THE OPERATING ENVIRONMENT PERCEIVED BY TRAVELLERS

Thanks to digital technology, **mobile phone ownership** and the use of apps in various daily activities, operators can improve the quality of service of their transport networks, particularly through ticketing (pricing) and the passenger information system. The same applies to on-road equipment (stops, connections, terminus, etc.) which must be visible and accessible.

Related Questions

- Do the technical specifications for the future bus mention the pre-equipment of the vehicle compatible with the current **Système actuel d'Information des Voyageurs (traveller information system)** or with a planned system?
- In both cases, have the checks been made to ensure that these systems are compatible with the **Système d'Aide à l'Exploitation (operational assistance system)** in place or a planned SAE?
- Has a **fare modernisation project** been undertaken with a ticketing system that is the same for all network routes, and the introduction of electronic tickets and mobile payment in particular?
- In the aforementioned cases, has an in-depth **analysis been undertaken of the need and the cost-effectiveness** of these projects?
- Has a **programme been drawn up to modernise the facilities and installations on roads with the following objectives: visibility of and accessibility to stops, integration of the aforementioned "system" facilities?**
- Are plans in place for an efficient **user interface** that is accessible online and through a mobile app?

Resources*

The next step: Passenger information (network map, smartphone apps, timetables, brand identity guidelines and network name)

THE OPERATING ENVIRONMENT AT THE SERVICE OF THE OPERATOR

It mainly involves **improving the operating performance of the routes that must cope with road congestion**. It also focuses on the ability to design and modify the transport offer in complex urban environments, and growing and diverse needs for mobility. Finally, it includes tools for protecting the safety of people and goods.

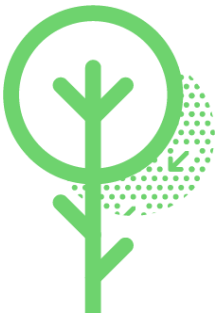
Related Questions

- Have efforts been made to **optimise the offer**?
- Are plans in place for a **network security system** (on-board video protection, at the terminus, etc.) ?
- Have the **operating and maintenance policies been defined**?
- Have the **more recent innovations** made available by digital technology been considered?
- Is a project in place for implementing a **Système d'Aide à l'Exploitation (operational assistance system)** or adapting/improving an existing SAE?

Resources*

The next step: Operating equipment (street furniture, accessibility of bus stops, ticketing system, *Système d'Aide à l'Exploitation et d'Information Voyageurs* (operating assistance and traveller information system)).
The next step: The determining factors in terms of productivity (dead mileage, driving time, etc.);
The next step: Network security (video surveillance, etc.)
The next step: Operations and maintenance policy
The next step: Opportunities related to digital technology

*Resources available atguidebus.codatu.org



*Resources available atguidebus.codatu.org

MEASURING AND MONITORING THE RESULTS OF A BUS ACQUISITION PROJECT

In order to measure the results of the renewal of all or part of the fleet of a bus network, an information system based on an array of indicators feeding into a dashboard must be implemented. The extent of the renewal determines the scope of the measure: one route, a group of route, the network (in the event of a full renewal). In addition to monitoring the project in the strictest sense of the term, particularly with regard to operations, it may be worth – as part of a more ambitious goal – looking for the overall effects on mobility in the case of a major renewal. But in any case, this raises the question of the capacity of the organising authority and the operator (all the more so, when multiple operators are involved) to collect the data, process them, analyse them and draw conclusions from them to be used for subsequent projects.

*Resources available atguidebus.codatu.org

FOLLOW-UP OF THE PROJECT

Monitoring operations is essential for the purpose of improving the transport offer and ensuring that it is used properly with regard to the means put in place (efficiency, alignment between the offer and occupancy levels, profitability, etc.).

Related Questions

- Has a **dashboard for monitoring operations** been designed? At what level: the organising authority? The operator? Who manages and uses the results and trends?
- Are there **indicators that are specific** to the vehicles and their developments: fuel consumption, changes in components and equipment, breakdown rate, etc. ? Are they updated and analysed regularly? Do they lead to corrective actions?
- Are there **indicators in place that monitor demand and profitability** (route, groups of routes, network)?

Resources*:

The next step: Interest in continuously monitoring operations, over the short and long term
The next step: Indicators to monitor how buses are being renewed and the overall transport offer
The next step: Indicators for tracking the use of the bus network and its profitability

*Resources available atguidebus.codatu.org

"MACRO" EFFECTS OF THE PROJECT ON THE URBAN AGGLOMERATION

The "macro" effects correspond to the observable consequences of the renewal of buses on a larger scale (city, agglomeration, etc.) in terms of mobility practices and user behaviour. Proper management of a bus fleet also involves evaluating current modes of travel and anticipating future practices.

Related Questions

- Is there a system for monitoring the effects of bus renewal on mobility in the agglomeration? Has a "car - public transport" switch been observed? What is the change in the modal share?

Resources*

The next step: Monitoring the direct effects on mobility in the agglomeration
Operating experience: The Observatoire des Déplacements Urbains *de la* commune de *Ouagadougou* (urban travel observatory of the municipality of Ouagadougou), or ODUO, Burkina Faso

APPENDICES

THE NEXT STEP
OPERATING EXPERIENCE
EXAMPLE
TOOL

The appendices can be found at
guidebus.codatu.org

GLOSSARY

Budget annuality

Fixing the budget year to a duration of one year.

Assistance à la Maîtrise d'Ouvrage (consultant technicians)

Contract according to which the contracting authority uses the services of a public or private entity to be assisted in the management and running of a project. If the consultant technician makes recommendations and puts forward proposals, it is the contracting authority who takes the final decision regarding the project.

Organising authority

An *Autorité Organisatrice de Transport* (transport organising authority) is in charge of organising transport services within a given perimeter. An *Autorité Organisatrice de la Mobilité* (mobility organising authority – formerly *Autorité Organisatrice des Transports Urbain*) is a body recognised as the competent authority for organising mobility services within a given perimeter.
Source: Cerema

Bus Rapid Transit (BRT)

Public transport system on its own site (with a bus lane, enclosed stations, specific ticketing, priority at crossroads, etc.). The BRT features a high transit capacity and an improved quality of service, comfort and performance – comparable to those offered by the rail transport systems (tram, metro, heavy metro). The BRT's format varies according to the supply of transportation services, its capacity, the infrastructure in place (more or less heavy), and the mode of operation adopted. In France, the concept of high-level service buses (BHNS) is inspired by the BRT system.

Central procurement office

Organisation that pools purchases in order to seek better overall efficiency.

Congestion
Bottleneck, congestion making the flow of motor vehicles difficult.

O&M contract
Operations and maintenance contract. It defines such things as the skills of the staff, the scheduled servicing, its price, the obligations of the parties, the term of the contract, etc.

Haut-le-pied
Non-commercial movement of a vehicle on a network.

Overall
Overall or column length is the distance between the extreme front and rear points of a vehicle's structure.

Leasing
Rental of capital goods, with option to buy.

Contracting authority
Legal entity for whom the project is carried out and who bears responsibility for it from start to finish.

Multimodality
Multimodality corresponds to the existence of different transport offers between two locations.

EURO standard
To reduce air pollution, the European Union has implemented European emissions standards (known as EURO standards). They are aimed at limiting the polluting emissions of vehicles.

Public-private partnership
A public-private partnership (PPP) is a long-term contract that transfers significant project-related risks and responsibilities to a private entity. Even if it spreads the investment over time, the total cost represented by a PPP is higher than a conventional investment. Its implementation requires particularly close attention from a legal point of view.

Plan d'Amélioration de la Mobilité Urbaine (urban mobility improvement plan)

Plan set up in Antanarivo in 2008 to tackle the mobility issues of the Malagasy capital that is structured upon the following two aims: the first is on managing the dialogue between the various stakeholders of the sector of the urban transport in the agglomeration of Antananarivo, in order to improve the system of transport as a whole; the second is on work concerning the pilot routes (rehabilitation of roads and footpaths, installation of street furniture, work on public space around the terminus, renewal of rolling stock, etc.).

Urban mobility plan

The Sustainable Urban Mobility Plan (SUMP) is a strategic planning tool that aims to define a common outlook for the development of a sustainable multimodal mobility system.
Source: CODATU, 2016

Rabattement

Option to use another transport offer or connection between several modes of transport allowing users to change mode.

Renewal

The renewal of a bus fleet can be linear (this is an annual rotation of a defined number of buses – sale and purchase – in order to maintain a balanced age pyramid of the fleet), rapid (which involves buying a bus for 5 or 10 years then reselling it before major maintenance becomes necessary) or even total (which is the complete renewal of the fleet).

Development and urban planning master plan

In France, an urban planning document that sets out the development framework and guidelines for a region.

Sourcing

Refers to the act of reducing the general cost of purchases by searching, locating and evaluating suppliers in order to meet an identified need (in terms of goods or services)

Système d'Information Géographique (geographic information system)

System that collects, analyses and sets out every type of spatial and geographical data.

Système d'Aide à l'Exploitation (operations assistance system)

The *Système d'Aide à l'Exploitation* (operations assistance system) gives the operator control of the activity of its transport network and a real-time overview of the vehicle fleet.

Système d'Information Voyageurs (traveller information system)

A *Système d'Information Voyageurs* (traveller information system) provides information to prepare passengers and optimise their movements, know the state of the traffic in real time and be warned in the event of an incident in order to provide alternative solutions

Total Cost of Ownership (TCO)

The cost of use or TCO (Total Cost of Ownership) includes the total cost of the complete lifetime of a vehicle.

Paratransit The term (whether we speak of transport, sectors, modes, offers or services) refers to a collective transport offer, long qualified as informal, even illegal - which is run on the margins (or alongside) the institutional transport systems, and sometimes replaces it. It emerges from private initiatives offering a relatively "organic" offer that is tailored to the context of African cities. *Source: "Informal collective transport: a key component in a dual system" – CODATU Guide, 2015*

Institutional transport

The term institutional (whether we speak of transport, sectors, modes, offers or services) refers to a public transport offer that is often described as formal. These are formally structured public or private companies that offer services in compliance with the standards and regulations defined by the authorities responsible for urban transport. *Source: "Informal collective transport: a key component in a dual system" – CODATU Guide, 2015*

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