

# Dealing with risks in bus fleet modernisation projects

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## Introduction

In developing countries, buses and other road-based public transport (e.g., jeepneys, matatus) are often in need of modernisation in terms of vehicle fleet, routes and stops, and business models. Many national and local governments are addressing this need through large-scale programmes that involve requiring safer and more environmentally friendly vehicles, rationalised routes and stops, and operations contracts that have clearer service requirements.

These programmes have laudable expected outcomes, such as greenhouse gas mitigation potentials of 2.6 MtCO<sub>2e</sub> for the Bus Rapid Transit (BRT) project in Karachi, Pakistan (over 30 years) or of 9.2 MtCO<sub>2e</sub> for the Public Utility Vehicle Modernisation Programme in the Philippines (over ten years), in addition to co-benefits such as improved air quality and accessibility.

For these expected outcomes to be realised, however, the programmes have to coordinate multiple components, including: the technical viability of electric vehicles and their supporting infrastructure; the financial profitability of requiring new business models; the social impacts on stakeholders including operators, drivers, and passengers; and the political will needed to introduce drastic changes to existing systems.

In support of the Bus Fleet Renewal and Modernisation Toolkit, this assessment reviewed programmes from Colombia, Costa Rica, Pakistan, and the Philippines, with the aim of developing a reference document on risks and potential mitigation actions for other programmes to consider in their planning and implementation of fleet renewal or modernisation.

Specific risks were classified into eight categories: political, technological, financial, social, operational, ridership, governance and regulatory, and environmental. The potential mitigation actions listed alongside these risks show that, despite improvements in technology, the crucial concerns for fleet renewal and modernisation remain to be the engagement of key stakeholders: decision-makers from government, existing operators and drivers, users of public transport, vehicles suppliers, and other sectors related to bus operations.

The details in this document, particularly the risk levels, are only guides that need to be reviewed and adapted for local contexts.

RISK	DESCRIPTION / POTENTIAL SPECIFIC RISKS	RISK LEVEL <sup>1</sup>	GENERAL MITIGATION ACTIONS
<b>Political</b>	1. Elections and other changes in government offices may affect programme support, approvals, and timelines	Medium / High	<ul style="list-style-type: none"> <li>Identify relevant stakeholders—from the public sector, private sector, academia, civil society—and engage them to help ensure support for the project despite changes in the political environment.</li> <li>Implement a comprehensive communication strategy for the programme.</li> </ul>
<b>Technological</b>	2. Innovation for new vehicles, batteries, charging infrastructure may mean continuous changes to the best-available technology, requiring constant upgrades and training	Low	<ul style="list-style-type: none"> <li>The technology for e-vehicles, batteries, and charging infrastructure have already been proven in different parts of the world. For new areas, operators and personnel need training on the operation and maintenance of new bus fleets.</li> <li>Other new technology (e.g. biomethane, hybrid) should be closely monitored to be able to optimise performance.</li> <li>Knowledge development for all operators and personnel needs to be continuous.</li> <li>Integrate sections in the contract for guarantee of vehicle/battery lifetime and performance as well as possible upgrades.</li> </ul>
	3. Performance of vehicles, batteries, and charging infrastructure may need improvement, affecting project profitability	Low	
<b>Financial</b>	4. Securing financing may be difficult for some operators	Medium	<ul style="list-style-type: none"> <li>Ensure engagement and buy-in of relevant stakeholders, especially operators and banks. Clearly present government support for the programme, to help assure operators, suppliers, and financiers that it will be implemented.</li> <li>Pursue a procurement method that is appropriate for the programme and that regulators are comfortable with, to help ensure less delays.</li> <li>Prepare the programme budget based on an implementation plan that is developed with key stakeholders (e.g., regulators, operators, suppliers) and that has contingency plans for delays.</li> <li>Share financial risks between different stakeholders.</li> </ul>
	5. Co-financiers might pull out support for the programme	Low	
	6. Programme funds may be misappropriated	Medium	
	7. There may be cost overruns due to delays (related to <i>Operational Risks</i> )	Medium	

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<sup>1</sup> These risk levels vary per city or country and should therefore be validated according to the context.

RISK	DESCRIPTION / POTENTIAL SPECIFIC RISKS	RISK LEVEL <sup>1</sup>	GENERAL MITIGATION ACTIONS
<b>Social</b>	8. Personnel will need new qualifications, which may lead to potential changes in their work scope or displacement from the job	Medium	<ul style="list-style-type: none"> <li>• Provide trainings that will lead to job opportunities for those who will be displaced.</li> <li>• Engage all relevant stakeholders—from the public sector, private sector, academe, civil society—to help ensure acceptance of and support for the programme.</li> <li>• Work with the stakeholders—especially those who may be negatively affected, such as drivers, conductors, technicians, and engineers—to ensure that they are trained to operate and maintain the new fleet or so that they have key skills that may lead to other opportunities.</li> <li>• Implement a comprehensive communication strategy for the programme.</li> </ul>
	9. A rationalisation of operations may lead to less vehicles and potentially less available jobs	Medium	
	10. There may be increased costs for passengers if higher investment costs are transferred to ticket costs (see also: <i>Governance and Regulatory Risks</i> )	Medium/ High	
	11. A lack of public awareness of and support for e-mobility may make programme implementation difficult	Low	
<b>Operational</b>	12. There may be delays in implementation due to approvals, regulation preparation, capacity development, and lack of vehicle supply	High	<ul style="list-style-type: none"> <li>• Work closely with relevant stakeholders to manage implementation timelines and ensure security around relevant areas, as this will be important for project delivery, to maintain stakeholder interest, and to give due consideration to any political changes. Also calculate time buffers and plans with alternative vehicles to maintain normal operation.</li> <li>• Ensure that operators receive the necessary trainings and advice to properly operate and maintain the new fleet following any changes to the system in terms of technology and service contracts.</li> <li>• Carefully plan implementation and have safety guidelines in place for all phases of the programme, including construction (if any) and operations.</li> <li>• Have contingency power sources, especially for e-vehicles and their charging stations. Engage in dialogue with utilities in an early planning stage.</li> <li>• Find ways to clearly present to suppliers of vehicles and other supporting infrastructure that the programme is a priority and that there is demand for their products.</li> </ul>
	13. Security concerns around the programme implementation areas may affect roll-out and operations	Medium	
	14. Congestion or accidents may happen in relation to the programme, which may affect public perception or delay implementation	Medium	
	15. Changes in the fleet and system would mean changes in operator processes, business model and user experience, which may cause delays, initially higher costs, and other implementation issues	Medium	

RISK	DESCRIPTION / POTENTIAL SPECIFIC RISKS	RISK LEVEL <sup>1</sup>	GENERAL MITIGATION ACTIONS
	16. Technical problems during first operation phase	Medium	<ul style="list-style-type: none"> <li>Encourage dialogue among vehicle suppliers and others in the e-vehicle and public transport operations industry to have dialogues that will provide necessary certainty on the availability of vehicles.</li> <li>Assure data collection to monitor technical issues, battery/charging performance, environmental impact etc.</li> </ul>
	17. For e-vehicles: energy sources/ electricity grid for charging stations may not be reliable	Low	
	18. Suppliers may not be able to deliver necessary vehicles	Medium/ High	
<b>Ridership</b>	19. Passenger demand may be lower than expected, resulting in less income for the operator and reduced financial sustainability	Low	<ul style="list-style-type: none"> <li>Passenger demand (i.e., expected ridership) and the resulting fleet requirement can be better estimated and planned for prior to start of programme implementation</li> </ul>
<b>Governance and Regulatory</b>	20. Weak institutions may delay programme deployment	Medium	<ul style="list-style-type: none"> <li>Carefully map out the stakeholders—both supporters and opposers—in view of the programme requirements.</li> <li>Engage and support regulators, operators, and other relevant groups to help ensure proper and timely programme implementation.</li> <li>Work with other interest groups (e.g., private companies, academe, civil society organisations) that may want to support the programme, potentially by providing technical assistance to strengthen organisational and individual capacities for the development and implementation of necessary regulatory or institutional reforms.</li> <li>Identify groups who may oppose the programme and work to get them on board, depending on their own concerns and interests.</li> <li>Involve stakeholders and communicate properly the importance of a fleet renewal and modernization, to help them better appreciate the commensurate increases in cost. Calculate the TCO of fleet renewals to convince stakeholders. Support regulators in preparation of fare matrix, if needed.</li> </ul>
	21. Vested interests of existing stakeholders (e.g., operators) may delay programme implementation and affect its success	High	
	22. New regulatory requirements may be needed for e-vehicles and their supporting infrastructure, including standards, registration processes, and monitoring methods	Medium	
	23. New regulatory requirements may be needed for the modernization of operations (e.g., introduction of service standards)	Medium	
	24. Increases in tariffs may be difficult to implement (related to <i>Social Risks</i> )	Medium / High	

RISK	DESCRIPTION / POTENTIAL SPECIFIC RISKS	RISK LEVEL <sup>1</sup>	GENERAL MITIGATION ACTIONS
<b>Environmental</b>	25. Scrapping of old/decommissioned vehicles may be difficult to implement	Medium / High	<ul style="list-style-type: none"> <li>• Conduct life-cycle analysis for vehicles and its component parts (e.g., batteries), considering manufacturing, operational use (e.g., energy source of charging stations), and disposal, to better understand which steps of the process need to be improved for environmental sustainability.</li> <li>• Work with stakeholders (e.g., materials recovery facilities or disposal facilities) to help ensure proper treatment of decommissioned vehicles, especially potentially sensitive components.</li> <li>• Work with regulators to establish supporting policies or programmes such as for motor vehicle inspection systems.</li> </ul>
	26. Supporting systems may need to be institutionalised to help monitor environmental aspects of new vehicles	Medium/ High	
	27. Environmental/climate benefits might not be a priority and be neglected by certain stakeholders.	Medium	



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