

Paratransit in Asia

Scalable Solutions to Reform, Modernise and Integrate



2022



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Foreword

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1. Executive summary

Despite the development of mass transit services, paratransit remains an important part of daily mobility in Asian cities. Just like anywhere else in the world, defining transport services which are neither provided by a public authority, nor an identified private operator abiding to an agreement with transport authorities, raises many questions in Asia. Paratransit refers to demand-responsive and self-organised mobility services serving the public interest, with a business model based on passengers' fares with no access to public subsidies. However, in contrast to most other parts of the world, it is lawful in Asia.

The difficulty to define paratransit mirrors the diversity of transport and mobility modes it encompasses in the region. Diverse and flexible, paratransit services show a broad range of characteristics depending on the urban fabric and needs of the inhabitants in each city. In cities where mass rapid transit systems are implemented, para-transit services can fill gaps and play a key role as a feeder mode, but also in reaching neighbourhoods not directly served by mass transport. In many small and medium-sized cities, paratransit is and will remain for a long time the main public transport offering.

Ever-changing, paratransit keeps evolving to adapt to cities' needs and fast-growing agglomeration and urban population. In Asia, paratransit is at the nexus of urban development dynamics and technological innovations – related to the expansion of digital solutions and adoption of cleaner technologies to foster the ecological transition. In order to transition towards a more sustainable mobility, many Asian cities seek to enhance mobility services by modernising their existing public transport and building new equipment such as mass rapid transit systems. Often, the existing paratransit services are not taken into account, or only marginally, in this process. At the same time, paratransit sector is currently facing significant transformations in many Asian cities and this paper aims to document these transformations and provide guidelines to further support decision-makers, practitioners, consultants and policy-makers responsible in fostering paratransit modernisation and integration into sustainable urban mobility systems.

Paratransit's transformations in recent years in Asia are also linked to the emergence and the use of digital tools and the adoption of new technologies for vehicles. The use of digital technologies is widespread in Asia compared to other regions in the world and the mobile internet has opened a world of opportunities. While digital tools have proven they can benefit users, operators and local authorities alike, contributing to better service quality and optimised operation, their fast expansion come with risks. Some regulators lag behind, while operators might struggle adapting their business models fast enough. Additionally, the spread of Ride-Hailing Apps (RHAs) (Ola, Grab, Go-Jek, etc.) could possibly constitute a steppingstone for passengers towards the use of private vehicles, jeopardising efforts towards clean mobility.

The ecological and energy transition in Asian cities is progressing but at a different pace between countries. The rise of new technologies, the transformation from fuel vehicles to cleaner vehicles and the growing production of e-vehicles accelerate the possibilities to transform the paratransit vehicles fleets in the region. However, in the countries where the transition is most advanced, it relies mainly on the strong incentives given by the national government with some countries in the region that still heavily rely on coal-fired power plants, cancelling the positive effects on GHG emissions. Additionally, for operators, the cost of e-vehicles remains high and requires a complete overhaul of their business models.

The recent trends of digitalisation and vehicle transition happening across Asia show promising developments in the paratransit sector. These trends are key for modernisation and professionalisation programmes, mostly in the context of mass-transit projects. However, some regulatory adjustments are required, especially at the national level, to enable paratransit to play its part in the modernisation of mobility systems serving the public interest, whether it is integrated or not with existing or upcoming mass transit systems. Besides, even though promising reforms are implemented both at the national and local level, there is still room for improvement regarding the articulation between these levels to consider long-lasting and comprehensive reforms of the paratransit sector.

The recommendations set out in this paper detail the tools, including regulatory instruments, which can be implemented to facilitate paratransit modernisation and integration. Building on the existing Paratransit Toolkit developed under the direction of MobiliseYourCity, these recommendations are tailored to the Asian context and cover various levels of actions to enhance a comprehensive approach of the paratransit sector (i.e. national, local and project). Beyond the presentation of the different categories of actions available for public authorities at the project, local and national level, this paper aims at presenting examples of complex reforms using different kinds of lever to modernise and professionalise the paratransit sector, with a specific focus both on the introduction of new technologies of vehicles and digital tools. Thus, the ambition of this paper is to offer a broader perspective on the paratransit sector, mostly for decision-makers as well as International Financial Institutions' (IFIs) who often target their actions at the local level.

Indeed, national governments in Asia demonstrate real capacity to reform paratransit, even though this can vary greatly depending on the degree of decentralisation. However, specific steps shall be considered to undertake a consistent reform of the regulatory framework including paratransit as a public transport service. Indeed, some regulatory measures at the national level are understood to be key to encourage reforms and paratransit-friendly actions at the local and project level.

Tools available at the local level mainly include regulatory actions as well. Although the development of a Sustainable Urban Mobility Plan (SUMP) can ensure an integrated and holistic approach including paratransit within the whole mobility system, there are many actions which can also be carried out outside the framework of a SUMP, and that can be considered and combined to other actions at the national and project level.

At the project level, the implementation of a mass public transport system can be an ideal opportunity to start rethinking and reforming paratransit. However, it cannot be forgotten that most small and mid-sized cities rely on paratransit as the main public transport mode and therefore require tools outside of the mass public transport system's development process.

When analysing the outcomes of existing reform programmes at all levels across Asia, it is found that building awareness, understanding, ownership, and capacity – on the operators, decision-makers and users' sides alike – should be at the heart of any reform at the design stage. This can help reduce difficulties during the implementation stage, by (i) improving buy-in from all stakeholders, (ii) ensuring reforms' financial sustainability and inclusivity, and (iii) facilitating enforcement of regulations and actions in the future.

2. Rethinking paratransit: an introduction

2.1. MobiliseYourCity partnership's objectives

The MobiliseYourCity Partnership is promoting the adoption of National Urban Mobility Policies and Investment Programmes (NUMPs) and Sustainable Urban Mobility Plans (SUMPs) in the Global South¹ at the national level as well as at the local level. Through its actions and missions, **the Partnership has adopted a service area labelled 'Implementation Support', seeking to empower its members "to bridge planning with implementation for green and just mobility."**

Among its actions MobiliseYourCity is pursuing to fill the gap between the mobility policies, mobility planning and daily mobility practices, **the Partnership is supporting small-scale investments to promote walking and cycling, institutional and regulatory reforms** to enable the implementation of NUMPs and SUMPs. In addition, the Partnership is engaged to **modernise the paratransit sector, notably by building on digital technologies.**

2.1.1. Recognising, modernising and integrating paratransit

Since MobiliseYourCity is supporting the development of SUMPs and NUMPs aiming to improve the urban mobility systems, **the Partnership has developed a specific approach towards paratransit.**

Firstly, recognising the paratransit services as complementary transport services to the official and so-called formal public transport. Paratransit sector is a complement, not a substitute, for higher capacity transit systems. In some developing and emerging cities, paratransit services form the backbone of public transport. Even as governments invest in higher capacity transport modes, these services will continue to provide essential feeder services. Paratransit services are providing both a mobility service for the inhabitants as well as a key sector of employment, often qualified as "informal."

Secondly, supporting paratransit's modernisation towards a better structured service making use of digital technologies, and with low-carbon solutions to limit the sector's negative externalities and ensure the integration of the paratransit service with the formal urban mobility. However, paratransit's modernisation cannot be carried out by "copy pasting" and replicating generic measures. This process needs to consider the singularity of each city in terms of governance context and socio-economic characteristics.

Thirdly, ensuring paratransit's integration in the SUMP elaboration process, both from a technical and social perspective. MobiliseYourCity SUMPs seek to promote the improvement of efficiency of the paratransit services and operators through network restructuring, vehicle scrapping or enhancement, improved maintenance, better passengers' information, etc. The sector's integration is not limited to the transport service. It also has to anticipate the integration of the paratransit's workforce into the existing (or currently developing) collective

¹ The Global South is made up of Africa, Latin America, the Middle East and the developing countries of the Asia-Pacific region and is home to the so-called BRIC countries: Brazil, the Russian Federation, India and China, which, along with Indonesia, are the largest Southern States (Aerts *et al.*, 2020).

transport services. Paratransit's integration is not limited to technical aspects, this process is – above all – about developing a social engineering approach.

2.1.2. Producing pioneer operational content

Since its creation, the **MobiliseYourCity Partnership has produced materials with the objective to increase the integration of the paratransit services into the innovative mobility planning documents** such as the SUMP, and into the mobility policies elaborated within the NUMP.

As part of the Mastering Mobility series launched by the Partnership in 2020, a first participatory workshop was organised as a “co-creation of MobiliseYourCity’s approach to paratransit analysis.” This event was specifically designed for the MobiliseYourCity African Community of Practice and focused on the integration of paratransit services in the development of SUMP and NUMP.² Based on a participatory process, this work led to a two-volume publication entitled “Understanding the paratransit - Defining and diagnosing paratransit” (part 1) and “Reforming the paratransit - A catalogue of practical actions for policy-makers and practitioners” (part 2) which is expected to be a practical and effective Toolkit.³

A second work was launched with the financing support of AFD by the Africa Transport Policy Programme (SSATP), an international partnership aiming to facilitate policy development and related capacity building in the transport sector in Africa. This work is focused on specific cities as case studies: Kampala, Antananarivo, and Accra. This publication will be crucial as it provides details on the local paratransit systems.⁴

Finally, a third work related to paratransit was developed by Codatu, one of the knowledge partners of the MobiliseYourCity Partnership. It is not geographically limited to the African context, and is entitled “Capitalising on Projects to Improve Paratransit (*in French: Transport Artisanal*) - How to Act on Paratransit to Facilitate its Integration into Urban Mobility Systems? Illustrations and Proposals based on International Improvement Projects.” This publication paves the way to ensure a smooth integration of the paratransit into the existing urban transport services.

The **MobiliseYourCity Partnership is engaged in the field of policy reforms, producing guidelines and toolkits while making sure to promote existing publications and materials.**⁵ Additionally, the Partnership promotes the use of digital solutions for informal transport modernisation⁶ and aims to cover new geographical areas such as Asia.

² For reference, the details about the materials can be found [here](#). Those webinars were developed by Codatu and Espelia under the umbrella of MobiliseYourCity and with the financing of AFD.

³ See MobiliseYourCity Paratransit Toolkit (Baffi & Lannes, 2021a, 2021b).

⁴ SSATP work is still on-going. AFD has also mandated the consultant Transitec to carry out field work on paratransit services in the cities of Kigali, Dakar et Capetown.

⁵ Consult the [MobiliseYourCity Knowledge Platform](#) and download a wide range of existing materials on paratransit.

⁶ MobiliseYourCity organised a webinar on this innovative approach in June 2021 (for more details available [here](#)).

2.2. Objectives and methodology

2.2.1. Providing operational recommendations

The present paper on paratransit's modernisation in Asia falls into the 'Implementation Support' service area activities conducted by the Partnership. **The overall objective of this paper is to document paratransit in Asia, its current dynamics and to provide guidelines to support its modernisation.**

To foster the transition towards a more sustainable mobility, **many Asian cities seek to enhance mobility services by modernising their existing public transport and building new equipment** such as mass rapid transit (including Bus Rapid Transit and metro systems). Often, the existing **paratransit services are not or marginally considered in the cities' urban mobility transition**. When local authorities do not ban the paratransit services entirely, they are usually looking for alternatives to professionalise these services. Accordingly, paratransit is currently facing significant transformations in many Asian cities. Today, paratransit in the region is characterised by both its persistence and its modernisation via the use of digital tools (e.g e-hailing apps, smart ticketing, etc.) and local adaptation and adoption of "clean vehicles".

To contribute to this overall objective, the MobiliseYourCity Asia Programme Management Unit (gathering consultants from Codatu and Espelia) was assigned the elaboration of the present paper, with the purpose of:

1. **Identifying and documenting the diversity of paratransit solutions and features, their role in urban mobility systems** in different cities and their economics;
2. **Understanding the recent dynamics affecting paratransit in Asia** – especially the development and the use of digital tools, the emergence of cleaner vehicle technologies, the adoption by some cities of measures to regulate paratransit – **and identifying a path to paratransit modernisation**;
3. **Formulating a series of operational recommendations for the stakeholders involved in the transport sector** (national and local governments, development partners, consultancies, etc.) to contribute to a better integration of paratransit in mobility policies and projects.

Based on a high-level assessment of the situation in Asia, this paper seeks to provide **operational recommendations** which can be used by different stakeholders such as cities, ministries as well as International Financial Institutions (IFIs) to engage the paratransit's modernisation in Asia and pave the way to its integration into the existing public transit services.

2.2.2. Opting for a pragmatic methodology

The present study was carried out conducting desk-based research in the form of a literature review focused on paratransit in the region, distinguishing South and Southeast Asia experiences. This research took place during the unprecedented COVID-19 pandemic and accordingly, no fieldwork was carried out.

The study focuses on **contextual characteristics of paratransit**, including the **technical operation of the paratransit services, the business model of the involved stakeholders and the institutional and regulatory frameworks** (encompassing regulatory strategies and governance approaches) concerned with paratransit operations (Figure 1). In addition, this study emphasises specifically on the **regional trends and technical innovations**

such as the use of digital tools and the ongoing transition toward cleaner vehicles, often in the form of electrification, but not only.

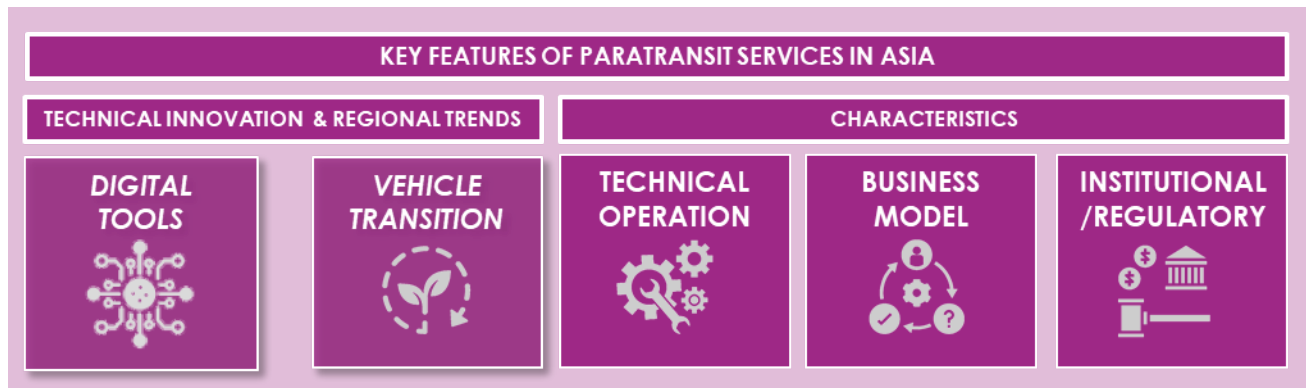


Figure 1 Methodological Approach to Investigate on Paratransit Services in Asia, Source: Consultant

2.2.2.1. Data collection and documentation review

To conduct this work and provide a broad picture of the paratransit sector situation in Asia, several data sources were collected, including:

- Publications produced by international donors and MobiliseYourCity partners (AFD, ADB, GIZ, UN Habitat);
- Publications produced by institutional research centres (UITP, ITDP, Shakti foundation, WRI, etc.) and identified as grey literature;
- Publications produced by academics (scientific articles and scientific reports) with peer review;
- Technical documentation (i.e technical studies for mass transit systems and planning documents such as SUMP baseline assessments) produced by international donors via consulting firms. This category of sources is not available in the public domain.

The review of the collected documentation has been carried out following a dual approach: by theme, at the global and regional level, and by country (where paratransit services have been studied). The detail regarding the type of documents reviewed can be found in [Appendix 1](#).⁷

Overall, the Codatu-Espelia team examined and studied **about 200 documents related to paratransit**, exploring specific themes such as digital tools and vehicle transition and delving into data produced on specific cities and countries in Asia (both in and out of the MobiliseYourCity Partnership).

2.2.2.2. Case studies and interviews

Based on the available documentation mentioned above, the Codatu-Espelia team provides in this paper some **'focus' and spotlights on various case studies at the city or country level**, covering the key themes identified (Table 1 and Figure 2). **This paper does not provide exhaustive case studies of targeted cities** as it was not

⁷ [Tip for navigating this document](#): After clicking on the hyperlinks, pressing Alt + Left Arrow key will take you back here, to the last-followed hyperlink.

possible to collect data reliable enough to be used for extended comparison. The selected case studies are discussed throughout the paper, either in the main body of text or in specific boxes (i.e. spotlights).

Initially, selected countries and cities were those where MobiliseYourCity is conducting activities. It was anticipated that cities benefitting from Technical Assistance as part of MobiliseYourCity would have readily available data on paratransit. However, **data on paratransit services was scarce in these member cities, while paratransit had been documented in other cities or countries.**⁸ Where data on paratransit was found to be available, the research team targeted key informants to conduct interviews. These **interviews aimed to provide additional in-depth information to complement reviewed documentary sources** (reports, academic articles, transport studies, SUMP diagnosis, etc.) as described above. Key contacts selected were mostly experts (i.e. consultants and academics having specialised knowledge on the targeted cities) as well as entrepreneurs and civil servants working for public bodies. The detailed list of interviewees can be found in [Appendix 2](#).

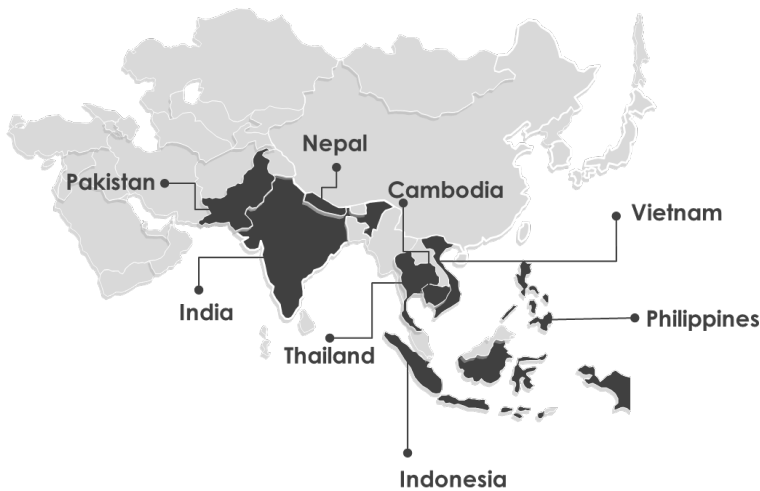


Figure 2 Countries where Data on Paratransit have been Accessible and Reliable, Source: Consultant

Table 1 Focus Countries and Cities, Source: Consultant

Country	Cities
India	Delhi, Mumbai, Visakhapatnam
Nepal	Kathmandu
Pakistan	Peshawar
Indonesia	Medan, Jakarta, Bandung
Philippines	Manila
Thailand	Phuket, Bangkok
Vietnam	Ho Chi Minh City
Cambodia	Phnom Penh

2.2.2.3. Data sources and limitations

As mentioned previously, **a large number of papers was produced on paratransit operations in Asia** and the state of the research is fairly robust. Since mid-2010, two papers were produced providing an updated overview of paratransit in Asia, refreshing pioneer papers produced by Shimazaki & Rahman (1993, 1995) and previously by Cervero (1991) and Rimmer (1984). The first one, published by Phun & Yai (2016), proposed a literature review of paratransit research in low- and middle-income countries in Asia by exploring approximately 30 reports mostly on governance and its implications for paratransit systems (Phun & Yai, 2016). The second, produced by Wicaksono *et al.* (2015), provides a comparative study on urban public transport and paratransit in six Asian countries (including Japan). It focuses on legal aspects and intermodal issues among existing urban paratransit. However, these two papers are already six years old, and **several 'blind spots' remain.**

⁸ A specific focused was done on Asian emerging and developing countries that fall under the category of Global South. For this reason, countries like Japan, South Korea or Singapore were not considered. Chinese cases were not studied as the country met a high development of mass rapid transit systems the last thirty years and public transport services are widely spread in urban areas for decades.

Firstly, **the existing literature comprises academic papers mainly**, with a mix of qualitative and quantitative studies examining the implications of regulatory approaches in paratransit. Often, the studies examine multiple paratransit modes in one context (city or country) as they focus on policy, management, and different governmental mechanisms. In this context, it is challenging to compare paratransit in different cities as a wide variety of methodologies and approaches have been used to depict the singularities of paratransit services. Finally, when information does exist, it is in the form of a **monograph on one specific case or city** (e.g. Manila (Philippines), Kolkata (India), Phnom Penh (Cambodia), Jakarta (Indonesia)). Consequently, the picture of paratransit in Asia is ‘fragmented’.

Secondly, there is an **increasing number of papers dealing with the emergence of digital tools in the sector** such as the Ride Hailing Apps (RHAs) (e.g. the case of Cambodia covered by Phun *et al.* (2018)) and the adaptation of vehicles to reduce GHG emissions and air pollutants, such as the electrification of rickshaws in India (Shandilya *et al.*, 2019). In addition, several papers focus on other technical aspects linked to digital tools, such as the methodology used to build a General Transit Feed Specification (GTFS)⁹ profile for paratransit services in a city were produced.¹⁰ There is however a lack of studies on social assessment and employment in the paratransit sector. Paratransit remains considered often as informal or illegal in some cases. There is consequently a **lack of information regarding business models and financial flows in paratransit in Asia**.¹¹

Thirdly, **the research did not examine in-depth paratransit’s relationship with institutions and the operational issues of integration within the formal system**. In recent years, some cities started to try and integrate paratransit services into formal transport systems. It is particularly the case when a mass transit line is under construction or has recently started to operate, for instance, in Jakarta and Bandung (Indonesia) or in Peshawar (Pakistan). However, there is a lack of studies investigating the results of the integration within the formal system. Contrarily, tensions arising due to paratransit reforms are often depicted, for instance, in the case of Surabaya in Indonesia (Wijaya *et al.*, 2016) or in Bangkok in Thailand (Wu & Pojani, 2016). In addition, there is a lack of comparative studies between cities (or countries) on experiences of regulatory reinforcement, integration with mass transit systems or fleet renewal.

It is important to note that, as the present study is desk based, and because of the COVID-19 pandemic period, this study could not fully address the three blind spots identified.

2.3. Paper structure

In this paper, Codatu-Espelia’s team first provides an assessment of paratransit in Asia. The diagnosis starts by depicting **the current urban, economic and social dynamics affecting the paratransit in the region**. It particularly shows the trends specific to the region such as the large adoption of digital tools and the adaptation of the vehicles to reduce GHG emissions and air pollutants. This section then **highlights the characteristics of**

⁹ GTFS defines a common format for public transportation schedules and associated geographic information. GTFS feeds allow public transit agencies to publish their transit data in a format that can be consumed by a wide variety of software applications. The feeds can include information such as fixed-route schedules, routes and also bus stop data.

¹⁰ Reference is made to SUMP diagnosis studies, as the one engaged in Medan Metropolitan Area by the Consultant Egis under the umbrella of MobiliseYourCity.

¹¹ This aspect is also stressed by Cassius *et al.* (2021) in a report entitled “Future of Paratransit and Shared Mobility: Mapping Report” produced by ITDP.

paratransit sector in Asia by detailing their technical operation, business model and institutional and regulatory context. A **SWOT analysis** concludes the assessment.

Based on the diagnosis, several **recommendations are elaborated for practitioners** at the local and national level, as well as for the International Financial Institutions financing urban transport and mobility projects. The recommendations follow a 'zooming' approach, from the national level to the urban project level, considering technical and regulatory aspects.

3. Understanding paratransit: what are the dynamics of paratransit in Asian cities?

3.1. The Asian context

Asia’s future is urban and Asian cities are still growing rapidly. Urban populations in Asia increased from about 18 % of the region’s population in the 1950s to 49% in 2018 (UN DESA, 2018). Today, more than half of the 4 billion residents of developing Asia are living in urban areas and the urbanisation process is still ongoing.

In the next 30 years, about 1 billion inhabitants may settle in urban areas, pushing the regional urbanisation rate above 64 % by 2050 (UN DESA, 2018). Urban populations in the region increased at an average of 3.4 % per annum from 1970 to 2017, well above the rates of 2.6 % in the rest of the developing world, also considered as the Global South, and 1.0 % in developed economies (UN DESA, 2018). Consequently, Asian cities tend to be larger and denser. Currently twelve of the largest 20 megacities¹² and 35 of the 50 most densely populated cities are found in Asia (Figure 3).

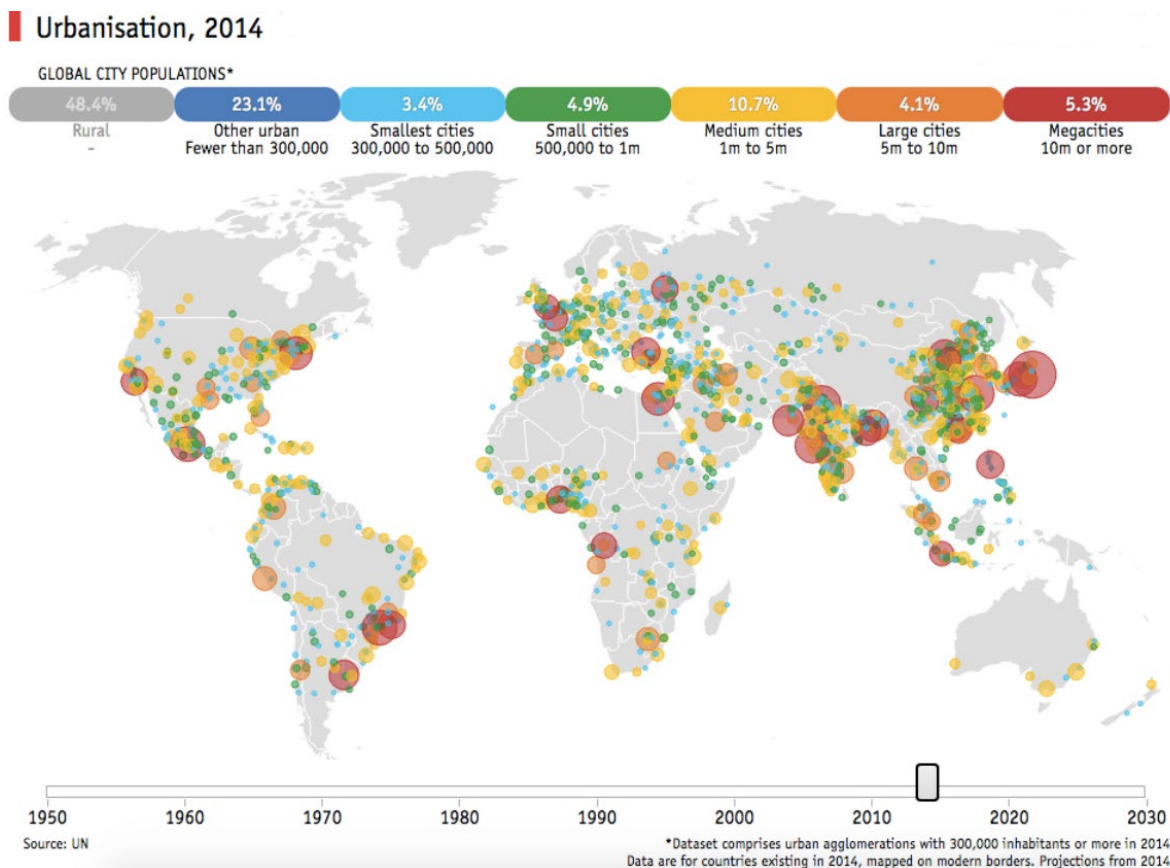


Figure 3 Megacities in the World in 2014, Source: *The Economist*, based on UN data

¹² Megacities refer to cities of more than 10 million population.

Directly related with the urban dynamics, **most of cities in Asia are dealing with the *metropolisation* process.**¹³ This global process affects small, medium, large cities and megacities, both in developing and emerging countries, impacting the socio-spatial transformations of the urban fabric and challenging the supply of urban services. One of the first outcomes of this *metropolisation* process is **the spatial extension of the urban areas** which changes the structures of cities. In term of mobility, **the travel patterns are evolving and the demand in transport is increasing.** A second outcome is the **rapid urban economic and demographic growth.** As indicated above, the urbanisation rate is still growing in the region. In addition, as Asian cities witness a rise in the number of urban inhabitants, they also see an increase in the incomes of the urban households. Indeed, it is estimated that 2 billion Asians are members of the middle class in 2020 and this number could rise to 3.5 billion by 2030. The rise of this middle class has a direct relation with the rise of motorisation and car ownership. The car is seen as social symbol of economic success and an attribute of the emerging middle classes. In short, **many developing countries in Asia have been experiencing motorisation, in which car ownership increases rapidly as economies develop** (Kato, 2018).

As a result of *metropolisation*, Asian cities, and especially emerging and developing cities in South and South-east Asia, are now playing a major role as both economic and administrative centres. **Transport plays a major role in the integration of individuals and communities into modern economy.** As the cities adjust to their new urban landscape, so do their transport systems. If during few decades public investment were mainly channelled towards road construction and urban expressways (Dick & Rimmer, 1998), a shift has occurred in Asia. **Since the mid-1980s, many cities are opting to improve their public transport and planning to develop and build mass rapid transit systems** such as metro and Bus Rapid Transit (BRT) (Figure 4). This shift was also possible as the economy develops, and as emerging Asian countries get access to international financial institutions' loans. There was a clear acceleration during the last decade (2010s) – many mass rapid transit systems were put in operation in South and Southeast Asia. In this period, 8 metro lines were opened in India, 3 in Indonesia and 1 in Pakistan, while 14 BRT lines were put in operation. In the meantime, several metro and BRT projects were launched (like in Vietnam, Hanoi, and Ho Chi Minh City) and other networks were consolidated (such as the BRT in Jakarta or the metro system in Bangkok).

However, **the transportation infrastructure deficit is still important in the region and these infrastructures do not yet manage to address completely the transportation demand.** From the planning to the implementation of these infrastructures, a gap often remains: the lack of capital investment. In addition, such **large transport systems benefit mostly to megacities or large cities**, when medium and small cities rely mainly on existing smaller-scale public transport, when they do exist.

Due to the construction of urban expressways and mass transit systems, several cities in Asia, such as Manila and Jakarta, adopted policies in order to **ban alternative public transport services such as paratransit** (Rimmer, 1984; Cervero, 1991). Often, smaller capacity public transport units and slower moving vehicles were banned as they were considered as unsafe and disturbing the growing traffic flows of private vehicles by dropping passengers on and off along the service routes (Cervero, 2000). Later, with the construction of the first mass rapid transit lines, **paratransit services, especially those with higher capacities, were considered as competitors**

¹³ The *metropolisation* refers to the process by which people, activities and wealth are increasingly concentrated in cities such that both the forms and functions of those cities are affected.

to the new public transport systems. Additionally, they were also seen as contributing to substantial levels of air and noise pollution (Phun & Yai, 2016).

However, paratransit services can appear as a kind of **remedy to institutional inertia and the shortcomings of large public and private transport services** (Goldblum, 2001). They exist because of the collapse of public transport (and public service in general) or due to the absence of public service and/or its inadequate spatial distribution in a city. Paratransit sector provides services when there is demand that is not covered by public transport offer. Additionally, with the issue of urban sprawl and the development of mass transit systems, paratransit can **fill the gap for the 'last mile'**. Paratransit plays a key role as a feeder mode in urban transportation in the context of emerging and developing countries (Tangphaisankun *et al.*, 2009). Paratransit does not only play a role in terms of mobility and transport services due to of the urban expansion but is also an **important sector of employment**. It offers poor and low skilled workers a large variety of job opportunities (from drivers to mechanics) (Cervero & Golub, 2007).

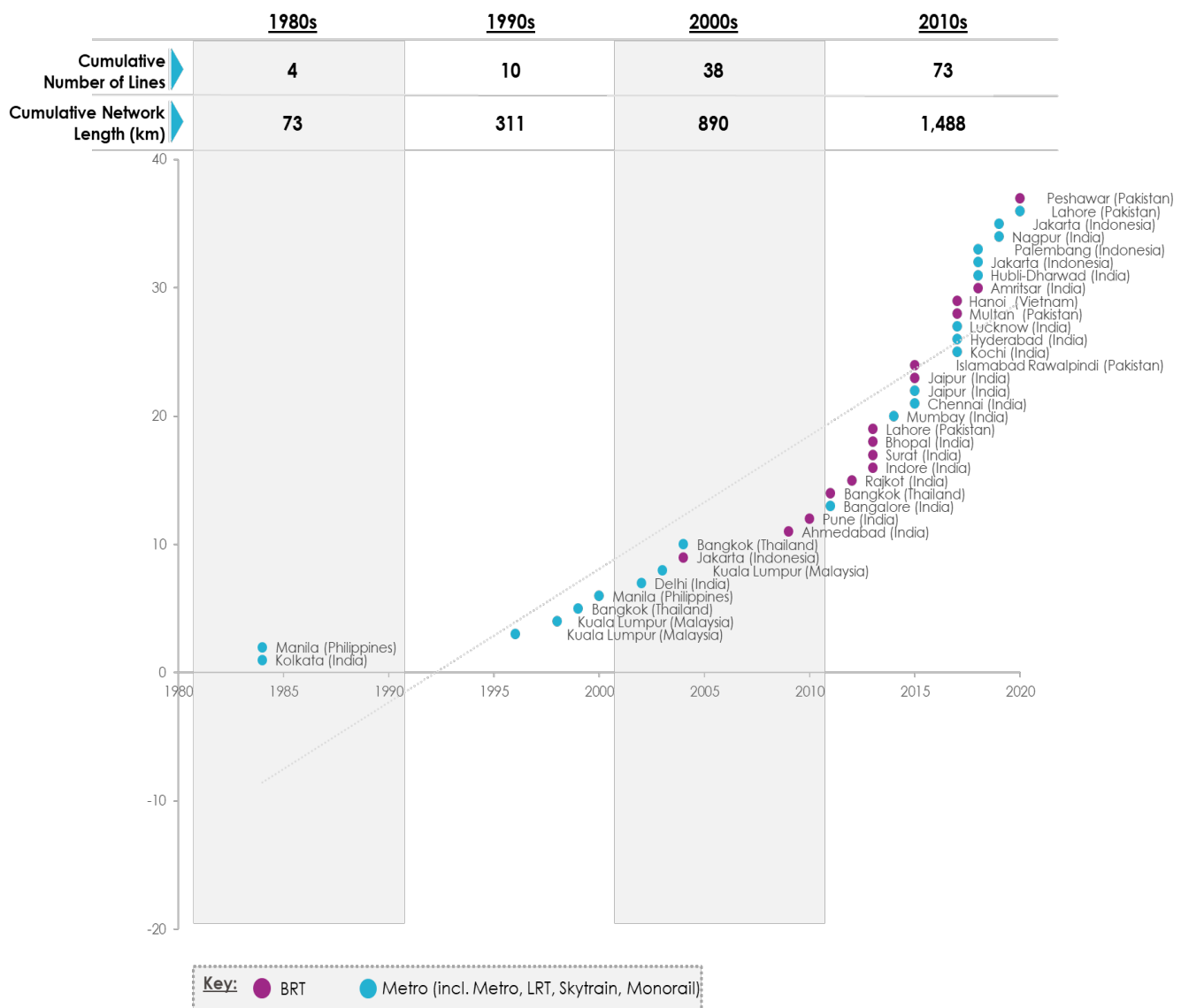


Figure 4 Overview of the Main Mass Transit Line put in operation since the end of the 1990s in South and Southeast Asia, Sources detailed below

Sources: Specific to metro (<https://www UITP.org/publications/world-metro-figures/>); specific to BRT (<https://brtdata.org>) [with additional Google Search by country and cities to visit the official website of public transport authorities]. BRT (Bus Rapid Transit) LRT (Light Rail Transit)

Paratransit comprises a multiplicity of transport solutions able to adjust fast while the urban areas are reshaping and spreading. In addition, paratransit itself is witnessing important transformations in Asia. **The evolution of the paratransit services in the region is at a nexus between vibrant urban development dynamics (as indicated above with the *metropolisation* process) and technological innovations.** These technical innovations are related to the boom of digital solutions (apps, mapping, e-hailing service, e-payment/ cashless, etc.) and the adoption of measures to foster transition with the use of cleaner vehicles. In addition, due to the development of mass rapid transit system, new questions may arise as how to ensure income security for the stakeholders involved in the paratransit sector.

3.2. Definitions and concepts

3.2.1. 'Paratransit' definition in the Asian context

3.2.1.1. Examining the issues around definitions

Just like anywhere else in the world, describing transport services which are neither provided by a public authority, nor a well-known private operator abiding to an agreement with transport authorities, raises many issues in Asia. **Many terms have been used to encapsulate the spontaneous and self-organised services** (Rimmer, 1984) that ensure the mobilities of millions of individuals in Asian cities, from informal transport, pop-transport, indigenous transportation, to paratransit. It is **commonly accepted that “informal transport” does not offer a satisfying analytical frame**, and results from a very contextualised understanding of the nature of transport services. By difference, **“indigenous transportation”** (Babiano *et al.*, 2011) and **“pop transport”** underline one of the main characteristics of these services: they have been providing services for an important share of the urban population for several decades, and sometimes they represent the only transport offer (especially in small and medium-size cities). The terms paratransit and para-transit are used in Asia as in other countries in the world, with a specific connotation in the Global South. Indeed, as Ghosh & Kalra (2016) recall, paratransit services in developed countries refer to **demand-responsive services** such as shared-ride taxis. In developing countries, **paratransit services refer to a diversity of modes and services provision reflecting the lower standard of living, the high densities, cheap labour force and the lack of public transport offer in extended metropolitan territories.**

Besides this definition of paratransit, which is common with other regions in the world, academics and researchers suggest using specific terms to identify the specificities of service provision in Asian cities. Among these terms, several scholars from Japan conceptualised the term of **LAMAT, for Locally Adapted Modified Advanced Transport**. If the definition underlying the notion of LAMAT encompasses many similarities with the notion of paratransit (such as the flexibility of service, its potential to compensate the lack of supply and its role as a source of employment), LAMAT emphasises the adaptation of exogenous vehicles to local needs and constraints, as well as the use of recent technologies to upgrade the service (Phun *et al.*, 2015). Another term coined by scholars to understand the specificities of paratransit modes in Asia is **Intermediate Public Transport (IPT)**. Used mostly in India, IPT integrates a broad diversity of modes, from dial-a-ride to cycle rickshaws, having in common their capacity to fill the gap between private transport and public transport. In India, IPT refers thus both to informal transport services, (i.e. minibus-like services, characterised by fixed-routes services with

intermediate stops for boarding and alighting), as well as services falling under the “contract carriage” services (i.e. flexible demand-based services where the passenger determines the destination) (Ghosh & Kalra, 2016). From this last definition, one can understand the complexity of the Intermediate Public Transport concept: it can be “formal” or “informal” (in this case informal refers to the ownership structure fragmented between many individuals and the lack of regulation), and it covers point-to-point services as well services provided on fixed-routes (Mani *et al.*, 2012). By contrast, the term of “**Public Utility Vehicle**” used in the Philippines underlines the role of jeepneys to provide a public service, i.e. a service used by a large part of the population.

Table 2 Overview of the terms used in the literature to designate paratransit services in Asia. Source: Consultant

Term	Context	Characteristics	References
Paratransit	Global	Demand-responsive transport services – developing countries: when lack of public transport offer	Phun & Yai (2016)
Indigenous transport	Global South / Asian cities	Modes developed by locals, based on local conditions and cultures	Babiano <i>et al.</i> (2011)
LAMAT	Asian cities	Flexibility of the service, source of employment, adaptation of exogenous vehicles, use of technologies	Phun (2015)
IPT (Intermediate Public Transport)	Indian cities	Services filling the gap between private transport and public transport	Mani <i>et al.</i> (2012), Ghosh & Kalra (2016), Gadepalli (2016)
Public Utility Vehicle	Philippines	This term coined by local authorities includes Public Utility Jeepneys, UV Express, Minibuses, Public Utility Buses, and all abide to the regulation of private operators providing a public service.	Land Transportation Franchising and Regulatory Board (LTRFB)

3.2.1.2. Elaborating the definition used in the paper

Regarding the definition adopted in this paper, the term paratransit is most used. This broad **definition enables to consider the nature of the supply as well as its modal share, the technical aspects of the service delivery and the regulation**. Besides, in the context of Asian cities, the transport services observed are often complementary to mass-transit services, thus literally fulfilling the role of *para*-transit services. Eventually, prioritising the use of this term also results from the will to enable comparisons at a global level. Indeed, from the observations and analysis developed in the case of Asian cities, some feedbacks and key takeaways might be relevant to other cities in the global South, and internationally. However, when addressing the specificities of cities and case studies, local terms are used to echo the literature on the topic, for instance Public Utility Vehicle (PUV) in the Philippines, or Intermediate Public Transport in India.

3.2.1.3. Analysing the diversity of paratransit in Asia

The **difficulty to name the paratransit sector also mirrors the diversity of transport modes it encompasses**. Indeed, looking more precisely to what falls under “paratransit”, “LAMAT”, or “IPT” in Asian cities, one can identify a broad range of transport modes, with distinct characteristics regarding the type of vehicle, the traction or the capacity (Figure 5).

From this first overview, it is striking to consider the **diversity of modes and services in the paratransit sector in Asian cities**, which is much more important than what can be observed in African cities for instance. First, this diversity reflects the **various functions and roles of paratransit services in Asian cities**. Minibuses are used sometimes as main modes of transport, or as feeders for mass-transit projects. 3-wheelers and 2-wheelers, very widespread in the context of Asian cities, provide first and last miles services, as well as main services for shorter trips. Non-motorised transport, which are common, also provide short-distance services.

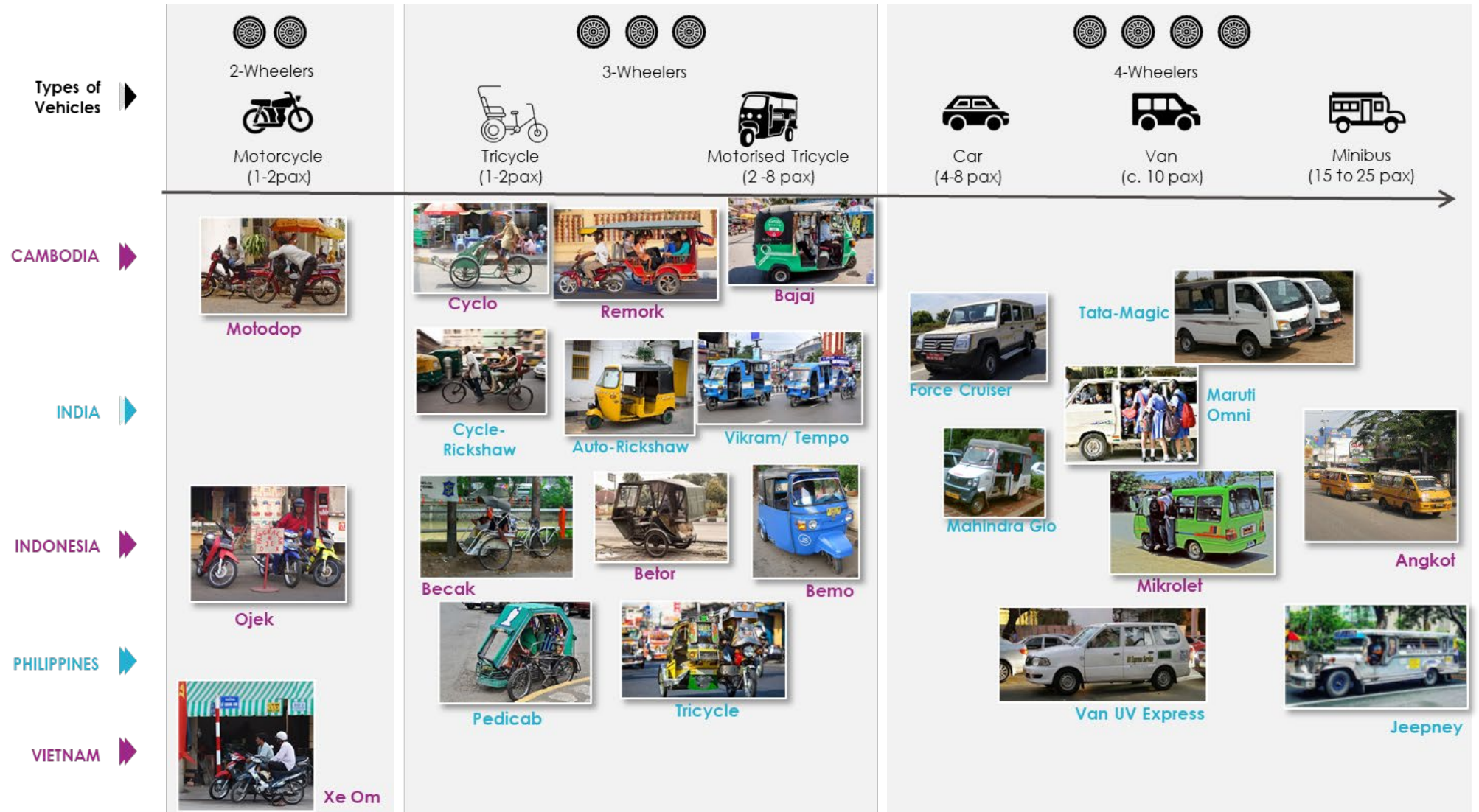


Figure 5 Some of the Paratransit Modes Available in Asia, Source: Consultant

Second, **this diversity of services is also representative of the complexity of the “gap to fill” in these fast-growing cities**, and the existence of several “gaps”. In some cases (especially small cities and middle cities), there is a global lack of public transport, explaining the spread of minibus-type of vehicles, which tend to be regulated in some cities (angkots, jeepneys) or remain informal in others (e.g. in India). Besides, due to the intense growth and territorial expansion of these cities, the first mile and last mile provision becomes an accurate issue for many households living far from job pools and depending sometimes on several transport modes to reach their destination. Third, **the introduction of many mass-transit projects in Asian cities (Figure 4) entailed a reconfiguration of transport service provision for many operators**, which evolved towards a role of feeder services.

3.2.2. ‘Modernisation’ and ‘integration’ definitions

3.2.2.1. Overview

In Asia and globally, much attention has been drowned towards paratransit over the past years, especially from the local authorities, with the objective to modernise services. Indeed, due to the spread of paratransit services and the increased demand resulting from urban growth, public authorities aim to regulate the sector. One of the main reasons to enhance modernisation relates to the negative externalities produced by these services: **vehicles are highly polluting** due to the lack of maintenance and the age of the fleet, they **contribute to traffic congestion** by boarding and alighting passengers with frequent stops without dedicated spaces, **the quality of service is often very low**, and the **operators evolve in a precarious environment**. Even though paratransit services seem accepted in most cities nowadays, **its recognition is often conditioned to the modernisation of the sector in order to minimise these negative externalities**. According to Phun & Yai (2016), there are four main dimensions to consider undertaking paratransit modernisation:

- **Improvement of the quality of service,**
- **Integration with mass transit systems,**
- **Promotion of electric paratransit modes,**
- **Government support.**

Overall, **one of the objectives of modernisation is to encourage paratransit integration within urban transport systems**. As previously mentioned (see section [2.1.1](#)), the integration of paratransit is multi-fold. First, one aspect regards **the integration of paratransit as a transport service per se**, for instance as a feeder service where mass-transit services exist, or as the main mode of transport when it is the case. This involves considering paratransit integration as a matter of planning, regulation, but also through pricing and even contracting. Second, paratransit integration relies mostly on **the implication of the different stakeholders involved in the sector**. It is therefore a priority to understand who these stakeholders are and how they interact, in order to consider their role within a global mobility system. This often entails the implementation of a professionalisation programme to facilitate the formation or consolidation of private entities able to answer public tenders. Eventually, integration also refers to the **possibility to offer a diversity of transport solutions for urban populations**, with the ultimate objective to foster greater inclusion. This relies on better access to information, great accessibility, and locally adapted transport solutions.

3.2.2.2. Challenges

Even though paratransit services answer different kinds of demand, **Asian cities face similar issues regarding the necessity to integrate these services, and more generally, the need to shift urban population towards public transport services and shared services.** Indeed, **environmental considerations** are particularly pressing in Asian cities, where pollution is particularly intense and reaches an important share of the population due to high densities. In Delhi, 55 % of the population are within 500 meters of a freeway and 50 meters of a major road and are likely exposed to high levels of traffic-related air pollution. In Hanoi, in 2006 pedestrians were exposed to 495 $\mu\text{g}/\text{m}^3$ of PM10, motorcyclists to 580 $\mu\text{g}/\text{m}^3$, car drivers to 408 $\mu\text{g}/\text{m}^3$ and bus passengers to 262 $\mu\text{g}/\text{m}^3$; all these figures being much higher than the WHO guidelines of 20 $\mu\text{g}/\text{m}^3$ (UN-Habitat, 2013). The high level of exposure to air pollution in Vietnam, as in many cities, can be directly connected to the increase of registered motorcycle and cars (UN-Habitat, 2013). From 2007 to 2017, passenger car registration has been growing at a pace of 17 %/year, and motorcycle registration at 10 %.¹⁴ A similar trend is observed in Pasig (Philippines), where the registered vehicle fleet in the country grew at an annual rate of 15% between 2004 and 2017, and even 18 % in the case of motorcycles, with a total fleet increasing from 1,8 million to 6,1 million.¹⁵ In India, it was estimated that the motor-vehicle market grew at a rate of 11% annually (Mani *et al.*, 2012) and could reach more than 350 million vehicles by 2035.

In other Asian emerging countries, even though the total number of vehicles remain lower (except in China), the projected growth indicates that the total amount of vehicles in 2035 could reach more than 200 million vehicles. Indeed, motorisation rates are likely to last and even intensify, as in many countries vehicles growth rates are still higher than Gross Domestic Product (GDP) (UN-Habitat, 2013). Besides, the concentration of wealth in Asia being very important in cities, the rate of vehicle ownership sometimes double compared to the national values. Eventually, the high number of private vehicles also impacts the ridership of mass-transit projects, causing a financial burden for local authorities.

The shift of motorised households towards public transport services represents a priority in many cities, as well as the development of a transport offer attractive enough to prevent households to opt for the use of a private car in the future. This consideration is central to understand the efforts and will of governments and local authorities in order to integrate paratransit services. Indeed, these **paratransit services are considered as tools to facilitate the modal shift of motorised households through improved quality of service,** especially with the diffusion of digital tools and ride-hailing platforms. Indeed, the use of these tools translated into the development of the shared-taxi and on-demand services, especially among the middle and upper-class. Besides, **fixed-routes paratransit services are identified as relevant feeder services for mass-transit infrastructures** in many cities. Eventually, **paratransit is considered as a lever to introduce e-vehicles transition in many Asian cities.** Through incentives and within the frame of fleet renewal programmes, public authorities aim at fostering the transition to reduce greenhouse gas emissions.

This rapid overview showed the paratransit's specificities and commonalities observed in Asia, as well as its key challenges. Building on this, the present paper intends to examine paratransit more precisely in several

¹⁴ Data about Hanoi are available on Solution Plus [website](#)

¹⁵ Data about Pasig are available on Solution Plus [website](#)

countries and cities, in order to identify key takeaways and lessons regarding paratransit integration in urban systems. The paratransit's diagnostic covers **two main aspects**, namely:

- **Regional trends stimulated by technical innovation referring to (i) digital tools and (ii) clean vehicle transition;**
- **Regional characteristics of paratransit with its (i) technical operation, (ii) business model and (iii) institutional and regulatory frameworks.**

3.3. Paratransit defining trends in Asia

This section aims to **identify the main trends and transformations of paratransit in the region sparked by the emergence and the use of digital tools and the adoption of new technologies for vehicles.** The mobile internet has opened a world of opportunities with travel assistance applications. Many start-ups developed dedicated apps for passengers or goods' mobility by providing platforms for transport supply and demand to meet. Others engaged in geomatic data collection and mapping services. Additionally, the rise of new technologies, the transformation from fuel vehicles to cleaner vehicles and the growing production of e-vehicles speed up the possibilities to transform the paratransit vehicles fleets in the region.

3.3.1. The emergence of digital tools

The **use of new technologies and data innovations, combined with a greater internet access, have proven to be a catalyst for paratransit.** Due to the deployment of Information and Communications Technology (ICT) infrastructure and rising income levels, the availability and affordability of digital tools in Asia opened several opportunities for the sector including app-based ride-hailing services, mapping, trip planning and real-time information, e-payment and smart ticketing and delivery services. These digital services can contribute to improving operations and service quality of paratransit.

3.3.1.1. Availability and affordability of digital tools in Asia

The emergence of digital tools in paratransit is enabled by a large access to internet, especially through mobiles. In 2019, in low and middle-income countries, 87 % of all broadband connections were mobile broadband. In South Asia and East Asia & Pacific, respectively 33 % and 60 % of the population were connected (i.e. using mobile internet) in 2019 according to GSMA¹⁶ (GSMA, 2020). The connection level in East Asia & Pacific (60 %) is higher than the global average (49 %) and significantly higher than in Sub-Saharan Africa (26 %) where paratransit is also omnipresent.

It is important to note that **there is an important rural-urban gap in mobile internet use.** In 2019, the use of mobile internet in rural areas was 34 % in low and middle-income countries, compared to 54 % in urban areas. In South Asia, the rural population was 30 % less likely to use mobile internet than the urban population in 2019. The observed rural-urban gap in mobile internet use is lower in the East Asia & Pacific region and has declined

¹⁶ The Global System for Mobile Communications Association (GSMA) is an industry organisation representing the interests of mobile network operators worldwide. Figures used in this section were retrieved from the report entitled "State of Mobility Internet Connectivity Report 2020" (GSMA, 2020).

at a fast rate in recent years: it stood at 22 % in 2019, against 30 % in 2017. Sub-Saharan Africa had the largest gap at 60 % in 2019 (rural mobile internet use stood at 16 %, compared to 40 % in urban areas).

Smartphone ownership is particularly important in driving mobile internet use. Affordability of internet-enabled devices and data remains a key barrier to mobile internet adoption. However, cost of such devices is declining in countries with lowest levels of affordability. In 2019, the cost of an entry-level internet device stood at 18.5% of monthly GDP per capita in East Asia & Pacific, compared to 20.9% in South Asia and 30.2% in Sub-Saharan Africa. For reference, the average cost of an entry-level internet device represents 4% of monthly GDP per capita in high income countries. In Sub-Saharan Africa and South Asia, it is reported that the median cost of an internet enabled device in 2019 was around USD 35, compared to USD 40–60 in other regions.

When examining smartphone penetration in Asia, it is found there are large differences between countries in the region, as shown in Figure 6. In 2020, while in Vietnam, 63% of the population were described as smartphone users, i.e. using a smartphone at least once a month, in Pakistan, only 18% were considered to be smartphone users. However, smartphone penetration is witnessing extremely high growth rates. For instance, in 2017 in Indonesia, only 20% of the total population were smartphone users, while in 2020, smartphone users accounted for 58% of the total population in the country.

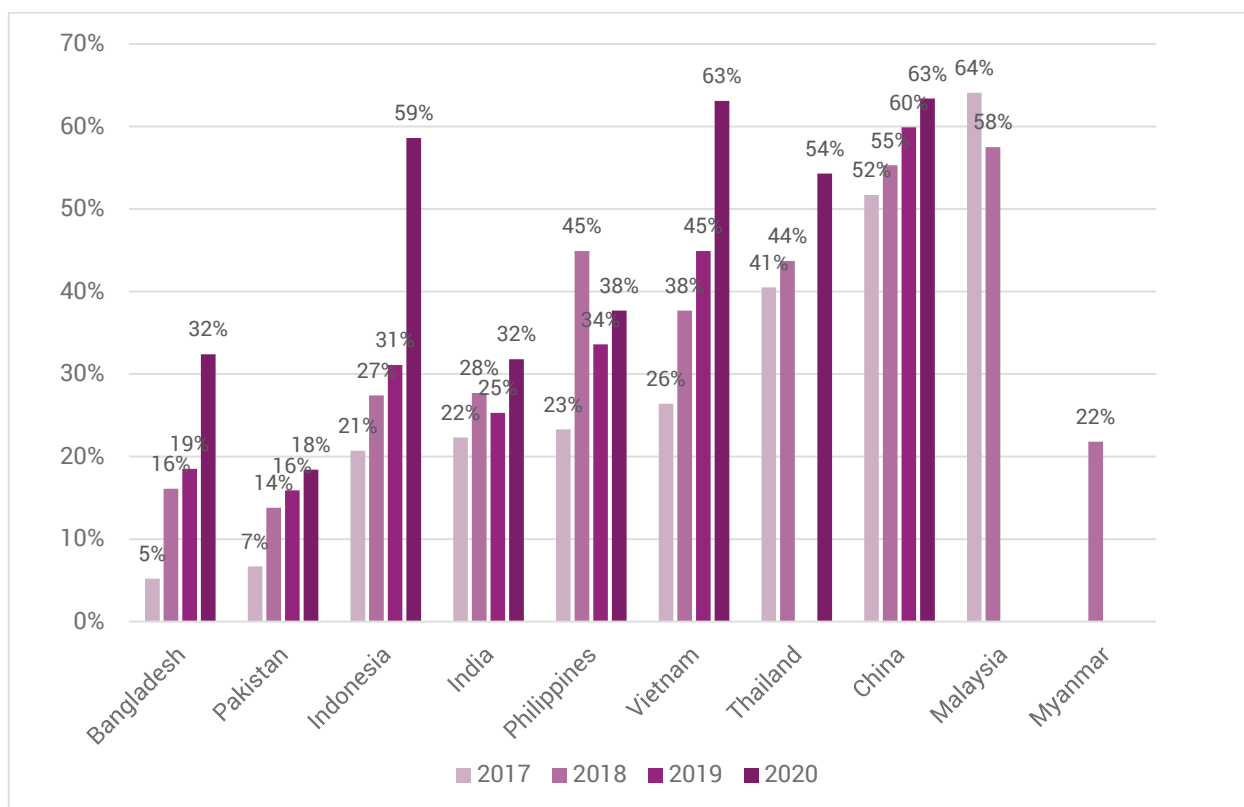


Figure 6 Smartphone Penetration Asian countries, in percentage of population actively using a smartphone (at least once a month), Source: Newzoo's 2017, 2018, 2019 and 2020 Global Mobile Market Reports

In India, the recent boom in the use of internet results partly from the aggressive strategy of one of the main providers, Go, who created an offer with internet access for less than USD 1 per month, accelerating massively the diffusion of internet since a few years. More generally, the digital innovations are strongly supported by the Indian Government through an initiative called “Digital India” aiming to spread the use of digital tools among Indian society (Interview K). By way of comparison, in 2018, it was reported that the percentage of smartphone

users was 76% in France, 36% in South Africa, 21% in Kenya and 13% in Nigeria. In addition, it is understood that the COVID-19 has increased reliance on internet and is expected to have accelerated further the use of digital technologies.

3.3.1.2. New mobility services: Ride-Hailing Apps (RHAs)

The emergence and mass uptake of smartphones enabled new mobility options such as applications offering e-mobility services. Today, **Asia's paratransit sector is characterised by the rapid adoption and expansion of ride-hailing apps (RHAs) in many cities.** While RHAs services involved all type of private vehicles, due to a high usage of motorised two wheelers,¹⁷ motorbike is one of most used vehicles through the available apps in several countries in Southeast Asia. Many different terms are used to describe RHAs such as app-based ride-hailing services, Transport Network Vehicle Services (TNVS), Transportation Network Companies (TNC), On-Demand Ridesourcing, Motorcycle-Based Ride-Sourcing (MBRS), etc.

The multiplication of the number of apps and e-hailing services in Asia (especially for motorbikes) is important. In 2017, there was **a cumulative of 79 apps available in South and Southeast Asia.** This included companies such as Uber, Lyft, Didi Chuxing, Careem, Freenow, Grab, Be, Gojek, Ola, etc. This is due to a favourable context with the emergence and rapid adoption of technology and ICTs by Asia's societies (as described above) on one hand and existing (very) flexible paratransit solutions with the moto-taxi on the other hand.

Some of the most prominent operators in the region today are Grab (that covers mainly Southeast Asian countries, see Spotlight [here](#)), Ola (in India) and GoJek (in Indonesia). At the national scale, it is reported that Ola is available in 250+ cities in India and GoJek operates in 207 cities and managed to settle in other countries (Singapore, Philippines, Thailand and Vietnam). The figure below details some of the most popular RHAs in selected countries across Asia. The first year of RHAs operation in each country is specified in between parenthesis.

It remains difficult to estimate the modal share of RHAs in Asian cities today. Egis' survey in 2020 in Medan (Indonesia) found that ride sharing accounted for around 57,000 individual trips daily, representing 1.2 % of total mode share in the city. While the majority of these trips were booked on Gojek and Grab, new ride sharing companies keep emerging such as Maxim and inDriver. Medan's RHAs fleet size is currently unknown, but it was reported that their introduction in 2014 led to a sharp decline in the number of motorised tricycle (betor) in the city. Regarding Ola (in India), it was estimated that the company was operating a network of more than 200 000 cars in 2015, with an average of 150 000 bookings per day, with 600 000 drivers. Initially the company offered cab services, but due to the strong competition with companies such as Uber, Ola diversified its service offer with the introduction of auto-rickshaw services in Bangalore, spreading to other cities afterwards (Basu, 2019).

¹⁷ Especially in some Southeast Asia countries, see Spotlight on Modal Shares Section [3.4.1.1](#).

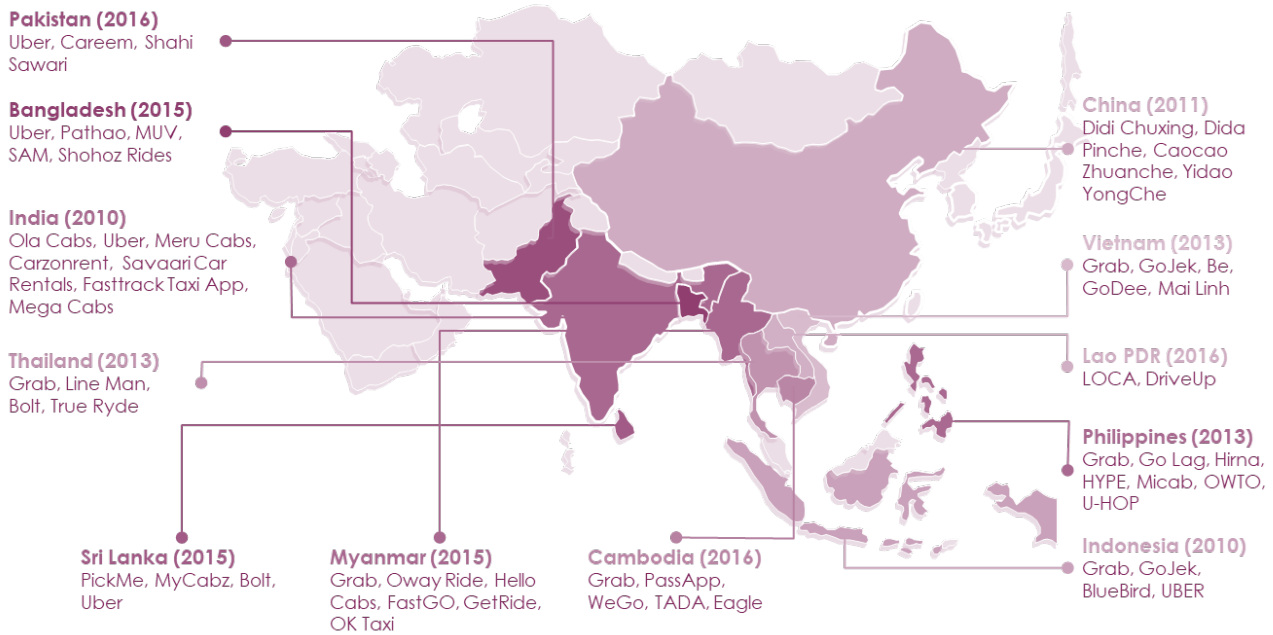


Figure 7 Mapping RHAs in Asia, Source: adapted from Phun et al., 2018, Consultant

Passenger information and fare transparency provided by the apps represent main assets of the digital tools, as they allow passengers to optimise their trip in a context of very poor access to real-time data and information in general (Eskenazi & Boutueil, 2016). The possibility to book the trip also empowers customers and contributes to an overall improvement of the service. The real-time information provided by RHAs is believed to facilitate integration with other transport modes in some cases. In Jakarta, motorcycle-based ride-sourcing (MBRS) were found to be feeders for short travel distances and acted as a complementary mode for the Bus Rapid Transit system, the TransJakarta, and Jakarta commuter train (Irawan et al., 2020).¹⁸ In India, the complementarity between paratransit and mass transit services has also been enhanced through the use of digital apps, in Kochi for instance (see Spotlight [here](#)), or through the emission of new permits called “metro feeder” permits (interview L).

Spotlight 1 - One of the RHAs dominant player and its derivatives activities: Grab

Founded in 2012, Grab (formerly known as GrabTaxi) is a Singapore-based technology company that offers ride-hailing and logistics services through an app. After having acquired Uber’s Southeast Asia operations in 2018, Grab became the most popular RHAs in the region, the first transportation platform in the ASEAN region as well as the first fintech platform. Beyond transportation services, Grab’s fintech services include payments, insurance, micro-investment and financing to consumers, micro-entrepreneurs and small businesses through one of its subsidiary’s companies.



Figure 8 Coexisting Uber and Grab motorbike drivers in Ho Chi Minh City (Vietnam) before Grab acquiring Uber operation in Asia, Source: Consultant

¹⁸ This type of complementarity can be further enhanced by partnerships between RHAs providers and mass transit companies. In the USA, the Southeastern Pennsylvania Transportation Authority (SEPTA) has established a partnership with Uber. In order to increase the train demand, SEPTA train users were given a 40 % discount for Uber rides with a maximum discount of USD 10 per ride. As subsidies’ costs were entirely borne by Uber, SEPTA provided co-branded advertising on their railcars (Irawan et al., 2020).

From the customer side and practical use, Grab allows the user to choose its preferred starting point, drop-off point, time, and to select whether they travel for personal or business reasons. The customers can also mark the drivers. Users simply need to download the Grab app on their smartphone, sign up and verify their mobile number. The purpose is to make the use of the app as easy as possible so that everyone, regardless of age or skill, can use Grab. As of April 2021, Grab is reported to have more than 214 million app downloads and operations in more than 400 cities across 8 countries in Southeast Asia (Singapore, Malaysia, Indonesia, Philippines, Vietnam, Thailand, Myanmar, and Cambodia).

Within 10 years, Grab has become a leading ‘super app’ in the region with millions of people relying on the app every day for ride-hailing but also for business logistics and food delivery services. Additionally, Grab provides financial services offerings through the Grab Financial Group (GFG), including digital wallet payment, lending, insurance, and wealth management. For instance, in Indonesia, Grab has collaborated with JULO, a digital credit provider, to provide same-day micro loans to drivers and delivery partners. In Malaysia, in 2020, the Government introduced a stimulus programme that used selected e-wallets providers including GrabPay to disburse government funding to 15 million citizens and encourage consumer spending amidst the COVID-19 pandemic.

Additionally, **most platforms such as Grab and GoJek offer e-payment. For users, mobile applications have been found to save considerable time by avoiding the fee negotiation process.** In Jakarta, it was reported that higher-income city dwellers people tend to use RHAs on a regular basis due to the convenience, and their usage of motorcycle taxis is decreasing (Irawan *et al.*, 2020). The same users’ trends are observed in the Philippines where RHAs are more expensive than conventional public transportation (Ramizo, 2019). However, higher-income users are willing to pay more as RHAs services are reported to be safer and more comfortable (Ramizo, 2019). In India, as large parts of the population are still unfamiliar with the on-line money transfers, RHA offer a cash option, and a broad range of other options is available, such as e-banking, app-wallets, top-up cards (Basu, 2019).

E-payment enabled by RHAs can also benefit drivers. In Indonesia, when GoJek successfully implemented a process of fare regulation, it was found to benefit the drivers who increased their revenue (Eskenazi & Boutueil, 2016). Income levels of drivers using Motorcycle-Based Ride-Sourcing (MBRS) were found to be 1.7 times higher than traditional non-MBRS in Jakarta (Irawan *et al.*, 2020). In India, drivers’ income using RHA tend to change as there were many incentives from Ola and Uber at the beginning through bonus, which are now decreasing due to the arrival of many new operators in the market, making it unsustainable for the aggregators to provide so many financial incentives (interview L; Basu, 2019). A certain **inconvenient of the platforms is that the fares are automatically set and do not let the drivers the possibility to adjust fares** to the circumstances and context, which is one of the reasons why they are able to meet their daily target income. The transparency of the fare pricing and the commission taken by platforms mostly could prevent drivers to earn more.¹⁹

RHAs also come with many drawbacks as they **lead to decreases in public transport ridership and contribute to increased congestion** (Yanocha *et al.*, 2021). Another drawback comes from the “**stepping-stone scenario**” (Lane *et al.*, 2015), **according to which facilitating the access to car ride for middle-class population through**

¹⁹ The impact of RHAs on the drivers and their role in the paratransit business model is further detailed in Section [3.4.2.3](#) about the *Role of Labour in Paratransit’s Business Model*.

RHA could enhance motorisation and encourage a shift from public transport. Consequently, **governments all over Asia developed regulatory instruments** in response to the introduction of app-based ride hailing schemes.

India is one of the countries which has been most **proactive in introducing measures to regulate RHAs**. This is explained by the fact that the Government of India sees the development of **RHAs as part of its national transport strategy**, and national climate action plan. For instance, India ordered ride-hailing providers to reach 40% of electric vehicles within their fleets by 2026. However, in **some other countries, ride-hailing providers are still largely unregulated**. In Cambodia, the Government simply requires providers to register their company and pay taxes accordingly. However, there are no existing requirements regarding drivers' employment and the actual provision of services (Interview J).²⁰

Today, **the use of RHAs is not limited to on-demand mobility service**. The below spotlights present two cases where the use of RHAs provides innovative services, especially by **proposing new sharing mobility services adapted to passenger's needs** (the case of Mobility-as-a-Service (MaaS) in Kochi, India) and **adapted to the rapid evolution of urban fabric** (case of the RHAs used for fixed route shuttle bus booking in Ho Chi Minh City in Vietnam).

Spotlight 2 - Mobility-as-a-Service (MaaS) in Kochi, India

In Kochi, Mobility-as-a-Service (MaaS) is used as a lever to integrate Intermediate Public Transport (IPT) services in the mobility system, especially since the metro implementation under the local transport authority leadership, KRLM. The objective is to gather all mobility services under the same app, called "Kochi One", and facilitate the coordination between the different offers, in order for the IPT to act as a feeder for the metro system. Besides, through the implementation of this project, e-rickshaws were introduced to provide last-mile connectivity. (Singh, 2020; Shandilya *et al.*, 2019)

In June 2018, auto rickshaws drivers' unions gathered to form a committee, and the registered vehicles were equipped with GPS and card-reading facilities for Kochi One app. At that point, 300 auto-rickshaws drivers were identified to take part in the process and provide trips from and to the 16 operational metro stations. For reference, about 18,000 auto-rickshaws were identified in the Kochi metropolitan area in 2016.

With the use of the app, the service tends to evolve as passengers can share their trip with another person who has booked to go in the same direction. The trip is then less costly for the users, and enables to save time as there are fewer stops compared to a bus-based service.

Parallel to the service evolution, working conditions also improved for the drivers, as they had to form cooperatives, benefitted from trainings and have to respect 8 hour/working day, have paid leaves, medical insurance, access to loans and discounted fuel.

Through the MaaS project, the approach in Kochi was to integrate the IPT drivers and consider the IPT as a service provider within a more global transport system. To this date, the system built in Kochi is one of the most advanced in terms of planned inclusion with IPT services providing last-mile connectivity from/to the subway stations and introducing both new technologies and e-mobility.

²⁰ A comprehensive list of regulatory instruments relating to ride-hailing schemes in Asia was put together by GIZ (2021) and can be found in section 3.4.3.1.

Spotlight 3 - Shuttle bus booking in Ho Chi Minh City, Vietnam

On-demand ride-hailing services are very popular in Vietnam's big cities, such as Hanoi, Da Nang City and Ho Chi Minh City (HCMC). As detailed in the table above, RHAs are now authorised to operate as legal businesses in Vietnam and are considered as conducting business in passenger transportation, with no distinction between digital and non-digital taxi businesses. Among the diversity of RHAs available in Vietnam, Grab remains the biggest player in Vietnam since its launch in 2014 in HCMC. However, beyond Grab's ubiquitous presence, the emergence of fixed-route RHAs with the creation of GoDee in 2018 is an interesting trend in the country's market. The app GoDee is a shuttle service that provides daily rides through mobile app booking in HCMC. The app describes itself as "cheaper than a taxi, smarter than the bus and safer than a motorbike".²¹

The company offers 20 scheduled fixed routes and users can pre-book their ride, from 2 days ahead to at least 10 minutes prior to the trip start, using cashless payment methods. GoDee operates a regular schedule during morning 6:30 am - 11am and evening 3:30pm - 8pm rush hours, often running approximately twice per hour. The company's vehicles are 16-seaters AV vans with AC. These vehicles do not fall under the Vietnamese regulation for shared transportation (buses with more than 29 seats), however, GoDee has recently applied for a trial basis licence to operate fixed routes using smaller shuttle buses.

GoDee has designed all 20 fixed routes to serve the new residential developments in HCMC by using social media and collecting customers' requests. The company focuses on new real estate developments to ensure density and studies alternative transport options (individual cars and motorbikes, etc.) with a shuttle service that offers a shorter commute. GoDee's route creation is a constant iteration process based on customer feedback and route performance.

Through the app, users can also buy daily and monthly passes, track the coming bus and get information about their estimated time of arrival (ETA). The app also offers customer support allowing users and drivers to communicate in real-time and resolve any pending issues to minimise the cases of missing passengers, trip delays, etc.

Some key barriers to the implementation of GoDee include user and driver education (Interview H). GoDee's customers are typically used to on-demand, door-to-door service, which Godee does not provide. Educating drivers to follow a fixed route and schedule was also found to be important.

According to GoDee, integration with mass transit is also crucial for the development of fixed route services (through RHAs or not). They report that buses, shuttles and other shared transport modes can only thrive when users already use high-speed shared transport infrastructure such as BRT, subways and tramways as part of their daily commute. Commuters will switch to shared transport only when it will take three times less time than personal transportation e.g. 20 minutes by subway train or BRT versus 60 minutes by personal motorbike.

It is worth noting that a single trip costs USD 1.29, which is about five times more expensive than a public bus trip. Issues around cashless payment include the high credit card processing costs, up to 10% of the ticket's price. Blockchain is understood to be one of the solutions able to fix that problem, with the promise of low transaction fees for payments.

²¹ For more information about GoDee services consult URL: <https://godee.vn/en>

3.3.1.3. Improvement of paratransit services due to digital tools

○ Real-Time information and trip planning

A trend towards open transit service data standard can be observed in some developing countries in Asia (Krambeck & Qu, 2015), thereby enabling a better access to information for users. The development of technologies such as **General Transit Feed Specification (GTFS)** including paratransit services can serve users for **trip planning and real-time information**, as shown in the case of Sakay described below.

In Manila for instance, the Land Transportation Franchising and Regulatory Board (LTFRB) and Sakay – a Filipino start-up launched in 2013 – have come together to pioneer live location tracking of jeepneys and buses. Sakay developed an open-source multi-modal trip planner.²² The Sakay app provides web- and SMS-based directions for commuters who intend to ride public transport in Manila. Sakay integrates the information about jeepneys, UV Express, trains and P2P buses,²³ using the GTFS data collected as part of the World Bank project that aimed at producing GTFS datasets (see Spotlight [here](#)). Commuters can get route directions via SMS by sending “route” followed by place of origin to destination. Information provided to users also include the estimated fare for each ride and the time it takes to get to one’s destination. This service was used as part of the Government’s response to COVID-19.

Due to COVID-19, many vehicles were not operating anymore. **LTFRB implemented a service contracting scheme in October 2020** to help in easing the impact of the pandemic – this scheme allowed drivers and operators of PUVs to enter into transport service contracts with the Government. Under service contracts, public utility jeepneys and buses are paid a subsidy for every kilometre they run on required 18-hour operations daily (operated by 2 drivers). Traditional and modern jeepney drivers earn PHP 11.00 per kilometre, while bus drivers earn PHP 23.10. **Distance is tracked using the driver-assistance app that Sakay and LTFRB have developed.** As of June 2021, 56,482 out of the targeted 60,000 drivers have been oriented on the programme, and 37,103 have submitted contracts.

GTFS feeds are difficult to develop and maintain in developing countries. However, **other technology can be used to provide real-time information and offer journey planning features.** Relying on GPS and camera, an app-based service similar to Sakay was developed in Bandung (Indonesia), however, it has not been fully implemented yet. The Research Center for Information and Communication Technology at Institut Teknologi Bandung (ITB) has collaborated with the municipality of Bandung to develop a mobile application for people to access in real-time the location of the angkot fleet and to plan their journey. Called the SemutApp, this mobile application is free and relies on two devices installed in angkots:

- A GPS device is tracking the fleet location, speed, and estimated time; and
- A camera is recording the number of occupying passengers in each vehicle.

A study was conducted in 2019 about the users’ perception of this service (Siahaan *et al.* 2020). It was explained to respondents that providing this information requires a large investment, therefore leading to users bearing additional costs. It was found that 84 % of respondents agreed to pay more in the future to access real-

²² For reference the content is available by following this link: <http://sakay.ph/>

²³ UV stands for Utility Vehicle. P2P stands for Premium Point-to-Point Bus Service. It is an express bus service in the Philippines administered by the Department of Transportation and operated by private bus companies in partnership with LTFRB.

time information. However, users were only willing to pay a small additional cost (IDR 500-1,500 ≈ USD 0.03-0.11).

○ Smart ticketing and e-payment

While fare payment remains largely cash based, in recent years, paratransit services in Asia have been enhanced with innovations related to fare collection and multimodal fare integration such as smart ticketing and e-payments. The still predominant use of cash explains the choice of most aggregators to offer several options to the customers, from various forms of payment (cards, e-wallet) to cash payment.

Electronic payment systems mainly include card-based systems and digital wallets supported by mobile payment platforms, tied to a credit card-based account. However, electronic payment systems can also rely on mobile phone-or network-based systems, commonly known as Mobile Money, which do not require a smartphone or even internet access.

RHAs such as Grab typically accept payments via cash, debit/credit card or mobile phone through a digital wallet, also known as e-wallet. In Vietnam, the Moca wallet proposed by the Grab app relies on a local ATM card, i.e. a PIN-based card, used to transact in ATMs only. Traditional paratransit services also started incorporating e-payment systems and digital ticketing, including in the Philippines, and in India. In India, Uber was the first RHA to introduce cash payments as many customers did not feel comfortable with online money transfers. Ola, the other main RHA in the country, also launched its own payment service “Ola Money”, which enables digital payments via an e-wallet which can be used as well to purchase goods and pay bills.

In India, Chalo (“let’s go!” in Hindi) was started in Mumbai in 2014. This start-up developed an app that offers mobile ticketing, online passes and proposes real-time information, helping users track buses and planning for their journey. Chalo works in partnership with the bus operators to deploy hardware on the bus, including GPS and on-board card readers. Once the user purchases the Chalo Card (which can be recharged or used as a monthly pass) from the driver, they can tap the card to pay, or they can purchase the tickets/pass on the Chalo app and scan their QR code to travel. Chalo currently works in more than 30 Indian cities. The Chalo system makes transactions hassle-free, which in turn, can benefit bus operators by bringing in more rides and revenues.

In the Philippines, the Public Utility Vehicle Modernisation Programme (PUVMP) launched in 2017 is pushing for rolling out e-payment in jeepneys. In the context of this reform the modernised jeepneys (i.e. after vehicle improvement and route operation rationalisation) are required to have an Automated Fare Collection system (AFCS)²⁴ onboard. However, at the moment, because the Department of Transportation is still developing relevant guidelines and standards, there can be as many AFCS than jeepneys, making it difficult for users (Interview D).

Spotlight 4 - Grassroot e-payment and financing innovations

In the shadow of the leader of the e-payment solutions as Grab is, locally some innovations are under preparation. In the Philippines, the Francisco Motors Corporation (FMC), one of the company’s manufacturing jeepneys

²⁴ An AFCS automates the ticketing system of a public transportation network and forms the basis for integrated ticketing.

in the country, is implementing the required Automated Fare Collection system (AFCS) in its jeepneys and coupled it with a e-wallet app called the EFI wallet (named after Elmer Francisco, founder and chairman).

Currently at the pilot stage, the EFI wallet app is open to everyone, and all operators can use the EFI wallet as merchants, with no transaction fees. In order for passengers to pay with the EFI wallet, the operators need to put the relevant QR code inside their jeepneys. The passengers can then scan the QR code and pay through the EFI wallet while the operator get the transaction information on its mobile phone (Interview D).

The expected benefits for digital payment in jeepneys include: 1/ The end of the target system: with operators controlling the income generated by the jeepneys, AFCS brings transparency and can be an incentive for operators to salary drivers as employees; 2/ A better integration of various paratransit modes: digital payments can facilitate integration with other transport modes, including other paratransit services; and 3/ Accurate records of drivers and operators' revenues, thereby facilitating tax collection and raising revenues for local governments. While drivers and operators already pay taxes linked to some aspects of their activities, such as fuel, vehicle registration, and fees for operating licences, their revenues cannot be tracked and taxed accurately yet.

In Kathmandu (Nepal), Aeloi (a local start up) is developing solutions to provide digital loans that can only be spent within an ecosystem of accredited vendors. In short, Aeloi is engaged in the so-called "blockchain" to develop decentralised financial solutions, to support green technology project developments and to propose affordable finance for micro-entrepreneurs. Having the technology to provide digital token loan services, Aeloi is trying to coordinate with the safa-tempo association, the 3 wheelers paratransit system operating in the city. The start-up wants to help safa-tempo drivers to have easy access to finance via digital token and to introduce alternative e-payment system between the drivers and the users. Beyond the will to foster the transition towards e-vehicles, Aeloi wish also to build drivers capacity and help build multiple models of income (Aeloi, 2021).

However, **using cashless option can be an important barrier for drivers who rely on their daily income and need the money instantly**. In India, most of the drivers rely on their daily income for the expenses of the next day. It also implies a greater transparency over their revenues, money flows and a greater possibility of control by the tax authorities. If the revenues do not increase, it is understandable that traditional drivers will not make the change (Baker, 2021).

3.3.1.4. Opportunities for transport practitioners: GTFS, GPS tracking and mapping

Mapping and building local knowledge about paratransit services and routes is key for transport practitioners. Making paratransit visible is the first step to understand and acknowledge paratransit, in order to then reform and integrate the sector.

The **use of new technologies is changing the way transport practitioners map transport systems, including paratransit services**. Due to the deployment of data innovations such as GPS tracking²⁵ and GTFS, it becomes easier to map and record information about paratransit services. Over the past years, many projects aiming at mapping paratransit services blossomed worldwide, from central and Latin America to Asia, and Africa –

²⁵ GPS tracking is carried out through a navigation device in a vehicle that uses the Global Positioning System (GPS) to determine the vehicle movement and its geographic position/location.

notable under the umbrella of the Digital4Africa initiative.²⁶ In all these cases, **the goals associated with the mapping are at least twofold: (i) to create passenger information and (ii) to create data useful for local governments to plan and regulate urban transportation.**

A large number of experiences have been carried out in Asia where GPS and GTFS were used to map and improve the paratransit services, including in the Philippines (as described in the below spotlight) as well as in other countries of the region such as India and Thailand where GPS has been experienced (see Spotlight [here](#)). In addition, and due to the Pandemic situation, digital tools have been used not only for paratransit but for planning mobility purpose (that include paratransit services) (see Spotlight dedicated to the use of digital tools during the COVID-19 Pandemic [here](#)).

Spotlight 5 - Experimental GTFS format mapping in the Philippines

In 2013, a pilot project was conducted by the World Bank in Manila to map transit systems and maintain transit databases (World Bank, 2015). The database was built using the General Transit Feed Specification (GTFS). In order to build the database, a transport planning firm and an open-source software developer were hired to develop a mobile phone application for transport agency staff to map transit routes in the GTFS format.

An open-source platform was also developed to allow various agencies to update the database. The map generated provided authorities with a better understanding of the city's transit systems, where the demand for services was and where there were inefficiencies (e.g. route redundancies). In 2014, the Department of Transportation used the GTFS data generated to complete a jeepney and bus route reorganisation plan, with the help of an opensource mobile application for collecting en route passenger survey.

Today, the database is used by developers for a wide array of web and mobile applications making access to public transport easier for users. One of them is TransitMix, a third-party application, offering visualisation of the Manila GTFS data (Now called Remix). This project supported by an international organisation, with a full collaboration of local stakeholders, was then totally absorbed by newcomers.

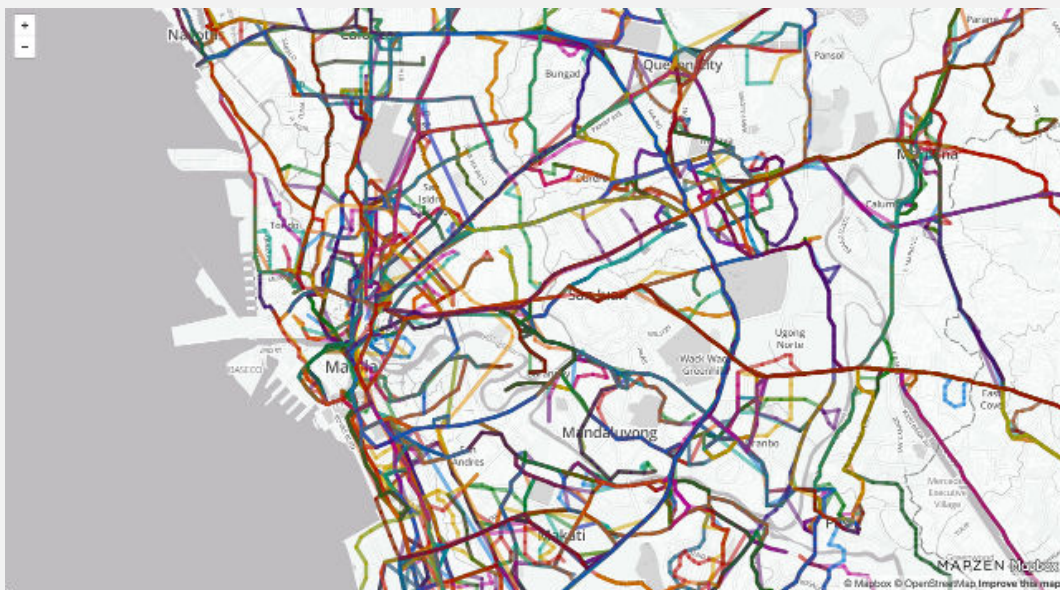


Figure 9 Screenshot from TransitMix data, Source: www.remix.com in World Bank (2015)

²⁶ For reference consult: <https://digitaltransport4africa.org/fr/>



Spotlight 6 - Multipurpose use of GPS

GPS use to identify demand in India...

Back in 2014, Nirmal Foundation, in partnership with East Delhi Municipal Corporation, launched “G-Auto”. Relying on the use of intelligent transportation system (ITS) and GPS, G-Auto provided a way for residents in East Delhi to book auto-rickshaws online or by phone. The service started in Delhi with a fleet of 125 autorickshaws and it was the first organised fleet of autorickshaw service in India providing 24/7 auto-on-call.

G-auto helped drivers identify where the demand is. The service also provided better safety conditions as IPT is not considered to be a safe mean of transport, especially for women and elderly. In Delhi, the approach was more coercive as the drivers had to install the GPS in their vehicle in order to get their fitness certificates²⁷ (Ghosh & Kalra, 2016). The implementation of these tracking devices paved the way for the success of Ola and Uber nowadays.

... and to identify flows in Thailand

In 2017, a study was conducted in Krabi (Thailand) to estimate paratransit passengers’ boarding and alighting locations of paratransit passengers using GPS technology and Wi-Fi-based monitoring (Fukuda *et al.*, 2017). Each songtaew²⁸ in the study area was equipped with both a GPS logger and WifiScanner, thereby collecting data about paratransit passengers’ boarding and alighting locations.

Any passenger with their smartphone’s Wi-Fi turned on could be detected. Using Wi-Fi-based passive passenger monitoring allowed the researchers to collect boarding and alighting information and map dynamic origin-destination travel demands.

Spotlight 7 - Use of digital tools during the COVID-19 pandemic

The COVID-19 pandemic has brought tremendous challenges to transport practitioners around the world, due to the difficulty to conduct fieldwork and large-scale surveys. In the COVID-19 context, the use of digital tools can serve transport users and operators, and it is also proving helpful for transport planners and other mobility practitioners. The use of digital technology in mobility planning was accelerated by the COVID-19 constraints. Mobile phones notably can be valuable tools in mobility planning. Digital footprints from mobile phones for instance can be used to generate useful data for transport and mobility planning. These were used by Egis (2020) – a French engineering firm – in Medan, Indonesia, during the COVID-19 pandemic.

In parallel to carrying out a GTFS survey aiming to record *angkots*²⁹ routes and main stops, Egis has used mobile phone data to collect information about mobility patterns when conducting the Medan SUMP diagnosis phase. In order to compare the pre-COVID and during COVID period situation, Egis engaged a commercial partnership with Telkomsel, the major mobile operators in Indonesia. The use of mobile phone data, combined with households’ surveys enabled Egis to elaborate consolidated Origin-Destination Matrix as shown below and to consolidate the database on paratransit.

²⁷ In India, a fitness certificate is an official document certifying that the holder’s vehicle is fit for being driven in public places. This measure was implemented after the rape of a 25-year-old woman in a cab in 2015.

²⁸ Songtaew are modified pick-up trucks taking passengers on semi-fixed routes. They can accommodate up to 20 passengers, operating as a main public transport mode in many medium-sized cities in Thailand

²⁹ Local paratransit vehicles

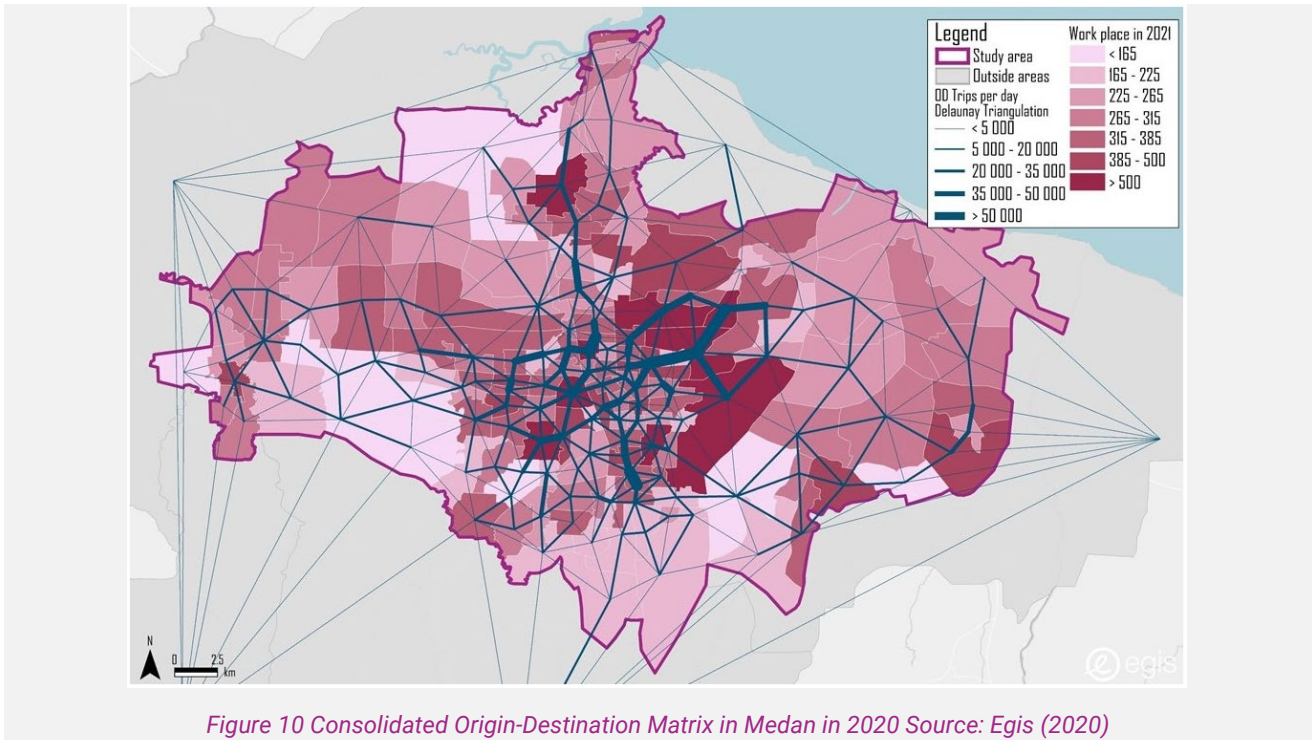


Figure 10 Consolidated Origin-Destination Matrix in Medan in 2020 Source: Egis (2020)

3.3.1.5. Key takeaways

○ Regional specificities

- The **use of digital technologies is widespread in Asia** compared to other regions in the world: the connection level in East Asia & Pacific (60 %) is higher than the global average (49 %) and way higher than sub-Saharan Africa (26 %). However, penetration rates of smartphones and digital tools are concentrated in major cities.
- The **expansion of digital tools includes is wide-ranging, covering Ride-Hailing Applications (RHAs), new payment methods and mapping** (with the use of GTFS and GPS tracking).
- **Digital tools benefit more directly “on demand” services** (rather than “fixed route services”) which are already the most developed form of paratransit in Asia.
- **Digital tools and related initiatives have been developed mostly by the private sector** including start-ups (79+ ride-hailing platforms in 2017). However, the public sector (i.e. in the case of Kochi MaaS application) and civil society (i.e. researchers) are also playing a significant role.

○ Opportunities

- **Digital tools have proven they can contribute to better service** quality thanks to a gradually more user-centric approach of paratransit (e.g. providing passenger information, personalised itinerary planning, new payment methods and ensuring safety).
- **Digital tools can also benefit paratransit operators by enabling them to optimise the operation of their vehicles.**
- **Digital tools are also valuable assets for local authorities** (through facilitating survey and information collection and facilitating modal integration).

○ Constraints

- Because of the **speed at which digital technologies are developing, governments cannot always keep up and this leads to a legal “limbo” in many countries regarding the regulation** (e.g. type of service provided, status of RHAs, etc.). There is a need to update the regulation (especially for RHAs) as the technology and solutions keep evolving rapidly.
- **Drivers are becoming captive of platforms, and digital tools impact their business models.**
- **Increased inner competition between paratransit players and risk of a continuum of fragmented services** due to the multiplication of online platforms.
- The **spread of RHAs could possibly constitute a steppingstone for passengers towards the use of private vehicles**, accustoming them to individual transport rather than collective modes.

3.3.2. The adoption of new and clean vehicle technology

In the context of the climate emergency, the emissions generated by paratransit services are a highly discussed topic (Phun & Yai, 2016; Cassius *et al.*, 2021). **Several factors explain the pollution linked to paratransit services, such as the ageing fleet, the poor maintenance of vehicles, the driving practices** (erratic behaviour, multiple stops) and **congestion**, and **the use of adulterated fuel** (with kerosene especially). However, **it remains very difficult to assess the impact of paratransit services on the environment**, first due to the lack of data, and also due to the difficulties to measure this impact. Often, greenhouse emissions do not take into account the emissions resulting from the production of the vehicle itself, the fuel extraction or fuel processing. Over the last decades, various incentives have been implemented in Asia in order to promote the use of clean technologies and the transition towards E-Vehicles (EV).

So far, **the transition towards clean vehicles has been uneven between Asian countries**. For instance, China and India are at the forefront of the transition globally as they are also known for being the largest producers of EV worldwide while some other Asian countries are lagging behind. However, the adoption of paratransit e-vehicles in Asia is fostered by the availability of EV in the region, enabled by the proximity with China and India, as well as Japan and South Korea. More and more local initiatives are emerging in the region, mostly concerned with the use of electric 2 and 3 wheelers.

3.3.2.1. Vehicle adaptation with cleaner technology

One of the main incentives regards the use of cleaner technologies, especially Liquefied Petroleum Gas (LPG) and Compressed Natural Gas (CNG). The transition towards these new technologies can be reached through retrofit, or the purchase of new vehicles. As LPG and CNG are often cheaper than gasoline, cleaner fuels became popular among the supply and the demand side and spread rapidly in South-East Asia. In Thailand, tuk-tuks are running with CNG and LPG, as well as taxis. In Phnom Penh, bajajs³⁰ using CNG or LPG are also becoming more popular because of their availability on RHAs. Some operators even tend to evolve from bajajs using remarks³¹ (running with gasoline) towards cleaner fuels to respond to the demand observed in the market and through the use of the apps (interview J).

Besides the incentives of the market, **governments also facilitated the shift towards CNG and LPG**. This is the case in India, where it became mandatory to use CNG since 1998 (with effective implementation since 2000). According to Ghosh & Kalkra (2016), more than 60 % of the Intermediate Public Transport vehicles in cities use CNG or LPG fuel, the other operators using a blend of petrol and diesel. In general, these vehicles are more widespread in urban areas where auto-rickshaws are progressively being phased out, for instance in Bangalore, Delhi or Mumbai. According to a report from Shandilya *et al.* (2019), the use CNG/LPG contributed to mitigate 1036,595 tonnes of CO² per day in Delhi. **While some positive results have been observed due to the reduction of air pollutants and GHG emissions, other negative aspect appears**. Firstly, a supply issue was raised. **The refuelling infrastructure became a concern due to the lack of station**. As a result, for instance in Delhi, long queues for CNG refuelling were observed. Secondly, **the obligation to evolve towards the use of CNG and LPG**

³⁰ Bajajs are three-wheelers imported from India, consuming cheaper liquefied petroleum gas and typically operated by drivers using RHAs. Most of the paratransit drivers who have adopted RHAs operate with *bajajs*.

³¹ Remarks are traditional two-wheeled carriage pulled by a motorcycle.

led to a decrease in the number of paratransit vehicles in some cities. In Delhi, prior to 1998, 83 000 auto-rickshaws circulated on the road, whereas there were 55,000 18 months later (Trivedi, 2015). Indeed, even though access to loans had been permitted to support the incentive to opt for CNG/LPG, many operators were then forced out of the market or had to give up their licence (Trivedi, 2015).

3.3.2.2. Overview of the vehicle electrification: an uneven process

The transition towards vehicle electrification happens at a different pace in Asian countries. If China and India are well advanced in the process, other countries such as Laos or Cambodia do not show yet a representative share of e-vehicles in the total amount of vehicles (see Table 3). Also, important to note is that **even though the increase of e-vehicles has been important over the past years, the technology has been present in Asia for a few decades already:** e-rickshaws started to be developed around Second World War and were introduced afterwards in China by local and Japanese motor vehicle industries. In India, development of e-rickshaws started in the late 1990's, as a way to improve manual rickshaws, and in the Philippines, Francisco Motor Corporation started to produce some electric jeepneys prototypes in 1980's.

Nowadays, **China remains the largest market regarding e-vehicles**, with for instance 1,1 million electric cars sold in 2018 and accounting up to 99 % of the global market for e-buses. Behind China, **India is also well-advanced regarding the shift towards e-vehicles** at the international level. If no roll-out has been implemented yet (contrarily to Chile and Ecuador for instance who respectively rolled-out 200 and 40 e-buses in 2018), procurements are on the way. However, if China and India are considered as leaders at the international level regarding the shift towards e-mobility, the trend becomes more diversified when analysing the different transport services, and especially the spread of 2 and 3-wheelers, which are very popular in South-East Asian countries. In 2020, China exported USD 838.9 million worth of electric motorcycles in all of Asia. China's exports of electric 2-wheelers to Asia have increased annually by 19% on average, from 2017 to 2020 (in value). Vietnam for instance was among the top 3 Asian importers of Chinese electric 2-wheelers in 2020, accounting for 10% of total imports from Asia (in value) (see Figure 11). Regarding electric 3-wheelers in India (also called e-rickshaws), that is known for being one of the fastest growing market, by 2024 nearly half of new 3-wheelers sold will be electric vehicles (Crisil, 2021). Other countries in the region, such as Thailand, are aiming to accelerate the production of electric 3-wheelers, locally named e-tuk tuk, with the target to produce 500 units for 2025 and already 2,200 by 2030.³²

³² Figures exposed by Prof. Yoosapong Laoonual on 24/06/2021 (webinar "Electric 2 and 3 wheelers (by UNEP) with EV Associations", GIZ Transport and Climate Change Week)

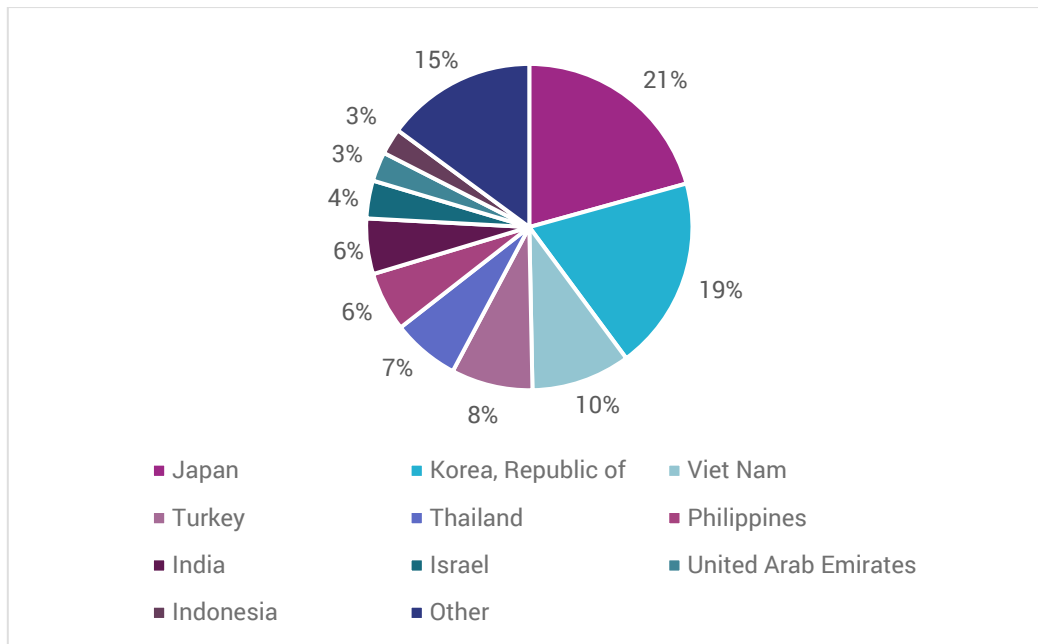


Figure 11 Top Ten Importing Markets from Asia for electric 2-wheelers exported by China (excluding HK China), Source: www.trademap.org

Electric 3-wheelers are used in many developing and emerging countries in Asia, central and South America and Africa, and are instrumental to provide first and last mile connectivity. Also, these vehicles provide both public transportation services, as 6 to 8 seaters (example of Kathmandu in Nepal or India), as well as on-demand taxi services in Thailand, India, Nepal or Pakistan. The nature of the services provided by paratransit, i.e. shorter trips in comparison with private vehicles and mass-transit trips, makes it easier to adopt e-vehicles, which need to be charged regularly. Also, the introduction RHA offering e-mobility services, such as Smart-E in India, contributed to the development of a demand from users, forcing operators to evolve towards these services.

Table 3 Number of E-Vehicles Registered in Selected Asian Countries*, Sources Detailed Below

Country	Number of Electric 2/3-Wheelers	Year
<i>Number of electric 2-wheelers registered</i>		
Vietnam	1,350,000	2020
India	600,000	2019
Indonesia	3,000	2018
Thailand	2,300	2020
Malaysia	2,000	2020
<i>Number of electric 3-wheelers registered</i>		
India	2,380,000	2019
Philippines	4,318	2020

Source: Compilation of sources: Policy Guidelines for Electric 2- & 3-wheelers for Southeast Asia, UNEP (2020), IEA (2019).
 *It is important to note that in many countries part of the fleet remains unregistered.

The introduction of **electric 3-wheelers represents a short-term solution to mitigate pollution**, as according to Shrestha (2018), 3-wheelers in Asian cities produce individually up to 4 tons of CO²/year. Besides, studies show that **e-rickshaws are cost-effective compared to regular vehicles in terms of travel per km and maintenance cost**. At this stage, the **main lever to reduce the operating cost and improve the business model of operators rely on the improvement of battery technology**.

Nowadays, the **autonomy of these vehicles enables to provide up to 120-150 km travel range with lithium-ion batteries and take up to 5 hours to recharge, whereas with lead-acid batteries it takes up to 12 hours to recharge, and vehicles provide a 60 km travel range**. Eventually, the **production of vehicles is feasible in most countries, or least parts** such as chassis, electric motors and batteries being still mainly imported from other countries (except for India).

Spotlight 8 - A RHA providing e-mobility services in Delhi: Smart-E

Among the major cities in India, e-rickshaws are particularly widespread in Delhi, where they were introduced in 2010 during the Commonwealth Games. Nowadays more than 100 000 vehicles are registered; and the number of vehicles rose rapidly over the past few years with an increase of 935 % in the number of registered e-rickshaws between 2016 and 2018. Among the operators, 81 % own their vehicle (81 %), with few operating on rent (29 %). A large part of the offer is provided through RHA, with Ola and Uber, as well as a local RHA named Smart-E. It was developed in 2015 by Treasure Base Venture, with the specific goal to deploy e-rickshaws in Delhi area. Beyond the app, Smart-E provides paid infrastructures facilities (charging and parking) and training for drivers in partnership with other organisations and vehicles equipped with GPS and CCTV to address the issue of commuter safety. E-rickshaws help more than 6,3 million passengers to commute each day (Shandilya *et al.*, 2019), providing mainly first and last mile connectivity, as among these trips, 88% are short trips.

3.3.2.3. Development of a local ecosystem in the e-mobility sector

Considering the different paces at which the transition towards e-vehicles takes place in Asian countries, **the existence of a local e-mobility ecosystem is one of the main levers identified**. For instance, the existence of local manufacturers is a key factor in India. Companies such as Mahindra, Kinetic Green, Lohia contributed to develop a market and decrease the cost of vehicles. This is one of the reasons of the rapid expansion of the usage of e-vehicle by paratransit operators. **The existence of e-vehicle local manufacturers can be a trigger for being use by paratransit operators**. Thailand is currently towards this direction, other countries like Vietnam or the Philippines also are following this path.

Spotlight 9 - Role of local manufacturers to provide jeepneys on the Makati Green Route (Manila)

An EV fleet has been operating in the Makati “Green Route” since 2008. It initially ran as a demonstration project (free-of-charge service) and began operating commercially in 2012 after the transport service franchise was awarded. The e-jeepneys are operated by PhUV Incorporated (Philippine Utility Vehicle), which is the business arm of the Motor Vehicle Parts Manufacturers Association of the Philippines and is an umbrella organisation of companies and institution pioneering the electric vehicle industry in the country. PhUV was granted incentives (such as tax holidays and duty-free importation of raw materials and capital equipment) by the Board of Investments.

The vehicles have a capacity of 16 passengers which is lower than traditional jeeps. This is an important downside for operators as it affects revenues, in particular during peak hour when the demand is increased.

Also, as the cost of new vehicles or even new engines remains prohibitive for operators, there have not been important changes. There could only be a loan amortisation with the support of other external revenues, such as those from advertising. However, this means that such experiment would be limited to central business districts (at least initially) where the potential income for such revenue streams is higher.

The market context, i.e. the production of electric vehicles, is crucial but not sufficient. The development of a local ecosystem is often pushed by national incentives. The Faster Adoption and Manufacturing of (Hybrid & Electric Vehicles (FAME) programme in India (see spotlight [below](#)) or the proactive measures undertaken by the government in Thailand in 2020 are relevant examples. In the case of Thailand, the government announced a target of 250 000 electric cars produced, 3 000 electric buses and 53 000 e-motorcycles by 2025. In this country, the state's support also takes the form of a subsidy up to USD 475 to encourage the purchase of electric cars and motorcycles. Similar incentives are also undertaken in Indonesia.

Spotlight 10 - Evolution of the regulatory framework in India to enhance e-paratransit: FAME programme

New incentives were given to the deployment of e-rickshaws in India since the 2000's with the national government pushing for their use in Indian cities. These incentives happened in the context of the Faster Adoption and Manufacturing of (Hybrid & Electric Vehicles in India (FAME I and FAME II schemes).

This scheme, launched in 2011 and renewed in 2019 (FAME II), aims at financing with 1,15 billion euros the development of e-mobility in India focusing on diverse categories of vehicles (especially e 3-wheelers, e 4-wheelers, e-bus segment and e 2-wheelers) and monitoring the increase of e-vehicles in the country. As an outcome to this scheme, the Government committed that by 2030, 50 % of the vehicles in India would be electric and only electric vehicles will be manufactured in the country.

As a result, for a few decades, the number of e-rickshaws has been increasing drastically. In 2019, India had about 1.5 million e-rickshaws and about 11,000 new e-rickshaws enter the mobility setup every month (Shandilya *et al.*, 2019). In big cities, e-rickshaws provide solutions for first/last mile connectivity, whereas in medium cities it is considered as the main transportation mode.

Also, in the early 2010, there was almost no regulation regarding the operations of e-rickshaws, and this led to a form of liberalisation of the market with a rapid increase of operators. Indeed, soon e-rickshaws became an opportunity for many individuals to access paratransit, traditionally strongly regulated through the contract carriage permits. However, due to the rapid increase in the number of e-vehicles and several incidents, in 2014 e-rickshaws were excluded from the NMT category and passed under the Motor Vehicles Act (Ponodath *et al.*, 2018; Interview F). Nowadays e-rickshaws ply according to the paratransit regulatory framework.

The enactment of such measures and incentives has largely been encouraged by international donors (GEF, UNHabitat, UNIDO, AFD, EU, etc.) through the development of financial tools to help cities and countries to engage with pilot projects and provide loans to encourage operators to change their vehicles (interview I). However, many initiatives introduced in the frame of a localised project struggled to expand once the project faded due to the **lack of regulation and monitoring structures** (Shandilya *et al.*, 2019).

Spotlight 11 - Implementation of e-trikes in Boracay (Philippines): public programme with support of ADB

The first initiative in Boracay was launched in 2011 with 10 e-trikes as part of the local government's programme to phase out gasoline-powered tricycles. A separate project of the Department of Energy and the Asian Development Bank was then carried out to scale up from these 10 e-trikes.

In 2018, the Department of Energy (DOE), in partnership with Department of Transportation (DOTr) and the local government unit of Malay, signed on a Memorandum of Agreement for the donation of 200 electric tricycles. The investment and political will were motivated mostly by the need to develop a more sustainable tourism activity. In 2020, there were 500 e-trikes in operation in Boracay managed by the Boracay Land Transportation Multipurpose Cooperative (BLTMPC). However, 182 gasoline-run units are yet to be converted. The local authorities issued an executive order stating that traditional Motorised tricycles should be totally phased out of the streets of Boracay in 2020.

These initiatives were made possible by the following enabling conditions: an interest and strong commitment by the local government, giving them the willingness to pass laws and guidelines to ban gasoline tricycles, the availability of "Champion Leaders" in the organisation, the presence and activism of an Organised tricycle group, as well as some strong interest from the owners of tricycles, sufficient electricity available for charging, partners interested in the charging infrastructure, but also the drivers' willingness to change, the consideration for typography, and finally the existence of an organised supply chain.

However, the will to quickly implement such incentives sometimes lead to unexpected results or flaws. In India for instance, the government softened the conditions to get permits and licence for e-vehicles (no specific permit needed initially to operate an e-rickshaw, by difference with regular rickshaws), in order to achieve its global agenda on green transition. Due to the lack of regulation, more incidents were registered immediately after the incentives happened. In Thailand, a pilot project was launched to convert Win Motorcycles (moto taxis available in some areas of Bangkok) into electric vehicles (Interview I). The technical aspects of the project were deemed feasible. The technology to convert the fuel engine motorcycles into e-motorcycles was locally available. Moreover, the presence of local manufacturers and technical knowledge on the ground was favourable to this conversion. Yet, there were several flaws in the project's implementation, especially regarding the issuing of number plates. Indeed, in the context of Bangkok, motorcycles are registered individually, and the licence plate identifies the vehicle, not the owner. Due to the engine change, the administration considered the vehicles to be different ones and they had to be registered again, leading to long bureaucratic procedures for drivers. In addition, the management of vehicle registrations was transferred from the national level to the metropolitan level, causing another layer of interference to implement such an innovative project. Thus, the path to the electrification of paratransit vehicles remains fussy.

Spotlight 12 - Electric 3-wheelers in Kathmandu (Nepal): a fragile "poster boy" case

Electric 3-wheelers, also locally known as "Safa Tempos", were introduced in Kathmandu in 1993 in the context of a United States Agency for International Development (USAID)-financed project. This project aimed at converting diesel 3-wheelers ("Vikram Tempos") into e-rickshaws. Originally introduced as a pollution-fighting measure and in addition with the ban in early 1999 of diesel auto-rickshaws, the introduction of these "Safa

Tempos” created opportunities for jobs, especially for women World Bank (2013),³³ as well as serving some of the most important transit routes in the city. Other opportunities appear as the demand was growing. Business sector players then invested in “Safa Tempos” vehicle assemblage chains as well as in charging stations for the batteries. By the end of the 1990s, this sector provided job opportunities for more than 700 persons and the vehicles were serving about 100,000 people every day in the Kathmandu Valley (Bhatta & Joshi, 2004).

“Safa Tempos” can be considered a successful e-tuk tuk which can pass through narrow streets of the Nepal capital city and stops at shorter distance with a capacity of carrying 6 to 12 passengers; and by 2000 the city had more than 600 of these zero-emission electric vehicles (Bhatta & Joshi, 2004). Locally manufactured and backed by government policies designed to encourage adoption, “Safa Tempos” constituted at that time the largest fleet of battery-powered public transport vehicles in the world. They turned one the world’s poorest cities into a pioneer for an extraordinary new idea in public transit, but eventually only briefly.



Figure 12 Safa Tempo drivers, Source: Shilu Manandhar, [Global Press Journal](#)

The fall of the Safa-Tempos

After the 2000s, the “Safa Tempos” system started to decline. At that time the technology was showing some weaknesses – as for instance the need for one vehicle to import new batteries every two years with a cost around USD 1,800 per battery. But one of the most important reasons of the “Safa Tempos” decline was the government’s decision to allow owners of the previous banned diesel 3-wheelers to import diesel/petrol/LPG minibuses (then new type of vehicles) at reduced customs tariffs. Those custom tariffs competed with the privileges extended to the electric vehicle industry.

In the context of Kathmandu, although “Safa Tempos” are privately owned and operated, their commercial viability has been tied to institutional support from the government. In particular, the government has assisted the industry in reducing the cost of production through tax breaks and reductions in import duty on components (especially from the USA and more from India). The government also tried to bring down the cost of operation of electric vehicles by providing electricity to charging stations at a subsidised rate. Hence, the special customs

³³ As a result of Danida (Danish cooperation agency) funded project about 200 drivers were women and some women are also owners in 2013.

tariff rates extended to minibuses had a strong negative impact on the cost competitiveness of the “Safa Tempos”. The government’s decision to promote minibuses in this manner appears to have been a politically motivated move and was not necessarily based on a rigorous analysis of the associated social costs and benefits.

Despite few local electric vehicles manufacture (mostly involved in the assemblage sector) had closed, some Kathmandu iconic “Safa Tempos” remain. Depending on the sources, today there are about a total of 714 and 1,200 “Safa Tempos” operating in the valley. However, the number of “Safa Tempos” owners and entrepreneurs may not rise sharply soon (Shrestha, 2019). Since 2007, the Government adopted several regulations to promote the importation and the use of e-vehicles as well as to develop locally e-vehicle infrastructures. But the results did not come yet. These fluctuations and lack of support from government policies have discouraged a lot of micro-entrepreneurs of the electric vehicle industry, and air pollution rates in the urban area, meanwhile, have skyrocketed (Bhattarai, 2019).

The seeds of resurgence

A major critical factor in the rise and fall of “Safa Tempos” was inconsistent government policy and opposition from interest groups of fossil fuel vehicle owners, which had close connections to the authorities. If diesel 3 wheelers were banned in 2000, at the same time public subsidies were given to minibuses to replace them and LPG 3 wheelers were allowed (with LPG publicly subsidised). In addition, allegations of battery pollution undermined the image of “Safa Tempos.”

Nevertheless, if Nepal missed the opportunity to produce locally e-vehicles as the “Safa Tempos”, the government is developing – first on the paper – plans to stimulate the use of e-vehicles. This country has a great advantage: most of the electricity is produced by hydro-power plants. This is a major incentive to push the transition towards using e-vehicles. If the recycling of the battery remains a problem, this country has green electricity available and direct commercial partners (as China and India) who can provide new types of e-vehicles, as a new generation of e-tuk tuk (Grütter & Kim, 2019).

The current situation might seem difficult for “Safa Tempos” but there is a possibility that it can turn into a positive situation in the near future. Some new entrepreneurs involved in the digital sector (as Aeloi) are developing digital solutions (based on token) in order to provide loan services to current “Safa Tempos” owners and potential entrepreneurs while working closely with the “Safa Tempo” association Aeloi (2021). However electric vehicle industry like “Safa Tempo” still needs support from the government. Here are the seeds to offer to Kathmandu to rebecome a pioneer in the e-vehicle industry.

3.3.2.4. Current limitations of paratransit electrification

The transition towards e-vehicles still faces several obstacles, mainly linked to technological issues as well as the lack of assistance in the implementation of e-vehicles regarding safety and training. First, in spite of the growing market, **the cost of vehicles remains prohibitive for many operators**, especially as many of them cannot access loans or capital (Trivedi, 2015; Interview D). Second, **the access to charging stations is a crucial factor in order to scale up the number of e-vehicles**. Indeed, often there is not enough demand yet to generalise the implementation of charging stations. Different recharging modes exist, such as at-home charging systems or battery swapping, depending on the infrastructure in the city. Also, **the types of batteries used also need to be**

considered carefully: as they represent the cheapest option and technically sufficient, lead acid batteries are mostly used, and Li-ion batteries are not widespread yet. Besides, the working conditions for the recycling of batteries are either not organised, and/or very dangerous for the health of the workers (mainly women and children) in charge of disassembling them, in spite of local initiatives (Shandilya *et al.*, 2019). **The source of electricity also needs to be considered carefully.** In cities of developing country, the priority given to vehicle electrification might be difficult to understand in countries where the population still have limited access to clean energy for domestic use. Besides, the existing grid existing might not be suited for battery charging during peak hours in residential areas. Another controversial point regards **the energy mix, as many cities still rely on coal to provide electricity.** The deployment of e-vehicle fleets is more appropriate in cities such as Kathmandu (Nepal), which relies mostly on hydroelectricity (see Spotlight [here](#)), or Jabalpur (India) where solar powered charging stations for taxis have been implemented (Shrestha, 2018).

Generally, **the transition towards e-vehicles raises many questions in terms of implementation and assistance for authorities, such as the type of vehicles to prioritise for electrification:** 2-3 wheelers are more adapted for electrification given that their batteries are easier to recharge, and the autonomy is more adapted to short distances. However, 4-wheelers are also contributing greatly to the emission of GHG. Another lead to explore regards the use of e-vehicles for goods carriage, which is also one of the functions of paratransit, especially in Asian cities. This aspect has not been developed here, but it is considered (and already exists) in several Asian cities. Another important issue regards **political will towards energy transition and the lack of regulation (or enforcement of the regulatory framework when it exists) regarding the standards to comply with.** This is the case for instance regarding the manufacture of vehicles. Specific parts are produced in India as well as entire vehicles by local manufacturers complying with safety standards. Some parts are also imported, especially from China, which also exports entire vehicles. Some assemblers operate illegally, with no licence and using low quality parts or retrofit models, with no guarantee regarding safety, at a lower cost (the cost different is about INR 60 000 to 80 000 (\approx USD 800 to 1,050), so almost 70 to 90 % of the price) (Shandilya *et al.*, 2019). Eventually, safety concerns have been expressed by users regarding the quality of the vehicles, as well as the training of drivers. Electric vehicles show specificities which, even for experienced drivers, need adjustment, such as the lighter weight of vehicles. Thus, the necessity to provide specialised training for operators before they get their driving licence is still stressed by researchers (Priye & Manoj, 2020).

3.3.2.5. Key takeaways

○ Regional specificities

- **The energy transition in Asian cities is progressing, however at a different pace between countries.** India and China are among the most advanced countries in the world regarding vehicle electrification, whereas some other Asian countries are still lagging.
- **The large fleets of 2 and 3 wheelers in Asian cities facilitate their transition towards e-mobility,** as electric 2 and 3 wheelers are more easily accessible and more convenient for shorter trips given the remaining technological obstacles.
- **In the countries where the transition is most advanced (based on the energy transition and number of e-vehicles), it relies mainly on the strong incentives given by the national government and the existence of a local ecosystem,** i.e. manufacturing industry, able to provide vehicles, batteries and parts – and even sometimes recycle batteries – at a lower cost.

○ Opportunities

- **The use of CNG and LPG by paratransit vehicles is quite widespread in Asian cities** and contribute to mitigate the sector's GHG emissions.
- **The widespread use of 2 and 3 wheelers facilitates the introduction of e-vehicles.**
- **The replacement of older vehicles by e-vehicles will have a positive impact on the GHG emissions and help improve air quality - however, this is only relevant when electricity is not generated by coal-fired power plants.**
- **The energy transition fosters the introduction of fleet renewal schemes with the support of the national and local governments.**

○ Constraints

- **The cost of e-vehicle typically remains high** (especially the upfront cost because of batteries), and significantly higher than traditional engines. This is a significant constraint for a sector where often the stakeholders are cash-strapped.
- **The introduction of e-vehicles entails a completely different business model for operators** (some projects failed due to the poor understanding of the paratransit ecosystems and lack of support for operators).
- **The incentives supporting the energy transition are often decided at a national level and implemented at a local level,** creating governance issues.

3.4. Paratransit characteristics in Asia

This section aims to identify the main characteristics of paratransit in Asia, in terms of its technical operation, business model and institutional and regulatory framework. Based on case studies and experiences across the region, this section presents the features of the sector in the Asian context and **highlights the distinct opportunities which the sector can leverage as well as the constraints which need to be overcome when intending to modernise and professionalise paratransit.**

3.4.1. Technical operation

Paratransit in Asia takes many forms, and the term itself covers a very diverse range of services and vehicles, each playing its distinct role in the mobility system of the city, varying from one country to another. This section examines the role and complementarity of paratransit with other transport modes through its modal share. The sector's supply in terms of vehicles and types of services offered is also analysed in this section.

3.4.1.1. Paratransit in Asian cities' modal split

○ Overview and regional comparison

According to Phun & Yai (2016), paratransit is an “indispensable mode of public transport in Asian developing countries where mass transit systems are inadequate”. **In many cities, paratransit not only complements formal public transport, or a feeder service when mass rapid transit exists, but constitutes the main mode of public transport.**

The market share of paratransit in Asia varies greatly from one city to another. While a number of studies have collected data on the paratransit market share, these studies' results are difficult to compare and aggregate because of the differences in the paratransit definition and the object analysed (number of vehicles on the road, number of daily trips, number of passengers per mode, reported choice of transport, etc.). The definition of paratransit also differs from one country to another (see section 3.1). Additionally, the illegal/informal nature of paratransit in some countries makes it difficult to capture accurate data on these services.

Figure 13 summarises the results of a number of studies analysing the modal share of paratransit worldwide. This figure is for illustrative purposes only as (i) there is a lack of reliable data on paratransit vehicles, and (ii) this figure aggregates a number of various sources including MobiliseYourCities member cities Factsheets, data from the Inter-American Development Bank (Tun *et al.*, 2020) and other sources (city monographies and specific technical studies, see [Appendix 3](#)) which might not use the same definition of 'paratransit'. Considered as a broad picture, **this figure shows that paratransit plays a significant role in urban mobility around the world, including in Asia. However, in the context of Asia it seems that paratransit has a smaller modal share than in Africa for instance.** This remains an indication as for many medium and small size cities (where data is lacking), paratransit remains a dominant mode for commuters.

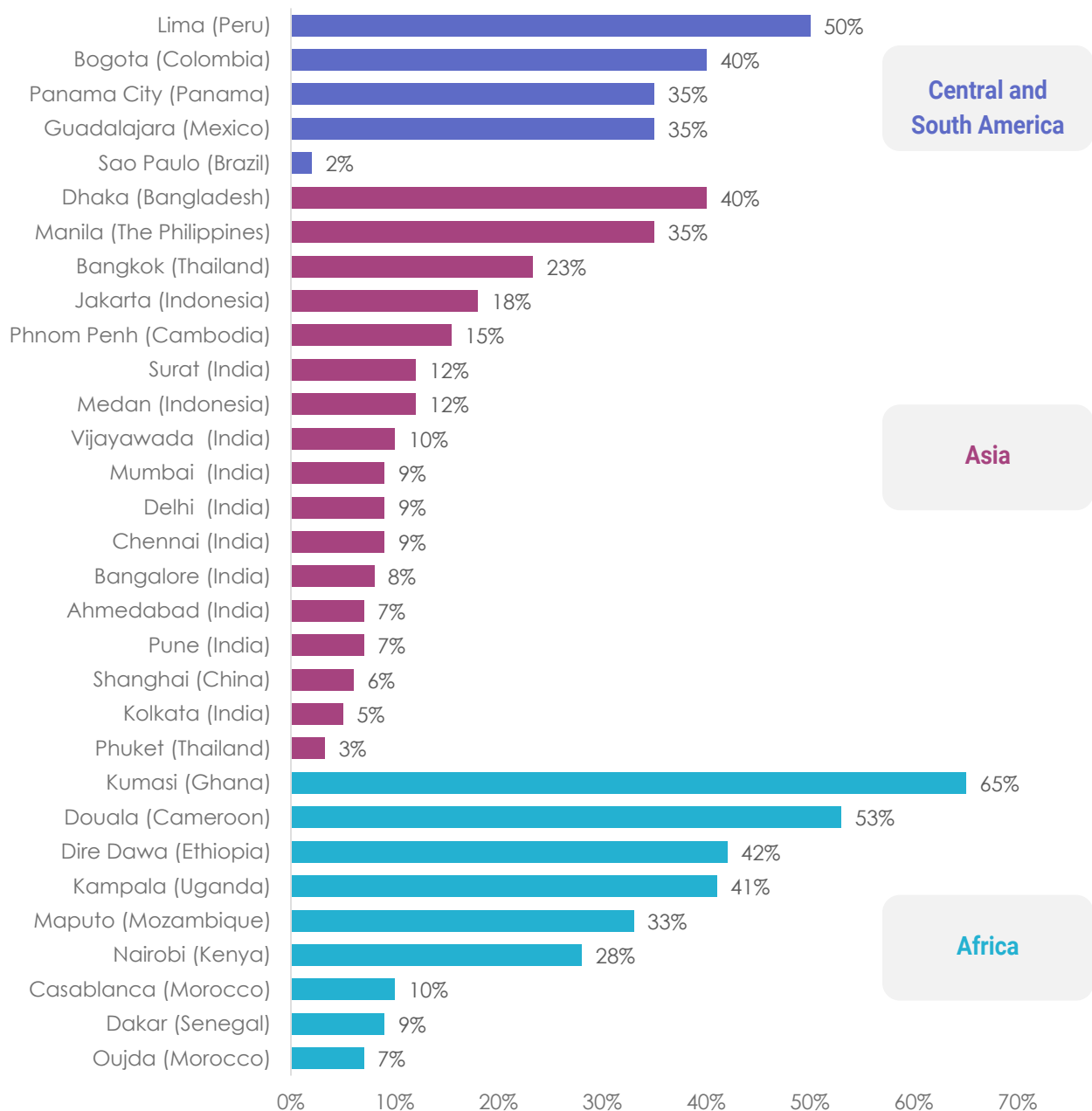


Figure 13 Modal Share of Paratransit in Selected Asian Cities in Comparison with Other Regions, Source: Consultant

Detailed figures showing the modal split of specific cities (e.g. Medan, Manila, Phnom Penh, Phuket and Bandung) and the integration with other public transport modes can be found in [Appendix 3](#). Based on these selected examples, specificities however appear. Paratransit accounts for approximately 12% in Medan (in terms of reported choice of transport mode), 35% in Manila and 15% in Phnom Penh in terms of number of daily trips. As demonstrated in [Appendix 3](#), in Metro Manila and neighbouring provinces, jeepneys are the most prevalent mode of motorised transport, accounting for 19% of all trips. In the Philippines, at the national scale, it is reported that jeepneys account for approximately 40% of all vehicle trips, it is the most dominant mode of road-based transportation system in the country (Mettke et al., 2016).

The formal integration of paratransit with other public transport modes is limited, as detailed in [Appendix 3](#). While more and more initiatives emerge in Asian cities to promote better integration of paratransit with other

modes of transport (as shown in Section 3.4.3), most paratransit services remain poorly integrated with other formal public transport modes. **This poor integration refers to the physical integration** (paratransit can be banned from the major public transport hubs when they exist), **to the fare integration** (paratransit are often using only cash, even evolution is boosted by the use of the e-payment solutions, and disconnected to the formal public service fare), **and to the institutional integration** (vehicles and drivers might be not registered at the local level for the service that they are provided).

It is important to note, however, that **the integration level of paratransit with formal public transport modes largely depends on the type of paratransit**. While some forms of paratransit (e.g. more than 3 passengers / fixed route) are reported to be in competition with other public transport modes and are poorly integrated with them, the situation is different with other forms of paratransit (e.g. 2-3 wheelers), notably the two-wheelers on-demand service.

According to Phun & Yai (2015), in Cambodia, motodop can act as feeders for the bus for instance. In Bangkok (Thailand), a zoning approach was implemented. Since 2003, registration has been required for motorcycle taxis and drivers now wear distinctive numbered vests designating their district of registration and where they are allowed to accept passengers. They are typically used to serve as feeders for BTS/MRT. This form of integration has proven to be successful in that particular context (Interview J).

Spotlight 13 - Modal share and paratransit integration in Indian cities

As described above, comparing modal share of paratransit in various Asian cities is complex due to wide differences in definition between countries. The example of India, where paratransit is often described as Intermediate Public Transport (IPT), allows for an insightful comparison between cities, as shown in the figure below. Here, the modal share is based on the number of journeys by main mode of transport. In India, the modal share of paratransit stood between 5% and 12% in selected Indian cities according to Hanni *et al.* (2021).

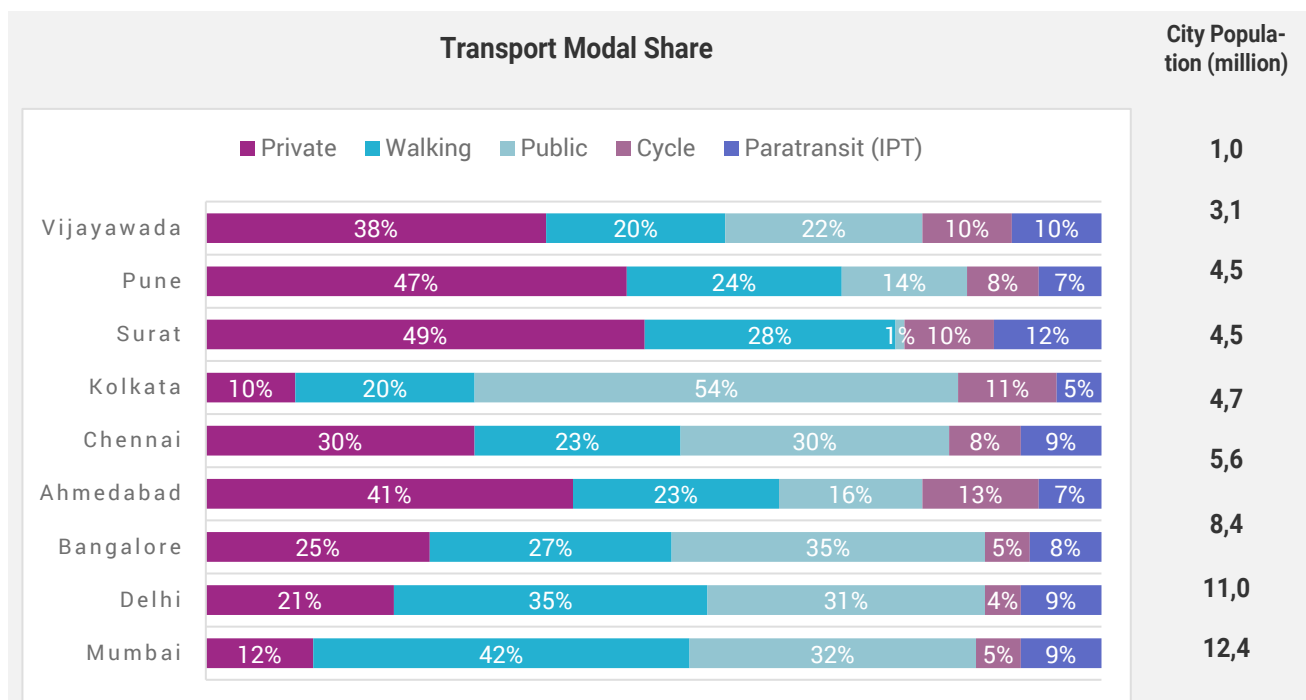


Figure 14 Modal Share in Indian Cities and Population, Source: Hanni *et al.*, 2021, India 2011 Census Data

Delhi, Mumbai, Kolkata, Bangalore, and Chennai have a public transport share of more than 30 %, while the remaining cities (Ahmedabad, Pune, Surat, and Vijayawada) have a far smaller public transport share. As shown in the figure below, it appears that larger cities typically have larger share of public transport. According to Ponodath *et al.* (2018), IPT tend to vary according to the size of cities: the bigger the city, the smaller the modal share of IPT is. It is understood that paratransit higher market shares are observed in smaller cities where mass transit is less developed. However, this is not a clear-cut correlation, as it appears in the figure below on selected cities, and as it has been developed in previous research (Ghosh *et al.*, 2016). Regarding the IPT modes, surveys show that auto-rickshaws are the dominant mode (60 %), followed by Tata Magic (24 %) and in many cities like Delhi, Bhopal, Indore, Alwar, Tempos/Vikrams constitute only 16 %.

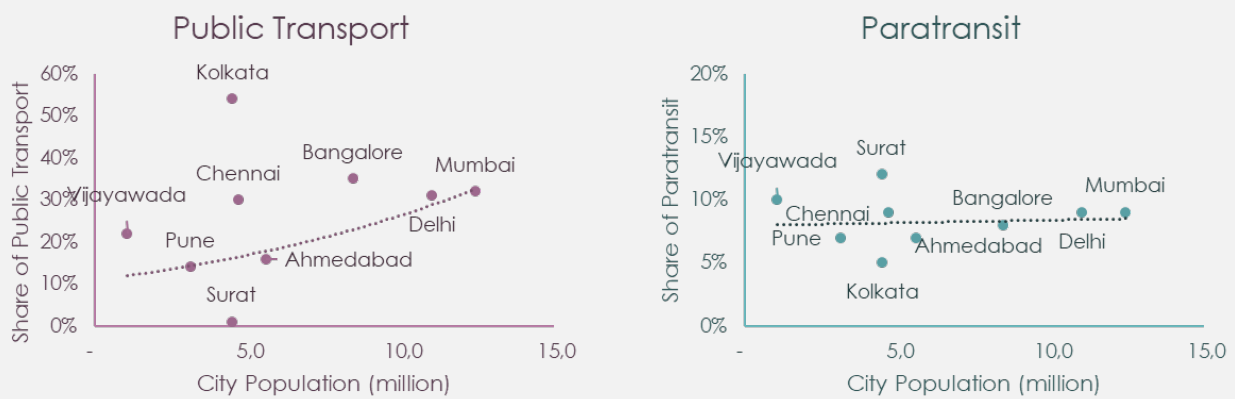


Figure 15 Share of Public Transport and Paratransit in Indian Cities and Population, Source: Hanni *et al.*, 2021, India 2011 Census Data

In India, it is reported that there is a lack of formal integration between IPT and mass transit. However, empirical studies show that there is no competition for the ridership (Gadepalli, 2016; Gadepalli *et al.*, 2018; Basu, 2019). When there is mass transit, IPT becomes a feeder service, and when there is no mass transit, it is the main mode of transport. In Delhi, a quarter (24 %) of metro rail depends on cycle rickshaw for feeder services (Singh, 2020). Interestingly, the comparison between the share of paratransit and the share of public transport in selected cities shows a trend where cities with largest shares of public transport have smaller shares of paratransit.

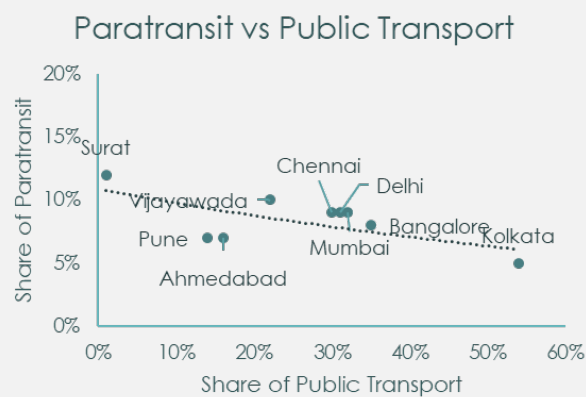


Figure 16 Share of Public Transport and Paratransit in Indian Cities, Source: Hanni *et al.*, 2021

○ Evolution of the paratransit modal share

The role and size of paratransit in Asia is in constant evolution, impacted by the emergence of digital tools and cleaner vehicle technologies as described in Section 3.3.2 as well as other regional trends such as rapid urbanisation, economic growth, rising income levels and private motorisation.

In recent years, rapid urbanisation coupled with economic growth has increased the share of private vehicle transport in most cities in Asia (Hanni *et al.*, 2021). **Private vehicle transport is widespread in Asian cities and has been increasing in recent years, with urban travel dominated by two-wheelers, and followed by cars** as detailed in the spotlight below. In the case of Phnom Penh (Cambodia), motorcycle accounted for 52% of transport modes used in the city (in terms of daily trips) in 2012. In Medan, three quarters (72 %) of households choose private vehicles as their main mode of transportation, with motorcycles accounting for 55% (Egis, 2020). For reference, in Medan, 97% of households own a private motorised vehicle, 74% of which is a motorcycle. In the case of Phuket (Thailand), out of all the daily trips, 88 % are made by private motorised transport (including 50% by motorbike and 38% by car).³⁴ Users choose to travel with private vehicles due to the added flexibility, shorter travel time and avoid public transport as they are perceived as unsafe and uncomfortable with long travel times. In addition, in South and Southeast Asia, the usage and affordability of motorised two wheelers make this means of transport widespread.

Spotlight 14 - Private vehicle ownership in Asia

It is important to note that vehicle ownership in developing Asian countries is dominated by the motorcycle. In Indonesia, Vietnam, Thailand and Malaysia, more than 80% of households owned a motorcycle in 2015. In the mid-2010 car dominates in relatively few Asian countries.

However, as emerging and developing Asian countries become wealthier, it is expected that they will follow the trend observed in countries such as Malaysia and Thailand where high levels of car ownership are found. The motorisation rate in Asia is fast and expected to place an important burden on road networks.

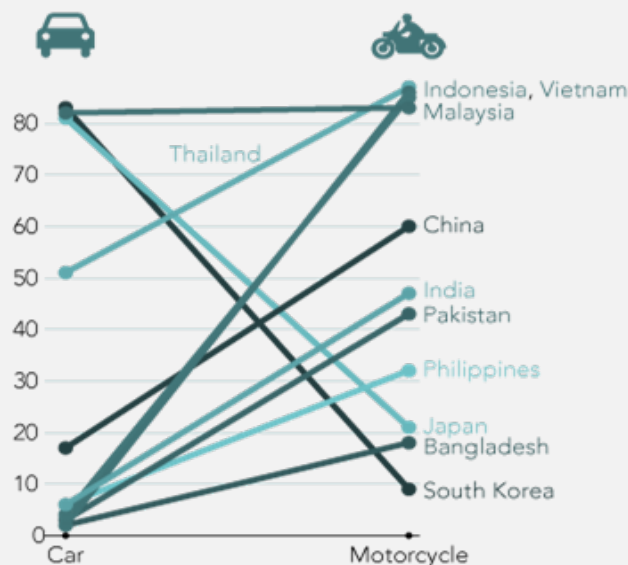


Figure 17 Households that have a car or a motorcycle (in percentage), Source: Pew Research Centre (2015)

³⁴ Find details for the cities of Medan, Phnom Penh, Phuket but also Bandung and Manila in [Appendix 3](#).

Rising income levels and private motorisation rates leads the paratransit modal share to decrease in Asian cities. This is the case in the city of Medan, where angkots have witnessed a sharp decline in ridership since 2010s because of the shift to private vehicles (especially motorcycles) due to higher purchasing power and lower vehicle prices. The lack of ridership has also accelerated the decrease in level and quality of angkot services. At the same time, e-hailing modes have been growing in Medan. When they can afford it, users choose RHAs services over angkots due to their reliability and because of the lack of information regarding angkots schedules. This shift to private vehicles, especially motorcycles, and e-hailing services, is observed across Indonesian cities in general.

3.4.1.2. Paratransit supply: vehicles and services

Given the heterogeneity of paratransit, it is difficult to characterise the nature of the paratransit supply. The types of vehicles and services offered by paratransit operators vary greatly from one city to another depending on the travel distance, urban fabric, level of congestion, etc. **To understand the nature of the paratransit supply, the following aspects are examined:**

- **The vehicles used** (type, capacity, comfort, payment option);
- **The nature of the service** (on-demand vs fixed route); and
- **The level of service offered** (regularity, frequency and spatial coverage).

○ Vehicles' shapes and sizes

The table below (Table 4) details key features about some of the paratransit vehicles used in Asian cities. Paratransit in Asia includes both motorised and non-motorised modes. However, **non-motorised modes are rapidly disappearing and are now mainly used to cater to the tourist's demand**, such as cyclo in Cambodia and in Vietnam.

The size of the vehicles varies greatly, with small size vehicles (motorcycle, two-wheelers, three-wheelers) typically used for short distances, often door-to-door service while larger vehicles (mini-vans, minibuses, and buses) are used for longer distances. Smaller vehicles are particularly needed in cities where the demand is not localised, where the topography is difficult or where the urban fabric comprises narrow streets. Demand for small vehicles like moto-taxis (ojek in Indonesia or xe om in Vietnam) is also high when there are heavy traffic jams. Medium-size vehicles such as Asian Utility Vehicles (AUV) in the Philippines are used on routes where larger buses cannot be profitable due to lack of demand or flexibility.

As described previously, **fare payment remains largely cash in Asia.** However, in recent years, paratransit services in Asia have been enhanced with innovations related to fare collection such as e-payments. The use of the latter has markedly increased in the past few years. First, in some countries, the e-payment was supported through national reforms (e.g. the PUVMP reform in the Philippines). Second, RHAs services, which are more and more ubiquitous in large Asian cities, all accept payments via debit/credit card or mobile phone through a digital wallet. Additionally, the COVID pandemic spur economic players, and among them urban transport providers, to use cash-less systems (Wood, 2021).

Overall, the level of comfort and safety experienced in paratransit vehicles is found to be low. Most vehicles lack standard safety features, and the vehicles' passenger capacity is often exceeded. While some vehicles such as the AUVs in the Philippine are air-conditioned, the majority of paratransit services have basic comfort

features. While there are existing initiatives across Asia to equip traditional paratransit vehicles with digital tools (as described in Section 3.3.1), the large majority of vehicles do not benefit from any digital tools (card scanner Wi-Fi, GPS, etc.).

Table 4 Examples of Paratransit Vehicles throughout Asian cities

Medan Metropolitan Area (Indonesia) ³⁵	
 <p>Angkot (urban minibus)</p> <ul style="list-style-type: none"> • 12 to 15 passengers • ≈ 7,000 registered units vs 3,300 operating units in Mebidangro; ≈ 4,800 in Medan City (2020) • Fare: ≈ USD 0.3 /10km (USD 0.2 for students) • Features: fuel combustion engines, exempt from digital tools, rudimental comfort and no safety features 	 <p>Betor (motorised tricycle)</p> <ul style="list-style-type: none"> • Up to 2 or 3 passengers • 10,000+ licenced vehicles in Medan City (2020) • Fare to be negotiated • Comments: Betor usage decreasing sharply since the introduction of RHAs (2014). Becak (the non-motorised tricycle) has almost disappeared in the last two decades.
 <p>Online Ride-Hailing Motorcycle Taxi</p> <ul style="list-style-type: none"> • 1 passenger • Unknown fleet size (approximately 57,000 individual daily trips) made by ride sharing (Gojek and Grab). • Fare depends on distance and travel time • Existing providers: Grab, Gojek, Maxim, inDriver... 	 <p>Traditional Car Taxi</p> <ul style="list-style-type: none"> • Up to 4 passengers • ≈ 250 vehicles in Mebidangro • Fare depends on distance and travel time • Comments: decreasing usage

Source: Anas et al., 2020 ; Egis, 2020, photos from Egis

³⁵ Also known as Mebidangro, the Medan Metropolitan Area gathers the City of Medan, the City of Binjai, the Regency of Deli Serdang and the Regency of Karo located in the North Sumatra Province (Indonesia).

Manila (Philippines)



Jeepney

- 16 to 24 passengers
- 55,000 franchised jeepneys + unknown number of illegal operators (“colorum”)
- Fare regulated and set by LTFRB³⁶ (minimum fare+ additional per km fare)
- Features: 87% of jeepneys are 15 years old and above (2018), with surplus and second-hand Japanese engines built in the 1980s



AUV (Asian Utility Vehicles) or FX Express

- 10 to 18 passengers
- 6,000 units
- Fare regulated and set by LTFRB
- Features: express point-to-point service in mini-vans, faster than jeepneys and public buses



Pedicab (pedal-powered tricycles)

- Up to 2 passengers
- Unknown fleet size
- Fare regulated by MTPB³⁷ (fixed fare for 1st kilometre and additional fare per 0.5 kilometre)



Tricycles (motorised tricycles)

- 2 to 3 passengers
- Unknown fleet size
- Fare regulated by MTPB (fixed fare for 1st kilometre and additional fare per 0.5 kilometre)

Source : Kaenzig et al., 2020 ; Neumann, 2014 ; Pontawe & Napalang, 2018

³⁶ Land Transportation Franchising and Regulatory Board

³⁷ Manila Traffic and Parking Bureau – In the Philippines, the management of 2 and 3 wheelers are under the responsibility of the local governments.

Phnom Penh (Cambodia)



Motodop (Motorcycle taxi)

- 1 (up to 2) passengers
- Unknown fleet size
- Unregulated fare, known to be affordable



Cyclo (Non-motorised three-wheeler)

- 1 to 2 passengers
- 700 units in Cambodia (2012)
- Fare: unregulated
- Comments: short-distance trips, mainly preserved for tourist demand



Remork (Two-wheeled carriage pulled by a motorcycle)

- Up to 6 passengers
- 10,000+ vehicles (2018)
- Unregulated fare, known to be affordable
- Comments: decreasing usage and observed shift to bajajs



Long-Tailed Remorks

- Up to 20 passengers
- Unknown fleet size
- Affordable fare, unregulated
- Features: operating mainly in suburban areas, outside the city, and catering to low-income people. Reported to be unsafe.



Bajaj (Three-wheelers)

- Up to 6 passengers
- 14,000+ vehicles (2018)
- Unregulated fare, known to be affordable
- Comments: imported from India, typically used by RHAs drivers.

Source: Phun et al., 2015, Interview J



Visakhapatnam (India)



Auto-Rickshaws

- 3 to 6 passengers
- ≈ 28,400 vehicles (50% 3-seaters and 50% 6-seaters)
- Unregulated fare
- Comments: 3-seaters generally operate as a point-to-point taxi, while 6-seaters provide shuttle service



Vikram

- Shared-type of auto-rickshaw operating on fixed routes
- 6/7 passengers
- Routes, frequencies, and fare are decided by these cartels with the tacit support of local RTO officials

Source: Gadepalli et al. (2018)

Delhi (India)



Auto-Rickshaws

- 3-6 passengers
- Three wheeled
- Around 89,000 to 100,000 in Delhi
- Used for last mile connectivity and door-to-door trips.
- Fuelled by Compressed Natural Gas since the conversion of the city's entire public transport fleet from petrol and diesel in 2000-2002



Battery-Rickshaws/E-Rickshaws

- 6 to 8 passengers
- Three wheeled two or three rows of seats behind the driver
- Mostly domestic charging



Cycle Rickshaws (Tricycle)

- 2 passengers
- For short distances of ½ km
- Difficult data collection due to vehicles not being registered but ≈400,000 to 600,000 vehicles in 2009, currently decreasing due to the increase of e-rickshaws' fleet size.

Source: Harding (2017)

○ **Type and quality of services: fixed route vs. on-demand**

As shown in the table above, paratransit encompasses a wide variety of services, from “on-demand” to “fixed route” (depending on the distance, urban fabric, level of congestion, operators, etc.).

According to Phun & Yai, 2016, **fixed routes services are the exception in Asia. On-demand services are more widespread**, partly because door-to-door services providers experience no entry barriers while fixed route services must be discussed and negotiated with public authorities first. However, a wide diversity of situations is observed based on the type of government in each country depending on the level of centralisation and level of democratisation for instance. In a very centralised country, public transport and regulation of paratransit - including fixed routes - will be more common.

As described in Table 4 (see previous section), **while some fares of fixed route services are regulated by governmental bodies** such as the jeepneys in the Philippines or rickshaws in India, **most fares are unregulated for door-to-door services**. In the case of the jeepneys, fares are regulated and set by the Land Transportation Franchising and Regulatory Board. They consist of a fixed element or ‘minimum fare’ for the first portion of the journey followed by an additional per-km fare component. Fare level changes are typically driven by changes in the price of diesel. In India, fares are fixed by the Regional Transport Authority (RTA) through their Regional Transport Offices (RTO) on the basis of the national government notification. However, on the ground it appears that 70 % of cities do not have a fixed fares system, and in practice fares are decided by drivers and unions themselves (Ghosh & Kalra, 2016; Mittal, 2020).

When unregulated, the fares are negotiated between the user and the driver, for instance in the case of remorks in Cambodia or xe om in Vietnam, but overall, they are considered to be affordable. Fares vary depending on the travel time and distance, the number of passengers, the level of comfort offered and the working conditions (e.g. weather events, traffic congestion) (Phun *et al.*, 2015). Other factors can influence the fares. In Phnom Penh for instance, it was found that fares are typically higher when drivers are members of paratransit associations (Phun *et al.*, 2015).

Another type of organisation is the one of vikrams in Dehradun, India, where those three wheelers are organised by “unions” on fixed routes, mostly along high demand corridors in routes parallel to buses, during peak hours. The routes, frequencies and fare of this transport mode are decided by these groupings of vikram owners, referred to as “cartels” by Mittal (Interview F), as he considers that their grouping is created only to promote the mutual interest of its members and because they are often collaborating with the police to prohibit other drivers to enter their sector (Mittal, 2020). Those are not officially registered routes even though the authorities give them tacit support.

According to one of the key persons interviewed (Interview J), one of the reasons why paratransit services survive and thrive in Asia is because it serves a category of people who can accept the trade-off between low fares and issues around low quality and security, haggling, etc. **Fares are typically higher for door-to-door services than for fixed routes and RHAs services are understood to offer the most expensive paratransit services**. In the context of the COVID-19 pandemic, users who can afford it are expected to continue to favour door-to-door services as they require less contact with other users. **It is believed that inhabitants in major Asian metropolises can afford door-to-door services even though they are more expensive** (Interview J).

It is important to note that there is sometimes not a clear distinction between on-demand vs fixed route models. Paratransit services can be found on a continuum, as depicted in Figure 18, and some vehicles are understood to offer mixed services, meaning their nature (“on-demand” vs dedicated “fixed route”) might change depending on the time of day.

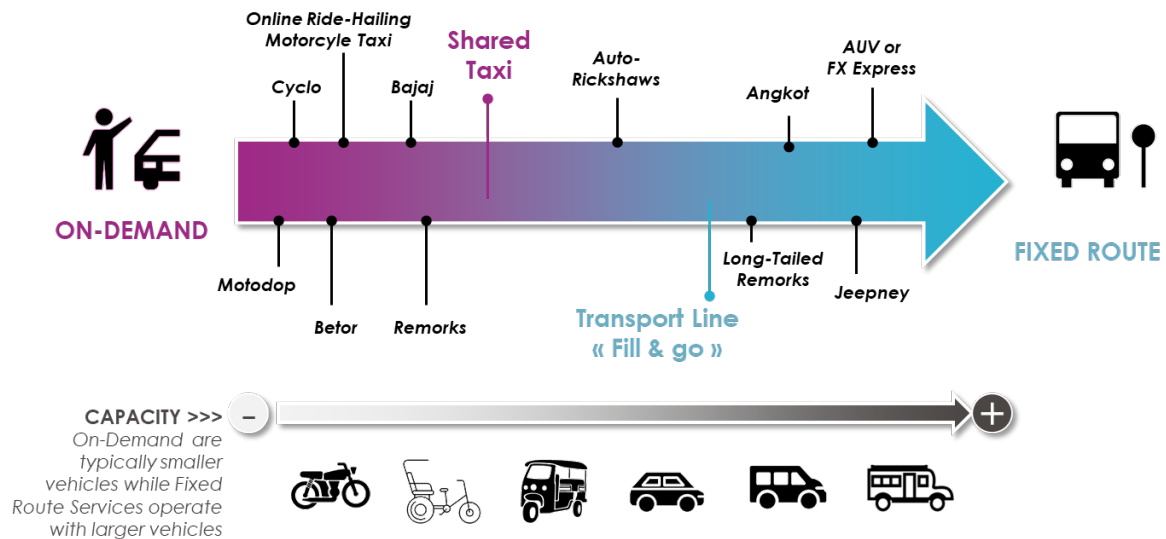


Figure 18 Paratransit Spectrum, from On-Demand to Fixed Route Services, Source: Consultants

Example of mixed-paratransit services

As shown in the figure above, auto-rickshaws in Visakhapatnam (India) are an example of mixed paratransit services where vehicles switch between different modes of operation depending upon the demand at a given point in time (Gadepalli, 2016). Each vehicle is given an annual licence to operate as a “contract carriage,” that is, as a taxi service for end-to-end trips. However, a soft enforcement regime allows them to operate as a “stage carriers,” that is, as a shared mode of transport operating as a shuttle service along fixed routes (Mani et al., 2012). As a result, their day-to-day operations are not monitored by any government agency.

For reference, Visakhapatnam’s auto-rickshaws serve 18 corridors, covering 91 kilometres of road and up to 15% of the arterial and sub-arterial roads of the city. They operate 10 hours per day and are especially active during the morning and evening commuting peak. The majority of the auto-rickshaws trips last for less than 15 minutes in terms of duration and less than 3 kilometres in terms of distance travelled (Gadepalli et al., 2018).

Examples of fixed route services

At one end of the paratransit service continuum is found the “fixed route” service. However, within the so-called fixed routes, there are a number of different operations modes with various levels of “fixity”. Some services operate with schedules while others start when vehicles are full (this is the “fill & go” service). While on the way, some services will stop to pick-up and drop-off passengers while others will only stop at formal stops. A typical example of fixed paratransit service in Asia is the angkot in Indonesia. The table below summarised the main characteristics of angkot services in Medan (Indonesia). It is important to note that while they do follow a fixed route, angkots stop on demand.

Table 5 Fixed Routes: Characteristics of Angkots Services in Medan, Source: Egis (2020), Anas et al., 2020; Joewono & Kubota, 2007

Criteria	Angkots Services in Medan Metropolitan Area (Indonesia)
Fixed Routes number and status	Approximately 200 routes are registered, however, there are not all operating (it is estimated that around 10% of routes are not permanently active).
Travel Time and Loading Factor	<ul style="list-style-type: none"> The typical travel time are between 30 minutes and 120 minutes. The vehicle's average loading factor is reported to stand between 26 to 33%.
Frequency and Regularity	<ul style="list-style-type: none"> Angkot services are reported to be irregular, with no fixed schedule. The number of vehicles per route varies greatly (from 15 up to 200), leading to disparity of services. Services are not based on demand: there is a lack of services on routes which are not profitable and an oversupply on profitable ones.
Quality of Services	<ul style="list-style-type: none"> The quality of services is found to be low, with a poor perception of the vehicles' safety, exacerbated by aggressive driving behaviours. Oversupply of services on profitable routes leads to high levels of competition and poor driving patterns. Additionally, the lack of information creates confusion around routes served. Congestion and frequent stopping to pick up passengers leads to increased travel time.
Spatial Coverage	<ul style="list-style-type: none"> Angkots offer a high coverage due to their small size and flexibility. They can reach areas where public transportation is lacking. Rail and urban buses only offer a low spatial coverage (at 8%) compared to angkots' coverage which is very high (56%). Traditionally, in Indonesia, the routes (and hence coverage) are typically designed by operators. The routes are then proposed to authorities who choose to approve them or not.
Operators	There are 11 route owners (or syndicates) who operate in Medan City, 42 at the metropolitan area scale (as of 2019). They own the routes and buy the services of vehicle owners to operate the services.
Infrastructure	<ul style="list-style-type: none"> There are no angkots' stations or stops in Medan, they stop on demand. However, they have access to bus terminals. There are some existing bus shelters, but they are found to be very ineffective and not fully utilised. Users are typically not aware of these shelters. Additionally, the distance to reach the shelters, the waiting times once there and the poor quality of the shelter's facilities deter potential passengers from using them.

In Asia, another famous fixed route example is the jeepney in the Philippines. The figure below details key figures about the number of routes and operators of jeepneys in Manila compared to Asian Utility Vehicles (AUV), another fixed route service operating in the capital. Both services are very different, with jeepneys stopping on demand while AUVs offer express point-to-point service, partly explaining the observed difference in average speed (km/h). Slow travel speeds of fixed paratransit services are also explained by increasingly motorised population in Manila, leading to traffic congestion. On some routes, jeepneys will be expected to be full before departing, workers known as *starters* are in charge of ensuring that it is the case.

Table 6 Key Figures about Jeepneys and AUVs' Routes and Franchises in Manila (2016), Source: Mettke et al., 2016

Mode	Jeepneys	AUVs
Routes	685	137
Franchises	43,541	2,622
Operators	24,387	2,527
Average speed (km/h)	14,0	25,2
Average length of route (km)	11,3	15,2

Both services also offer different levels of comfort, with AUVs for instance benefitting from A/C. Jeepneys' passengers typically experience a quality of service comparable to riding angkots in Indonesia. Jeepneys vehicles are reported to be uncomfortable and unsafe. There are often delays and prolonged journeys due to congestion and frequent stopping. Regarding access to information, workers known as *barkers* shout the route and destination names of jeepneys to attract potential passengers – this system makes accessing the information relatively difficult for users.

As in the case of angkots, oversupply of jeepneys is reported on profitable routes. An excess of franchises is granted for some routes, while others are not serviced adequately, and the route attribution system lacks the flexibility to respond to changes in demand.

3.4.1.3. Key takeaways

○ Regional specificities

- **Despite the development of mass transit services, the paratransit’s modal share remains high in Asian cities** (e.g. up to 35 % in Manila, around 10 % in Indian cities, Medan and Phnom Penh).
- **Paratransit in Asia is characterised by a large diversity of modes, and especially 2 and 3-wheelers.** Additionally, motorbikes’ ownership is more and more widespread, which explains the increase of daily trips using private vehicles.
- **The high number of smaller vehicles fit the local urban fabric (i.e. narrow lanes and high density of cities) as well as cultural aspects.**
- In contrast to other regions where fixed-routes prevail (in Africa especially), **on-demand services are predominant in Asian cities.**
- Due to higher densities of cities and sometimes the existence of a mass public transport service, **trips are shorter compared to African cities.**

○ Opportunities

- Since most of the services are on-demand and for short-distances, **there is less competition with existing (or upcoming) public transport service. On demand is also serving the “last km”.**
- **The modal share of paratransit tends to vary according to the size of cities** (and the public transport supply) – however this is observed empirically without a clear causal effect identified.
- **The coexistence of various transport modes, especially paratransit and public transport, suggests there is a complementarity between these services.**

○ Constraints

- **Regulations concerning on-demand transport services might prove difficult to enforce by contrast with fixed-routes** because the former are merely individuals entering the market independently, without facing market access restrictions.
- **The highest modal share of on-demand services also results from easier conditions of market access,** by contrast with fixed-routes services which are more tightly regulated.
- Due to the lack of regulation and enforcement – and sometimes because it is allowed – **some operators tend to operate both fixed-routes and on-demand services,** depending on the time of day or route travelled.

3.4.2. Business model

This section aims to **examine the economic and financial system underlying paratransit**. While little is known about the precise financials of paratransit services due to the nature of the business, it is crucial to gain a better understanding of the economic organisation and contractual arrangements shaping the relationships between all stakeholders involved. Additionally, the resulting financial model, tightly linked to the economic system, is examined. The role of the labour force, understood to be at the heart of the paratransit sector, is also analysed in this section.

3.4.2.1. Economic organisation

○ Stakeholders' relationships and contractual arrangements

The economic organisation of paratransit is highly complex, comprising a wide range of stakeholders whose contractual arrangements are at the heart of the ecosystem.

In Asia, as in other regions, **paratransit is a self-organised sector, with vehicle operators³⁸ organising themselves, through structures such as unions, cooperatives, associations, etc.** As shown in Figure 19, **these structures play the role of intermediaries between operators and national/local authorities**, mainly in the case of paratransit fixed route services.

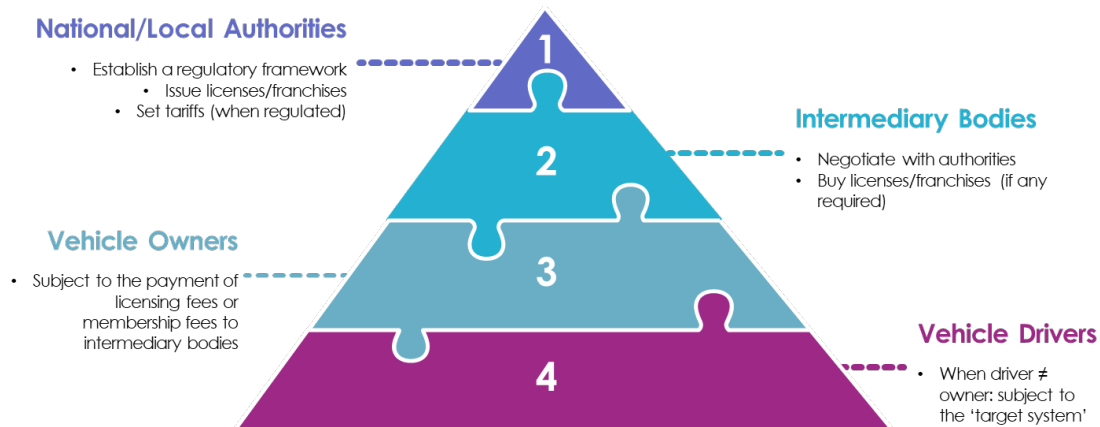


Figure 19 Four Levels of Stakeholders in a Typical Paratransit Ecosystem, Source: Consultant

The intermediary bodies' roles change from one country to another. For instance, in Indonesia, the intermediary bodies include route owners as well as a national association of route owners. In the Philippines, intermediary bodies include cooperatives or corporations, aiming to improve operations and management of services. In India, intermediary bodies such as unions control the routes, and the number of drivers on the routes. The various roles of these bodies are described further below.

National/local authorities typically play the role of regulator only (the role of governments in paratransit system is further explored in Section 3.4.3). **In most cases, vehicle operators (owners or owners-drivers) do not receive any subsidy from the Government.** The absence of subsidies is one the major characteristic of paratransit service found worldwide (Kumar *et al.*, 2021).

³⁸ In this paper, the term "vehicle operator" is used to describe a vehicle owner or an owner-driver, because in some cases, vehicles are operated by one person, or in other cases two different people (the owner and the driver).

When it comes to vehicle operators, the situation varies greatly between fixed route and on-demand services or depending on whether the driver owns the vehicle they operate.

In cases where the driver is not the vehicle owner, the paratransit business model for fixed route services is characterised by the ‘target system’, a system used worldwide, whereby a fixed fee (the ‘target’) has to be paid to the vehicle owner by the driver or the crew on a daily basis. In exchange, the crew receives all of the day’s fare income. The crew typically includes the driver but can also include other workers assisting the driver, for example someone collecting fares from passengers during the ride.

The target system is used by jeepneys owners in the Philippines for instance. Named the ‘boundary system’ in Manila, it consists of a rental contract between the owner of a jeepney and the driver. The owner of a jeepney can be an individual jeepney owner or a jeepney cooperative or corporation.

Vehicle owners implement this ‘target system’ because, as fares are typically paid in cash, they cannot control fare revenues. This leads to drivers trying to capture the maximum number of passengers in a day resulting in aggressive soliciting, disregard for traffic rules and long working days.

Complementary to the ‘target system’, **other practices as the “fill & go” have an impact on the operation service. In the context of the “fill & go”, the crew awaits until all (or most) of the seats in the vehicle are occupied before starting the service. This practice ensures that the ride can be profitable eventually.** However, it means that waiting times can be long for passengers and the service do not follow any schedule.

Spotlight 15 - Economic paratransit organisation in Indonesia: the Medan case

In Indonesia, transportation agencies of cities (i.e. Transportation Departments) regulate the organisation of angkots³⁹ and grant the right to operate routes to routes’ operators (or route owners). Once they have obtained the route licences, the routes’ operators rent them to vehicle owners.

There are typically two types of routes’ operators in the country, cooperative (i.e. equivalent to a union) or companies (i.e. Perseroan Terbatas PT, equivalent to a limited liability company – or SARL in France). The main difference between both types of structures is the distribution of votes in meetings and management boards. In cooperatives, 1 member will have 1 voice, regardless of his/her share of capital held.

Routes’ operators act as administrative intermediaries between the vehicle owners and the Transport Services for the issuance and extension of documents required for the legal operation of vehicles. They defend the vehicle owners’ interests and can sometimes offer financing services to owners i.e. granting loans for vehicle owners to purchase vehicles. Routes’ operators do not themselves own a fleet of vehicles, they merely group vehicle owners choosing to come together to get a better access to the market.

Routes’ operators are transport entrepreneurs possessing financial and social capital, including political connections and close ties with transport administrations. Some typical profiles of route operators include police or militaries (Desmoulière, 2019). Routes’ operators can both be top down (created by the State) or bottom up (grassroot organisation). For instance, the company Metromini in Jakarta was introduced in 1962 by the Governor.

³⁹ It is important to note that while transport agencies play a regulatory role, the city government does not invest in the vehicles and there is no formal funding of the fleets.

Routes' operators are themselves grouped into an association called Organda.⁴⁰ This association represents routes' operators/owners and negotiate with transportation agencies of cities regarding passengers' fare settings.

As part of the elaboration of the Medan SUMP (Indonesia), the relationships between all stakeholders involved in the organisation of the angkots services in Mebidangro were mapped (Egis, 2020) – see Figure 20 below.

In 2020, there were 11 route owners in Medan City (for about 4,800 angkots vehicles) (Egis, 2020). This diagram (see below) further highlights the various roles of routes' operators/owners:

- It is their responsibility to respect the fleet ceiling set by the local government;
- They are in charge of instructing vehicle owners about fares/routes to travel; and
- They can issue credits for vehicle owners to purchase angkots, therefore generating revenues from both operations and financial products.

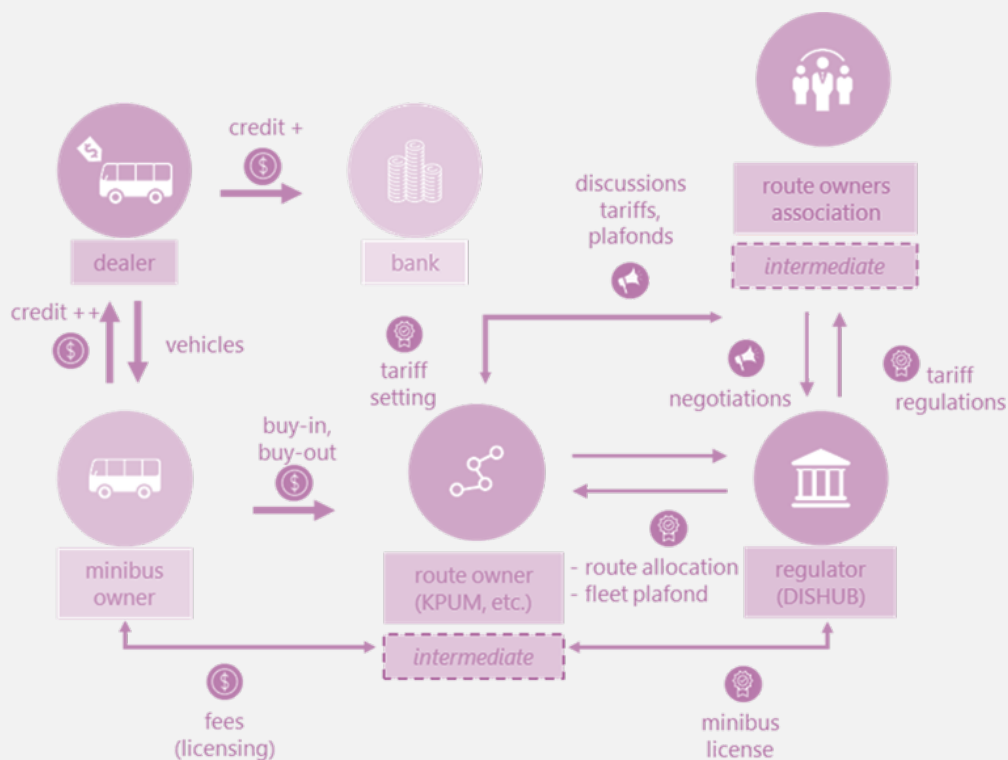


Figure 20 Relationships between Stakeholders involved in the Organisation of the Angkots Services in Mebidangro, Source: Egis, 2020

This system means that, due to the route licencing fees, vehicle owners are pressured into generating enough revenues to cover the fees, and they, in turn, pressure drivers (when they are not owners-drivers). A decade ago, the majority of angkot drivers in Medan were angkot owners themselves. However, the ownership trend has been changing in recent years and, since 2016, the majority of owners own one to five angkots,⁴¹ and do not necessarily drive them (Egis, 2020).

⁴⁰ Organda stands for Organisasi Pengusaha Nasional Indonesia Angkutan Bermotor di Jalan [Organisation of Transportation Companies in Indonesia in English].

⁴¹ Interestingly, a distinction between vehicle owner and entrepreneur was proposed by Darmaningtyas (2012) (quoting by Desmoulières, 2019). According to Darmaningtyas, market players who own up to four angkots should be defined as owners, and those who own more than five should be called entrepreneurs.

When the drivers do not own their vehicle, relationships between angkot drivers and owners are determined by the target system, named 'setoran' in Indonesia. Route operators/ route owners contract vehicle owners, who in turn hire drivers to drive the vehicles. Drivers do not typically have relationship with route owners, they are recruited by the vehicle owners.

As mentioned above, the 'target system' mostly applies to fixed route paratransit in Asia. As discussed in Section 3.4.1, fixed route in Asia (i.e. at the regional scale) remains limited with most paratransit operators offering on-demand services. In most cases, this means that only the first three levels of stakeholders exist in the economic organisation: the national/local authorities, the intermediary bodies and the vehicle owners-drivers as it is typically the same person. In India, drivers and owners are mostly different persons: in the cases studied by Ghosh and Kalra, 70% of the drivers do not own their vehicle and are operating them on rent (Ghosh & Kalra, 2016).

In this regard, India is a particular example where there is another layer of stakeholders that cannot be properly defined as an intermediary body between the operators and the state but do play an important role in the paratransit economic structure (see Spotlight [here](#)). Moneylenders help the owner acquire the vehicle. Before the driver/owner pays back its debt, the moneylender is the official owner of the vehicle, and the contract is at its name. These stakeholders fund the acquisition of vehicle but in most cases are defining high-cost instalments forcing drivers/owners into the target system.

Intermediary bodies, in the case of on-demand services, are often self-organised unions defending the drivers' interests. In Indonesia, *pangkalang* are self-organised cooperatives helping ojek and becak drivers to share resources, defend territory and create a safety net. The drivers' integration can go from a simple uniform to shared repair equipment and emergency fund to government recognition (CDIA, 2011). Some *pangkalang* are sanctioned by local police stations, or business and hotels, authorising the drivers to serve a specific area. It was found that organised drivers are more likely to provide helmets to passengers and drive safely because there is a sense of accountability in the group.

Spotlight 16 - Paratransit intermediary bodies in Cambodia

In Cambodia, both route associations and general associations exist as a type of intermediary body between paratransit drivers offering on-demand services and the authorities (Government and police) (Phun *et al.*, 2015).

A route association is a form of self-organisation where paratransit drivers come together to serve a defined service area such as pick-up spots near an airport or a transit station. Some examples of route associations include Tonlebasac Tourist TukTuk Association (TTTA), and TukTuk Association in front of Phnom Penh Airport (TTAPP).

General associations are understood to work as labour unions, managing and facilitating negotiations with authorities, not only for paratransit drivers but also for other groups of workers. These associations mostly focus on regulation impacting paratransit drivers. They support workers to negotiate with the administration and the traffic police, especially in the case of drivers coming from nearby provinces and the countryside who lack social capital.

Some paratransit associations also have their own logos or stickers attached to the paratransit vehicles. Drivers typically have to pay a monthly membership fee to the association. For motodop and remork drivers, it can respectively cost up to 0.5 USD and 1 USD per month. Labour unions do not offer financial help to drivers.

For 'digital' drivers, RHAs companies work like a labour union as they provide an official registration to the drivers. RHAs drivers do not often become members of labour unions as the RHAs companies seems to play a similar role. RHAs do not however provide direct opportunity of discussion with authorities (and especially traffic police) when there is a need. Additionally, RHAs drivers do not need route associations because they do not need them to find customers, the RHAs is playing fully this role.

○ Sector's fragmentation

Paratransit in Asia is characterised by a high degree of fragmentation (Interview F). In the Philippines, it is especially true due to the current system in which jeepneys operate under the "one franchise – one operator – one unit" scenario (Pontawe & Napalang, 2018). As a result, there is a high number of small-scale operators with 78% of operators in Manila owning just one vehicle. The average operator-to-vehicle ratio stands at 1.3. In the context of the Philippines, each owner or operator holds the franchise certificate for the vehicle and is in charge of guaranteeing that the service complies with all regulations set by Land Transportation Franchising and Regulatory Board (LTFRB) and local authorities.

For reference, jeepney operators (vehicle owners) are organised into three types: single, cooperative and corporation. Since the 'Public Utility Vehicle Modernisation Programme (PUVMP)' was launched in 2017, new franchises can only be issued to a corporation or a cooperative, meaning single operators are bound to disappear. However, the vast majority of operators own one vehicle only, and the multi-vehicle ownership remain a minority. The situation reflected by Figure 21 did not evolved so much in the Philippines due to the pandemic that started in 2020 (Interview C).

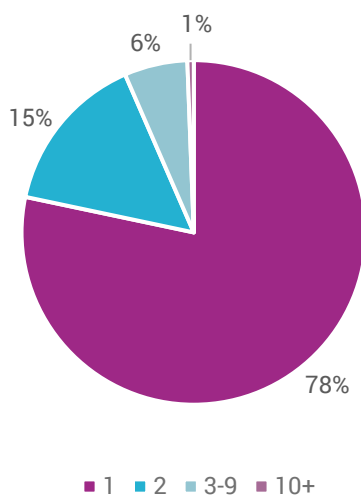


Figure 21 Share of operators by number of vehicles in Metro Manila, Source: LTFRB data (2018) in Kaenzig et al., 2020.

In Jakarta (Indonesia), ownership is also fragmented, typically with a small elite of large-scale vehicle owners, a large majority of very small owners and a broad spectrum of situations in between. However, Desmoulière (2019) highlights that the jeepney sector follows "cycles" of concentration and fragmentation. When there is a need for fleet renewal, the sector tends to concentrate as only large-scale owners can afford to renew their

fleet. Then, once the competition increases again with time, profitability decreases and a second-hand vehicle market emerges, leading to a cycle of fragmentation again.

3.4.2.2. Financial model of paratransit

Common to this sector everywhere in the world, **assessing the financial model of the paratransit services is made difficult by the lack of data available.** As there is a lack of transparency of any transaction, there is a lack of auditable recorded data. As described above, in many cases, the paratransit business model is based on day-to-day earnings for all actors, as well as on the target system (in the case of drivers who do not own their vehicle). The different financial flows between stakeholders are examined below from first the driver’s perspective and second the vehicle owner’s perspective.

○ Financial flows – from the driver’s perspective

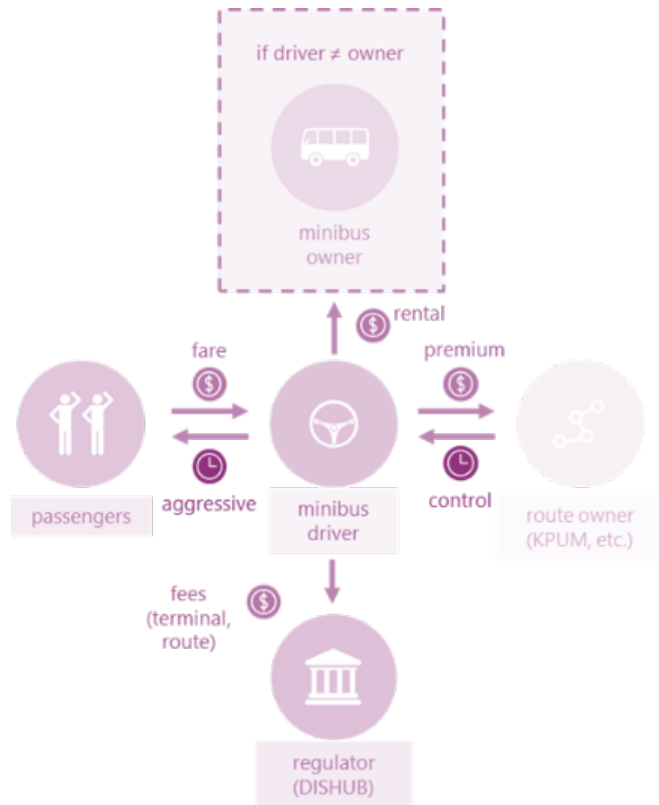
In the context of paratransit service (fixed route or on demand service), considering the driver’s perspective means to focus on the stakeholder who has the function to drive the vehicle during operation hours. Generally, in the paratransit sector, **drivers are typically liable for several types of fees. However, a first distinction should be made: the driver owns its vehicle or does not own its vehicle. In the first case, drivers will have to cover maintenance fees, washing fees, parking/station fees, association membership fees, monthly amortisation. In the second case, the driver is covering the vehicle rental fee.** It is important to note that the vehicle rental fees vary from one route to another, depending on their profitability. In addition, **drivers’ owners or renters are liable for those common fees:**

- **Payment for the crew** (e.g. jeepney barkers in Manila)
- **Fuel;**
- **Parking fees;**
- **Bribes** (towards local authorities or the professional organisations)
- **Association membership fee** (e.g. “butaw”, daily membership fee for a transport group in Manila); and
- **Terminal and route fees** (as clearly identify in the case of Mebidangro, Figure 22).

While taxes are not a direct cost (and especially when the drivers are operating in an informal way with no registrations), **drivers do contribute indirectly through fuel tax, vehicle tax and hub access** (railway station; parking, etc.). While these costs vary widely from one country to another, and between cities as well, it is interesting to compare the available data, including the price of rental vs maintenance fees for instance.

The case of the organisation of angkots in Mebidangro (Indonesia) (Figure 22) provides an example of the various financial flows between the driver and all other involved parties. This reflects the case of a paratransit fixed route service. It shows that in addition to the rental of the vehicle (in the case of a driver who do not own its vehicle) the main fees are related to the registration to operate on an identified route (that is already own by a route owner) and to the authorities (for operating in a terminal for instance).

Figure 22 Financial flows between angkot drivers and related parties in Mebidangro (Indonesia), Source: Egis, 2020



In India, a survey on 19 cities was published in 2016 by Ghosh & Kalra. It enables us to compare the average costs to operate 3-seaters autorickshaws, tempos and vikrams (vehicle that are mainly operates as an on-demand service but may also operate as fixed route in some contexts). The main results of the survey show that costs are comparatively higher for tempos and vikrams as they typically have a higher passenger-kilometre. The larger expenses are rental fees and fuel costs, borne by the driver. For reference, relatively similar maintenance costs were found in a 2015 Survey in Cambodia (including motodop and remork vehicles) (see Figure 23).

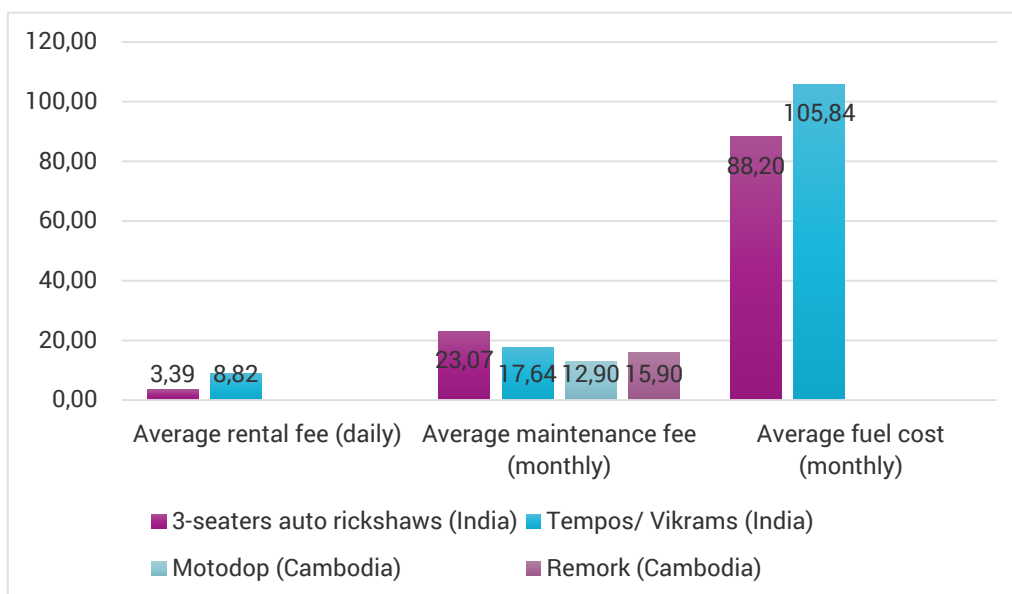


Figure 23 Comparison of Average Costs to Operate Paratransit Vehicles in India and Cambodia (in USD), Source: Ghosh & Kalra (2016), Phun et al., (2015).

The drivers' income comprise the passengers' fares collected. In the case of the target system, drivers only earn what remains of the passengers' fares after achieving the 'target' for the vehicle rental and the fuel expenses.

It is also relevant to have an idea of the delay cost operation. Figure 24 below presents a jeepney daily cost structure (Mettke *et al.*, 2016) in Manila. Jeepneys drivers collect between USD 52 to USD 59 daily in passengers' fares. After paying their costs (rental, fuel and other expenses), they take home between USD 13 to USD 19 depending on the length of the route.

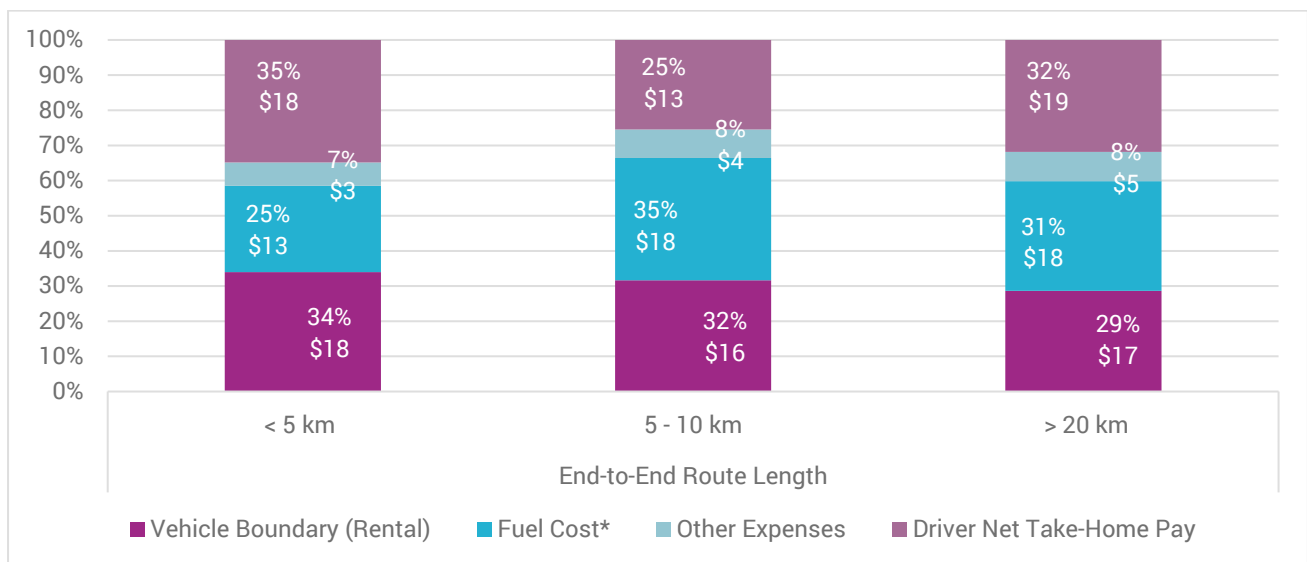


Figure 24 Jeepney daily cost structure (in USD and Percentage share), Source: Mettke *et al.*, 2016.
*Diesel Price USD 0.52/litre

It is difficult to estimate how profitable the paratransit sector can be for drivers. Whether they own their vehicles and the degree to which the sector is regulated have a significant impact on income. As shown in the figure below, **the net income of drivers who do not own a vehicle are much lower than driver-owner**. It is understood that, **without owning a vehicle, it is often difficult to generate adequate revenues to cover living expenses**. This leads drivers to work very long hours, in unsafe conditions – the “real” cost of this labour force is not captured in the figures quoted below as drivers' hourly income is often below the living wage.

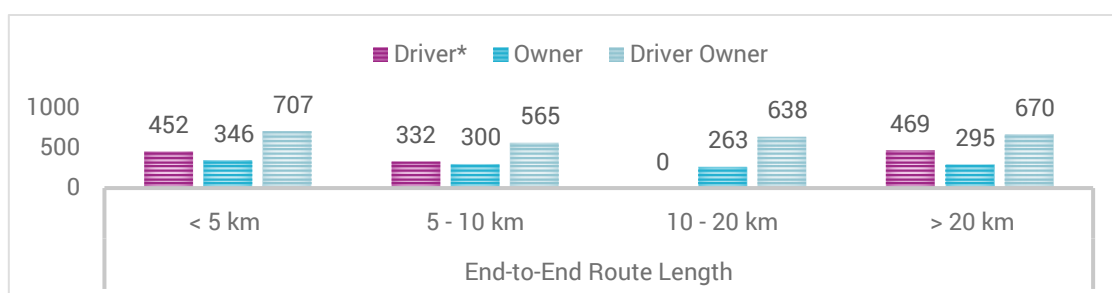


Figure 25 Estimated monthly net income of jeepney operator and driver-operator (in USD), Source: Mettke *et al.*, 2016.
*Assuming that drivers work 25 days a month.

Driving between 12 to 14 hours a day, paratransit drivers in Indonesia (angkot, ojek, and becak drivers) can expect to make between IDR 20,000 and IDR 90,000 (~USD 2 to USD 9) (CDIA, 2011). According to 2015 study (Phun *et al.*, 2015), in Phnom Penh, remork drivers earned on average a monthly income of USD 251 and

motodop drivers earned on average USD 176 per month.⁴² These results are in the same order of magnitude than the numbers found in Indonesia: assuming drivers work 26 days per month, the remark and motodop drivers' daily average income would stand at respectively USD 10 and USD 7.

In Kochi (India), drivers earn less than the minimum wage. They have to pay, on average, INR 300 (≈USD 4) for fuel and INR 250 (≈USD 3,3) as rent per day way when they do not own the vehicle. To this amount, they also have to take into account maintenance fees. This leaves them with an average of INR 550 (≈USD 7,3) per day which is less than the minimum labour wage in the State of Kerala which is set up at INR 600 (≈USD 8) for this type of activity (Singh, 2020). These findings converge with the data collected by Ghosh & Kalra (2016), who indicate net monthly earnings of INR 7 000 (≈USD 93), and some even lower than the minimum wages specified by the States Labour Departments.

Spotlight 17 - Additional sources of revenues for individual drivers

In some specific context, it was observed that individual drivers could get additional revenue that can cover the recurrent fees that they have to pay. Those additional sources of revenues are linked with commercial advertisement in the public space and with the use of dedicated apps.

In Phnom Penh (Cambodia), it was reported that remark drivers could earn around USD 6.2 per month in 2015 with advertisement display complementary activity (Phun *et al.*, 2015). In short, some remark drivers, due to the space that offer the remark (back and side) offer possibility of advertisement. It is also interesting to note that new digital tools could bring in new sources of revenues for drivers. While the app was put in pause (during pandemic), the concept of Rklamo App in Manila is a relevant example. This app allowed passengers to incentivise well-behaved jeepney drivers by giving them a tip via SMS. The app developer hoped that this system could nudge drivers to adjust their driving behaviour to earn more without having to speed and maximise the number of passengers.

However digital tools can bring lots of additional costs (such as the necessity to own a bank account, credit card, fees from the cashless apps) and do not enable drivers to integrate external factors.

○ Financial flows – from the vehicle owner's perspective

From the vehicle owners' perspectives, a different typology of financial flows is identified. **The vehicle owners are responsible for paying the costs associated to maintenance (tires, oil, brake, labour, lubricants, battery, etc), washing and repairs (spare parts, labour also).** In addition, the volume of cost can be more important than a single driver owner on the monthly amortisation of the vehicle (if a loan was contracted), the licence/franchise (due to the number of vehicles and potentially the number of exploited lines) and the organisation membership fees.

In return, the vehicle owners' income consists of the rental fees paid by drivers. As described in the section above on the 'Economic Organisation' of paratransit, the profile of vehicle owners can vary greatly and their capacity to make profits from the operation of paratransit vehicles varies accordingly.

According to Kaenzig *et al.* (2020), in the Philippines, some vehicle owners buy jeepneys as an investment, a ticket for future earnings. It often happens that these investors are overseas Filipinos' workers, earning money

⁴² it is important to highlight that, in this study, 30 % of drivers reported that they had other jobs.

abroad and returning to invest and run jeepneys. This business is seen as a way to earn rental fees during retirement (Interview D).

In Indonesia, some angkot owners consider this business as a family legacy to be perpetuated with angkot ownership going from one generation to the other. Others merely consider owning an angkot as an investment among others. However, in some cases, the angkot is not seen as a long-term investment but rather as a constant source of cash to feed a system of many other complementary activities and investments (Desmoulière, 2019). According to Desmoulière (2019), this is a bazaar type economy, characterised both by the rapid circulation of goods, services or money and by the modest volume of these exchanges. The actors of the bazaar economy spread their capital over several types of investment which generate short-term profits.

The profitability of owning paratransit vehicles depends on a number of factors, which can evolve rapidly such as regulations, prices of spare parts / maintenance, current passengers' demand for the route served, etc. In the Philippines for instance, the attractiveness a franchised route has a strong bearing on the buying price of the vehicle as the franchise remains with the vehicle.

Getting the financing to purchase a vehicle is generally a challenge for small-scale owners. Private equity is often not sufficient to cover the full purchasing price. However, loans from formal financial institutions are not accessible for most operators. In the Philippines, operators can only access financing through conventional bank if they are part of a cooperative as it allows the risk to be spread. In India, Trivedi (2015) as well as other researchers describe the oppressing scheme in which owners tend to fall, with financiers controlling a large part of the permits and imposing interest rates up to 16 or 18 %, and penalty charges. As the permits are only transferred in the name of the owner once the loan and debts have been cleared (until then the permit is under the name of a third party), it means that most vehicles are actually plying "illegally".

To solve the financing issues, a number of schemes exist (see Spotlight on "[Specific Loan Structures in India](#)"). In some cases, **monthly payments can be agreed with the previous vehicle owner. Loans can also be obtained through associations/cooperatives, family or informally.** In recent years, in Jakarta (Indonesia), the "lease-purchase" agreements have developed rapidly: the prospective owner ask a credit organisation to buy the vehicle on their behalf. They then lease it back for a set period of time, at the end of which the prospective owner can buy it back. This means that the real ownership of the vehicles becomes blurry as the persons operating the vehicles for their benefit are no longer necessarily their owners by law. The title is issued to the credit organisation and not the operator.

The issues around financing bear heavily on the operation of the paratransit vehicles. Because vehicle owners have to repay their loans, and profit margins of vehicles (both jeepneys in the Philippines and angkots in Indonesia) are low, **owners do not always have the financial resources for proper maintenance and vehicle replacement when necessary.**

When cleaner vehicles or vehicles with new technology are introduced, the issues around financing make it difficult for owners to upgrade the vehicles and take on board these innovations. In Cambodia, a shift from remark (running with gasoline) to bajaj (running with LPG) is observed. However, the initial cost of transitioning and buying the new vehicle is difficult to bear as many remark drivers are already repaying loans and some are

already experiencing financial difficulties⁴³ (Interview J). In India, the mandatory shift towards CNG and LPG vehicles in the late 1990s provoked a decrease in the number of operating rickshaws (Trivedi, 2015).⁴⁴

Spotlight 18 - Difference between financial flows before and after consolidation under the PUVMP reform in the Philippines

Pontawe & Napalang (2018) conducted a study examining the consequences of industry consolidation⁴⁵ and fleet modernisation⁴⁶ (as per the PUVMP components, detailed [here](#)). To this end, they presented a case study of a fleet management company named “1-TEAM” (1 Transport Equipment Aggregator and Management Inc.), in Metro Manila. 1-TEAM groups 20 franchise owners operating with modernised jeepneys since 2014. Currently, the company manages 30 brand new Euro 2 jeepneys plying in 5 routes within Metro Manila.

The responsibilities of the company’s stakeholders after the modernisation are as follows:

- Operators/Franchise owners: No responsibility in managing the fleet / are guaranteed a fixed amount of boundary every month;
- Drivers: Run the jeepneys for a guaranteed salary and benefits;
- Fleet manager (1-TEAM):
 - Take care of maintenance and operating expenses,
 - Fund the acquisition of the new jeepneys (down payment and monthly amortisation),
 - Manage the day-to-day operations of jeepneys,
 - Transfer the ownership of new jeepneys to the franchise owners/operators after 7 years,
 - Provide the guaranteed boundary for the operators and salaries and benefits of drivers and staff.

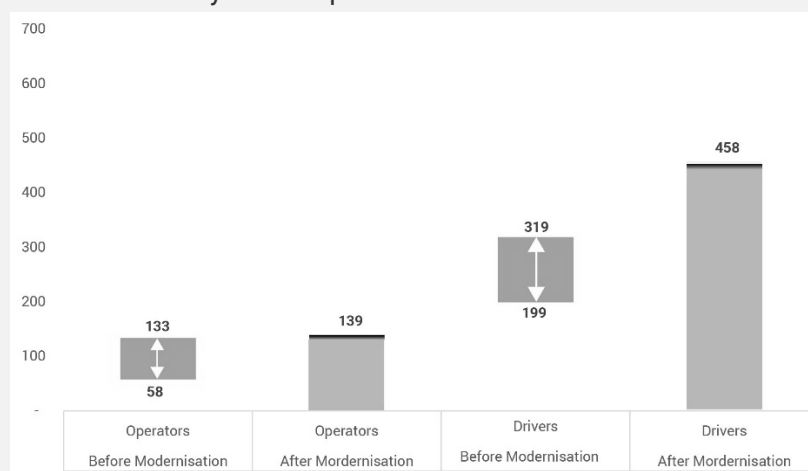


Figure 26 Monthly net income (in USD) of 1-TEAM operators and drivers before and after the modernisation of the jeepneys’ fleet, Source: Pontawe & Napalang, 2018

The figure above shows the change in monthly net income of 1-TEAM operators and drivers before and after the consolidation and modernisation of the jeepneys’ fleet. While operating costs are higher, the efficient

⁴³ For reference, in 2015, the average price of a motorcycle was USD 830 and the average price of a remork carriage was USD 763 (Phun *et al.*, 2015), compared to an average monthly income of USD 251 for remork drivers.

⁴⁴ According to Trivedi (2015), there were 83 000 auto-rickshaws on the road in Delhi in 2000 (just before the transition), and 18 months later there were 55 000.

⁴⁵ Industry consolidation entails individual franchise holders to either join or form legal entities such as cooperatives or corporations.

⁴⁶ Fleet modernisation involves operating jeepneys which are (at a minimum) Euro-4 compliant.

management of the modernised fleet resulted in higher income for both the operators and drivers. For instance, before modernisation, drivers’ net income ranged from USD 199 to 319 (based on the target system). After modernisation, they receive a fixed monthly salary of USD 458.

According to the President of 1-TEAM, his organisation proves that the modernisation of jeepneys can be financially viable. He highlights that “the bigger the fleet, the bigger the income”, with fleet management being the key to shift from the target system to fixed salaries and allow operators to purchase new vehicles without burdening individual operators about their creditworthiness. Additionally, the consolidation results in lower operating costs thanks to economies of scale.

The results of the study conducted by Pontawe & Napalang (2018) are aligned with the results found by GIZ in 2019 (see Kaenzig *et al.*, 2020). GIZ conducted an evaluation of the early operational experiences of the modernised jeepney route operators and overall findings were encouraging.

The majority of operators reported that the commercial performance achieved on the modernised routes was satisfying. Almost all operators were able to cover all costs including the vehicle repayment and turn a profit due to increased vehicle capacity, greater utilisation rates, fleet managed operation and economies of scale, in spite of the increased daily operating costs and the additional overheads for the on-vehicle/ non-vehicle equipment.

The vehicles were operated by two shifts of on-vehicle staff – meaning the vehicles were running all day, leading to a higher vehicle utilisation. Drivers were employed on a salaried basis, benefitted from social security rights, and worked less hours while their revenues remained stable. While frequent stopping and informal pickups remained, better driving patterns were observed.

However, this evaluation found that only a small elite of players (such as 1-TEAM) were involved in the programme to date, with participating entities already demonstrating a certain level of consolidation and professionalisation. There were no individual operators of traditional jeepneys forming a cooperative specifically to participate in the programme.

Table 7 PUVMP Progress, Source: Public Hearing of the Committee on Public Services joint with Finance (March 16, 2021)

Objective	Progress (as of March 2021)
Local public transport route planning	<ul style="list-style-type: none"> 1,379 LGUs (87%) were capacited. 611 LGUs (44%) submitted LPTRPs.
Industry consolidation	<ul style="list-style-type: none"> 29% of Public Utility Jeepneys organisations consolidated. So far, only a few individual operators have created a legal entity and benefitted from the Programme (Interview C).
Fleet modernisation	<ul style="list-style-type: none"> 2,257 operational OFG-compliant Public Utility Jeepneys.
Stakeholder support mechanism	<ul style="list-style-type: none"> 17,000 persons enrolled in the Tsuper Iskolar programme.

Four years after being launched, the trend identified during the evaluation of the early operational experiences remains: as of March 2021, only 29% of Public Utility Jeepneys organisations were consolidated. Only a few individual operators have created a legal entity and benefitted from the Programme for now (Interview C), meaning that the Programme tends to mainly benefit a small elite of players.

It was reported that, during these past two years, COVID-19 has slowed down the programme's progress. The priority is now given to the consolidation of operators. It is important to note that fare have not risen since the beginning of the programme.

It was reported that it was difficult to convince operators to consolidate and become a part of the programme for a number of reasons:

- Several jeepney operators, drivers and transport groups perceive the programme as a threat to the livelihood of thousands of jeepney drivers and operators nationwide – they formed the “No to jeepney phase-out” coalition (Remitio, 2017).
- Consolidation is a lengthy process, and some operators lack relevant information to understand the various steps involved.
- Changing from the target system to a wage system requires paying taxing and social fees, which creates fears among operators.
- Financing of modern vehicles remain a major barrier, as described [here](#).

Spotlight 19 - Specific loan structure in India

According to Baker (2021), the transition to digital mechanisms of finance and commerce is problematic for low-income entrepreneurs in a number of ways. First, they are exposed to high-cost subprime finance because of the nature of their work they cannot access low-cost finance through nationalised banks. Another issue comes from the fact that digital fare payment and online trip booking is too transparent and threaten the possibility of informal entrepreneurship in paratransit that usually adjusts the price of the trips according to several factors. “Given that most operators practice illegal fare setting techniques, there is resistance to having those transactions opened for monitoring, which is likely made possible through removing cash payment and the discretion it affords.”

Currently, one of the main ways to obtain a loan for paratransit operators in India is through Saitu moneylenders, who originally had a role of intermediaries between formal and informal economies.

The contract is held by the lender who is the agreed owner of the vehicle until the operator-driver pays off the loan and interest. A vehicle cannot be sold without a permit, and therefore, without permission of the lender. These loans are repaid in EMIs (Equated Monthly Instalments) usually over 30-36 months for new vehicles and fewer for second-hand vehicles.

The cheapest finance option to buy a vehicle is with banks, offering terms that allow operators to make small EMI's over a longer period. Non-Banking financial companies (NBFCs) are the second-best option even though they offer a shorter period of time for pay back. The most expensive option is with Saitu lenders, but they offer longer time period for pay back. This way the pressure over the operators' daily income is the same as NBFCs.

In order to access to low-cost finance by banks, operators must produce enough data applicable for credit scoring but due to the mobile and precarious nature of their lives they have great difficulties to do so. It seems unlikely that addressing technical issues in the short term will lead to increased autonomy for operators to access a wider range of financiers and lower cost loans that might address their economic precarity.



There is a main issue relative to digital payments which is that operators mostly utilise all of their income on their outgoings and have little money to save into an account and cannot receive the payment for the transaction days later.

According to this research, operators set themselves a daily target of INR 1000 and most take home INR 500-700 each day. The Indian States do not subsidise the procurement of vehicles, nor raise the wages of self-employed operators.

○ Financial pressures and constraints

Paratransit stakeholders are often subject to financial pressures and constraints. However, there are differences of pressures and constraints between the stakeholders, those who operate directly (drivers and vehicles' owners) and those who are the first users and client of the service, the passengers.

From the passengers' perspective

According to Phun (Interview J), in the case of Cambodia but also observed in other countries in the region, **paratransit serves a category of people who accept the service's low quality and poor security because of the low fares** – meaning they are a captive market, not able to afford other transport suppliers asking for higher fares.

In Indonesia, paratransit users are understood to be mainly urban poor. Other users include some from the middle class and specific groups such as students (who typically benefit from discounted fares). Paratransit's flexibility allows the services to be adapted to each group's needs and attracts niche markets.

Data collected by the Save Pune Traffic Movement & Parisar (2013) shows the modal split by income level in Pune (India). In short, the Pune case gives a sociological profile of the paratransit users. The share of autorickshaws in the modal split is highest for the very low-income group (at 8%) and lowest for the high-income group (at 4%) (Figure 27). It is understood that commuters eventually prefer using cars and two-wheelers (i.e. private vehicles) when they can afford it. The Pune case is also validating a pattern that is common with other context, poorer are the people, higher is the modal of walk.

The fare and pricing structure of each type of paratransit studied in this paper is detailed in Section 3.4.1. **While some fares of fixed route services are regulated by governmental bodies such as the jeepneys in the Philippines, most fares are unregulated for door-to-door services. When unregulated, the fares are negotiated between the user and the driver**, and the negotiation can be a very taxing process for passengers who might have little leeway to negotiate prices when they are not many vehicles available (e.g. in difficult weather conditions for instance, monsoon / shower rain). As a consequence, paratransit fare could be higher than public transport fare. In the current context of dissemination of digital tools, and the use of Ride-Hailing apps pricing structure are changing, at least fares shared to the potential users are transparent.

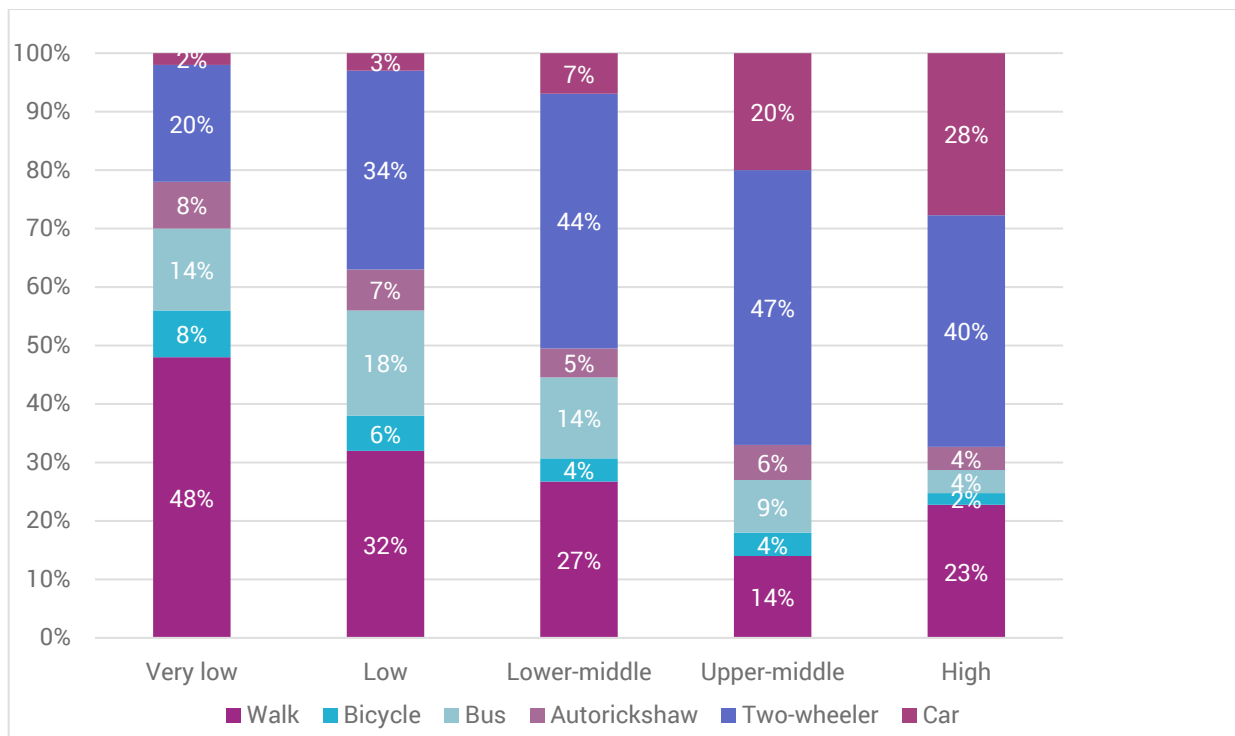


Figure 27 Modal Split by Income Level in Pune (India), Source: Save Pune Traffic Movement & Parisar (2013) from Hanni et al. (2021)

From the drivers' perspective

As described above, **drivers who do not own their own vehicles (especially in the case of fixed route services) are subject to the 'target system'**. This system leads to drivers working long hours, driving in a risky manner, endangering themselves to reach the 'target' fixed by the vehicle owners and having brutal (tense) interactions with passengers.

Drivers are also subject to economic pressures/corruption from intermediary bodies (organisations/associations, licence holders), local government officials and employees as well as financiers. It is not uncommon for drivers to pay "hidden costs", i.e. bribes, in order to operate. In Bangkok for instance, police officers and military position themselves as "protectors" in specific neighbourhoods, and therefore ask bribes to the motorcycle drivers who are not supposed to operate in this area (Sun, 2016).

In addition, as presented in the section on "Financial flows from the drivers' perspective" ([here](#)), drivers-owners experience sometimes strong pressure from moneylenders and financial institutions to repay their vehicle. This pressure put them in a cycle of accumulative debts. Their main objective then become the repayment of the contracted debt.

From the vehicle owners' perspective

Vehicle owners often face pressure from the intermediary bodies (cooperatives, corporations, etc.). As described above, in Indonesia, vehicle owners are pressured by cooperatives into generating enough revenues to cover the route licencing fees. Route owners exercise control on vehicle owners and expect financial results (Egis, 2020).

In Jakarta, according to Desmoulière (2019), some identified local cooperatives are known to put constant pressure on both the affiliated owners and the drivers. Some angkot organisations are akin to cartels. In

Jakarta, route operators are typically militaries and polices, with a high social and financial capital. This capital is necessary to open new angkot routes as prospective route owners have to cover the application fees. After filing an application to open a route, prospective route owners need to conduct a route test and all costs linked to the test phase are paid by the applicant. Following the route test, the applicant has to conduct a population survey to ensure that the route responds to the population needs. This process is corrupted as, to obtain favourable survey results, applicants need to make deals with influential people in the relevant neighbourhoods (imam, caid, etc.) and pay bribes, influencing the population’s responses. Requiring a number of ‘hidden’ costs, this process enables route owners to obtain the route licence and route licence card (Interview B). Even owners are subject to the target systems when they are paying back for a loan, they contracted to become owners of their vehicles. These loans are repaid in equated monthly instalments (EMIs) over 30-36 for new vehicles and a bit less for second hands (Baker, 2021) (see Spotlight [here](#)).

Paratransit organisations akin to cartels are also found in India. In the country, unions control some of the routes and the number of drivers on the routes, even though this normally falls under the regulation of the Regional Transport Authority and the Regional Transport Office. These unions act almost more as cartels than unions (Interview F). Indeed, because paratransit involves small vehicles and often small routes, it is easy to control and therefore to “cartelise”, and this phenomenon is even promoted by the Government. Knowing there is a gap in the public transport market provided by the city, and knowing the local authorities cannot fill that gap, the Government turns a blind eye to paratransit operators. However, due to the strong competition in paratransit, there is a risk of conflicts emerging. Consequently, the Government promotes the existence of cartels to control the operators and ensure that services are running smoothly. In that way, the Government can negotiate with the cartels’ heads instead of individual operators. Cartels are in charge of controlling the routes and the number of operators on each route. They also collect the bribes from all operators to be given to the Transport Department. In exchange, operators benefit from the protection of the cartel in the case of an incident. Additionally, the cartel can lobby the Government and defend the operators’ interests (Interview F). Bribery costs, as well as contracted debt in general, are often seen as obstacles and constraints for owner vehicles to invest in the renewal of the fleet vehicle and to be keen to improve the quality of the service.

○ Specific aspects of RHAs financial flows: the example of Grab

The introduction of digital tools as the RHAs introduces new financial flows. The case of Grab in Southeast Asia provides some highlights.⁴⁷ Regarding financial revenues, Grab drivers receive a “per minute fare” with upfront fares calculated based on the estimated trip time in addition to the estimated distance. The price structure also includes a base fare and a minimum fare (Vulcan Post, 2018). **This “per minute fare” is marketed by the RHA company as an incentive to convince drivers to operate depending the road traffic situation.**

Additionally, through its platform, **Grab offers a number of financial incentives to drivers to nudge their behaviours, including:**

- **“Time boosters” to compensate drivers driving in peak hours;**
- **A discounted commission (20%, against 25% normally) when drivers turn on “auto-accept” on the apps;**
- **Additional revenues if drivers accept to put advertising on their cars; and**
- **Various packages to reduce costs on maintenance, petrol and engine oil.**

⁴⁷ See also [here](#) for further details about Grab activities in Southeast Asia.

Grab is then not only proposing some incentives for the driver to increase their daily wage but also to minimise their operational expenses. In some countries, such as Singapore, Grab also has a vehicle rental arm, GrabRentals, which offer drivers to rent vehicles to operate them.

However, **it remains difficult to assess whether RHAs drivers make a decent living, with many sources contradicting each other.** It is interesting to note that in 2018, in the Philippines, Grab reported a shortage of available cars and drivers, the app registered an average of 600,000 ride bookings per day, but only had 35,000 registered cars/drivers to serve the riders. This could suggest fares are too low to incentivise drivers to join the sector (Visor Magazine, 2018). The impact of RHAs on drivers' income is further detailed in the section below "The role of labour in paratransit business model".

3.4.2.3. Role of labour in paratransit's business model

Generally speaking, paratransit service is a vital part of urban economies in the global south. While paratransit provides mobility service, it is also **responsible for a large part of employment in some cities in Asia.** However, **working conditions are often harsh and employees are highly vulnerable to ruptures.** The use of **digital tools as the RHAs introduced also new dynamics in term of labour condition.**

○ A key employer

The paratransit business model relies on a large labour force, comprising owners-drivers and drivers as well as many other individuals working hand in hand with them and contributing to keeping the system running efficiently. Data around the paratransit labour force is not easily accessible in Asia. However, it is understood that **paratransit is a major source of employment and income for urban population across major cities in Asia.**

In Metro Manila for instance, it was estimated that around 118,000 families (or about 590,000 individuals) depend on income from the jeepney sector (Mettke *et al.*, 2016). This includes drivers, but also *barkers* (shouting the route and destination names to attract potential passengers), *starters* (ensuring that jeepneys are full before departing) and *bantays* (sleeping in jeepneys to guard them overnight). Along the sector's supply chain, a number of businesses including mechanics, repair shops, assembly plants, motor insurance companies, filling stations, also rely on the jeepney sector for employment and income. In Dhaka (Bangladesh), it was estimated that approximately 280,000-400,000 rickshaw drivers operate around the city (Regmi & Pojani, 2022), representing around 5 to 7% of the employed population.

Paratransit's labour force is often found to consist of the urban poor. Historically, paratransit absorbed former agricultural workers arriving in cities looking for jobs (Desmoulière, 2019). Low levels of education in some rural regions in Asia excluded these workers from formal employment. Entry barriers into the paratransit sector were low and enabled agricultural workers to find a job rapidly.

Nowadays, paratransit remains a niche sector limiting unemployment in cities; however, it is not as linked to rural exodus as it used to. **Workers entering the sector now are often young drivers, seeing their jobs as a temporary occupation. Paratransit also serves as "re-training" when unemployment hits.** For instance, due to the COVID-19 pandemic in Vietnam, the workforce in the tourism sector had to change jobs to earn their living and many turned to paratransit, using their own cars and motorbikes to offer on-demand driving services (Vietnam+, 2021). "Career" drivers having worked their whole career in the paratransit sector are becoming rarer. For both younger and older drivers, their employment in paratransit often goes beyond earning an income, their

job is a source of personal dignity for individuals who are typically left with few other options (Desmoulière, 2019).

As detailed in Section 3.4.2, in the case of fixed-route paratransit services, drivers are subject to the target system. They typically rent the vehicle they drive on a daily/monthly basis, and they are responsible for paying fuel and terminal fees (when applicable). The amount of rental fees varies from one route to another, depending on their profitability. It is understood that **between countries and within cities in Asia, the level of income of paratransit operators varies greatly.**

The wide difference in income is explained by the wide differences in situations between workers involved in paratransit. **There is an important hierarchy within the labour force between drivers and owners-drivers of paratransit vehicles for instance. This distinction heavily influences the level of income of workers.** As detailed in Section 3.4.1, the level of vehicle ownership in the sector is typically fragmented, with a wide spectrum of situations between drivers, owners-drivers (owning one vehicle), owners (with one to five vehicles), and elite owners/entrepreneurs (with more than five vehicles).

In Medan, it is observed that a decade ago, the majority of angkot drivers were angkot owners themselves. However, the ownership trend is changing in recent years and, since 2016, the majority of owners own one to five angkots, and do not necessarily drive them (Egis, 2020). In Jakarta, Desmoulière (2019) found there is a potential trajectory from driver to small owner, with experienced drivers purchasing their own vehicle to drive then becoming owner-driver. In some cases, some owners-drivers stop driving and become owners, renting their vehicle(s) to other drivers. It is worth noting that drivers who enter into a rental agreement with owners rarely drive the vehicles full time. They use substitute drivers themselves, with a strong social hierarchy between main drivers and substitutes.

It is often reported that drivers need to drive long hours (sometimes up to 15 hours a day) to generate some profits and support their families after paying the rental fees to vehicle owners. Additionally, the paratransit's labour force faces dire working conditions on a daily basis, being exposed to high levels of air pollution, noise pollution, stressful traffic jams, poorly maintained roads and difficult weather conditions leading to long-term health problems (Mettke *et al.*, 2016). As they are typically not salaried and undeclared with day-to-day earnings, drivers do not benefit from social protection and health insurance in case of sickness or accident.

While there is little data available regarding gender-specific issues within paratransit from the providers' perspective, **it is known that the overwhelming majority of drivers are male.** However, various initiatives such as the e-jeepneys of Makati (Metro Manila) and the Safa Tempo EV in Kathmandu (detailed in Section 3.3.2) are pushing to get women behind the wheel. It was reported that **attitudes towards female drivers are changing in recent years and, while they are still facing discrimination, it is expected that they will represent a larger share of drivers in the future** (CNN, 2015). Currently, when there are female drivers, for example in the case of Vahinis (female e-rickshaws drivers in India), their routes are 46% shorter, they work at least 2.5 hours lesser, and earn 28% less than male operators. This is analysed as a safety, household and care tax, by which women are constrained by unremunerative household and care work (Shah, 2021).

It is worth noting that paratransit workers are often faced with additional difficulties linked to the market and information asymmetries. In Phnom Penh for instance (Interview J), paratransit is known to be an easy industry to get into. Workers from nearby provinces come to Phnom Penh and buy bajajs to drive them around the city.

They face wayfinding challenges because of their lack of knowledge of the city street patterns, making it harder for them to work efficiently and generate a profit. Additionally, the supply of bajajs have increased faster than demand in recent years and, after 3 to 6 months in the city, drivers have to sell the bajajs and change jobs again. In the city, there is an observable trend of second-hand shops of bajajs after being imported from India by/for the first owner.

○ **Impact of digital tools on the paratransit’s labour force**

In the last decade, the emergence of digital tools (as described in Section 3.3.1) has transformed the paratransit labour force, leading to conflicts between camps of drivers.

Firstly, **the profile of drivers of on-demand paratransit services has evolved. The emergence of RHAs has threatened the livelihoods of ‘traditional’ motorcycle taxi drivers**, who have seen a dramatic decline in their incomes in some Asian cities (News.com.au, 2017). Secondly, the use of RHAs to reach potential clients turn drivers into **self-employed workers, with little or no social security**.

In Vietnam, “traditional” motorcycle taxi drivers are typically full-time drivers, with an extended knowledge of the city and shortcuts but do not have enough financial resources to afford a smartphone and enter the ride-hailing sector. Additionally, these drivers often lack digital literacy, constituting another entry barrier and excluding them for this transition. Drivers using ride-hailing apps are typically younger and drive moto taxis as a side gig or temporarily (Trang, 2017). For reference, in December 2020, it was recorded that 190,000 drivers were using GrabCar and GrabBike in Vietnam, representing 75% of the ride-hailing market (Le, 2020). The number of traditional motorcycle taxi drivers (xe om drivers) was unknown.

In Cambodia, a survey by Phun⁴⁸ (2020) has shown that bajajs drivers providing paratransit services via RHAs are younger in age and are more educated than remork drivers. In contrast, the latter have more experience, but they experience difficulties adopting new smartphone technologies. For reference, just like in Vietnam, Grab is also the most popular app in Cambodia and, in 2019, it was reported there were 20,000 ride-hailing drivers in the capital city (Turton & Phorn, 2019).

Due to the proliferation of bajajs, remorks are less attractive to users who own smartphones and, with demand for remorks decreasing, the income of remork drivers have followed the same trend. In Phun’s survey (2020), it was found that bajaj drivers earned around USD 431 per month, while remork drivers earned approximately USD 231 per month. However, it is important to note that bajaj drivers had slightly higher monthly expenses (USD 129) for their operational services than remork drivers (USD 93). While income decreased for remork drivers, a majority of drivers using RHAs reported that living conditions were remarkably improved after adopting RHAs (due to more customers and higher revenues while avoiding fare regulations). However, drivers were experiencing issues with app errors, customer cancellations and complaints (Phun, 2020).

While Phun’s survey (from 2020) shows that living conditions have improved for drivers using RHAs in Cambodia, it is important to note there has been a trend of strikes from drivers using RHAs in recent years in Asia. In Vietnam particularly, there were 13 strikes from 2017 to 2020 (Buckley, 2020). Drivers raised concerns about the levels of commissions taken by the apps as well as the levels of bonuses and taxes when changes arose. Because RHAs drivers are not typically unionised, the strikes were organised independently of any labour union.

⁴⁸ This survey comprised 217 participants, both *bajaj* and *remork* drivers.

In India, the development of platforms or “aggregators” also encouraged new operators to reach the sector, even though they do not have the status of employees but are registered as independent partners who can choose their working time. Initially the platforms encouraged the drivers to log in during peak-hours to improve the supply. In order to do so, drivers were given bonuses (up to INR 5 000) for serving few trips/day (interview L). However, once the number of drivers increased, the bonuses lessened, and disappeared while inner competition strengthened. When recruiting drivers, RHA carry a background check, collect personal and professional information and run police verification (Basu, 2019). In some cases, operators can benefit on specific training programmes (behavioural training, technological use). In some cases, RHA also provides loans or discount to purchase a vehicle, which on the one hand empowers drivers, but also create a dependency scheme on the other hand.

Secondly, **the emergence of digital tools and RHAs has led to divisions and conflicts within the paratransit labour force** (Trang, 2017). In many cities, rivalry for territory arose between traditional drivers and drivers using RHAs. While RHA drivers do not require specific pick-up stations, traditional drivers typically wait for their customers at secured pick-up locations such as transport hubs (airport, bus stops/terminals), hotels and markets where traffic and demand are high. Traditional drivers are intent on protecting these pick-up locations from RHAs drivers.

In Indonesia, in March 2016, an estimated 10,000 members of Indonesian Land Transportation Drivers Association protested against ride-hailing apps, with demonstrators blocking major roads and highways and attacking other taxis that were not taking part (Trang, 2017) (Interview B). In Bandung for instance, rivalry for territory between ojek drivers and Gojek drivers is reported to be relatively strong (Al Asadulloh, 2021). Ojek drivers have traditionally set up transit points in strategic locations throughout the city called *pangkalan*.⁴⁹ Ojek drivers standing by in these spaces have been reported to intimidate Gojek drivers for operating in their territory. Gojek drivers also congregate in “basecamps”, however, because Gojek’s algorithm operates based on the proximity of their drivers with customers, the basecamps are much more mobile in nature. These basecamps are typically set up among street food vendors, by public parks, and in dense commercial areas.

In Vietnam, similar conflicts arise around certain pick-up areas which are considered the “exclusive domain” of traditional drivers. Some bus stations for instance charge the traditional xe om drivers monthly fee of USD 50 to USD 100 to be allowed to pick up passengers. Grab drivers are not allowed inside the bus stations but are accused of unfair competition when waiting for passengers right outside the station, without paying the required fees (Trang, 2017).

In India, tensions have been also rising due to the increased numbers of Ola and Uber drivers and the main Indian cities. Indeed, in Mumbai, the number of permits delivered rose above 700 % within a few years. Besides the increased competition among transport operators, the difference of status and regulatory caused tensions: by contrast with paratransit operators under the “contract carriage” system, Uber (Asia) and Ola (India) did not have to ply to city boundaries (Interview L).

⁴⁹ *Pangkalan* translates as “stands” – These are located around road intersections, entrances to urban villages, and terminals.

3.4.2.4. Key takeaways

○ Regional specificities

- **The structure of the paratransit sector and its business model in Asia are similar with what is observed in other regions** (i.e. Africa and Latin America) as the sector is operating without subsidies. For the operators, the main source of revenues consists in the fares paid by passengers to drivers. The financial flows then reach the owners of the vehicles (if different than drivers) as well as the intermediary bodies according to the “target system”.
- **The fragmentation of the vehicles’ ownership – which might be linked to the predominance of small vehicles, i.e. 2 and 3 wheelers in Asia – differs from the “rentier” model observed in other regions.**
- Due to fierce inner competition (competition *in* the market), **drivers’ revenues are low** (often less than 200 USD/month in Cambodia, Indonesia, or India) **and they often live in precarious conditions.**
- **Unions and professional organisations are playing an important role, both as a service provider and financial structure** (e.g. providing access to loans). Additionally, they also play an in-between role with the authorities (especially the traffic police).
- **The introduction of RHAs has a strong impact on the business models of operators.** The RHAs companies are mainly attractive to tech-savvy drivers who own their vehicle.

○ Opportunities

- **As an important share of drivers also own their vehicle** (except in the case of India, and in some cases of fixed route service as in Indonesia or Pakistan), generally speaking, and at the regional scale, there is less pressure on the operator compared to situation whereby many vehicles are owned by a single individual. As a result, **the “rentier model” known in other regions in the world is not dominant in Asia.**
- **The introduction of RHAs eliminates the “fill & go” system by facilitating the connexion between supply and demand**, thereby leading to reduced waiting times for users, and better working conditions for drivers.
- **RHAs allow for more transparent financial flows** and, in some cases, can also provide loans opportunities or vehicle rentals for drivers.

○ Constraints

- **The fact that paratransit in Asia is characterised by many smaller operators could hinder the process of consolidation and the transition towards salaried employment for drivers.**
- Even though RHAs provide greater transparency regarding cash flows and fares, **they are poorly adapted to the operators’ needs and, often, the RHAs companies are themselves in control of fare setting.**
- **The increased number of operators attracted to the market by the ease of operating thanks to the RHAs lead to an even greater competition between operators and even conflicts in some cases.** The system of bonuses and changing fares set by RHAs create uncertainties for operators regarding their business models.

3.4.3. Institutional and regulatory framework

Even though some of the paratransit’s characteristics in Asia reflect its informality (such as the role of cartels and the cash flows’ lack of transparency), **in most cities and countries, paratransit services are operated lawfully, complying with some forms of norms and regulations** (Cassius *et al.*, 2021). In contrast to other places worldwide, national and local authorities are able to implement various sets of actions to regulate paratransit, from punitive to integrative measures. **National and local authorities in Asia typically aim to integrate paratransit services rather than eliminate it.** Reasons explaining this policy choice include the important number of jobs generated by the sector, the lack of public transport supply compared to the increasing demand, the urge to transition to cleaner mobility solutions and, in specific cases, the necessity to provide feeder services to increase mass-transit ridership.

3.4.3.1. The role and the responsibilities of government institutions: policymaking

○ Role of the institutions at the national level

Despite the lawful dimension of paratransit, these services are seldom acknowledged by the national government and within legislative documents and guidelines established at the national level. This result from the spontaneous nature of paratransit services, as well as its embeddedness in the local context: as it differs from city to city, it is difficult to legislate at the national level. However, various approaches are undertaken by the national authorities.

In Cambodia, paratransit services are not acknowledged by the authorities. At the national level, the land traffic law which adopted in 2006 and amended in 2014 does not specify any type of regulation on public transport and paratransit. At the local level, in the capital city Phnom Penh, paratransit services are not acknowledged either. Only owners of remarks are required to register their vehicles with the Department of Public Work and Transport in order to guarantee the presence of safety equipment such as effective brake system, back-mirror, and proper vehicle lighting system. In the Philippines, a liberal approach considers public transport operations not to fall under the authorities’ mandate, and the government’s role is restricted to being a regulator. On the other hand, in India, where the paratransit sector fills an important share of the offer, in 2006 the term of Intermediate Public Transport was officially introduced in the National Urban Transport Policy. Since then, in the Indian context there is a porosity between formal public transport and paratransit services.

Even though the recognition of paratransit does not always show in the national legislation, incentives regarding the professionalisation and the modernisation are often enhanced at the national level. Indeed, fleet renewal schemes for instance rely on massive subsidies provided to operators, sometimes even loans at preferential rates and incentives towards car manufacturers, energy providers (to enhance shift towards electric vehicles) and long-lasting actions. In India for instance, the national government’s will to shift towards cleaner energy supply has been critical to enhance a change in the sector. These types of actions rely on extensive source of fundings, political champions and monitoring capacities. Direct involvement in the reform of paratransit is rare at the national level, except for specific programmes such as the Public Vehicle Modernisation Programme (PUVMP) in the Philippines. In this case, the programme has been designed at the national level and implemented locally by several stakeholders acting at different levels, national and local. The major role played by

the technical German cooperation (GIZ) as a donor might be a factor to explain the involvement of the authorities at the national level.

Launched in 2017, the PUVMP is built around 10 main components aiming to improve the public transportation system, as depicted in the figure below (see Figure 28). This programme is considered a large-scale transformative initiative of the current administration and is not limited only to replacement of old vehicles as the route rationalisation component remains the main objective to ensure the service improvement. This programme faced however some critics when it started.⁵⁰ Especially, opposition appear due to the financing proposed pattern to modernise the jeepney fleet. The authorities, backed by the Land Bank of the Philippines, estimated that each jeepney replacement will cost between PHP 1.4 and 1.6 million (between USD 28,000 and 32,000). However, based on an interest rate of 6% per annum and a payment period of 7 years, the cost of a jeepney reaches PHP 2.1 million (over USD 40,000). This gap might put a burden on the vehicle owners and could jeopardise the modernisation of the fleet as well as the implementation of the reform. Despite these issues, the reform at the national level, as well as locally, was performed with for instance the increasing of the subsidy (from PHP 80,000 to 160,000; ≈USD 1,555 to 3,115) to support the vehicle owners to renew their vehicles.



Figure 28 PUVMP Main Components, Source: Kaenzig, et al. (2020)

The development of new technologies of vehicles and the rapid spread of digital tools also calls for new frameworks and guidelines at the national level. The position of the public authorities at the national level differs when considering the introduction of new technologies of vehicles and digital tools in the paratransit sector. Indeed, regarding new technologies of vehicles, the national level is often key to stimulate the industrial sector and foster innovations. Several Southeast Asian states (e.g. Indonesia, Thailand, Malaysia, Vietnam, Philippines) are proactive in adapting public policies in terms of transition towards e-mobility (see spotlight below). The boom in the electric vehicle market and the gradual structuring of public policies provide a favourable framework for an upgrading of paratransit vehicles. The more countries consolidate regulations in favour of e-mobility, the more opportunities to adopt cleaner vehicles for paratransit stakeholders will increase. The

⁵⁰ Some local transport groups were against to the program (Philstar Global, 2017).

adopting concrete measures from several states in Southeast Asia refer to: (i) the development of roadmap and definition of targets, (ii) the adoption of fiscal incentives, and (iii) the endorsement of non-fiscal incentives.

Spotlight 20 - Role of Southeast Asia national governments in shaping the e-mobility policies⁵¹

Regarding targets and roadmap, states are either planning the number of e-vehicles that should be use (e.g. Malaysia targets to have 100,000 electric cars, 100,000 electric motorcycles and 2,000 electric buses on roads in 2020) or, when the manufacturing sector is mature, the number of units to produce (e.g. by 2030 the Philippines plan to have 6.6 million e-vehicles with 50% manufactured locally including 72,250 Public Utility Vehicles, 70,000 trucks, 12,250 buses, 2.7 million 2-wheelers, 300,000 3-wheelers, and 20,000 cars). Countries like Indonesia or Singapore planned to phase out internal combustion engine towards 2040.

Most of the states in the region set up fiscal incentives to ensure the production locally of e-vehicles. Majority of the incentives are aimed at attracting investors that can bring their technology and manufacture the vehicles, batteries and charging stations locally. Few countries (e.g. Indonesia and Malaysia) had cancelled or lowered import tax on e-vehicle. Philippines provide subsidy for buyers of electric jeepneys, motorcycles and tricycles. Thailand also provides subsidies for electric motorcycle taxis purchases.

The non-fiscal incentives mainly include exemptions from road use restrictions such as the odd-even licence plate restrictions (e.g. in Indonesia) or allowing light mobility e-vehicles (not exceeding 100 kg) to use the cycling lanes to be established by local government units that should also create green public transport routes (e.g. in the Philippines). The Philippines also proposes to jeepney's owners and operator to ease the obtention process (and renewal) route franchise when they own and operate e-vehicles.

Spotlight 21 - Regulatory instruments relating to ride-hailing schemes

Regarding the use of digital tools, the national level shows a very unequal appropriation compared to the private sector. Indeed, as described previously, Asia's paratransit sector is characterised by the **proliferation of ride-hailing apps (RHAs)** in many cities. The rapidity of the RHAs' adoption and expansion has been an **ongoing challenge for national governments** in the region. They struggled at times to keep pace with this evolution and adapt existing regulations and/or adopt new regulations relative to RHAs activities. Governments of emerging cities sometimes lack financial and/or human resources, compared to tech giants with substantial innovation budgets.

One of the issues that governments faced with the emergence of RHAs is the unfair competitions between these new operators and existing public and private operators (i.e., conventional public transport as well as taxi companies). When they emerged, RHAs operators did not pay taxes or licence permits, meaning they were able to undercut the price of regulated public transport, making them cheaper and more attractive to consumers (Ford & Honan, 2017). Consequently, established transport providers subject to government regulations saw RHAs operators' ability to avoid the normal costs of doing business as an unfair advantage. For this reason, governments across the region have come up with regulatory solutions and guidelines with a view to **leveraging RHAs' benefits while avoiding their disadvantages**.

⁵¹ This spotlight is based on the paper published by Bathan-Baterina & Dematera (2020).

Today, these regulatory instruments can help governments to foster paratransit’s formalisation as they constitute a first step towards tax collection for instance. However, even when governments manage to set up regulations for RHAs such as tax collection, actual tax compliance and enforcement is difficult. For instance, in Malaysia, Grab car drivers are slow and resistant to comply with laws (Abd Hamid *et al.*, 2020).

The table below presents some of the regulatory instruments and legal frameworks that have been set up by national governments.

Table 8 Key Regulatory Instruments Relating to Ride-Hailing Schemes in selected Asian countries, Source: adapted from GIZ (2021)

Country	Legal framework	Key contents
India	Motor Vehicle Bill 2019 (Amendment)	<ul style="list-style-type: none"> > To define taxi aggregator as a transport provider; > To authorise each state to licence and regulate services of an aggregator.
	Central Guidelines for Aggregator, (Draft) 2019	<ul style="list-style-type: none"> > To provide technical requirements to operators to ensure safety and security.
China	National Temporary Management Method for Operation of Internet booked Taxi Services	<ul style="list-style-type: none"> > High quality of taxi service is encouraged; > To define minimum requirements for application for licence to operating the service; > To define minimum requirements for eligible driver; > To allow and require cities to develop city-level regulation to monitor and manage such services.
Indonesia	Ministry of Transportation Regulation No. 12/2019 and Ministerial Decree No. 348/2019	<ul style="list-style-type: none"> > For implementation of specific ride-hailing apps and minimum service standards; > For safety protection for motorcycle users which is used for the benefit of the community.
Malaysia	Land Public Transport Act Amendment (MA) 2017	<ul style="list-style-type: none"> > To define vehicle as a public service vehicle.
	Commercial Vehicle Licensing Board Act Amendment (CVLB) 2017	<ul style="list-style-type: none"> > To define the procedure of application for the licence of operating e-hailing service; > To define responsibilities of a licence holder.
Philippines	Department of Transportation and Communication (DOTC) Department Order No. 2015-11	<ul style="list-style-type: none"> > Inclusion of the TNVS (transportation network vehicle service) as a classification of public transport.
	Department of Transportation Department Order No. 2018-013	<ul style="list-style-type: none"> > Empowers the Land Transport Franchise Regulatory Board to regulate transport network companies and transportation network vehicle services.
	The Land Transportation Franchising and Regulatory Board (LTFRB) Resolution No. 96 (2018)	<ul style="list-style-type: none"> > To define e-hailing as a type of public transport service and how to apply for licence; minimum 60% of ownership of Philippine entities in running the operation of Go-lex, an Indonesia operator.

○ Role of the institutions at the local level

Depending on the countries and the level of decentralisation, local institutions can be vested with specific duties and capacities. At this level, traffic management and urban planning are some of the main issues under the responsibility of authorities. According to their prerogatives, local authorities might exert an extended mandate with greater competences, as it is the case in Delhi, which, as a city-state, could develop an evolved policy framework and benefits from a regulation support (Shandilya *et al.*, 2019). In the case of a federal State such as India, urban transport regulation is decided at the regional level in the frame of the Regional Transport

Authority (RTA). Especially, the RTA has the mandates to decide how many contract carriage permits are to be emitted each year, as well as the fares. However, the lack of coordination regarding the regulation at the national level also leads to contrasting situations among cities (interview K).

In order to unify the competences and regulating capacities of the local authorities, Unified Metropolitan Transport Authorities have been created in India in 2006. However, so far it remains mainly institutions and capacities to build. More generally, **strengthening of local governments' capacities do represent a new priority among the local stakeholders, often supported by international donors and funding agencies**. In the Philippines for instance, the fleet renewal programme involved the Local Government Units (LGU) with the objective to transfer skills and competences, more specifically regarding the planning and contracting capacities. This transfer of competences considers capacity building and trainings dedicated to the LGU.

○ Fragmentation of regulation

In Asian countries like everywhere else, **urban transport regulation often remains fragmented among the different levels of government (national, regional, local), with little integration between the different institutions**. As centralisation is prevalent in many countries, it entails low capacity to act and regulate at the local level. This is even the case in the Philippines, where the national government is in control of the BRT project as there are no institutions at this level vested with these prerogatives (interview A). One of the main aftermaths of fragmentation among the different levels of government regards the lack of coordination between public policies. The lack of consistency happens also sometimes within the same level of government (see the case of e-Safa Tempos in Nepal). Eventually, **the lack of enforcement of public policies and regulation remains a limit observed in many countries**. In Cambodia, most drivers (90,4 %) have not registered their careers as paratransit drivers, and 62,8 % of them did not have a driving licence (Phun *et al.*, 2015). This results sometimes from a lack of coordination between stakeholders, a lack of human resources, as well as cases of corruption.

3.4.3.2. The role and the responsibilities of government institutions: regulation

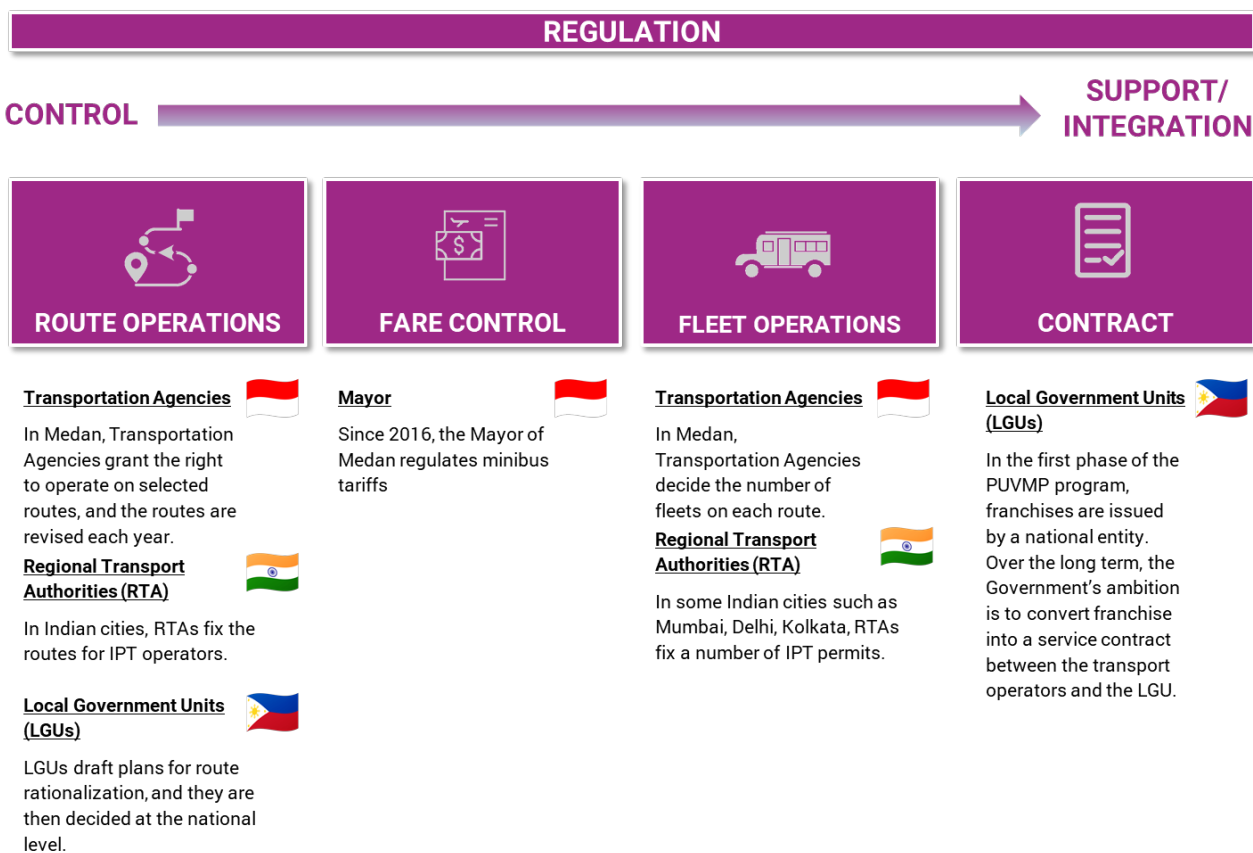
○ Transport planning and management framework

Paratransit services are subject to a diversity of appreciation from the authorities: it is a spectrum from “punitive” and “ban” approach to “support” and “integration”. Approaches differ from one city to another, and approaches differ as well sometimes between the different categories of vehicle, and between the different paratransit modes existing in one city (on demand vs fixed routes / motorised vs non-motorised).

The most drastic approach regards the prohibition of specific transport modes. This is rare, but it exists in Indonesia where 2-wheeled vehicles (ojek) are not recognised as legitimate public transport services. Restrictions are sometimes applied only to specific parts of the city, and specific modes. This is the case for instance in Mumbai, India, where auto-rickshaws are not allowed to operate in the South of the city. It is also the case in the Philippines, where local governments can forbid or allow their operation. In Vietnam for instance, the non-motorised Cyclo were banned at the end of the 2000s (in Hanoi and Ho Chi Minh City) but tolerated in the touristic areas for touristic purpose. In other cities, the lack of regulation reflects a “laissez-faire”, whereby authorities delegates public transport provision to private operators with very little intervention (in Cambodia for instance). In any way, it is important to note that **even though national authorities often do not acknowledge paratransit, restrictions and prohibition are decided at the local level**.

At the local level, approaches regarding regulation vary, reflecting whether paratransit is considered as a temporary solution before mass transit implementation (Interview B), or a long-lasting option within a multimodal transport system. Basic level of regulation entails quantitative measures, i.e. control of the number of permits emitted, the fare regulation and the control of routes (example of Medan (Indonesia), Indian cities and the Philippines, in Table 9) with the objective to control the inner competition in the sector and the working conditions for drivers. In the latter case, qualitative measures are introduced, with actions such as labelling, or issuing of norms regarding the level of quality of service (example of the Philippines). This level of agreement might even involve contracting with the operators, or at least a strong monitoring from local authorities to ensure operators' compliance with the specifications introduced.

Table 9 Examples of regulating tools and measures implemented by local stakeholders to integrate paratransit in several Asian cities, Source: Consultant



In many cities in Asia and elsewhere, the support/integration approach became more common after decades of punitive or “laissez-faire” policies. The punitive approach itself has evolved. First, some paratransit vehicles were simply prohibited (from axes or sectors) by the local authorities. Subsequently, this punitive approach was softened. Some local governments drew a line and started to define modalities for the paratransit stakeholders to operate. This paves the way to accept or at least tolerate some paratransit services when they meet criteria proposed by the local authorities. **Tighter regulations can be put in place when local authorities (at the metropolitan level) are able to establish some form of fare control (e.g. elaboration then enforcement of a fee schedule).**

This evolution of the authorities' attitude shall be linked to the urge of shifting private car users towards the use of public transport in the context of growing urban areas and global warming. This trend might be reinforced

since the COVID-19 pandemic and after implementing mass-transit projects in many Asian cities. Indeed, some of these mass-transit projects have lower ridership compared to the initial projections, creating a financial burden at the local level. It is therefore central for local authorities to rely more on and consider the role of paratransit as the main feeder for mass-transit services (Interview L).

○ Urban planning to manage paratransit

The need to encourage the shift of urban populations towards public transport explains the will of many cities to enhance the integration between paratransit services and BRT/MRT services. This integration involves a strong level of commitment of the local authorities, levers to ensure the enrolment of paratransit operators, and in some cases the implementation of planning rules, such as in the case of Jakarta (Indonesia). Far from limiting themselves to the role of regulators of the paratransit, the Minister of Transportation and the Special Capital Region of Jakarta transportation agencies have recognised the existence and legitimacy of paratransit stakeholders and are now seeking to associate them to the overall public transportation system, notably by integrating them with mass transit projects such as the Transjakarta BRT.

The first BRT line in Jakarta was put in operation in 2004. Since the number of corridors increased with a total of 13 lines in 2021 with a total network of more than 250 kilometres. At the very beginning operation of the BRT, the paratransit services dominated by the angkots were not considered. It took then almost a decade to have the first measure of integration (the experiences of Integration between Paratransit and Mass Transit in Jakarta are detailed [here](#)). After a few trials and errors, a programme called JaKLingko aiming to ensure a public transport integration was adopted in 2018. This programme is designed to integrate payment and physical connection between transport modes in Jakarta, and especially between the angkots and the more formal public transport modes. By this programme passengers can use a combination of minibus and TransJakarta trips, with an integrated fare IDR 5,000 (around USD 0,35) for every 3-hour period using non-cash payment. In term of operation, angkots drivers can only stop at dedicated stops.

Generally, paratransit services in large Asian metropolis are integrated as feeder modes for mass-transit services:

- In Thailand, this integration relies mainly on the formalisation of operators serving as feeders for the BTS/MRT: since 2003, registration has been required for motorcycle taxis and drivers and they now wear distinctive vests signalling that they are allowed to accept passengers.
- In Surakarta (Indonesia), the implementation of the Batik Solo Trans (a BRT-type service) with the deployment of 15 new air-conditioned buses was coupled with the revitalisation of angkot services as a feeder mode operationally integrated with the BRT.
- In Manila (Philippines), integration is coupled with quality and technology requirements, as only modernised jeepneys are allowed to access new transit terminals.
- In Kochi, parallel to the implementation of the metro, the deployment of a e-rickshaw fleet has been undertaken to provide first/last mile connectivity from the subway stations.
- In Bogor (Indonesia), the authorities aim at changing the nature of the paratransit services, from private property to cooperatives/companies to operate new buses. To do so, both coercive measures and an incentive scheme were implemented: angkot not affiliated to a cooperative or a company by August 2015 will have their operation frozen, and owners who comply to the new rules benefit from tax breaks. Within

this process, 22 organisations have been established, including 13 cooperatives and 9 companies. However, the project failed its objective for several reasons, among which the limited capacities of the new operators, and the low ridership of the new bus system, which caused the company to cease operations.

These examples are representatives of the current trend towards paratransit integration. However, **this integration often relies on the implementation of mass-transit modes, and paratransit are not integrated per se but most often as feeder modes.** There is room for improvement and innovation to facilitate the integration and planning of paratransit services also without the implementation of mass-transit projects. This is of a major importance as many small and medium-size cities in Asia only feature paratransit offer as public transport and will not see the implementation of a mass-transit projects.

More generally, the elaboration of a consistent regulatory at a local level relies on the transfer of capacities from the national level to the local level. Neglecting the role of paratransit services and the integration in urban mobility systems otherwise lead to paths that had been observed in many cities worldwide (Shandilya *et al.*, 2019):

- **Unplanned *ad hoc* inclusion:** operators/associations decide on routes, there is a lack of supporting infrastructure, it is difficult for authorities to regulate, large number of vehicles are not reported anywhere.
- **Planned inclusion to unplanned expansion:** when paratransit services are planned within the context of a project, but over time the service expands in an unplanned way.

To avoid these situations, **planning rules, operators' enrolment, and a long-term vision among the local authorities are key elements to ensure the implementation of an inclusive transport system.**

3.4.3.3. Key takeaways

○ Regional specificities

- In Asia, **paratransit is considered to be lawful, in contrast to most other parts of the world**; the large majority of operators do comply with some form of regulation.
- However, **the concept of paratransit and its role serving the public interest is often not acknowledged in the national policy**. Additionally, incentives are granted at the national level, while projects are implemented locally, sometimes leading to **conflicts between the different authority levels**.
- Even when there is a regulatory framework acknowledging paratransit, it **often remains weak and poorly enforced**, therefore limiting the options when it comes to paratransit integration.
- At the local level, **in most cities, the approach is rather integrative, and relies on regulating the sector through permit emissions, route control, traffic management, urban planning and – in some rarer cases – contracting with the operators**.

○ Opportunities

- **National governments in Asia show strong commitment regarding paratransit on targeted issues such as the energy transition** (in Nepal and India for instance) **or fleet modernisation** (in the Philippines).
- **Several programmes have been conducted to foster the modernisation and the professionalisation of the industry, most of the time in the context of mass-transit projects**. In these cases, local authorities tend to have more prerogatives (such as contracting with operators).

○ Constraints

- **Paratransit remains poorly acknowledged and regulations remain weak at the national level**. Little power is given to local authorities for them to regulate paratransit, except in the case of the implementation of mass-transit projects. However, even in these cases, the lack of coordination between the different levels of government often proves to be an obstacle.
- **Beyond the implementation of mass-transit projects, other forms of paratransit integration at the local level are hardly ever considered**.
- States are often lagging behind when it comes to innovation, spurred by the so-called 'tech giants'. Technical innovations arrive on the market (e.g. apps) and public authorities very often legislate afterwards. Even when regulation does exist, **governments often lack resources to enforce these regulations appropriately**.

3.5. Assessment of enabling conditions to modernise and integrate paratransit

3.5.1. SWOT analysis




○ From the diagnostic to the SWOT analysis

One of the main objectives of a diagnostic on paratransit lies on the need to elaborate detailed, neutral and comprehensive knowledge on this sector, its ecosystem of stakeholders and the local conditions in which these activities are carried out. Thus, it is important to avoid presenting the diagnostic according to a “silo approach”, and rather emphasise the interactions between actors, the spill over effects and the unexpected or under/over-estimated flows in the perspective of a systematic and integrated approach. This step is essential prior to undertake any reform of the paratransit industry, at any level.




Once the information has been collected and analysed, the results of the diagnostic must be formatted. **The SWOT matrix enables to present a systematic understanding of the paratransit services and enables to consider the positive externalities of the sector and the aspects to improve, as well as the negative externalities which should be mitigated.** Besides, considering the external opportunities is crucial to identify the levers that can be used to modernise the sector, whereas the threats analysis leads to a better understanding of the possible blockages.

To make the SWOT analysis operational, it should be declined among the different stakeholders interacting within the sector: the local authorities, the drivers, the owners, and the users. Indeed, positive and negative externalities can differ according to each group, and each stakeholder operate at a specific level, with its own range of interests and objectives. Also, by considering the stakeholders’ point of view, it is possible to shape more acceptable reforms, set priorities and creates favourable conditions to get the buy-in of the actors impacted. Eventually the SWOT should not be considered as a solution *per se*, but as tool to enhance discussions with the stakeholders and ultimately orientate the reform.




○ From the local authorities’ perspective

	INTERNAL		EXTERNAL	
	Strengths 👍 (+)	Weaknesses 📉 (-)	Opportunities 👍 (+)	Threats 📉 (-)
 ON-DEMAND	<ul style="list-style-type: none"> - A service close to the needs - Economically autonomous (no subsidies) - Source of employment 	<ul style="list-style-type: none"> - Private service that target profitability first - Generates negative externalities - Difficult to structure 	<ul style="list-style-type: none"> - Adapt digital tool (local RHA) - Fleet renewal - E-governance (transparent access for regulation) 	<ul style="list-style-type: none"> - Social and financial risks - Fraud
 FIXED ROUTE	<ul style="list-style-type: none"> - Intermediate service between taxi and regular PT, - Economically autonomous (no subsidies) - Source of employment 	<ul style="list-style-type: none"> - Services often compete with regular offer - Generates negative externalities - Image (not modern) 	<ul style="list-style-type: none"> - Mass rapid transit system and integration of existing private service - Fleet renewal - Re-organisation (mapping, stops) 	<ul style="list-style-type: none"> - Resistance to change (financial and job losses) - Difficulties in monitoring




○ From the owners' perspective

	INTERNAL		EXTERNAL	
	Strengths 👍 (+)	Weaknesses 📉 (-)	Opportunities 👍 (+)	Threats 📉 (-)
 ON-DEMAND	<ul style="list-style-type: none"> - Source of income - Low capital (investment) - High demand 	<ul style="list-style-type: none"> - High competition - Low regulation - Anti-competitive business practices (mafias, corruption) 	<ul style="list-style-type: none"> - Policies to help fleets renewal - Regulate competition 	<ul style="list-style-type: none"> - Social policies (higher costs) - Need transparency - Market decline
 FIXED ROUTE	<ul style="list-style-type: none"> - Source of income - Economies of scale - High demand 	<ul style="list-style-type: none"> - High capital requirements (to renew the fleet), - Anti-competitive business practices (mafias, corruption) 	<ul style="list-style-type: none"> - Market dev. and optimisation through digital solutions - Public regulation and organisation of the market - Fleets renewal 	<ul style="list-style-type: none"> - Social policies and costs of access to digital (higher costs) - Transparency requirements

○ From the drivers' perspective

	INTERNAL		EXTERNAL	
	Strengths 👍 (+)	Weaknesses 📉 (-)	Opportunities 👍 (+)	Threats 📉 (-)
 ON-DEMAND	<ul style="list-style-type: none"> - Easy access to the job (no prerequisites except driving licence) 	<ul style="list-style-type: none"> - Strong competition - Limited (or no) social protection - Difficult working conditions (danger, corruption) 	<ul style="list-style-type: none"> - Towards better social protection - Development of salaried employment 	<ul style="list-style-type: none"> - The risk of job losses due to organisational optimisation and competition from formal transport
 FIXED ROUTE	<ul style="list-style-type: none"> - Stable source of income - Social status - Not a lot of prerequisites 	<ul style="list-style-type: none"> - Strong competition - Very weak social protection - Difficulties in practice (corruption, danger) 	<ul style="list-style-type: none"> - A possible transition to more and more formal transport or even paid employment thanks to public intervention and digital tools 	<ul style="list-style-type: none"> - Risk of fewer jobs and more strain

○ From the users / passengers' perspective

	INTERNAL		EXTERNAL	
	Strengths 👍 (+)	Weaknesses 📉 (-)	Opportunities 👍 (+)	Threats 📉 (-)
 ON-DEMAND	<ul style="list-style-type: none"> - Demand-driven - Flexible and relatively fast service 	<ul style="list-style-type: none"> - Comfort and safety conditions can be very poor; - Difficult access to low-density areas 	<ul style="list-style-type: none"> - Improved passenger information, a more evenly distributed offer and better price consistency thanks to public intervention 	<ul style="list-style-type: none"> - Risk of tariff increases
 FIXED ROUTE	<ul style="list-style-type: none"> - A regular and flexible offer - Accessible to low incomes 	<ul style="list-style-type: none"> - Uncomfortable or even dangerous transport conditions - No passenger information 	<ul style="list-style-type: none"> - Better information for passengers, a better distributed and intermodal offer, better safety and better price consistency thanks to public intervention 	<ul style="list-style-type: none"> - Risk of service cuts or additional burdens, including tariff increases

3.5.2. Key takeaways

- Understanding the specific characteristics of paratransit in Asia:

- **Paratransit worldwide exists when the public transport supply cannot meet the demand for transport services. However, in Asia, especially in large cities, mass rapid transit systems have been implemented for years with a significant acceleration over the past decade.** As a result, cities are looking for complementary solutions to increase access and ridership. **In this context, paratransit has the potential to fill gaps and play a key role as a feeder mode,** but also in serving neighbourhoods and cities not served by mass transport. **In many small and medium-sized agglomerations paratransit is and will remain for a long time the main public transport offer.** As described in the diagnosis, paratransit services in Asia are very diverse, flexible, and adaptable to each city, its urban fabric and its inhabitants' mobility needs and willingness to pay. The existing cohabitation of paratransit and mass transit demonstrates the complementarity between these services.
- **Paratransit's business model is based on passengers' fares with no access to subsidies.** Characterised by the "target system" and a highly fragmented vehicles' ownership, paratransit is a competitive sector, with low revenues for many operators in Asia.
- **Local governments are well aware of paratransit ecosystems' organisation. In Asia, paratransit is lawful, in contrast to most other parts of the world. Unions and professional organisations often play an important role in connecting the authorities with paratransit operators.** However, a lack of transparency caused by informal practices and cartel-like organisations remains widespread. In this context, reforms of the regulation frameworks are difficult to tailor, implement and enforce.
- The recent trends of **digitalisation and vehicle transition happening across Asia show promising developments in the paratransit sector.** These trends are key for modernisation and professionalisation programmes, mostly in the context of mass-transit projects. **However, some regulatory adjustments are required, especially at the national level. Tax laws and financing mechanisms need to be developed to support the modernisation of the sector, including fleets renewal. The results of the fleet renewal and vehicle adaptation initiatives across the region often remain unsatisfactory, and the benefits of such initiatives are contested.** While larger consolidated players succeed, smaller operators struggle to adapt. Therefore, there is a crucial need to develop innovative funding and financing mechanisms that are inclusive and sustainable. These are required to enable paratransit to play its part in the modernisation of mobility systems serving the public interest, whether paratransit is integrated or not with existing or upcoming mass transit systems.

- Reforming, modernising and integrating paratransit

- The analysis of the paratransit trends and characteristics in Asia provides us with an understanding of (i) the enabling conditions for paratransit's modernisation and (ii) the potential options for moving it towards a more formal and conventional transport system.
- Stemming from the diagnosis, the **SWOT analysis serves as a basis to determine the leverages which can be used to modernise the sector,** while identifying the threats to be avoided.



- While the diagnosis aimed to identify trends and patterns applicable to paratransit **all across Asia, the diversity and complexity of this sector means that the characteristics of each city will need to be carefully considered** when aiming to reform, modernise and integrate paratransit.
- The recommendations below intend to provide public policy advice for decision-makers and practitioners at the national, local and project levels. Suggestions are also given to smoothen the transition process and foster an inclusive environment to transform and reform paratransit while respecting the distinctive characteristics of each city and its mobility system.
- These recommendations are based on four sets of objectives that will structure this transition process. Traditionally there are four objectives guiding the actions of public authorities regarding the reform of the paratransit sector: (i) improvement of the service quality, (ii) improvement of the air quality, (iii) improvement of the working conditions in the sector, (iv) improvement of the performance of the system. In the context of Asian cities and given the characteristics presented above, these four objectives can be declined as follows:

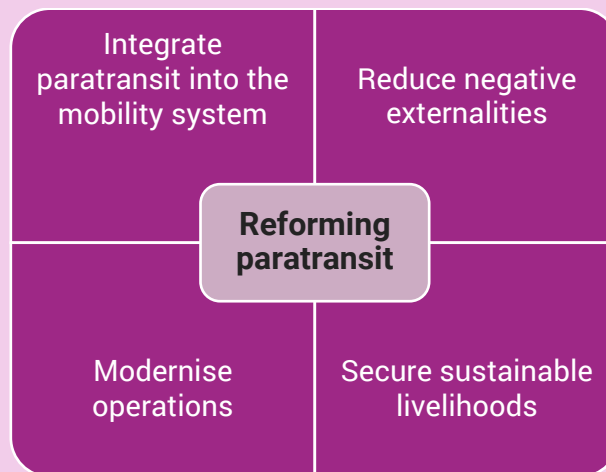


Figure 29 Abstract of the Four Paratransit Reform Objectives, Source: Consultant



4. Scalable recommendations for a better integration of paratransit services

4.1. Framework for developing recommendations

The assessment presented in the first main section of this paper has shown both the **fundamental role of paratransit in Asian cities**, as well as **its distinctive characteristics compared to paratransit in other regions**. These characteristics are summarised as follows:

- The **development of a large number of mass transit projects** creates opportunities to structure the urban mobility system and to use **paratransit services as “gap-filler”** option;
- **Public authorities demonstrate capabilities to act** (i.e. implementation of projects aiming to renew vehicle fleets and fostering the use of new technology for vehicles);
- **High digital penetration** facilitates access to services and clarifies pricing;
- Relatively structured **operators are organised** into professional associations.

It is important to note that **these characteristics vary greatly from one country to another**. In addition, these characteristics **depend on the size of cities**. Therefore, preparing public policy recommendations for better integration of paratransit into the overall mobility system requires to carefully consider the distinctive characteristics of each city and its existing paratransit services.

In some large megacities, enabling conditions already exist: efficient paratransit organisations operate, detailed objectives to improve the quality of service are established, and some actions encouraging greener vehicle fleets or fare integration are implemented. **However, in small and medium cities, paratransit services share similar characteristics, with the ones in Africa or Latin America, and often paratransit remain the main mobility service as public transport offer is lacking.**

The recommendations detailed in this section are (i) partly based on the existing Paratransit Toolkit⁵² developed under the direction of MobiliseYourCity while (ii) taking into account the regional characteristics identified in the diagnosis section and (iii) proposing recommendations at different levels (i.e. national, local and project) to foster paratransit modernisation and integration. For reference, the MobiliseYourCity Paratransit Toolkit provides guidelines to include and integrate paratransit in urban mobility systems in the context of a Sustainable Mobility Plan. The MobiliseYourCity Toolkit is threefold, and includes:

- A brief overview of the paratransit system and its ecosystem of stakeholders,
- The main questions to be tackled in order to conduct a diagnosis of the paratransit sector and the methodology of the diagnosis,

⁵²MobiliseYourCity Paratransit toolkit (Baffi & Lannes, 2021a, 2021b) is available [here](#).

- A set of 48 actions to reform and integrate paratransit within an urban mobility system, and
- Some brief examples of reforms of the paratransit sector carried out around the world.

The Toolkit will be regularly referred to in the recommendation section, especially at the local level, as it presents detailed actions to be implemented, along with some case studies. The case studies will focus on the different steps required to implement paratransit reforms in Asian cities. They emphasise the approaches followed by the public authorities and, when possible, the outcomes of the reforms.

4.1.1. At which level(s) to act?

In the field of paratransit, **actions can be undertaken at all levels of decision-making** recognised as competent by the Law in matters of mobility. Three different levels are identified as relevant for taking action on paratransit reform (Figure 30). Recommendations shall be implemented at each level to match as much as possible with the objectives set and the resources available.

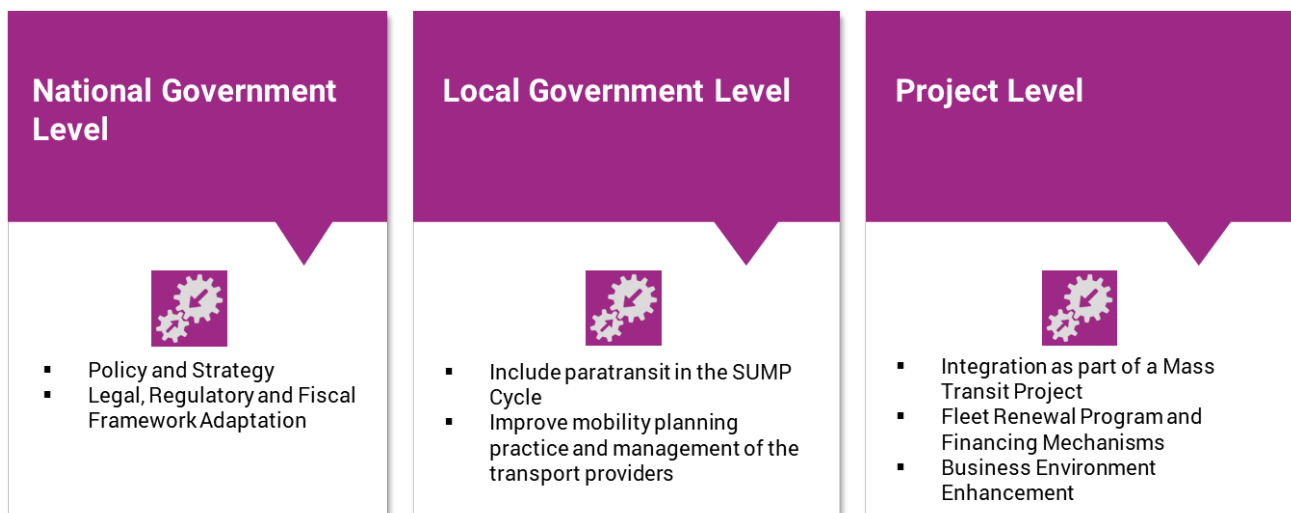


Figure 30 Three Levels of Recommendations to Modernise and Integrate Paratransit in Asia, Source: Consultant

4.1.1.1. National level

National governments in Asia demonstrate real capacity to intervene, in terms of legislation, financial tools and levers, and monitoring. Although this can vary greatly depending on the degree of decentralisation, the national government often provides the overall framework within which to carry out paratransit reforms and promote its modernisation. Adopting targeted measures to integrate paratransit services at the national level will encourage local governments to implement policies at the local level and will be a lever for dedicated projects at the city level.

These recommendations are primarily addressed to national government stakeholders and international financial institutions (IFIs) that support national governments in the development of National Urban Mobility Programmes, urban transport plans and other transport projects. In states with a federal structure, some of these recommendations may be implemented by the regional government depending on the level of legislative and regulatory autonomy of the regional level.

4.1.1.2. Local level

The recommendations mainly concern regulatory actions under the responsibility of the urban administration or part of its daily work.

- **In the context of the development of a Sustainable Urban Mobility Plan (SUMP)**

At the metropolitan level, several cities have started or are about to start a SUMP. This specific process is a relevant framework for defining a reform of the paratransit sector. Moreover, this comprehensive planning process already benefits from guidelines and supporting tools, such as the Toolkit created by MobiliseYourCity (see Baffi & Lannes, 2021a, 2021b). This Toolkit presents a set of locally adapted actions to reform paratransit. The present paper refers to this toolkit to identify actions at the local level that are suitable to the contexts of Asian cities.

- **Outside the framework of a SUMP**

The recommendations proposed at the local level (i.e. at the level of the city or urban agglomeration, whatever its size) can also be implemented by a Public Transport Authority (PTA) or any other public body in charge of transport in a specific paratransit action programme. Although the development of a SUMP ensures overall coherence between paratransit and other mobility-related actions, **almost all recommendations detailed in the present paper can also apply outside the framework of a SUMP.**

4.1.1.3. Project level

The “project level” both refers to projects that aim at modernising paratransit sector in complementary of the development of large-scale public transportation projects and to projects or actions directly aimed at modernising the paratransit sector. They involve financial and governance arrangements, often characterised by the association of different types of stakeholders beyond the local authorities.

The development of a public transport system (i.e. metro, urban rail, tramway, Bus Rapid Transit) often triggers a series of other processes, which should take paratransit into consideration. The implementation of a public transport project will raise additional issues, the resolution of which will further improve the performance of paratransit: fare harmonisation, network complementarity, prevention of competition on the project corridor, management of intermodal nodes, etc.

However, other projects, such as proactive fleet renewal policies, the implementation of digital operating or ticketing tools, and the improvement of social conditions for the profession can be implemented. Developed at the local level, those projects will involve a range of stakeholders and local public authorities will be the cornerstone.

These different projects require adapted governance and financing schemes that justify the formulation of specific recommendations.

4.1.2. Proposal to define a plan of action at the national and local levels

Transforming and reforming paratransit is a complex process and a hard task for decision-makers and practitioners. **Several steps are suggested to smoothen the transition and create a comprehensive and inclusive environment to undertake this process.**⁵³

○ Step one: make a diagnosis

Given the diversity of urban environments, shaped by the socio-economic and political context, **each entity in charge of managing sustainable mobility planning needs to assess its own situation.** This means that there is a crucial need to gain an in-depth understanding of the existing situation of paratransit first by conducting a thorough diagnosis (Figure 31).

The methodology to conduct a diagnosis of the paratransit sector is further developed in the MobiliseYourCity Toolkit. To understand the logic and the specificities of the paratransit sector in each city, 6 questions are suggested as a frame for the diagnosis:

1. What mobility system are we talking about?
2. How are fares collected, and who takes the commercial risk?
3. How is the sector regulated?
4. Do collective management rules exist regarding operations, equipment, etc.?
5. What is the place given to users?
6. What are the inefficiencies and hidden costs of the sector?

Detailed information regarding the sources that can be used and how to collect data and information in the context of the paratransit sector are also to be found in the Toolkit.

Eventually, the expected outcomes of the diagnosis are presented, with specific references on how to use the diagnosis in the context of a SUMP.

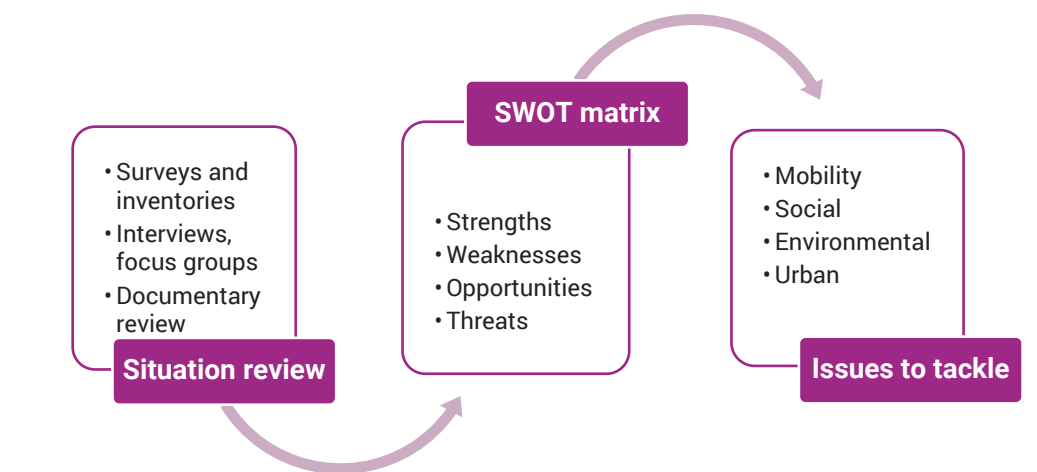


Figure 31 Summary of the Diagnosis Steps, Source: Consultant

⁵³ These steps echo the reform steps proposed in the document entitled “Reforming Paratransit - A catalogue of practical actions to integrate informal transport in urban mobility planning” produced under the umbrella of the MobiliseYourCity (see Baffi & Lannes, 2021b).

The diagnosis needs to be adapted depending on the two main types of services existing in the paratransit sector, i.e. **on-demand services and fixed-route services**. Indeed, these services have different characteristics and respond to different needs, even if there are intermediate forms between these two types. The elaboration of bespoke diagnosis for each service is even more important in Asia where both kinds of services are widespread.

○ **Step two: set objectives**

In general, and in a way that is adaptable to all situations, it is possible to summarise the objectives that can be assigned to public action relating to paratransit in four main groups:

Integrate paratransit into the mobility ecosystem	Reduce negative externalities	Modernise operations	Secure sustainable livelihoods
<ul style="list-style-type: none"> • Promoting paratransit where relevant: <ul style="list-style-type: none"> • Neighborhoods in which large vehicles cannot drive, • Feeder services on trunk roads, • Extra supply in peak hours, • Serving low-density, remote or dispersed areas, • Taxis and premium services. • Limiting/removing competition between modes of transport. 	<p>Such as:</p> <ul style="list-style-type: none"> • Pollution (air / noise), • Congestion, • Poor quality of service, • Insecurity, • Road accidents. 	<ul style="list-style-type: none"> • Passenger information, • Advance booking/ Pre-payment, • Service optimisation, • Harmonisation or even integration of fares. 	<ul style="list-style-type: none"> • Preserve and even secure jobs related to paratransit (drivers, barkers, etc.) • Improve working conditions for drivers, • Improve mobility conditions at the urban system level.

Figure 32 Objectives when preparing a local paratransit reform in Asian cities, Source: Consultant

The public authority is in charge to **specify these broad objectives according to the local situation, and to set them in order of importance**. The diagnosis will enable to **measure the gap between the current situation and the defined objectives**, and to guide the development of the action plan.

○ **Step three: identify actions and relevant level of implementation**

Step 3 aims to identify the relevant actions in order to achieve the objectives previously defined. **The levels of implementation refer to the national level, the local level and the project level**. Indeed, as mentioned in the introduction of this paper (see Section 2), actions can be set at different levels depending on the capacities and prerogatives of public authorities. **Actions refer to framework, rules, initiatives and measures implemented by the public authorities to create the leverage needed to integrate paratransit while improving working conditions and quality of services**. This variety of actions can also be referred to as “tools”, i.e. technical arrangements available to the public authorities to implement a defined policy.

Therefore, these **actions need to be implemented within a consistent and coordinated vision** to ensure they will reach the objectives set. For each objective, different set of actions (or tools) can be implemented according to the objectives set locally and the capacities of the relevant level of government. These actions have to be prioritised and carefully selected.

Given the variety of tools and means available in each context and at every level, the aim of the “recommendations” section is therefore to present a general framework for the set of actions available at each level, and some examples of implementation.

To this end, the recommendations illustrate the possible steps of reform for each level, and the possible interactions between levels and actions according to a comprehensive approach. Case studies are also presented to highlight specific examples of approaches developed in Asian countries and, when possible, to provide a critical analysis.⁵⁴

4.1.3. What kind of paratransit services?

As explained in the diagnosis, the term “paratransit” covers different transport offerings, from taxi mode (no route, no timetable, no grouping) to modes of operation closer to formal transport (a route or at least a connection, timetables or at least a number of trips per day, aiming for a good vehicle load).

Between these two terms, many intermediaries exist. However, for ease of understanding, paratransit services can be classified according to these two categories.

The ‘on-demand’ mode is, by definition, based on an economic model that is and must remain self-supporting. Its purpose is to offer a personalised door-to-door service that formal transport cannot provide. Thus, the objectives of public action will essentially be to reduce negative externalities (road safety, congestion, and level of pollution, etc.) and to ensure that it does not compete with formal transport (differentiated fare levels, prohibition on using certain routes, etc.). Except in very marginal cases, the “taxi” mode is not intended to be integrated into a formal transport system: it allows the diversification of available means of transport.

The ‘fixed route’ mode, on the other hand, is close to the mode of operation of formal transport, at least in terms of its aims. Therefore, it can be considered as the outline of a transport network when there is no formal transport, or a complementary mode enabling remote or poorly connected districts to be served, or a feeder mode for mass transport. As with the taxi mode, public action will aim to reduce negative externalities. But it will also aim to bring its operation closer to the formal transport ones, and to improve the integration of this mode of transport into the formal offer if it exists. This opens the door for multiple actions in the field of pricing, investment support, passenger information, planning, etc.

In the following sections, some recommendations will be more appropriate to either “on-demand / taxi” paratransit services or “fixed route” modes. The following pictograms will be used to flag which mode the recommendation is most appropriate for:

The recommendation targets **on-demand mode and fixed-route mode**:



The recommendation targets **mainly fixed route mode** but can be relevant for on-demand mode:



The recommendation targets **fixed route mode only**:



⁵⁴ Those examples are presented as “Example box” in the following parts.

4.2. At the national level: defining a framework for the paratransit sector

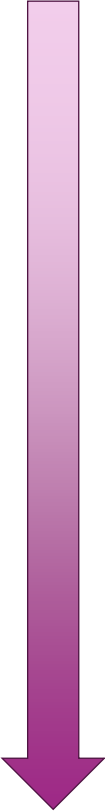
4.2.1. Overview of the type of actions and actors involved at the national level

The following recommendations can be addressed to any ministry in charge of transport and mobility. They can be part of a National Urban Mobility Programme (NUMP) or can be implemented as stand-alone measures.

As often with recommendations to reform, modernise and integrate the paratransit, they may apply differently to fixed-route (i.e. working similarly to a public transport service) and on-demand operations (i.e. facing little control from public authorities). Additionally, recommendations at the national level apply to urban transport, as well as intercity and rural transport.

Recommendations at the national level can be categorised into four types of actions and associated actions. These are summarised in the table below, and actions are then detailed in sections 4.2.2 to 4.2.5.

Table 10 Summary of Actions to be taken at the National Level. Source: Consultant

Progress	Component	Type of action	Main actions
	Legislative	Define the framework	<ul style="list-style-type: none"> Action N1: Defining the activity of the paratransit sector within the law
	Regulatory	Define rules	<ul style="list-style-type: none"> Action N2: Defining and monitoring the minimum conditions to access to the profession Action N3: Sanction clandestine transport Action N4: Defining and enforcing the traffic conditions of the vehicles assigned to the service Action N5: Guarantee and strengthen the social protection of operators Action N6: Setting and monitoring vehicle emission standards
	Fiscal	Define priorities	<ul style="list-style-type: none"> Action N7: Using the fiscal level to promote the paratransit reform
	Programmatic	Define actions	<ul style="list-style-type: none"> Action N8: Defining and implementing specific training courses for the transport professions, including the specificities of paratransit Action N9: Implementing a national labelling process Action N10: Supporting industrial sectors raising the level of quality and professionalism of paratransit stakeholders Action N11: Launch calls for projects for experimentation Action N12: Seek partnerships with international donors

In order to provide a consistent overview of paratransit reforms undertaken in Asian countries, and to illustrate ideal measure to take to modernise and integrate paratransit, two examples are given in this sub-section – one showcasing the national reform on e-paratransit in India, and the other one presenting the Public Utility Vehicle Modernisation Programme (PUVMP) in the Philippines. Both programs have been implemented at the national level, however in very specific governance context as in India parts of the program were adapted at the State level and local, and in the Philippines, Local Government Units have been instrumental in the implementation of the reform.

○ The FAME programmes in India⁵⁵

A strong emphasis has been drawn towards the development of e-vehicles in India since a few years, and among the new fleet of vehicles deployed, e-rickshaws are at the forefront, which contributes to redefine the role of this transport mode in Indian cities. Even though several initiatives have been undertaken at the national level over the past decades, the cornerstone of the Government of India’s action regarding e-mobility is the Faster Adoption of Manufacturing of Electric/Hybrid vehicles, an initiative which started in 2015 when the Ministry of Heavy Industries and Public Enterprises made a public announcement.

Initially scheduled from 2015 until 2019, a second phase was initiated from 2019 to 2023, for a total amount of USD 1,5 billion. Whether the first phase focused on subsidising the e-mobility sector by providing rebates for the purchase of e 2-wheelers, 3-wheelers, 4 wheelers and bus segments, during the second phase an amount of 10 % is dedicated to the implementation of Electric Vehicle Supply Equipment. The incentive regards in priority public transportation, especially 3-wheelers (e-rickshaws) and bus.

The overall objective of the programme is to develop the e-mobility sector in India with clear indicators to reach: by 2030, India is expected to reach 50 % of e-vehicles, with all EV being manufactured in the country. Thus, besides the deployment of a large fleet of e-vehicles, the objective of the FAME programme is to develop a local manufacturing industry.

○ The Public Utility Vehicle Modernisation Programme (PUVMP) in the Philippines⁵⁶

In the Philippines, it was estimated that more than 230,000 jeepneys were in operation in 2018 (Pontawe & Napalang, 2018). In Manila alone, there are 55,000 franchised jeepneys⁵⁷ operating on more than 700 routes. While jeepneys are only one of the various Public Utility Vehicles (PUV) available in the country, they account for 40% of all vehicle trip and are understood to be the most dominant mode of road-based transportation system in the country. Jeepneys are known to be cheap and flexible, however, they lack maintenance and safety, suffer operational inefficiencies (i.e. unreliable schedules) and generate traffic congestion and pollution (Mettke *et al.*, 2016).

The ‘Public Utility Vehicle Modernisation Programme (PUVMP)’ in the Philippines was launched in 2017 by the Philippine Department of Transportation (DOTr), in order to make the current public transportation system more

⁵⁵ In this sub-section, the following sources were used to document the Indian case study on e-paratransit: UNEP (2020), Shandilya *et al.* (2019), IEA (2019), Shrestha (2018), Gadepalli *et al.* (2018).

⁵⁶ In this sub-section, the following sources were used to document the PUVMP programme in the Philippines: Mettke *et al.*, 2016; Kaenzig *et al.*, 2020; Interviews C, D and E.


⁵⁷ Each jeepney owner has to request a franchise certificate to operate their vehicle and is in charge of guaranteeing that the service complies with all regulations set by Land Transportation Franchising and Regulatory Board (LTFRB).

efficient and more environmentally friendly by professionalising the sector and renewing the vehicle fleets. The PUVMP concerns all 4-wheelers (PUJ, UVE, MB, PUB).⁵⁸

In both of the cases presented, the reform focuses on the modernisation of operations, with the correlated objectives to reduce negative externalities, promote the integration of paratransit in the mobility system and secure sustainable livelihoods through improved working conditions and trainings. These two examples can be considered as complementary, as they show very distinct and precise objectives articulated at the national level and implemented in different territorial contexts: in India, the federal structure means that states play an important role, whereas in the Philippines Local Government Units are a key stakeholder in the implementation of the reform. In both countries, the reform implemented are representative of the regional characteristics as they rely on the introduction of new tools and new technologies.

4.2.2. Define the framework

○ Action N1: Defining the activity of the paratransit sector within the law

		N1: Defining the activity of the paratransit sector within the law
0	Overall objective(s)	<ul style="list-style-type: none"> Integrate paratransit into the mobility ecosystem
1	Which stakeholders to involve?	<ul style="list-style-type: none"> Supervisory ministries (in charge of transport, finance, local authorities) Representatives of local authorities Representatives of transport operators, if there is a structured national representation of the profession.
2	What is the length of the process?	<ul style="list-style-type: none"> Depends both on the importance given to prior consultation, and the legislative process in each country. A timeframe of one to two years seems reasonable.
3	What are the major steps or phases?	<ul style="list-style-type: none"> i) pre-consultation, ii) drafting and finalising the law, iii) the legislative process.
4	What is the overall cost?	<ul style="list-style-type: none"> No specific identifiable costs unless external experts are used.
5	What are the pre-requisites for implementation?	<ul style="list-style-type: none"> The existence of a national representation of paratransit professionals would be a plus.
6	Which expertise to associate?	<ul style="list-style-type: none"> Expertise in paratransit (mainly social, economic, and contractual aspects).

The precise form of this recommendation will of course vary greatly from one country to another, depending on the existing body of law, legislative traditions and modes of governance. However, **the general principle of this recommendation is to define and affirm/confirm the role and place of paratransit in the law, either within a law dedicated to paratransit or as part of a framework law on transport and mobility.**

⁵⁸ These acronyms stand for: public utility jeepneys (PUJ), UV Express (UVE), Mini Buses (MB), public utility buses (PUB).

The following principles could form the basis of a national law or decree acknowledging the role of paratransit in Asian cities:

1. **Paratransit includes all the means of transport provided to the public, carried out by small and medium capacity vehicles, and capable of adapting quickly to the needs of their customers.**
2. **Paratransit is accessible to all clientele.** It is therefore a public service.
3. **The state's objectives in the area of paratransit** focus on the following:
 - To develop complementarity between adapted transport and other forms of mobility especially mass transit, particularly through pricing, passenger information and intermodal locations;
 - To make paratransit a tool for developing mobility and accessibility, by taking into account the specific needs of the female population and by offering solutions adapted to specific groups (elderly, disabled, young children, etc.);
 - To reduce the negative externalities linked to the uncontrolled exercise of the activity: pollution, road insecurity, urban congestion, unequal distribution of the offer;
 - To promote the safety and social protection of operators and professionals, and to encourage women's access to the various position into the paratransit industry.
 - To modernise paratransit by developing tools and methods to improve knowledge of the offer, passenger information and the security of financial transactions.
4. **Paratransit is carried out by operators, whether companies or individuals, acting in a private economic framework.** These operators' right to seek a fair profit is usually recognised.
5. However, **as a public service, it is subject to progress objectives in terms of coordination, regulation, quality of service and respect for the environment.** It is also subject to obligations defined by law and by national and local regulations, which may give rise to penalties in the event of non-compliance. For instance, any operator of paratransit services must hold a licence or permit to operate, issued by the local authorities under conditions set by the State.
6. **Paratransit fares are the responsibility of local authorities.** It must be consistent within a given territory and not vary randomly according to fluctuations in supply and demand. It must seek the best compromise between giving the greatest number of people access to paratransit services and respecting the economic equilibrium of the operators. It must be consistent with mass transit pricing.
7. **Access to this activity may be conditional on requirements** in terms of staff qualifications, the quality of used vehicles, or the service offered. It may be subject to a *numerus clausus* at local level if circumstances so require.
8. **Paratransit includes two main types of service: those that are fully demand-responsive and accessible to individual customers (taxi type / "on-demand"), and those that serve a predefined route by seeking to group customers together ("fixed route"),** with intermediate or mixed forms possible. This distinction may justify the differentiation of certain objectives, certain regulations, and certain public interventions.

9. **Paratransit, and particularly "fixed route" transport, is complementary to and not in competition with mass transit systems** where they exist (exclusive right-of-way public transport and "conventional" bus networks). Paratransit is intended to provide fine-tuned services to neighbourhoods that do not have sufficient customer potential for transport by large vehicles. Mass transit operators may offer paratransit operators the opportunity to charter their services to supplement the regular network, under conditions to be agreed by both parties and with the approval of the local supervisory authorities.
10. **The competent authorities at local level may conclude agreements or contracts with paratransit operators** defining precisely the operating area allocated to them, the conditions of competition, complementarity with mass transport, operating conditions and service quality objectives, the facilities granted by the local authorities (access to bus stations and parking areas, fare advantages, possible aid and subsidies, etc.), and the consequences of non-compliance with the terms of the contract or agreement.
11. **The State and the competent local authorities have the possibility to intervene in the economic model in order to promote the achievement of objectives such as quality of the service provided, affordability of fares and environmental protection.** This public intervention is subject to the fulfilment of a number of conditions on the operator's part.
12. **Policies implemented at local level in the field of paratransit must be fully compatible with the guidelines and objectives defined by the State in this field,** and more broadly in the field of mobility and the environment.

Example 1 - Defining the e-paratransit sector in India

- Define the objectives of the programme by law
- Define and confirm the role and place of e-paratransit (e-rickshaws) in the mobility ecosystem
- Set standards regarding the vehicles and the safety requirements

Different set of measures have been implemented in parallel to the Faster Adoption and Manufacturing of Hybrid & Electric Vehicles (FAME) India Scheme, or to support it prior or since the launch of the programme. Among the most relevant programmes and initiatives, some shall be highlighted:

Regarding the EV and energy transition, the National Electric Mobility Mission (NEMMP), launched in 2013, aimed at promoting the manufacturing and use of electric vehicles in India and achieve national fuel security.

Regarding the integration of paratransit services and the regulation of e-rickshaws, the Motor Vehicle Amendment Act of 2014 notifies the existence of e-rickshaws and e-carts with a power limit up to 2 000 Watts, and specifies the regulation to obtain a driver's licence. Later, the Amendment as augmented with regulation on the safety standards for e-rickshaws.

In 2015, the Motor Vehicles Amendment Act increased the power limit for e-rickshaws by defining this transportation mode as special 3 wheeled vehicles with a power not exceeding 4 000 Watts. The same year, the Central Motor Vehicles Amendment Rules clarified the procedure to obtain driving licence and the formalities required for e-rickshaw operations.

In 2016, the Ministry of Road Transport and Highways (MoRTH) introduced a Draft Taxi Policy, mentioning the use of e-rickshaws to provide first and last mile connectivity. The objective of the policy is to promote e-rickshaws as a non-polluting feeder to public transport services.

In 2017, the Draft National Energy Policy established the development of charging stations as a component of city planning. By creating a favourable environment for charging stations, The Government of India also made it mandatory since 2016 to set up EV charging stations in residential and commercial buildings and parking lots (up to 20 % of parking spaces) and placed a cap on the maximum tariff that can be asked by a public charging station.

Regarding charging stations, the 2nd phase of FAME indicates a target of 2 700 charging stations to be implemented in cities above 4 million inhabitants, as well as fast charging stations along major highways at a maximum interval of 25 kilometres each, and ultra-fast charging stations every 100 kilometres.

Other possible actions:

There might be a need for harmonisation of the existing national policies, and between the policies existing at different levels. Urban and public transport integration also need to be considered, for instance by setting an optimum number of vehicles allowed to circulate, by fixing the location of terminals and charging stations and by designing dedicated lanes and infrastructure for 2 and 3-wheelers.

Example 2 - Defining the Public Utility Vehicles in the Philippines

- Define the role of paratransit by law with a new name
- Define the regulation to modernise the fleet and the operations of jeepneys
- Political will to implement the programme

Prior to the PUVMP, DOTr had acknowledged paratransit and recognised its role for the public interest by coining the term Public Utility Vehicle (PUV). This term includes Public Utility Jeepneys, UV Express, Minibuses, Public Utility Buses, and all abide to the regulation of private operators providing a public service.

The Government implemented several measures to contain the development of the paratransit sector since 2003. The first attempts involved moratorium on the number of franchises issued, however leading to the increase of illegal operations in the sector. One year after the moratorium, in 2004, the Government announced plans to phase out aging jeepneys. This was proposed again in 2013, without tangible steps towards implementation. In 2015, the Government announced a mandatory phase-out of jeepneys which are 15 years old and above, taking effect in 2017.

This announcement led to fierce opposition and transport strikes paralysing mobility nationwide. Transport groups such Stop and Go Coalition, Pagkakaisa ng mga Samahan ng Tsuper at Operators Nationwide (Piston) and Alliance of Concerned Transport Organisations (ACTO), protested the mandatory phase-out as it would lead to a loss of livelihood for many drivers and operators. Consequently, the mandatory phase-out never took off.

Following the 2016 presidential elections, strong supporters of the PUVMP came into power and had the political will to implement the programme. It was finally launched in 2017. The 'Public Utility Vehicle Modernisation Programme (PUVMP)' entails 10 components:

- Route rationalisation
- Local public transport route planning
- Regulatory reform
- Industry consolidation
- Fleet modernisation

- Financing
- Vehicle useful life programme
- Stakeholder support mechanism
- Communication
- Initial implementation

The 10 components presented in the PUVMP demonstrate the acknowledgement of the service provided by the jeepneys operators by the national authorities and aim as well at defining more precisely its function in urban areas (through the route rationalisation process for instance) and improve the service quality (fleet renewal and modernisation).


4.2.3. Define rules

A balance should be reached in order to define common rules that can be applied at the national level while giving enough room to the local level to be able to implement them. Once the general framework is defined, the regulatory scope should be limited to areas under the competences of the national level to avoid any interference with the transport system managed at the local level. **Three areas where the national level is providing guidance for implementation at the local level are identified as follow: (i) security, (ii) social protection and (iii) environment.**


4.2.3.1. Ensuring security

This area can be understood mainly through three main topics, which take into consideration either the conditions of access to the profession, i.e. the competences of the drivers, the capacities of the authorities to enforce the regulation and make sure only authorised drivers operate, and eventually the conditions of the vehicle, especially regarding the emissions. Each of these topics are declined as follows:

○ Action N2 - Defining and monitoring the minimum conditions for access to the profession

		N2: Defining and monitoring the minimum conditions for access to the profession
0	Overall objective(s)	<ul style="list-style-type: none"> • Modernise operations
1	Which stakeholder to involve?	<ul style="list-style-type: none"> • Ministry of Transport. • Gathering the prior opinion of paratransit stakeholders.
2	What is the length of the process?	<ul style="list-style-type: none"> • Six months to a year until the promulgation of the regulation. • Two to five years for gradual implementation.
3	What are the major steps or phases?	<ul style="list-style-type: none"> • i) Prior consultations; • ii) Drafting and adoption of regulations; • iii) Timeframe for implementation; • iv) Assessment.
4	What is the overall cost?	<ul style="list-style-type: none"> • No specific identifiable costs, unless external experts are used.



		N2: Defining and monitoring the minimum conditions for access to the profession
5	What are the pre-requisites for implementation?	<ul style="list-style-type: none"> The existence of a national representation of paratransit professionals would be a plus.
6	Which expertise to associate?	<ul style="list-style-type: none"> A precise diagnosis of access to the profession in various contexts. A prior impact assessment of the envisaged measures.

The purpose is to ensure that the person in charge to drive public transport vehicles has sufficient qualifications and/or experience to obtain a licence or authorisation to operate. Those authorisations should also include disposals about their responsibilities in terms of their customers and other road users' safety.

Drivers' qualifications (or experiences) can be checked in many ways. The minimum requirement is obviously a driving licence appropriate to the type of vehicle concerned. However, in many countries, drivers of motorised two-three-wheelers are sometimes not required to have one. Additional measures to ensure drivers' qualifications can be introduced as for instance:

- The creation of a special permit for public transport if it does not exist,
- Criminal record,
- Short qualifying training courses,
- Proof of sufficient professional experience (recognition of prior learning),
- Issuance of provisional permits subject to subsequent evaluation,
- Etc.

Lastly, it is recommended that licences or permits to operate are issued at the local level. Verification of these requirements will be the responsibility of local authorities.

Example 3 - Defining and monitoring the minimum conditions for access to the profession in India

- Define specific criteria to obtain a licence to operate electric vehicles
- Make sure the offer provided fits with the demand and adjust the number of licences emitted accordingly
- Set standards and regulation regarding the vehicles and the safety requirements

Regarding the operation, the regulation framework is lighter regarding e-rickshaws compared to "traditional" rickshaws. Whereas traditional rickshaw operators have to apply for a stage permit or a carriage permit by the local authorities, e-rickshaws owners do not need to obtain specific permit but have to register. However, recently the regulation became stricter, and in some cities local governments established route rationalisation also for e-rickshaws operators, to ensure that the service is available according to the demand of passengers. The evolution of the regulation is symptomatic of a rapid process of promulgation, and the need to proceed to adjustments have several incidents happened.

Regarding the definition of vehicles, which is central in process of vehicles' electrification, the difficulties result from the complexity of the manufacturing industry and the lack of traceability regarding each part of the vehicle. Manufactured models of e-rickshaws have to comply with the standards established by Automotive Research Association of India (ARAI) and International Center for Automotive Technology (ICAT), the two State Agencies specialised in the testing of electric vehicles and undertake various series of test. Once the model is approved, it can be registered by the Regional Transport Office. In spite of this procedure, many vehicles do not comply with these standards, as they are not registered, or some parts do not fit with the prevailing standards.



Other possible actions:

Setting standards is an absolute necessity to regulate the e-mobility sector. Standards regard the design of the vehicles, which shall be adapted to the local context (problem for instance in India and Asia in general, with the design of the vehicles not always adapted to the regular floods), the obtention of permits and licence to operate, the necessity to undertake a training to get the right to operate.

Example 4 - Defining and monitoring the conditions for access to the profession in the Philippines

- Defining the access to the industry through route rationalisation
- Defining the conditions for operation
- Introduce consolidation within the industry
- Introduce standards for vehicles through fleet renewal

In the context of the PUVMP reform, different components introduced a framework to precise the conditions of access to the sector, the conditions for operations and standards regarding the vehicles. These components represent different steps, and can be presented as follows:

Route rationalisation: Responsibility for local network planning was devolved to the Local Government Units (LGU). LGUs must conduct route rationalisation studies to determine the appropriate modes and levels of service that can cater to the actual passenger demand and travel patterns within a given area. Route rationalisation is understood to be a pre-requisite for franchise consolidation. It is important to note that 2 and 3 wheelers are excluded from the PUVMP. They remain under the responsibility of the local governments, who can forbid or allow their operations.

Local public transport route planning: On the basis of the route rationalisation studies, local public transport route Plans (LPTRP) have to be drafted by LGUs and submitted to LTFRB. A manual to assist LGUs was produced by the Government and capacity-building seminars were organised.

Regulatory reform: Once the number of jeepneys and other PUVs required for a particular corridor is determined through route rationalisation studies, LTFRB publishes a call for applications to serve a route and invites applications to operate the route. The number of vehicles required, and service standards are specified in the call. A single franchise for that corridor is then issued, meaning only one entity (a jeepney cooperative or corporation) operates its services on this corridor. This aims to avoid any on-street competition and ensure better fleet management.

At the beginning of the programme, priority was given to existing operators in the application for franchises. However, it is understood that by mid-2020, if existing operators did not comply with the PUVMP requirements, their route were opened to all interested applicants.

Industry consolidation: LTFRB does not issue franchises to unconsolidated operators, meaning it is compulsory for operators to “regroup” to operate a route/corridor. Industry consolidation⁵⁹ is understood to be pre-requisite to reform the public transportation system and for the financial mechanisms proposed to be sustainable. The “Office of Transportation Cooperatives” is the key agency involved in consolidating individual operators.


⁵⁹ Industry consolidation entails individual franchise holders to either join or form legal entities such as cooperatives or corporations.

Fleet modernisation: Franchises can only be granted to operators whose fleet are compliant with a number of environmental, safety and user comfort standards (Omnibus Franchising Guidelines, OFG). The vehicles are expected to be (at a minimum) Euro 4-compliant and should include a number of features such as seatbelts, CCTVs, ramps, Wi-Fi, GPS, and AFCS. Three classes of PUVs were given as options by DOTr:

- Class 1 are 9–12-seater PUVs are better suited for municipal/provincial roads.
- Class 2 and 3 have a seating capacity of up to 23 passenger and are seen as the new jeepneys.

Modernising vehicles represents a huge investment for operators. The average price for Euro 4-compliant vehicle is variable but new vehicles' prices typically range from PHP 1.8 million to 2.4 million (≈USD 35,000 to 46,700) (Interview D). It is estimated that 10% of operators who can afford to modernise select electric jeepneys (Interview E). It is worth noting that the government is providing incentives to car manufacturers under its Comprehensive Automotive Resurgence Strategy (CARS) programme to revitalise the Philippines automotive industry and fix the manufacturing capability gaps.

○ Action N3 - Sanctioning clandestine transport

		N3 - Sanctioning clandestine transport
0	Overall objective(s)	<ul style="list-style-type: none"> • Integrate paratransit into the mobility ecosystem, Secure sustainable livelihoods
1	Which stakeholder to involve?	<ul style="list-style-type: none"> • Ministries in charge of Transport and Security • Gathering the prior opinion of paratransit stakeholders.
2	What is the length of the process?	<ul style="list-style-type: none"> • Can be coupled with the previous point. • Six months to a year until the promulgation of the regulation. • Compliance period of two to five years.
3	What are the major steps or phases?	<ul style="list-style-type: none"> • i) Prior consultations; • ii) Drafting and adoption of regulations; • iii) Timeframe for implementation; • iv) Assessment.
4	What is the overall cost?	<ul style="list-style-type: none"> • No specific identifiable costs unless external experts are used.
5	What are the pre-requisites for implementation?	<ul style="list-style-type: none"> • The existence of a national representation of paratransit professionals would be a plus.
6	Which expertise to associate?	<ul style="list-style-type: none"> • A precise diagnosis of access to the profession in various contexts. • A prior impact assessment of the measures envisaged.

It is recommended that the regulations clearly define what is legal and what is illegal, and that any "grey areas" between the two regimes be removed or minimised. Consequently, the procedures for monitoring and sanctioning irregular situations can be defined, such as:

- Practicing the profession without a licence or authorisation
- The consequences of serious traffic violations on licensing (drunk driving, driving under the influence of drugs, significant overloading, serious at-fault accidents, etc.)
- Failure to comply with the obligations of the operating licence or contract



○ Action N4 - Defining and enforcing the traffic conditions of the vehicles assigned to the service


N4 - Defining and enforcing the traffic conditions of the vehicles assigned to the service		
0	Overall objective(s)	<ul style="list-style-type: none"> Reduce negative externalities
1	Which stakeholder to involve?	<ul style="list-style-type: none"> Ministry of Transport. Gathering the prior opinion of paratransit professionals Gathering the opinion of professionals in the field of car repair and control
2	What is the length of the process?	<ul style="list-style-type: none"> Can be coupled with the previous point. Six months to a year until the promulgation of the regulation. Compliance period of two to five years.
3	What are the major steps or phases?	<ul style="list-style-type: none"> i) Prior consultations; ii) Drafting and adoption of regulations; iii) Timeframe for implementation; iv) Assessment.
4	What is the overall cost?	<ul style="list-style-type: none"> No identifiable costs to the State. Additional cost for paratransit professionals, Additional activity for the motor vehicle control sector (if it exists, otherwise to be created).
5	What are the pre-requisites for implementation?	<ul style="list-style-type: none"> The existence of a national representation of paratransit professionals would be a plus. The existence of an automotive repair and inspection sector will facilitate implementation. This measure will be more effective if it is coupled with support programmes for vehicle renewal.
6	Which expertise to associate?	<ul style="list-style-type: none"> A survey is needed to i) verify the coherence of the economic model for the control centres, ii) assess the impact of the measure on the economy of the operators.

The aim is to **define a coherent and consistent assessment framework to ensure a minimum level of safety, reliability and control of vehicle emissions**. This framework must be adapted to the procedures that already exist in each country. It is recommended not to establish overly strict vehicle qualification criteria, which would have many counterproductive effects (depriving many operators of access to employment, fraud, etc.). **Checks should be focused on the components (i) related to safety** (e.g. braking system) **and (ii) pollutant emission** (e.g. level of particle pollutants).

In order to implement such measures, there is a requirement to create control and check centres (in the main urban areas) that are entrusted to the private sector, but also controlled by official and public bodies (to ensure rule enforcement and avoid fraud and corruption). The control of the approval of vehicles would then be left to the local authorities, with a view to issuing operating permits or licences.

4.2.3.2. Ensuring social protection

○ Action N5 – Guarantee and strengthen the social protection of operators

		N5 - Guarantee and strengthen the social protection of operators
0	Overall objective(s)	<ul style="list-style-type: none"> Secure sustainable livelihoods
1	Which stakeholder to involve?	<ul style="list-style-type: none"> Ministries in charge of transport and labour Gathering the prior opinion of paratransit stakeholders (employers, self-employed and employees)
2	What is the length of the process?	<ul style="list-style-type: none"> Very variable, depending on the starting situation and the objectives chosen A simple reinforcement of the control can be put in place quickly, with a compliance period of one to two years
3	What are the major steps or phases?	<ul style="list-style-type: none"> i) Prior consultations; ii) Drafting and adoption of regulations; iii) Timeframe for implementation; iv) Assessment
4	What is the overall cost?	<ul style="list-style-type: none"> Very variable according to the systems in force and the level of social protection, both for the State and for the operators
5	What are the pre-requisites for implementation?	<ul style="list-style-type: none"> The existence of social protection rules applicable to all workers
6	Which expertise to associate?	<ul style="list-style-type: none"> Any measure of a social nature must be based on a very precise diagnosis and impact study measuring the impact on the living conditions of workers and the economy of enterprises

Most of the countries covered by this report have low levels of public social protection. The possible social protection policies that can be advocated here do not pretend to change the existing social protection systems of self-employed and employed workers, but simply **to assert the same access to existing social laws as all other workers, and to provide for specific sanctions in case of abuse or fraud**, if necessary.


The main aspect is **to control that illegal work conditions do not exist**. National regulations could thus provide the temporary or permanent withdrawal of licences or operating authorisations from any vehicle owner who employs drivers or assistants outside the legal framework, or who does not pay his social security contributions.

Another point of vigilance, which will probably only be applicable in countries which already have a relatively advanced form of social law, could be **to ensure that drivers working exclusively under the orders of a vehicle owner or licence holder have the status of an employee and not a self-employed person**.

It is difficult to be more precise in this respect, as the precise definition of social measures depends on the progress of social legislation and on constructive dialogue with the organisations representing operators. However, this may be an important issue, making it possible to significantly improve drivers' working conditions and improve the quality of service provided to customers.

4.2.3.3. Ensuring environmental quality

○ Action N6 – Setting and monitoring vehicle emission standards

		N6 - Setting and monitoring vehicle emission standards
0	Overall objective(s)	<ul style="list-style-type: none"> • Reduce negative externalities
1	Which stakeholder to involve?	<ul style="list-style-type: none"> • Ministries in charge of transport and environment • Gathering the prior opinion of paratransit stakeholders. • Gathering the opinion of professionals in the field of car repair and control.
2	What is the length of the process?	<ul style="list-style-type: none"> • The measure should be integrated into vehicle condition monitoring. • Six months to a year seems reasonable • A compliance period of two to five years.
3	What are the major steps or phases?	<ul style="list-style-type: none"> • i) Drafting and adoption of regulations; • ii) Timeframe for implementation; • iii) Assessment.
4	What is the overall cost?	<ul style="list-style-type: none"> • Costs integrated into the cost of periodic vehicle inspection.
5	What are the pre-requisites for implementation?	<ul style="list-style-type: none"> • Definition of environmental standards adapted to the paratransit sector. • This measure will be more effective if it is coupled with support programmes for vehicle renewal.
6	Which expertise to associate?	<ul style="list-style-type: none"> • Assess the expected environmental impact of the measure.

This issue is similar to the one already mentioned regarding vehicles' qualification criteria : environmental criteria can be introduced to eliminate the most polluting vehicles. However, as with safety, it is recommended that the level of requirements be limited to the most unacceptable situations, not to condemn an entire fleet of vehicles to scrap, with the social consequences that this could entail.

Maximum emission standards should be ambitious but realistic, and should be phased gradually, giving industry and operators time to adapt. At the same time, **the State should put in place the necessary means of control.**


The policy of **reducing environmental pollution linked to the paratransit sector should be based primarily on positive measures** (measures to encourage the renewal of vehicle fleets, programmes to teach economical driving, etc.) rather than on overly coercive measures, which would generate social problems and fraud.

4.2.4. Define priorities

After recognising the existence of paratransit and editing general rules regarding paratransit operations, the state can define its policy for direct intervention in the paratransit economy.

○ Action N7 – Using the fiscal lever to promote paratransit reform

The main national leverage refers to the fiscal incentives (or constraints). It can grant tax advantages to some paratransit stakeholders to encourage their actions, or on the contrary, introduce taxes and fees to release resources that can be allocated to other actions or to rebalance the market.

 N7 - Using the fiscal lever to promote paratransit reform		
0	Overall objective(s)	<ul style="list-style-type: none"> Depending on the orientation of the fiscal lever, the objectives can be multiple and diverse, and thus deal with each of the component of the paratransit reform
1	Which stakeholder to involve?	<ul style="list-style-type: none"> Ministries in charge of finance and transport Gathering the prior opinion of paratransit stakeholders.
2	What is the length of the process?	<ul style="list-style-type: none"> Very variable, depending on the size and complexity of the measure. Implementation may be through legislation or simple tax rules.
3	What are the major steps or phases?	<ul style="list-style-type: none"> i) Definition of the draft tax measure and impact assessment ii) Prior consultations iii) Drafting of the measure and implementation iv) Assessment.
4	What is the overall cost?	<ul style="list-style-type: none"> Very variable depending on the type of measures and the objectives sought.
5	What are the pre-requisites for implementation?	<ul style="list-style-type: none"> Depends on the state of tax law and its implementation for the sector concerned. Need for means of control to combat any fraud generated by the measure.
6	Which expertise to associate?	<ul style="list-style-type: none"> Each measure requires a detailed impact assessment on the state budget and the economic balance of the paratransit sector.

Each state must define its priorities in terms of intervention beforehand: depending on whether the state gives priority to reducing the ecological footprint, the social protection, the harmonious development of transport networks or the development of a national industry, the potential tools will not be the same. Moreover, fiscal provisions vary significantly from one state to another, and not all solutions are applicable to every State. It should be noted that in federal states, fiscal measures can be implemented in by adopting a similar approach at the regional level.

The following is a non-exhaustive list of subjects in which the state can play a role through taxation to achieve the objectives listed above.



Table 11 Potential fiscal leverage and expected outcomes, Source: Consultant

Potential fiscal leverage	Expected outcomes
Tax relief on fuel purchased by public transport companies	Allow the improvement of the operating account of the companies and consider a reduction in tariffs (beware of the risks of fraud!)
Tax relief produced public transport AND/OR over-taxation of imported public transport vehicles	Encourage local production if it exists. Enable negotiation with local manufacturers on a path of progress. This measure can be applied to all public transport or only to paratransit services.
Tax relief for non-polluting public transport vehicles (e-vehicles) AND/OR over-taxation of polluting public transport vehicles	Encourage the renewal of the fleet with non-polluting vehicles (transition towards e-vehicles or vehicle adaptation with CNG or LPG).
VAT relief on revenues (if available)	Allow the improvement of the operating account of the companies and consider a reduction in tariffs (beware of the risks of fraud!).
Adaptation of the tax system for operators	Proper classification of paratransit operators' revenues
Endowment of intervention funds through specific taxes (e.g. on fuel)	Provide budgetary resources for intervention in the transport sector (see next section)
Differentiation of tax regimes for taxi (on demand) and fixed route services	Prioritise fixed routes to help massify demand and promote linkage with mass transport
Etc.	

Implementation of such measures require specific studies to verify the impact on state revenues and the elimination (or minimisation) of the risks of fraud, windfall effects and perverse effects. Tax incentives will only have their full effect if they are perceived as permanent and not volatile, if their positive and negative effects are evaluated, and if their correct application is monitored.

Example 5 - Using the fiscal lever to promote the paratransit reform in India

- Rebates on e-vehicles to encourage the purchase and foster the manufacturing industry
- Tax exemption at the State level
- Cheaper tariffs on electricity

To encourage the transition towards e-vehicles, the main actions include consumer subsidies (purchase support) and support of the manufacturing industry, both at the national and State level.

At the national level, the FAME scheme represents the main fiscal incentive regarding e-rickshaws and e-mobility in general in India. Among the USD 1,5 billion dedicated to the scheme, In the 1st phase of FAME, the fiscal incentive consisted in rebates of INR 7,500 to 22,000 (USD 110 to 320) on the purchase of e-vehicles, within a list of 62 eligible models. About 40 % of the models are low-speed (less than 25 km/hour), and within this list, 8 models of e 3-wheelers appear. The subsidy eligibility depends on the battery size, the models having a larger battery being eligible for a higher subsidy. In the 2nd phase of FAME, 2 wheelers have been excluded from the list of eligible models to focus the support of the Government on public transportation.

At the State level, in some cases complementary measures were introduced. In Uttar Pradesh for instance, the Uttar Pradesh electric vehicle manufacturing policy set in 2018 for a period of 5 years sets different measures

to encourage the investments and economic activities in the field of EV. Therefore, tax exemption, interest free loans and subsidies for the purchase of e-vehicles are included in the Policy. In Goa, road tax does not apply for electric vehicles.

Generally, policies implemented at the State level include fiscal advantages for manufacturers and buyers.

Other possible actions:

Other incentives to foster the transition towards e-vehicles include fuel consumption limits, vehicle tax rationalisation (to reduce tax on lighter vehicles and more efficient vehicles), insurance rationalisation (also in favour of lighter vehicles and low-speed vehicles).

Example 6 - Using the fiscal lever to promote the paratransit reform in the Philippines

- Financial support to the operators to renew their fleet
- Investments in modern vehicles
- Scrappage allowance

Within the PUVMP, specific components of the reform are dedicated to the mechanisms implemented in order to promote the fleet renewal:

Financing: The Government in partnership with national Development Bank of the Philippines (DBP) and Landbank of the Philippines (LBP), have developed a financial assistance programme in order to support operators in making the necessary investment in modern vehicles.

This model was coined the “5,6,7,8 model” as it entails:

- 5% down-payment,
- 6% annual interest,
- 7-year amortisation term (with a six-month initial grace period),
- A subsidy of PHP 80,000 (≈USD 1,555 USD) for surrendering old franchise. This subsidy was recently revised to reach PHP 160,000 (≈USD 3,110 USD) as the initial amount was considered too low.

In order to benefit from this financing scheme, the operators have to (i) consolidate, (ii) file an application for the substitution of old units or apply for a franchise (in the case of developmental route) and (iii) apply for a loan from DBP or LBP.

Vehicle useful life programme: This part of the programme ensures the appropriate treatment of the vehicles during their useful life, including approval of, inspection system and scrappage at the end of the vehicle life. The scrappage is necessary to improve the acceptability of the programme and to ensure that that the old vehicles will not be re-circulated back into public transport systems elsewhere in the country.

In spite of the financing mechanisms implemented through PUVMP, financing of modern vehicles and access to capital turned out to be one of the main barriers to the implementation of the reform. Upfront investment requirements are minimal, as the scrappage scheme typically covers the initial capital investment. However, while loans can easily be accessible, the repayment remains unaffordable for many. Most individual operators cannot finance the remaining 95% of the loans. For reference, a diesel jeepney costs around PHP 675,000 against around PHP 2,000,000 for a Euro-4 compliant vehicle. Additionally, while a 7-year repayment period is sometimes considered to be too short, it is difficult to stretch the repayment period when vehicles cannot be operated for more than 15 years.

Regarding vehicle modernisation, there is a large gap between existing operators and new operators. Existing operators bought the jeepneys as an investment, taking out a loan with a high interest rate because they expected a high return on investment (40% to 50%). Existing jeepney operators are expected to be worse off due to the PUVMP. However, a new self-financing jeepney operator could achieve higher financial return than traditional jeepneys owners by making an investment in an electric jeepney as part of an operator co-operative (Interview E).


The financial sustainability of the PUVMP could prove difficult in the long term. While the quality of service in the modernised jeepneys have improved, fares have not increased to finance upgrades. For the programme to be sustainable, it is likely that the increase in costs to provide a better service will have to be shared by all stakeholders (operators, users and the Government) (Interview E).

4.2.5. Define actions


Depending on the availability of funds and the ways in which they intervene in local affairs, **states can also encourage the emergence of projects or support the development of sectors that contribute to raising the performance level of the paratransit sector.** Four main channels of direct intervention are identified, of very different natures.

4.2.5.1. Training, meeting requirements and labelling

- Action N8 - Defining and implementing specific training courses for the transport professions, including the specificities of paratransit

		N8 - Implementing specific training courses for the transport professions, including the specificities of paratransit
0	Overall objective(s)	<ul style="list-style-type: none"> Secure sustainable livelihoods, modernise operations
1	Which stakeholder to involve?	<ul style="list-style-type: none"> Ministries in charge of transport and education Universities, professional training centres, continuing education centres related to the transport and mechanical trades Gathering the prior opinion of paratransit stakeholders.
2	What is the length of the process?	<ul style="list-style-type: none"> Approximately one year to define the project, one year for its effective implementation by the training organisations, one year for the first promotion
3	What are the major steps or phases?	For each programme: <ul style="list-style-type: none"> i) Definition of the need ii) Definition of the training scheme iii) Definition of the pedagogical content iv) Recruitment of teachers and first students v) Launch of the training vi) Assessment
4	What is the overall cost?	Depending on: <ul style="list-style-type: none"> the type of training, the type of training organisation, the method of financing,



		N8 - Implementing specific training courses for the transport professions, including the specificities of paratransit
		<ul style="list-style-type: none"> the duration the size of the target audience.
5	What are the pre-requisites for implementation?	<ul style="list-style-type: none"> Must be associated with a benefit for professionals (access to the sector, labelling, tax advantages, access to aid for vehicle renewal, etc) These benefits must be laid down by law or regulation (see above). The funding mechanism must be defined beforehand: payment by the trainee, by his or her company, by the State or local authorities, by professional organisations, etc.
6	Which expertise to associate?	<ul style="list-style-type: none"> Collaboration with universities and professional bodies in the definition of needs, programmes and teaching methods

States, but also the various levels of governance in charge of vocational training, have the **possibility to implement specific training courses for the transport professions, including the specificities of paratransit**. This may be either initial training, intended for future operators, or continuous training enabling drivers, for example, to prove that they have the necessary level to obtain an operating licence.

The forms of these training courses can be multiple, either in the form of cycle training or dedicated and targeted short training sessions. They may be provided by public bodies such as universities or vocational schools, or by private bodies under contract with the national level.

The implementation of training courses will lead to the issue of diplomas or certificates which can be used by those trained to facilitate their access to employment or to obtain bank loans for the acquisition of vehicles.

Example 7 - Implementing specific training courses for the transport professions in the Philippines	<ul style="list-style-type: none"> Providing operators with trainings regarding vehicle operation & management Consolidating operators' knowledge regarding business models and sector performances Capacity building and training programmes dedicated to local authorities in charge of the implementation of the reform
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Specific components are dedicated to the support of operators through training programmes in the context of PUVMP. The main programme developed within the reform is twofold: one the one hand, it trains operators to use new vehicles in the context of the fleet renewal process, and on the other hand it aims at professionalising operators and consolidate their knowledge regarding the business model of the service, the performance of the sector, etc. it can be detailed as follows:

Stakeholder support mechanism: Training and social programmes are implemented to equip stakeholders with skills and capacity to meet the needs of the future system:


- Capacity training for vehicle owners includes finance training. Vehicle owners need to build their knowledge on the operations & management of the modern vehicles to feel comfortable taking financial and technical risks.
- Social support programme (Tsuper Iskolar programme) includes skills and entrepreneurship training (e.g. mechanics training) to provide new livelihood options for affected drivers. Participants in the programme are given a daily stipend of PHP 350 (~USD 6,8) for the duration of their training.

Important to notice (and detailed in another section as well), trainings and capacity building have been also provided to Local Government Units, as their role and competence evolved in order to coordinate the reform and regulate the sector. Also, different set of skills and knowledge are useful for the decision-makers and technicians involved in the industry.

Another important component of PUVMP regards the communication with operators and more generally, stakeholders impacted by the reform. Besides the operators' training, raising awareness is also a key element to facilitate the acceptability of the reform, even for users whose daily habits are likely to be affected by the change:

Communication: Explaining the objectives, benefits and progress of the programme to stakeholders is a key part of the PUVMP. Constant contact and interaction with stakeholders are required to avoid miscommunication (as well as unfounded rumours and fake news) and find local champions of the programme.

○ Action N9 – Implementing a national labelling process

 N9 - Implementing a national labelling process		
0	Overall objective(s)	<ul style="list-style-type: none"> Integrate paratransit into the mobility ecosystem, modernise operations
1	Which stakeholder to involve?	<ul style="list-style-type: none"> Ministry in charge of transports Representatives of the main transport organising authorities Gathering the prior opinion of paratransit stakeholders.
2	What is the length of the process?	<ul style="list-style-type: none"> Definition: relatively quick in its definition (six months to a year including prior consultations) Implementation: several years before operators fully adhere to the approach.
3	What are the major steps or phases?	<ul style="list-style-type: none"> i) Pre-consultation ii) Definition of the project and associated benefits iii) Definition of the communication plan iv) Launch of the label v) Assessment.
4	What is the overall cost?	<ul style="list-style-type: none"> No costs identified, except communication plan, unless financial benefits are attached to the label.
5	What are the pre-requisites for implementation?	<ul style="list-style-type: none"> Define benefits for operators: advertising, tax advantages, access to aid for vehicle renewal, etc. These benefits could be laid down by law or regulation (see above). If PTA exist, must be closely involved in the definition of this label so that they can then use it in their own policies
6	Which expertise to associate?	<ul style="list-style-type: none"> Paratransit expertise

To go further, it is possible to consider a labelling process (at national, regional or local level) that would certify that an operator meets a certain number of criteria. This labelling process could help to prove the operator's ability to carry out the activity in good conditions of reliability and safety. These criteria could thus relate to:

- The level of training and qualification of drivers or assistants
- The age of the vehicle, if necessary, the organisation of the periodic technical controls,


- Compliance with environmental standards for pollutant emissions,
- Compliance with qualitative criteria to be defined, relating to passenger information on the routes taken, vehicle load standards, compliance with timetables or frequencies, etc.
- The use of digital booking tools that guarantee the security of transactions,
- Etc.

Holders of this label (issued at the level of the operator, whether a company or an individual) could use it with their customers **to increase their reputation and influence customer’s choice**. The awarding of this label could also open the possibility for the operator to access certain advantages or resources (access to parking points, referencing in digital tools, subcontracting to mass transit companies, etc.) to be defined at the local level.

The subject of labelling implies the control of the obligations attached to this distinction. The label should be issued for a limited period of time, neither too short nor too long (for instance a period of two years can be tested). But this precaution is not sufficient to ensure that the label holders do not allow the quality of the service they provide to drift. It is difficult to consider this control being carried out by government officials, and it is probably preferable that it be carried out at the local level, integrated into the overall control functions that local authorities must exercise over operators.

4.2.5.2. Supporting the industrial sector

- Action N10 – Supporting industrial sectors raising the level of quality and professionalism of paratransit stakeholders

		N10 - Supporting industrial sectors raising the level of quality and professionalism of paratransit stakeholders
0	Overall objective(s)	<ul style="list-style-type: none"> • Reduce negative externalities, modernise operations
1	Which stakeholder to involve?	<ul style="list-style-type: none"> • Ministries in charge of transports and industry • Representatives of the economic sectors targeted by the action
2	What is the length of the process?	<ul style="list-style-type: none"> • These actions can be concentrated in time, or permanent.
3	What are the major steps or phases?	<ul style="list-style-type: none"> • i) Identification of the need or priority • ii) Study of the means of intervention and the budget • iii) Search for partnerships and funding • iv) Communication to potential beneficiaries • v) Implementation • vi) Assessment
4	What is the overall cost?	<ul style="list-style-type: none"> • Definition of actions under the constraint of a predefined budget, depending on the resources and partnerships available
5	What are the pre-requisites for implementation?	<ul style="list-style-type: none"> • Support actions must contribute to the achievement of previously defined policy objectives, for example through the framework law
6	Which expertise to associate?	<ul style="list-style-type: none"> • Preliminary and impact studies to be conducted by experts in the economic sectors concerned

The state can intervene directly **to support industrial sectors that contribute to raising the level of quality and professionalism of paratransit sector**. Three sectors in particular have been identified:

- **The vehicle sector:** construction or adaptation of specific vehicles (jeepneys, tuk-tuk, etc.), development of specific components for better energy or environmental performance (carburettors, exhausts, etc.),
- **The fuel industry:** production of biofuels, biogas, etc.
- **The ITC sector:** development of digital applications and equipment: light-weight ticketing systems, geo-location and fleet management, e-hailing, journey booking, route managers including paratransit are the main opportunities.

This support can take many forms, including fiscal measures (mentioned above), capacity building activities, inclusion of new criteria in the evaluation for public contracts, the promotion of the companies concerned in public communication bodies, and the calls for projects developed below.

Example 8 - Supporting the industrial sector in India

- Create the conditions locally to develop the industrial sector by providing advantages to companies and industrial actors

Besides the fiscal rebates already presented (Action N7), incentives are given at the State level in India in order to foster the development of the e-vehicle industry in specific territories. This is the case for instance in Uttarakhand, where the “Electric vehicle manufacturing, EV usage, promotion and related services, Infrastructure policy” from 2018 presents tax exemption and land provision for EV manufacturers, 100 % electricity duty exemption, and favourable conditions for loans obtention. Maharashtra also provides tax exemption and subsidies in favour of buyers and EV manufacturers and gives access to cheaper tariffs than the commercial rates. More generally in India, the innovation in the industrial sector also relies on the existence of strong links between universities, research and technical institutes and manufacturers.

Other possible actions:


Incentives can be given to strengthen the R&D departments in manufacturing companies. The organisation of awareness campaign is a lever to encourage the purchase of e-vehicles, as well as clear communication on the benefit of e-vehicles and the labelling on vehicles to make it easier to identify e-vehicles among other vehicles.

4.2.5.3. Developing calls for projects

○ **Action N11 – Launch calls for projects for experimentation**

 N11 - Launch calls for projects for experimentation		
0	Overall objective(s)	<ul style="list-style-type: none"> • Modernise operations
1	Which stakeholder to involve?	<ul style="list-style-type: none"> • Ministries in charge of transport, industry, education... • The aim of the action is precisely to identify stakeholders.
2	What is the length of the process?	<ul style="list-style-type: none"> • A three-year programme seems to be a good average.
3	What are the major steps or phases?	<ul style="list-style-type: none"> • i) Identification of the need or priorities • ii) Preparation of the call for projects documentation



 N11 - Launch calls for projects for experimentation		
		<ul style="list-style-type: none"> • iii) Selection of projects • iv) Funding and monitoring of projects • v) Assessment
4	What is the overall cost?	<ul style="list-style-type: none"> • Definition of actions under the constraint of a predefined budget, depending on the resources and partnerships available
5	What are the pre-requisites for implementation?	<ul style="list-style-type: none"> • Selected projects must contribute to the achievement of previously defined policy objectives, for example through the framework law
6	Which expertise to associate?	<ul style="list-style-type: none"> • Project management and assessment

The main objective of developing tenders (or also calls for projects) is **to the involve public or/and private stakeholders to propose experimentation or operational research programmes** on a given theme, enabling the performance of paratransit sector to increase. The selected projects are then financed by the national level (after evaluation). Based on the outcomes of the diagnosis, several topics can be the subject of a tender: (i) vehicle performance (including environmental performance); (ii) development of digital tools and (iii) social experimentation. Other topics can be subject to tenders.⁶⁰

Several topics can also be grouped. These calls for projects can be financed either directly by the State (by allocating all or part of the proceeds of a specific tax) or by international donors.

4.2.5.4. Seek partnerships with international donors

○ Action N12 – Seek partnerships with international donors

 N12 - Seek partnerships with international donors		
0	Overall objective(s)	<ul style="list-style-type: none"> • Empowerment of the local authorities to implement and monitor the paratransit reform
1	Which stakeholder to involve?	<ul style="list-style-type: none"> • International funders • Ministries in charge of transport, finance, industry • Representatives of the metropolitan areas, of small and medium-sized cities
2	What is the length of the process?	<ul style="list-style-type: none"> • National governments can encourage international donors to set up five-year "facilities", for example.
3	What are the major steps or phases?	<ul style="list-style-type: none"> • This action covers several modalities that involve different sequencing. • It is essentially a continuous provision of resources and facilities.
4	What is the overall cost?	<ul style="list-style-type: none"> • Impossible to assess at this stage. Most of the actions of international donors involve co-financing by governments or final beneficiaries.

⁶⁰ Among them: Knowledge of the transport offer (itinerary survey technologies); Passenger information; Management of bus stations and parking areas; Intermodality with mass transport; Pricing innovation.



 FIXED ROUTE		N12 - Seek partnerships with international donors
5	What are the pre-requisites for implementation?	<ul style="list-style-type: none"> Selected projects must contribute to the achievement of previously defined policy objectives, for example through the framework law
6	Which expertise to associate?	<ul style="list-style-type: none"> Project management and assessment.

A lot of Asian countries do not allow cities to contract loans directly from International Financial Institutions (IFIs). In addition, cities do not always have the critical size to obtain necessary funding from donors to develop their projects. **The national public authorities can play an intermediary role between the needs of small and medium-sized towns, and the requirements of international donors.** This role can be exercised through:

- **The development of coherent programmes**, through calls for projects as mentioned above, or more simply through the definition of action programmes concerning a vast metropolitan area (gathering several municipalities); the state (or a large regional entity) can then take the head of the metropolitan area and contract the loan directly to redistribute it to the beneficiary body of the metropolitan area;
- **Technical assistance for the definition of action programmes**, the realization of loan application files and the negotiation with donor agencies;
- **The provision of a state guarantee** for loans contracted by entities that cannot provide sufficient financial guarantees.

Example 9 - Seek partnerships with international donors in India

- Develop calls for projects
- Create synergies between actions and projects
- Facilitating access to international donor facilities for small and medium-sized towns

As a way to develop further the e-mobility sector and the transition towards clean energies, programmes have been set at the local level, with the support of International Donor Agencies. This is the case for instance of the CITIIS programme funded by AFD in India. The CITIIS (City Investments to Innovate, Integrate and Sustain) programme, co-developed by AFD, the National Institute of Urban Affairs (NIUA) and the Ministry of Housing and Urban Affairs (MoHUA), will provide technical and financial support to some fifteen Smart Cities projects. Selected following a national call for projects, these projects will focus on sustainable mobility, public spaces, digitalisation of urban services, and social innovation in precarious neighbourhoods.

- The financial support is made possible by a sovereign loan from AFD to the Government of India signed in March 2018 in the presence of Indian Prime Minister Narendra Modi and French President Emmanuel Macron. The accompanying expertise is mobilised through a EUR 6 million grant from the European Union and a EUR 1 million grant from the French Government.
- Once selected, the winning projects will receive additional grant funding as well as specific technical assistance tailored to the needs of the project.

Outside of the CITIIS project, Jabalpur has also been identified as one of the “smart city” by the Government of India, and local officials committed to the transition 5 000 fossil-fuelled rickshaws towards zero emissions e-rickshaws, and solar-powered stations. As a pilot project, the authorities set up nine solar-powered charging stations with the objective to be used by 400 e-rickshaw operators in the city. These stations have been designed to enable four vehicles to be charged simultaneously. It can serve up to 7 or 8 hours to fully recharge a



battery, e-rickshaws reaching then an autonomy of 100 to 150 kilometres. the solar panels in the station are also connected to the state grid, so they can also feed in additional power through net metering.

Other possible actions:

Incentives can be given to strengthen the R&D departments in manufacturing companies. The organisation of awareness campaign is a lever to encourage the purchase of e-vehicles, as well as clear communication on the benefit of e-vehicles and the labelling on vehicles to make it easier to identify e-vehicles among other vehicles.

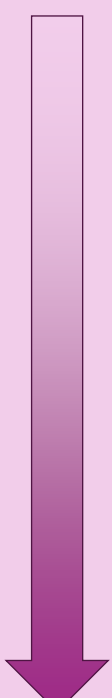
4.3. At the local level: towards the integration of paratransit within urban mobility systems

4.3.1. Overview of the types of actions to be implemented at the local level

If the main orientation of the regulation shall be set at the national level, **the implementation of a consistent regulatory framework at the local level is essential to tailor a bespoke action to reform of the paratransit industry and design appropriate and integrated services.**

This framework shall include the specificities of the paratransit services depending on each city, may it be on-demand, fixed routes, or feeder services. Different levels of policy are first identified to present the main groups of actions local authorities can undertake.

Table 12 Summary of Actions to be taken at the Local Level. Source: Consultant

Progress	Context	Component	Main actions
-	IN THE FRAMEWORK OF A SUMP	-	USING MOBILISEYOURCITY PARATRANSIT TOOLKIT SET OF ACTIONS AT EACH STEP OF THE SUMP
	OUTSIDE THE FRAMEWORK OF A SUMP	Reduce Negative Externality	<ul style="list-style-type: none"> Action L1: Defining / Strengthening the Public Transport Authority (PTA) Action L2: Establishing / Strengthening Consultation Structures with the Paratransit Sector Action L3: Setting up the Local Regulatory Framework Action L4: Setting up Control Agencies/Entities Action L5: Labelling
		Towards a Public Service Concession	<ul style="list-style-type: none"> Action L6: Design of a service scheme to regulate competition Action L7: Defining pricing rules Action L8: Grouping of operators in cooperative structures Action L9: Negotiation of agreements or contracts with operators
		Integration into the Multimodal Public Transport Service	<ul style="list-style-type: none"> Action L10: Fares harmonised with formal transport Action L11: Improving passenger information Action L12: Subcontracting to paratransit operators
		A Modern and Non-Polluting Mode of Transport	PROJECT LEVEL ACTIONS

4.3.1.1. Four policy levels to ensure integration of paratransit in the transport system

Depending on its level of development, on the actions already carried out and the amount of resources available for investment, operation and control, each local authority must be able to position its objectives and define the path to achieve them.

The diagram below summarises four levels of development of policies for the integration of paratransit in the transport system, which are developed below:

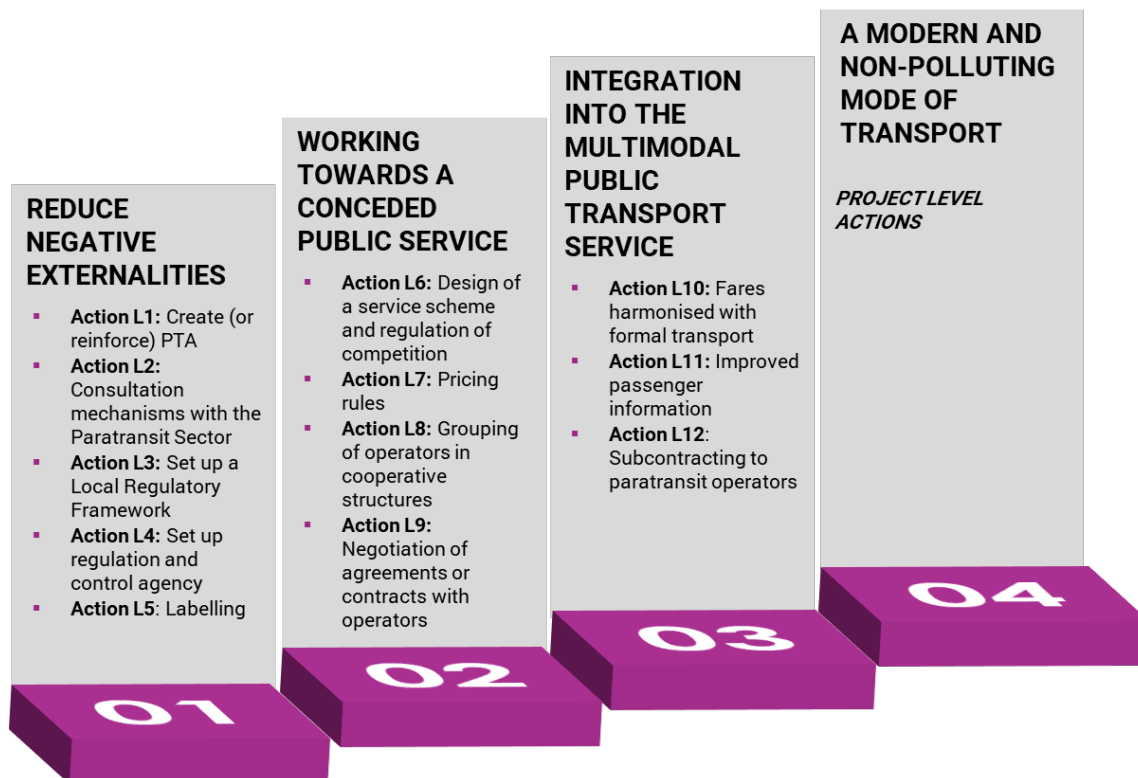


Figure 33 Four levels of development of policies for the integration of transport, Source: Consultant

○ Level 1: reduce negative externalities

In other contexts, such as in Africa, it is not uncommon for paratransit services to be provided without any public authorisation or control, and to be driven by the need for immediate income. **This situation is not as common in Asian large cities but may exist in small and medium size cities.**

In this context, **the objectives of a public policy will initially be limited to reduce negative externalities** by setting operating rules and conditions to access the sector. Eventually, a labelling procedure may be used to encourage operators who best comply with these objectives.

○ Level 2: towards a public service concession

Once the first level has been completed, it is then possible **to transform a private service into a public service, at least for fixed-route services**, by encouraging operators to form Economic Interest Groups, or any other type of associations allowing them to acquire 'legal personality'.

This would allow local authorities to sign agreements or even contracts with operators. These agreements would set out the conditions of operation (routes to be used, frequencies, range, fares, safety and quality of services, parking areas, etc.) in exchange for regulation of competition, access to certain facilities (bus stations, for example) and other advantages such as access to training, financial aid and joint services.

Level 2 requires that the Public Transport Authority (PTA) already has (i) gained an in-depth knowledge of the paratransit offerings and (ii) drawn up a service plan defining the routes to be served, the number of vehicles allowed on each line, and the fares,⁶¹ so as to ensure good coverage and fair competition. If a bus network exists, this plan will also set out the rules for complementarity between the two modes of transport.

○ **Level 3: integration into the multimodal public transport service**

Once the second level has been reached, it is possible **to aim for the integration of paratransit (more particularly fixed-route paratransit) into a coherent set of mobility services**, including formal transport (bus, mass transit) and even other products such as self-service bicycles or taxi-type paratransit. This integration will be based firstly on pricing: it should ideally allow complex journeys (fixed line paratransit + bus or mass transport) to be made without a fare penalty, which requires the implementation of compensation procedures (which can be complex). It can also be based on a subcontracting approach (by mass transport operators) of paratransit operated lines. In this way, the densification of the public service network would be feasible. It also presents the advantage of providing adapted means of transport to foreseeable demand.

This integration must also involve passenger information, thanks to the marking of stops, the fitting out of bus stations and assembly points with passenger information aids, and the provision of information media common to paratransit and mass transport. In the long term, there should no longer be an opposition for the transport user between formal transport and paratransit, but a range of public transport products adapted to each type of demand.

○ **Level 4: a modern and non-polluting mode of transport**

The fourth level of intervention seeks **to enable paratransit to reach the efficiency standards of formal transport**, through the introduction and development of digital tools, and/or to aim at a better energy and environmental performance through the introduction of vehicles running on decarbonised energy.

This fourth level implies, in almost all cases (at least for fixed-route services), a direct involvement of the PTA in the financing and management of these projects. The innovative nature of these projects and their leverage effect on travel patterns and air quality improvements will often facilitate the involvement of international donors in their financing.

The recommendations refer to actions that a metropolitan area or a city can take to reform paratransit, either as part of a SUMP, or simply as part of a specific paratransit action plan, for example to occur with a structural transport project.

⁶¹ The PTA would need to strike a good balance between fare affordability and the financial sustainability of the operators.

4.3.1.2. Reforming paratransit at the local level with the existing MobiliseYourCity's paratransit toolkit

In this sub-section, recommendations are based on the existing MobiliseYourCity Paratransit Toolkit and provide guidelines to develop Terms of References (prior to a SUMP) which include instructions for paratransit inclusion (especially in the survey to be conducted as part of a SUMP elaboration process).

○ Setting up objectives and identifying relevant actions

In recent years, substantial work has been published on paratransit. Some publications provide comprehensive analyses based on case studies and propose general recommendations to modernise paratransit with a set of adaptable options.⁶² Under the MobiliseYourCity direction, an operational document was released in 2021 (Baffi & Lannes, 2021a, 2021b) and includes two distinctive parts namely “Understanding Paratransit” and “Reforming Paratransit.” **This document is paving the way to promote operational recommendations to integrate paratransit into sustainable mobility planning and the development of Sustainable Urban Mobility Plans (SUMPs).**

Promoted by MobiliseYourCity Partnership and AFD, this document is described and disseminated as a ‘Toolkit’ for practitioners. Available online,⁶³ the ‘Toolkit’ comprises a total of 48 action sheets. These action sheets can be used by public authorities and/or consultants engaged in a SUMP. By adopting a step-by-step reform approach (see Table 13), these actions aim to integrate paratransit into the multimodal mobility policy and to reduce the paratransit’s negative externalities at a city scale. **As with any Toolkit, not all action sheets are suitable and useful in all contexts. It is up to each local authority to define its own path depending on its own challenges, circumstances, capacities, and resources.** The Toolkit comprises “core” policies to improve and reform paratransit. Each step of the reform includes 3 to 5 action sheets.

⁶² Among them see Kumar et al. (2021) [*Myths and realities of “informal” public transport in developing countries: Approaches for improving the sector*], Tun et al. (2021) [*Informal and Semiformal Services in Latin America: An Overview of Public Transportation Reforms*] or Cassius et al. (2021) [*Future of Paratransit and Shared Mobility: Mapping Report*].

⁶³ The MobiliseYourCity Paratransit toolkit is available [here](#).

REFORM STEPS	Approach	Objective	Action
	1 Preparing for reform	Identify	To know the state of the offer of artisanal transport
		Concerts	Establish forums for dialogue and better understanding between the parties
		Plan	Define the type of service and function of artisanal transport within an intermodal public transport system
	2 Reforming the paratransit sector	Structure	Promote the creation of representative structures within the craft sector
		Regulate	Develop the body of law and regulations defining legal and illegal services
		Labelling	Define quality indicators and give preference to operators who meet these indicators
		Authorise	To control the exercise of the profession of transport operator and make it subject to compliance with certain conditions
		Contracting	Integrate legal paratransit into the mobility offer through agreements with the organising authority and/or the institutional carrier
	3 Accompanying the reforms	Pricing	Establish a coherent, even multimodal pricing system
Professionalise		Implementing activities to promote the development of operators' skills	
Inform		Develop information on small-scale transport services within a multimodal information system	
Materialise		Develop the places of concentration of the artisanal transport to improve its visibility and its quality of service, develop the bus stations...	
4 Ensuring the implementation of reforms	Support	To provide the necessary resources to help craftsmen renew or repair their equipment, to train themselves...	
	Check	Implementing the means of control and sanctions against the illegal practice of transport	
	Financing	Ensure the functioning of the authorities in charge of regulating the sector	

Table 13 Structure of the "Toolkit" of the MobiliseYourCity / AFD document "Reforming Paratransit", Source: adapted from Baffi & Lannes (2021b)

○ Using a SUMP project to initiate local paratransit reform

For a city, the development of a SUMP is as a unique moment to draw up an inventory of the inhabitants' mobility practices but also to make an inventory of the available mobility services (private and public) at the scale of the urban area. Paratransit services are known to inhabitants, and therefore to the city technical departments. However, paratransit services are often not acknowledged and not well documented and remain "informal."

The SUMP's methodology offers an opportunity to (i) highlight and document paratransit services and (ii) understand the relationship between its operators (i.e. drivers, entrepreneurs, companies, etc.) and public authorities. In short, by introducing the need to study paratransit in the SUMP's Terms of Reference and considering it as a mobility offering to be coordinated with the conventional public transport, a SUMP can pave the way to reform and integrate the paratransit.

In the SUMP cycle, made of four identified stages (i.e. diagnosis, vision and goals, measure and scenario selection and implementation), paratransit can receive significant attention to prepare the reform of the sector and to gradually integrate this offering into the conventional public transport services. Based on the example of the SUMP in Medan (Indonesia), Figure 34 provides a practical example of how paratransit is surveyed and integrated in this mobility planning approach.

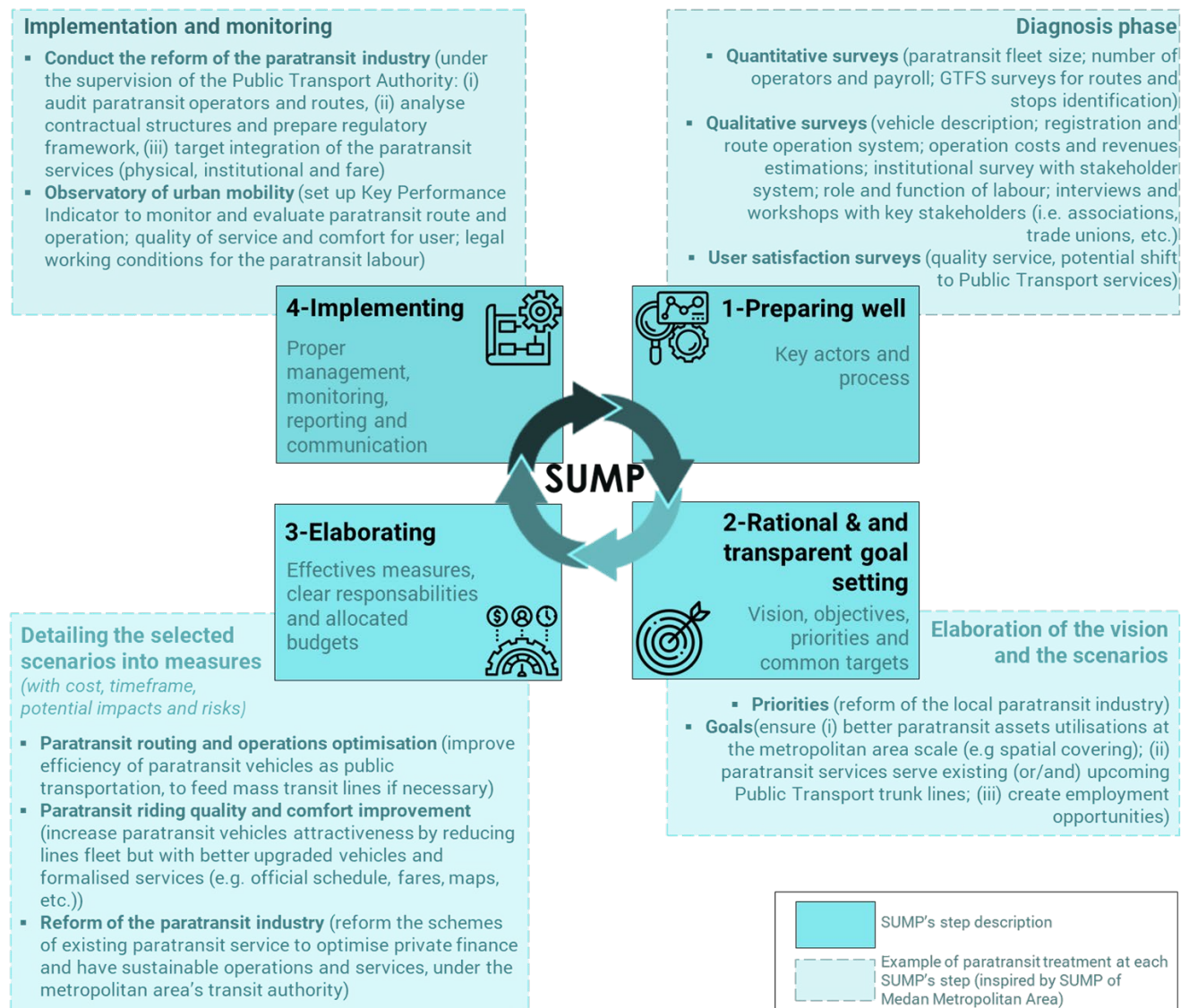



Figure 34 SUMP theoretical cycle with practical situation of Paratransit treatment, Source: Consultant (adapted from Rupprecht Consult (2019) and from Egis (2020))

Focusing on the Asian context, the present document does not intend to replicate the MobiliseYourCity Paratransit Toolkit described above. However, as indicated, some of these actions can be used and adapted to the regional context. The present paper intends to develop operational recommendations referring but using the Toolkit as necessary.

4.3.2. Level 1: reduce negative externalities

At the local level (i.e. municipal / metropolitan level), the following set of measures constitutes the minimum basis for organising, implementing and monitoring any policy for the integration of paratransit into a multi-modal mobility system.

○ Action L1: Defining / strengthening the Public Transport Authority (PTA)

		L1 - Defining/ strengthening the Public Transport Authority
0	Overall objective(s)	<ul style="list-style-type: none"> Ensure coordination of local mobility policies and stakeholders (private / public)
1	Which stakeholder to involve?	<ul style="list-style-type: none"> The different local authorities with a role in mobility The Ministries in charge of Transport and Local Governments
2	What is the length of the process?	<ul style="list-style-type: none"> Highly variable, depending on the complexity of the local governance system and the partners' willingness to cooperate. From almost nothing if a structure is already operational to ensure this competence, to years.
3	What are the major steps or phases?	<ul style="list-style-type: none"> i) Legal and financial study of the mobility competence ii) Comparative study of different scenarios iii) Negotiations and choice of the selected scenario iv) Operationalisation study: statutes, governance, financing, refined definition of competences v) Consultation with the different operators vi) Recruitment of personnel and installation
4	What is the overall cost?	<ul style="list-style-type: none"> Depends on the existence of pre-existing means or not, and of course, on the size of the agglomeration. The assistance of external consultants may be recommended to operationalise the structure.
5	What are the pre-requisites for implementation?	<ul style="list-style-type: none"> National legislation defining the distribution of competences in the field of mobility A willingness of the various local partners to cooperate
6	Which expertise to associate?	<ul style="list-style-type: none"> Advice and expertise in the legal, financial, and organisational fields applied to transport

The first step in the construction of a mobility policy at a metropolitan scale is to clarify the responsibilities of each administrative and political entity, and as far as possible to group these responsibilities within the same entity.

The diversity of local situations and modes of governance makes it difficult to formulate detailed recommendations. In some cases, the municipal level will be suitable to take on the role of Public Transport Authority (PTA), as its territory of action will be sufficiently large. In other cases, supra-municipal structures (inter-municipal cooperation organisations, districts, regions, provinces, etc.) may constitute a suitable territorial level. Finally, in other cases, it will be deemed preferable to set up a specific entity, whose governance arrangements can take many forms.

A Public Transport Authority must have the necessary staff and adequate capacities to carry out four main functions:

- Planning and studies,
- Project management,
- Contractual monitoring with operators
- Quality control.

In addition, a PTA also has to manage internal administrative and financial functions and the secretariat of the assemblies.

In all cases, it is necessary that:

- **The status of the PTA and the framework of its functions, governance and resources must be based on clear legislative and regulatory texts, both at national and local levels;**
- **The PTA has the technical, human and financial means necessary for its missions, and in particular the means to control the activity on the ground;**
- **The PTA has the legal personality to conclude contracts or agreements with operators, to examine applications for authorisation or licences, and to sanction illegal transport or non-compliance with rules and agreements;**
- **The PTA has effective supervision mandate on both formal and informal transport;**
- **The PTA competence and legitimacy be recognised by the other territorial levels and by the State.**

Many Asian cities have already reached or exceeded this stage. However, these principles are still applicable to many cities, especially medium-sized ones.

The definition of the missions and governance pattern of a PTA can be one of the major actions of a SUMP.

<p>Example 10 - Defining the role and capacities of the local authority</p>	<ul style="list-style-type: none"> • Identifying the data collected and used by the RHAs • Building capacity within the PTA to analyse the data and prioritise its use according to the PTA’s responsibilities • Monitoring the activity of RHAs and elaborating regulatory framework for their activity
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Depending on the context, the status and form of the Public Transport Authority might differ according to the local governance, the process of devolution, the means available, the transport projects existing etc. Across the world, the nature of these Authorities and their structure vary greatly, and Asian cities are representative of this diversity of configurations.


In some countries, there is a limited devolution of capacities and power from the national government to the local authorities, thus bounding the competence of the local authorities. In the Philippines, the transfer of skills and competence on urban transport regulation from the national government towards the Local Government Units is increasing, especially since the implementation of the PUVMP reform in 2017.

Other configurations exist, whereby cities show a broad range of competence and means to regulate and coordinate urban transport services. This is the case in India for instance, where the creation of Unified Metropolitan Transport Authority enables the main agglomerations to set their own public transport policy and regulation, and contract with transport operators.

In the case of Singapore, the Public Transport Authority gathers prerogatives regarding both public transport services and urban roads, as well as road safety, regulation, and legal framework.

Instead of a metropolitan agency, inter-municipal structures are built in mega-cities such as Johannesburg, which belongs to the Gauteng region and gathers several metropolitan areas. In order to implement the BRT and the reform of the paratransit in 2010, the decision was made to create an inter-municipal transport committee rather than a regional transport authority. This is the example of a rather original governance structure in African cities, whereby no specific institution is built to implement a mass-rapid transit project and efforts are concentrated towards improving the coordination of the already existing institutions at the regional level (Klopp *et al.*, 2017).

○ Action L2: Establishing / strengthening consultation structures with the paratransit sector

		L2 - Establishing / strengthening consultation structures with the paratransit sector
0	Overall objective(s)	<ul style="list-style-type: none"> Integrate paratransit into the mobility ecosystem, Secure sustainable livelihoods
1	Which stakeholder to involve?	<ul style="list-style-type: none"> Public Transport Authority Local governments in charge of public security Organisations representing operators (owners, drivers, and helpers), ensuring that they are representative Representatives of operators who are not members of trade unions or associations
2	What is the length of the process?	<ul style="list-style-type: none"> Implementation can be more or less rapid depending on the willingness of operators to cooperate The consultation structure is intended to be permanent
3	What are the major steps or phases?	<ul style="list-style-type: none"> i) Prior consultations to set up the structure ii) Setting up a secretariat iii) Getting the structure up and running regular meetings (i.e. bi-annual) plus exceptional meetings when necessary
4	What is the overall cost?	<ul style="list-style-type: none"> No specific costs, except for the working of the secretariat Optional costs of consultancy
5	What are the pre-requisites for implementation?	<ul style="list-style-type: none"> An operational Public Transport Authority.
6	Which expertise to associate?	<ul style="list-style-type: none"> Expertise in facilitating consultation can be useful.

Given the diversity of the challenges posed by paratransit (transport, economy, social, environment), **it is essential that the PTAs seek to establish a dialogue with the operators or their representative organisations.** This dialogue should be oriented towards co-construction rather than confrontation and power struggles.

Any organisational measures aiming to improve the efficiency of paratransit and its complementarity with formal transport will have an impact (positive or negative) on operators' income. **Taking this economic and social dimension into account is therefore an essential condition for the success of the actions** that will be undertaken, and this can only be done through dialogue with the primary stakeholders.

It is recommended that this consultation structure be conceived from the outset as a permanent body, intended to help build the right solutions to improve the functioning of the sector, but also to evaluate the success of these solutions and to identify new issues that may emerge.

The development of a SUMP is an excellent opportunity to set up this type of consultation structure.

Example 11 - Establishing/strengthening public consultation with operators


- Identification of stakeholders willing to develop a strong relationship with local authorities
- Consultation to establish the structure and functioning of the organisation
- Identification of assets or advantages to be provided to the operators taking part to the consultation

The recognition of the services provided by the paratransit sector enables to engage further dialogue with the stakeholders and representative organisations when they exist. The acknowledgement of these professional organisations and the creation of a neutral platform for discussion is a first step to initiate a consultation process. The creation of this platform can result in the constitution of committees representing the transport operators. On this basis, levers for reform can also be introduced, as it has been the case in India or in the Philippines.

In Kochi for instance, in the context of the metropolitan transport reform, a district level coordination committee including several auto rickshaw drivers' unions has been constituted and registrations to the committee opened in June 2018. The consultation led to the creation of a cooperative society registered with a district level coordination committee supervised by Kochi UMTA (Unified Metropolitan Transport Authority). The registration gave access to specific equipment for the operators, such as GPS and card-reading facilities compatible with the technologies used in the overall transport reform implemented under the name "Kochi One", and through the cooperative drivers gained better work conditions with benefits such as trainings, allotment of vehicles, 8-hour working day, paid leaves, discount on fuel, medical insurance, loans (Singh, 2020).

Engaging with the paratransit sector prior to any reform is one of the main lessons learnt from several projects aiming to introduce BRT services, such as the BRT projects implemented in Ghana or in Tanzania in its first attempt, leading otherwise to major hindrances or even failures of the projects.

○ **Action L3 – Setting up the local regulatory framework**

		L3 – Setting up the local regulatory framework
0	Overall objective(s)	<ul style="list-style-type: none"> • Reduce negative externalities, secure sustainable livelihoods
1	Which stakeholder to involve?	<ul style="list-style-type: none"> • Public Transport Authority • Local governments in charge of public security • Organisations representing operators (owners, drivers and helpers), ensuring that they are representative • Representatives of operators who are not members of trade unions or associations • OR consultation structure with paratransit operators (see above)



L3 – Setting up the local regulatory framework		
2	What is the length of the process?	<ul style="list-style-type: none"> • Very variable, but a time frame of one to two years may seem appropriate
3	What are the major steps or phases?	<ul style="list-style-type: none"> • i) In-depth diagnosis of the current situation • ii) Identification of key issues • iii) Identification of objectives • iv) Consultations with operators • v) Drafting of local regulations and enforcement • vi) Ongoing assessment
4	What is the overall cost?	<ul style="list-style-type: none"> • Possible costs of external expertise
5	What are the pre-requisites for implementation?	<ul style="list-style-type: none"> • An operational Public Transport Authority • A clarified national framework
6	Which expertise to associate?	<ul style="list-style-type: none"> • Technical expertise on paratransit and legal expertise may be required.

The national level recommendations stress the need to leave a large part of initiative and adaptation to local authorities. Therefore, **it is necessary for the PTA to formalise and clarify the conditions for exercising the activity, in line with the national framework:**

- **Conditions of access to the profession** (training, age of the vehicle, inclusion of routes in a transport plan, reporting obligations, etc.)
- **Road operating measures** (authorised or prohibited lanes, hours and days when paratransit vehicles are prohibited or restricted, tonnage and speed limits, parking rules, etc.)
- **Minimum standards of service quality and safety:** identification of vehicles, drivers and routes, maximum number of passengers, rules for setting fares, maximum age of vehicles, pollution standards and technical inspection obligations, compulsory equipment of vehicles, etc.
- **Social standards:** maximum working hours for drivers, etc.
- **Operating and access rules for assembly points** (bus stations, taxi ranks, etc.) located on the public domain.

This regulatory framework may take the form of decrees with legal effect and defining the penalties for breaches, but some of these rules may, if the local authorities consider it preferable, be expressed in an extra-regulatory framework, in the form of conventions, agreements with representative organisations, or booklets of recommendations.

The definition of this local regulatory framework can be one of the major actions defined by a SUMP.

Example 12 - Setting up a local regulatory framework	<ul style="list-style-type: none"> • Acknowledging the existence and the function of the paratransit sector in the mobility ecosystem, even through the creation of a new term • Understanding the main features of the services provided • Understanding the main characteristics of the demand
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The acknowledgement of the sector and its definition is an essential preliminary action to set any regulatory framework. The definition of these services, their function and basic conditions for operation need to be elaborated at the national level, according to the use and functions observed at the local level.

There are few examples of States and cities who undertook this process, and sometimes this process is partially achieved. In India for instance, as mentioned above, the State officially introduced the term of Intermediate Public Transport, but its recognition locally varies according to the cities, so as the regulation to integrate these services.

In the Philippines, the reform of the paratransit sector initiated in 2017 by the Philippine Department of Transportation (DOTr) started by coining the term Public Utility Vehicle (PUV), and by then acknowledging the role for the public interest of the paratransit sector. Several transport modes are included in this term, i.e. jeepneys, UV Express, minibuses, Public Utility Buses, according to the transport modes used locally, and since all abide to the regulation of private operators providing a public service. Through the reform a regulatory framework has been established to specify conditions to access the sector (licence, trainings, etc.), route restrictions through the route rationalisation component of the reform, to indicate clear standards of quality, safety and service with the introduction of schedules, fares, fleet renewal, and improvement of the working conditions with fixed salaries and fixed working hours. However, one of the limits of the reform result from the difficulties in integrating all the operators present on the field. Also, the reform was not beneficial to the most precarious operators.


In Medan (Indonesia), where a Sustainable Urban Mobility Plan (SUMP) was developed at the scale of the metropolitan area, recommendations have been formulated to engage a reform of the institutional arrangements between angkot operators and the local authorities. By developing the SUMP, the Consultants identify the following actions as steps to regulate the paratransit industry:

- Consult operators (interviews, focus groups, workshops)
- Survey routes (GTFS, onboard survey)
- Analyse contractual structures (relationships between stakeholders, contractual and financial flows)
- Prepare the regulatory framework (contracts, criteria to evaluate the quality of services, long term monitoring system).


Regarding the regulatory framework, it is assessed that a minimum of 8 months should be required. However, the plan also points out the complexity of establishing institutional arrangements, and the possible hostility from operators.

○ Action L4 - Setting up control agencies/entities

No regulations on paratransit should be issued if the PTA is not sure that it can put in place the necessary means of control to enforce them.

		L4 - Setting up control agencies / entities
0	Overall objective(s)	<ul style="list-style-type: none"> • Integrate paratransit into the mobility system, reduce negative externalities, modernise operations, secure sustainable livelihoods



		L4 - Setting up control agencies / entities
1	Which stakeholder to involve?	<ul style="list-style-type: none"> Public Transport Authority Local governments in charge of public security Police forces
2	What is the length of the process?	<ul style="list-style-type: none"> Ongoing process. The necessary resources must be in place as soon as the Public Transport Authority is set up.
3	What are the major steps or phases?	<ul style="list-style-type: none"> i) Recruitment of field control staff ii) Definition of procedures iii) Contacts with partner authorities iv) Implementation v) Assessment
4	What is the overall cost?	<ul style="list-style-type: none"> Wage bill for control staff. Very variable depending on the size of the agglomeration and the number of paratransit operators. Material means of control (tablets, means of communication, possibly video surveillance of large concentration sites)
5	What are the pre-requisites for implementation?	<ul style="list-style-type: none"> An operational Public Mobility Authority. A clarified national framework. Established and shared local regulation (see above)
6	Which expertise to associate?	<ul style="list-style-type: none"> Technical expertise on paratransit and legal expertise may be required.

The PTA and its own agents can implement these control and knowledge tools. In this case, a swearing-in procedure is needed so that the PTA can, if necessary, sanction fraudsters or offenders.

These tools can also be based on cooperation agreements with the police, while ensuring that they exercise a proportionate and balanced level of surveillance and repression.

Finally, they can be based on agreements with staff of other entities, such as municipal officials, for example regarding the occupation of roads and assembly areas.

In all cases, the prevention of corrupt practices should be a point of attention. Similarly, the level and frequency of sanctions should be sufficiently attractive to encourage the operator to comply but should not compromise the survival of the enterprise or the individual operator's business.

Field inspections should not be seen solely as a repressive tool, but also as a means of furthering the PTA's knowledge of the field, and of exchanging and consulting with operators.


The implementation and results of these field inspections should be evaluated in consultation with the operators.

Example 13 - Setting up control agencies/entities	<ul style="list-style-type: none"> Precise the competencies of the local authorities to enforce the regulation framework Make sure the enforcement is done appropriately Create relevant organs when controlling specific components (for instance, technical standards for electric vehicles)
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Despite the efforts made to promote paratransit’s electrification in India, one of the main barriers identified by researchers (interview G and L) to ensure the reforms’ success remain the lack of enforcement and control by the local authorities. Dedicated agencies do exist, such as ARAI and ICAT, both specialised in setting up standards and controlling e-vehicles. However, enforcement in the field is still lacking, also due to a lack of clarity in the policy landscapes (Shandilya *et al.*, 2019). Indeed, there is a lack of policies at the local level, meaning that, instead, national schemes are implemented at the local level, such as FAME for instance.

Most initiatives regarding the deployment of e-rickshaws at the local level are project-focused and lack the ‘big picture’ approach. Consequently, they do not often include consistent actions set within policies. One of the main outcomes of this lack of policy and the absence of monitoring is the development of e-rickshaws in an unplanned manner beyond the limits of the projects in some cities. Additionally, a lack of enforcement has been observed at the local level. The creation of a dedicated national agency to monitor the manufacturing and the operations of e-vehicles can be considered as a possible way forward. This agency would also be responsible for the upgrading of vehicles labelling, setting safety standards and regulation related to technical issues.

○ Action L5 – Labelling at the local level

 L5 – Labelling at the Local Level		
0	Overall objective(s)	<ul style="list-style-type: none"> Integrating paratransit into the mobility ecosystem, modernise operations
1	Which stakeholder to involve?	<ul style="list-style-type: none"> Public Transport Authority Consultation structure with paratransit operators
2	What is the length of the process?	<ul style="list-style-type: none"> Continuous process. Implementation can take from six months to a year.
3	What are the major steps or phases?	<ul style="list-style-type: none"> i) Definition of criteria and objectives according to the priority objectives of the Public Transport Authority ii) Definition of the benefits associated with the label (if any) iii) Consultation with operators iv) Implementation and monitoring v) Assessment
4	What is the overall cost?	<ul style="list-style-type: none"> No major costs are involved except for a communication campaign on the label. Salary costs of the staff in charge of the instruction and control (included in the costs of the control staff mentioned above)
5	What are the pre-requisites for implementation?	<ul style="list-style-type: none"> An operational Public Mobility Authority.
6	Which expertise to associate?	<ul style="list-style-type: none"> Technical expertise on paratransit may be required.

The principle of labelling has already been outlined at national policy level, but it can also be implemented at local level (see MobiliseYourCity’s Paratransit Toolkit).


The principle is the same: **a number of minimum service quality criteria and targets are defined, and a quality label is awarded to operators who meet them.** In exchange, the operator can at least display this label for commercial purposes, and even gain access to a number of benefits to be defined.

This is a non-binding quality incentive scheme, which paves the way for more advanced processes.

4.3.3. Level 2: towards a public service concession

The transition from "level 1" to "level 2" implies that paratransit, until now considered as a self-regulated private service for which public action was limited to containing the impact on public order, becomes a real public service for the inhabitants, without questioning the private nature of the operation.

○ Action L6 - Design of a service scheme / regulate competition

		L6 - Designing a service scheme / regulate competition
0	Overall objective(s)	<ul style="list-style-type: none"> Integrate paratransit into the mobility ecosystem, secure sustainable livelihoods
1	Which stakeholder to involve?	<ul style="list-style-type: none"> Public Transport Authority Gathering the opinion of local governments Consultation structure with paratransit operators
2	What is the length of the process?	<ul style="list-style-type: none"> The normal duration of a SUMP is 18 months. Outside of the SUMP procedure, the period should not be significantly reduced.
3	What are the major steps or phases?	<ul style="list-style-type: none"> i) In-depth diagnosis of the transport offer, the economic models and the social organisation of the operators, including surveys (records, interviews with operators and passengers, focus groups, etc.) ii) Consultation of operators (throughout the process) iii) Development and evaluation of organisational scenarios iv) Negotiations with operators v) Definition of the selected scenario vi) Implementation of the selected scenario vii) Ongoing evaluation
4	What is the overall cost?	<ul style="list-style-type: none"> The standard cost of a SUMP is EUR 300,000. Outside the SUMP, a budget of EUR 150-200,000 is required.
5	What are the pre-requisites for implementation?	<ul style="list-style-type: none"> An operational Public Transport Authority. A willingness to cooperate on the part of operators.
6	Which expertise to associate?	<ul style="list-style-type: none"> Recruitment of consultants with specific experience in the technical, financial and legal fields of paratransit + expert in environmental and social assessment, sociologist

With the definition of a service scheme, the PTA is then legitimate in defining more precisely the place of paratransit in the mobility system, and in regulating situations of excessive competition or, on the contrary, under-supply. Similarly, when a formal transport network exists, the respective roles of paratransit and formal transport must be clarified.

The service scheme can be a key input to the SUMP, but it can also be developed outside this process.

The development of the Service Scheme should be based on a thorough diagnosis of the starting situation. This diagnosis should cover the transport offer to the inhabitants, but also the economic (standard business plan of the operators) and social aspects (working conditions of the drivers and assistants).⁶⁴

The aim of the Service Scheme is to define the rules of competition and the distribution of operators in order to reconcile the needs of the population, the economic equilibrium of operators, the improvement of the quality of service and the reduction of negative externalities. It is therefore necessary to move beyond a purely transport-oriented approach and to propose a global reorganisation of the sector.

The search for better geographical coverage of the service will inevitably lead to operators being required to serve less profitable routes than those operated up to now, which will involve a complex reflection on forms of compensation, equalisation, or limitation of competition.

It is therefore essential that such a plan be the result of a combination of a technical study and a participatory approach with the operators, but also with the customers. **No regulation will be effective without the consent of the operators themselves.**

Example 14 - Designing a service scheme

- Identifying the role of paratransit in the urban mobility system

When considering examples of service scheme design, two main approaches are identified. On the one hand, the existing offer might be improved and considered as a “service” by introducing route rationalisation. This option has been implemented in the Philippines, where LTFRB publishes a call for applications to serve a route; the number of vehicles required, and service standards are specified in the call. A single franchise for that corridor is then issued, meaning only one entity (a jeepney cooperative or corporation) operates its services on this corridor. LTFRB does not issue franchises to unconsolidated operators, meaning it is compulsory for operators to “regroup” to operate a route/corridor, unconsolidated operators being unable to apply. At the beginning of the programme, priority was given to existing operators in the application for franchises. However, it is understood that by mid-2020, if existing operators did not comply with the PUVMP requirements, their route were opened to all interested applicants.

Another similar scheme has been elaborated in Kochi, where more than 300 rickshaws are expected to provide first and last mile connectivity around 16 Metro stations, and their operations are strictly regulated by the local authority.

However, Singh (2020) and other academics and observers emphasise the remaining need, when city government/municipal authority takes the approach of route rationalisation, of a model to ensure that mobility services are provided to areas according to the demand of passengers.

On the other hand, designing a service scheme might be undertaken in the context of a mass-transit project, as these projects represent opportunities to define the function of the paratransit services within the urban transport system and plan infrastructures and services accordingly. In Jakarta, R. Desmoulière (2019) listed the different forms of integration possible between mass-transit and paratransit:

1. Parallel services running on the same road,

⁶⁴ See detailed paratransit diagnosis methodology with the part 1 of the MobiliseYourCity Paratransit Toolkit, “Understanding Paratransit” (Baffi & Lannes, 2021a).


2. Connection points linking a mass transit line with paratransit services,
3. Dedicated lanes shared by both types of services,
4. Opening of mass transit corridors to paratransit during peak hours only (*peak-logging model*), and
5. A trunk and feeder model.

[This dual model distinguishes at the city-wide level between main lines/trunk roads, preferentially allocated to mass transit or other centralised services, and feeder lines distributed to paratransit and small-scale operators. Prior to 2015, some initiatives to implement a *trunk and feeder model* without integrating paratransit services led to tensed conflicts in the DKI Jakarta, with paratransit drivers damaging Transjakarta buses (Interview B)].


6. A sixth and “extreme” form of integration is the “absorption” of paratransit actors, inviting them to become mass transit operators themselves by creating consortium or other business entities.

Eventually, designing service scheme also lies on the provision of dedicated infrastructures. Indeed, investments in infrastructure is a typical action to be implemented at the local level. It regards different aspects, as recalled by Ghosh & Kalkra (2016). A first type of infrastructures to be developed are halt and go facilities, to avoid the problem of paratransit vehicles queuing along the roads. These infrastructures shall be deployed at strategic points, such as along roadside, at interchange, bus stands and metro stations. Such infrastructures have been created in Delhi near bus stations and metro stations, as well as in Kochi near metro stations. Another kind of key infrastructures are parking areas, as they enable to avoid illegal parking and congestion, and if possible secured parking lot. Thirdly, providing amenities for the operators and the users is also essential, by providing sheltered stops with access to drinking water, toilet facilities and even services for the transport operators (mechanic, fuel, vehicle cleaning services). The maintenance of the infrastructure can be devolved to a private company, or to the professional organisations making use of it. The use of the infrastructures can generate income by the payment of a fee by the operators on a monthly basis, or the deployment of advertisement supports.

○ Action L7 - Defining pricing rules

 L7 – Defining pricing rules		
0	Overall objective(s)	<ul style="list-style-type: none"> • Modernise operations, integrate paratransit into the mobility ecosystem
1	Which stakeholder to involve?	<ul style="list-style-type: none"> • Public Transport Authority • Consultation structure with paratransit operators
2	What is the length of the process?	<ul style="list-style-type: none"> • Can be conducted as part of a SUMP (18 months) • Outside SUMP, long and complex process based on negotiation: 6 months to 2 years
3	What are the major steps or phases?	<ul style="list-style-type: none"> • i) Reconstitution of the operating accounts of the different types of operators ii) Identification of tariff inequalities and inequities iii) Development of proposals and modelling of the impact on operators’ revenues iv) Negotiations with operators v) Development of the chosen solution vi) Implementation and monitoring vii) Evaluation
4	What is the overall cost?	<ul style="list-style-type: none"> • Outside the SUMP, a budget of EUR 50,000-100,000 is required.




 L7 – Defining pricing rules		
5	What are the pre-requisites for implementation?	<ul style="list-style-type: none"> • An operational Public Mobility Authority. • A willingness to cooperate on the part of operators • A service scheme adopted or under development
6	Which expertise to associate?	<ul style="list-style-type: none"> • Recruitment of consultants with specific experience in the technical, financial (pricing) and legal fields of paratransit + expert in environmental and social assessment, sociologist

The definition of coherent tariffs rules for all operators is necessary in order to achieve a certain territorial equity. This is also a complex issue, as it directly affects the economy of each operator.

The tariff issue should be addressed in the framework of the service plan, as it is a possible tool for reconciling the imperatives of service provision and the economy of the operators. It is therefore essential to carry out this reflection in a participatory framework.

The question of fares includes not only the level of passenger fares, but also the monitoring of the proper implementation of these fares and the possibility of sanctioning abuses.

○ Action L8 - Grouping of operators in cooperative structures

 L8 - Grouping of operators in cooperative structures		
0	Overall objective(s)	<ul style="list-style-type: none"> • Secure sustainable livelihoods, integrate paratransit into the mobility ecosystem
1	Which stakeholder to involve?	<ul style="list-style-type: none"> • Public Transport Authority • Consultation structure with paratransit operators
2	What is the length of the process?	<ul style="list-style-type: none"> • Very variable according to local contexts. The process can take two years or more.
3	What are the major steps or phases?	<ul style="list-style-type: none"> • i) Project definition: why encourage operators to group together? What will be their advantages? • ii) Consultation with operators and negotiations • iii) Assistance in setting up structures
4	What is the overall cost?	<ul style="list-style-type: none"> • No specific costs apart from the involvement of the Public Transport Authority's staff. • If necessary, support for the process by a project management assistant.
5	What are the pre-requisites for implementation?	<ul style="list-style-type: none"> • An operational Public Transport Authority. • A willingness to cooperate on the part of operators. • A service scheme adopted or under development • A contracting project
6	Which expertise to associate?	<ul style="list-style-type: none"> • It may be useful to be accompanied by a project management assistant to help define the project and conduct negotiations.

Further integration of paratransit into the overall mobility system will probably require a reduction in the number of interlocutors and the creation of partners and structures capable of speaking for, and even contracting on behalf of, all operators.

These structures can be cooperatives, economic interest groupings, or any other formula enabling these groups of operators to have a legal personality. The feasibility of this action depends on the level of structuring of operators and their propensity to organise themselves collectively.

This action can only succeed if the operators are interested. To be successful, the PTA must be able to offer, either significant advantages (e.g. aid for the renewal of vehicles, as in the Philippines), or, on the contrary, penalties going as far as a ban on individual operators.

The PTA will have to be very present with the operators to help them structure themselves, but also to ensure that these groupings are not carried out to the detriment of some of the existing operators.


<p>Example 15 - Grouping of operators in cooperative structures</p>	<ul style="list-style-type: none"> • Identifying the relevant stakeholders both from the side of the government and the side of the paratransit sector • Encouraging the constitution of groups of operators, possibly according to operations • Providing trainings and capacity building both to the members of the cooperatives and the local authorities.
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In the Philippines, the consolidation of the paratransit sector has been organised depending on the route rationalisation process undertaken by the Local Government Unit. Operators have been then expected to gather and constitute cooperatives or corporations according to these routes, and the consolidation has been established as a pre-condition to achieve the overall reform objectives and for the operators to get financial support.

Important to notice, is that Local Government Unit were provided with capacity building during this process of route rationalisation, thus emphasising the need to empower stakeholders both on the side of the operators and the local authorities to ensure a sustainable dialogue (See project level for more information on training programmes).

This example from the Philippines also recalls that part of the consultation undertaken in Level 1 is the need to identify dedicated stakeholders from the side of the local government. In many cities, Public Transport Authorities provide this role and have the resources to engage with the paratransit stakeholders. However, in some cases such Authorities do not exist, or do not have the means to implement a consultation process. Other configurations might be elaborated depending on the local framework, such as in Jakarta, where the local public bus operator, PT Transportasi Jakarta took over the role of Technical Implementation Unit Transjakarta, which is part of the Jakarta Transportation Agency.

○ **Action L9 – Negotiation of agreements or contracts with operators**

 <small>FIXED ROUTE</small>		L9 – Formalising agreements or contracts with the operators
0	Overall objective(s)	<ul style="list-style-type: none"> • Modernise operation, integrate paratransit into the mobility ecosystem
1	Which stakeholder to involve?	<ul style="list-style-type: none"> • Public Transport Authority • Consultation structure with paratransit operators • Operator grouping structures (see above)
2	What is the length of the process?	<ul style="list-style-type: none"> • For agreements without financial flows, the process can be completed in 6 months to 1 year.



 FIXED ROUTE		L9 – Formalising agreements or contracts with the operators
3	What are the major steps or phases?	<ul style="list-style-type: none"> i) Definition of contracting objectives ii) Drafting of agreements iii) Negotiations with operators and signature iv) Implementation v) Assessment
4	What is the overall cost?	<ul style="list-style-type: none"> No specific costs apart from the involvement of the PTA’s staff. If necessary, support for the process by a project management assistant.
5	What are the pre-requisites for implementation?	<ul style="list-style-type: none"> An operational Public Transport Authority. A willingness to cooperate on the part of operators. A service scheme adopted or under development Preferably, the grouping of operators in cooperatives or EIGs
6	Which expertise to associate?	<ul style="list-style-type: none"> It may be useful to be accompanied by a project management assistant to help define the project and conduct negotiations.

The last stage of Level 2 consists in **formalising agreements or contracts with operators, if possible, grouped in cooperatives / associations, giving legal consistency to the rights and obligations of each party.**

These contracts must remain simple, as they should not generate financial flows between the parties. **Their main function is to recall the commitments of the operators, the penalties incurred in the event of failure to comply (which may go as far as a licence withdrawal), but also the commitments of the PTA** in terms of the creation of exchange points or complementarity with formal transport for example.

They should be concluded for relatively long periods to give the operator security but also to avoid generating too much administrative follow-up.

Example 16 - Formalising agreements or contracts with the operators	<ul style="list-style-type: none"> Once the paratransit sector is structured, definition of the type of agreement to be established Precision of the duties of each party in the agreement Evolutionary process: different kind of agreements might be possible to establish once the first towards formalisation has been undertaken
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The level and nature of the relationship between local authorities and paratransit operators is defined by the type of agreement implemented, may it be labelling, accreditation or contracting. Each agreement lies on the identification of the parties involved, and thus necessitates the structuration of the paratransit sector beforehand, and possibly the creation of professional organisations such as associations or cooperatives. Once the parties are set up, specifications are introduced, as well as the modalities to obtain the agreement and renew it.


Introducing an agreement between local authorities and operators represent one of the main steps to formalise the sector. In Medan (Indonesia), the process of licensing and routes rationalisation led to major change in the local governance of the paratransit sector. The creation of a single entity (at the municipality level) helped to reduce competition by consolidating lines, shifting the statutory ownership of vehicles to route owners, and encouraging to merge route operations under a sole operator, with the internalisation of drivers and other staff.

Beyond the type of agreement introduced, it can be necessary to encourage operators to register, consolidate and structure in order to answer call for tenders. In Delhi, a specific scheme has been implemented to support e-rickshaw operators in the licensing process and provide them with subsidies to help them economically.

This last example recalls that the introduction of labelling, accreditation and contracting is often a lengthy process, with requires support from the local authorities and is as well an on-going process, as operators are expected to renew their agreement.

4.3.4. Level 3: integration into the multimodal public transport service

○ Action L10 – Harmonising fares with the formal transport

 FIXED ROUTE		L10 - Harmonising fares with the formal transport
0	Overall objective(s)	<ul style="list-style-type: none"> Integrate paratransit into the mobility ecosystem, modernise operations
1	Which stakeholder to involve?	<ul style="list-style-type: none"> Public Transport Authority Consultation structure with paratransit operators Operator grouping structures (see above) Formal transport operator(s)
2	What is the length of the process?	<ul style="list-style-type: none"> Very variable depending on the ambitions of the action. One year seems to be a minimum.
3	What are the major steps or phases?	<ul style="list-style-type: none"> i) Diagnosis and definition of the issues ii) Setting up of a working group iii) Intermodal tariff study and development of scenarios iv) Negotiations v) Implementation vi) Assessment
4	What is the overall cost?	<ul style="list-style-type: none"> Intermodal fare study: between EUR 50,000 and 100,000 (in addition of paratransit fare study, see above)
5	What are the pre-requisites for implementation?	<ul style="list-style-type: none"> An operational Public Mobility Authority. A willingness to cooperate on the part of operators. A service scheme adopted or under development Preferably, the grouping of operators in cooperatives or EIGs
6	Which expertise to associate?	<ul style="list-style-type: none"> Recruitment of consultants with specific experience in the technical and financial (pricing) fields of paratransit and formal transport

The integration of paratransit as an integral part of the overall transport system implies the harmonisation of its fares and ticketing with formal transport if it exists.

Harmonisation does not mean alignment; respecting the economic balance of operators may mean that it is impossible to obtain the same fare levels as formal transport. Moreover, in some urban areas there will be several formal transport operators, which do not necessarily charge the same fares as each other.

But harmonisation implies that the fares charged by each of them are coherent and understandable to the user, and that each fare corresponds to an identified type of service.

Harmonisation fare for a connected journey is quite challenging. Logically, if a journey involves the successive use of two modes of transport, the cost of the journey should not be higher than for the cost of a single mode

journey. In reality, this is rarely possible, as operators (formal and informal) often charge a single price, in large increments, or by route. Achieving true multimodal pricing requires overcoming an important number of difficulties: collection of revenues by a third party before redistribution, perfect traceability and control of operations, compensation for the shortfall in relation to single-mode pricing, etc.

In concrete terms, each local authority wishing to make progress in this field must find the best compromise between what is desirable and what is possible. As with most other actions, a participatory process must be put in place to have a chance of success. The implementation of digital tools to manage and trace the financial flows of paratransit operators will then appear highly desirable.

It is more a question of initiating a continuous process than of seeking to achieve a predefined objective. At the end of this process, paratransit operators will be fully integrated into the global mobility system, and their remuneration will no longer be directly proportional to their direct turnover. But many cities will probably never reach this stage of integration.

Example 17 - Harmonising fares with formal transport

- Introducing ticketing (even through a paper format) as a basic level of formalisation
- Implementing modal integration with shared infrastructures
- Implementing fare integration with a compensation for users in order to promote multimodality

In the perspective of promoting modal integration and intermodality, actions on pricing and ticketing must be implemented. These actions require a high level of dialogue with the transport operators and can rely on different types of support, may they be quite simple (paper tickets) or rather sophisticated (dematerialised payment methods). Indeed, the most difficult point regards the possibility to introduce a compensation for users to penalise passengers using different transport modes. Also, fare integration and pricing are difficult actions to undertake, which need to be adapted to the local configuration of actors and service providers and needs of users.

In Jakarta, an attempt at fare integration was made in 2015, when the cooperative Kopaja⁶⁵ was authorised to use the busway lanes where routes overlap. Passengers could use the same ticket, for the same price. The aim of this integration was to enable feeder services, with 300 Kopaja vehicles benefitting from the BRT infrastructure while being able to serve areas in the peripheries as well. Moving away from a target system was one of the pre-requisites to this integration. Municipally owned company PT Transportasi Jakarta – operating TransJakarta – paid the vehicle owners per kilometre and drivers were salaried. The integration programme shifted the purpose and role of Kopaja as a cooperative:

- Before the integration: Kopaja controlled the creation and operation of routes and negotiated with other stakeholders such as transport authorities or banks.
- After the integration: Kopaja was in charge of recruiting drivers and served as intermediary to pay compensations and salaries.

⁶⁵ Kopaja is the first bus cooperative founded by vehicle owners in 1971 in DKI Jakarta. Kopaja vehicles are intermediate buses/ *midibus* with 24 seats and can carry at least as many standing passengers at peak times. These buses are typically operated by a two-person crew: the driver is assisted by a *kernet* who collects payment from passengers.


The impact of this collaboration between Kopaja and PT Transportasi Jakarta was understood to be positive thanks to two success factors, namely the integration of drivers and the integration of passengers' fees. However, this integration model is reserved to an elite of operators as one of the conditions for them to join the programme was to purchase modern vehicles adapted to Transjakarta corridors. This meant that only operators with sufficient financial and social capital were able to join the scheme.

Based on the success of the Kopaja's experience, in 2017, the programme was extended to Metromini⁶⁶ and 7 other cooperatives. In October 2018, the programme was officially implemented under the name JakLingko, an intermodal integration programme following the *trunk and feeder model*. As of March 2019, JakLingko had 29 routes in five areas of DKI Jakarta and 700 vehicles were part of the programme. Fleets under 5 years old and with licence were prioritised. With JaKLingko, passengers can use a combination of minibus and TransJakarta trips, with an integrated fare IDR 5,000 for every 3-hour period using non-cash payment. Drivers can only stop at dedicated stops. Between January 2018 and February 2019, around 185,000 electronic cards had been sold. In the coming years, JakLingko aims to involve all rail-based transportation owned by the DKI Jakarta Provincial Government such as Mass Rapid Transit (MRT), Light Rail Transit (LRT) and Electric Train (KRL Commuter Line). It is expected that distance-based integrated tariffs will be implemented by March 2022. The aim is for the integration of tariffs to apply to both rail-based transportation as well as online-based transportation including online ojek and taxi.


It is reported that some issues still hinder the deployment of JakLingko:

- Negotiations around the price per km. leads to conflicts between PT Transportasi and paratransit stakeholders. Currently, JaKLingko aims to include direct and indirect costs as well as a 10% profit margin, and
- The availability of electronic cards is still limited as not every Transjakarta bus stop sells cards.

○ Action L11 - Improving passenger information

 FIXED ROUTE		L11 - Improving passenger information
0	Overall objective(s)	<ul style="list-style-type: none"> • Modernise operations, integrate paratransit into the mobility ecosystem
1	Which stakeholder to involve?	<ul style="list-style-type: none"> • Public Transport Authority • Consultation structure with paratransit operators • Operator grouping structures (see above) • Formal transport operator(s)
2	What is the length of the process?	<ul style="list-style-type: none"> • Continuous process based on an action plan that can be achieved in 3 to 6 months
3	What are the major steps or phases?	<ul style="list-style-type: none"> • i) Diagnosis and definition of the issues • ii) Development of an intermodal action plan for passenger information • iii) Negotiations • iv) Implementation • v) Assessment
4	What is the overall cost?	<ul style="list-style-type: none"> • Diagnosis and development of an intermodal action plan for passenger information: EUR 50,000-150,000

⁶⁶ PT Metromini is a bus company that was formed in 1976 by the Government.

 L11 - Improving passenger information	
FIXED ROUTE	
5	<p>What are the pre-requisites for implementation?</p> <ul style="list-style-type: none"> • An operational Public Mobility Authority • A willingness to cooperate on the part of operators • A service scheme adopted or under development • Preferably, the grouping of operators in cooperatives or EIGs
6	<p>Which expertise to associate?</p> <ul style="list-style-type: none"> • Recruitment of consultants with specific experience in the technical (information systems) field of paratransit and formal transport

Passenger information is the other major issue in the integration of paratransit and formal transport. Fixed route paratransit is generally characterised by a lack of formalised information on schedules, routes and destinations. The issue is much less relevant for taxi mode. The level of passenger information in formal transport varies greatly in Asia, with some cities (particularly those with exclusive right-of-way networks) offering a high level of passenger information, notably with effective digital tools, while others still rely on word-of-mouth communication.

Asserting the complementarity of paratransit with formal transport implies that the same level of information is provided, and that the possibilities of complementarity and connections are indicated.

Passenger information is based on three main elements:

- **On-site information:** bus stop equipment, static and dynamic information on poles and bus shelters, direction indicators on vehicles, real-time information inside vehicles. Some topics, such as dynamic information, seem to be beyond the scope of the paratransit system. However, the formalisation of bus stops, the provision of street furniture, and the implementation of appropriate static information, can constitute progress opportunities, as long as the means of maintaining this equipment are provided.
- **Remote information:** websites, apps and digital tools, and paper-based information (maps and timetables) are the main means of access to static and real-time information when it exists. The authorities in charge of organising and managing the transportation can undertake actions to integrate, on existing or future media concerning formal transport, adapted information on the services offered by fixed-route paratransit.
- **Information in degraded mode:** this brings together the means of communication provided by the operator to inform passengers in the event of an incident (traffic interruptions, delays, deviations, etc.). Still not very developed on formal networks other than exclusive right-of-way transport, it does not exist in paratransit.

In any case, it is difficult to imagine that the responsibility to provide and control the information be under the paratransit operators. **Improving passenger information therefore requires that formal transport operators be explicitly charged with the additional task** of collecting and providing information, while paratransit operators are limited to a duty to transmit information and warnings.

Example 18 - Improving passenger information	<ul style="list-style-type: none"> • Passenger information is strategic • Providing users with information to encourage modal shift
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Promoting passenger information is a strategic action to be implemented as it enables both to formalise the services provided and to facilitate intermodality when an alternative transport offer exists, and to encourage

modal shift from private vehicle users. Indeed, the lack of information regarding the routes, fares and scheduled of paratransit services dissuade potential users. As Basu (2019) mentions, access to data in the mobility sector is crucial to encourage the modal shift of the middle and upper class, by saving paratransit users from the hassle of finding parking space as well as heated negotiations with taxi drivers on fares.

Passenger information relies indeed on data collection, which can be undertaken thanks to different tools and sources. In the context of the SUMP in Medan, the consultant Egis used mobile phone data provided by the local cell phone operator to build origin-destination matrix (See Spotlight on the use of digital tools during the COVID-19 pandemic). Several transport reforms also involve the deployment of GPS in paratransit vehicles, such as Delhi, Kochi or the Philippines through the PUVMP project.

In Kochi, local authorities went a bit further by implementing an app which can be considered as MaaS (Mobility as a Service). The creation the app at the metropolitan level in Kochi, named “Kochi one”, includes also the e-rickshaw services connected to metro stations and is aimed at facilitating intermodality. The implementation of this app was part of a larger urban transport reform, and the app has been a useful tool to gather data and information and attract new users.

○ Action L12 - Subcontracting to paratransit operators

 FIXED ROUTE		L12 - Subcontracting to paratransit operators
0	Overall objective(s)	<ul style="list-style-type: none"> Integrate paratransit into the mobility ecosystem, secure sustainable livelihoods
1	Which stakeholder to involve?	<ul style="list-style-type: none"> Public Transport Authority Operator grouping structures (see above) Formal transport operator(s)
2	What is the length of the process?	<ul style="list-style-type: none"> After defining the needs, a few weeks to a few months for the choice of the charterers and establish the contracts.
3	What are the major steps or phases?	<ul style="list-style-type: none"> i) Identification of needs and routes that could be chartered ii) Prior negotiations on the principle of subcontracting iii) Procedure for choosing the charter operator iv) Implementation and monitoring v) Evaluation
4	What is the overall cost?	<ul style="list-style-type: none"> This may be a saving if the chartered lines replace existing formal lines, or a neutral operation if they are fixed-route paratransit links integrated into the formal network
5	What are the pre-requisites for implementation?	<ul style="list-style-type: none"> An operational Public Transport Authority. A willingness to cooperate on the part of operators. A service scheme adopted or under development A formal transport operator wishing to expand its network Preferably, the grouping of operators in cooperatives or EIGs
6	Which expertise to associate?	<ul style="list-style-type: none"> It may be useful to be accompanied by a project management assistant to help define the project and conduct negotiations.

In order to facilitate the implementation of the above actions, and even to complete this integration logic, **it is possible to consider that formal transport operators charter certain paratransit operators to operate routes on their behalf**, especially when the flow of customers does not justify the use of large buses. The paratransit operator retains an entrepreneurial status but is then paid on the basis of a service contract (cost + margin),

with quality-of-service obligations. Revenues are collected on behalf of the formal transport operator. This is of course a radical change in the way operators work, which may guarantee them a high degree of income security but it also means they lose some of their independence. This type of arrangement, which is very common in Europe, could be the subject of targeted experiments in certain cities and then extended if the feedback is positive.

Example 19 - Subcontracting to paratransit operators

- Only introduced when fare integration, modal integration and consolidation of the paratransit sector
- More appropriate in the context of mass-transit projects

The examples of fare integration mentioned above also partly show cases of paratransit operators who are becoming subcontractors to the main public transport operators and who are providing feeder services.

Most of the initiatives undertaken to formalise paratransit operations as feeder services require both modal and fare integration. R. Desmoulière (2019) pointed out another type of configuration to introduce a special subcontracting form, as it is the case since 2017 for the services provided by the cooperative Koperasi Wahana Kalpika (KWK) for ten of its routes. KWK has been required to stop operating on portions of routes competing with Transjakarta, and Transjakarta passengers were given unlimited access to KWK angkots if they alighted at a peripheral terminal during peak hours and purchased a “friend of KWK” card each month from Transjakarta counters. Revenues generated by the cards’ sales were paid back to KWK members (i.e. vehicle owners). This specific case is representative of the evolution of paratransit services as feeders for mass-transit services. However, this integration model was limited as it excluded drivers from the programme. Vehicle owners remained in charge of fixing salaries offered to drivers. As a result, this experience of integration led to a decrease in earnings for drivers.

4.3.5. Level 4: a modern and non-polluting mode of transport

Level 4 covers the proactive actions that could be implemented by the PTA, after having settled issues of governance, regulation of competition and contracting, in order to boost the quality and performance of paratransit towards quality standards compatible with those of formal transport.

Three examples of projects can be considered in this context:

- A programme to support the renewal of vehicle fleets with more modern and less polluting vehicles
- A programme to support the development of digital tools, and
- A capacity building and training programme dedicated to the paratransit operators.

These projects can be implemented in the context of a mass transport project but also as standalone projects. **They are developed in Section 4.4 Project level.**

4.4. At the project level: reforming the existing paratransit services

4.4.1. Overview of the contexts of implementing a reform of the paratransit sector

Recommendations identified at the project level include actions that can be:

- (i) **Implemented in the context of the development of a major urban public transport project** (i.e. mass transit project in a large city); or
- (ii) **Specifically dedicated to the paratransit sector and its stakeholders** (i.e. in the case of smaller cities where the critical mass does not justify mass transit project and paratransit represents the main alternative to public transport).


In both cases, recommendations are following the same guiding principles: (i) modernisation and professionalisation of the existing services, and (ii) paving the way for a better physical and institutional integration of the paratransit services with the upcoming public transport services.

Table 14 Summary of Actions to be taken as a standalone project. Source: Consultant


Component	Main actions
Actions to be implemented as part of the development of a major urban public transport project	<ul style="list-style-type: none"> • Action P1: Integrating Paratransit as a Continuum of a Mass Transit
Projects dedicated to the paratransit sector and its stakeholders	<ul style="list-style-type: none"> • Action P2: Aid Schemes to Renew Fleets with Low-Emission Vehicles • Action P3: Developing the Implementation of Digital Tools • Action P4: Professionalisation and Capacity Building Programme

4.4.2. Reforming in the context of the development of a major urban public transport project

- **Action P1- Integrating paratransit as a continuum of a mass transit**

 FIXED ROUTE		P1 - Integrating paratransit into a mass transit system
0	Overall objective(s)	<ul style="list-style-type: none"> • Integrate paratransit into the mobility ecosystem
1	Which stakeholder to involve?	<ul style="list-style-type: none"> • Representatives of the main transportation authorities (local level and national level if needed) • Representatives of the paratransit stakeholders (representing association/ cooperative/ trade union; Ride Hailing Apps drivers associations)



 FIXED ROUTE			P1 - Integrating paratransit into a mass transit system
2	What is the length of the process?	<ul style="list-style-type: none"> Minimum cycle of 6 years (with an audit and evaluation to assess the progress of the transition after mass rapid transit project becomes operational) 	
3	What are the major steps or phases?	<ul style="list-style-type: none"> From the early planning stage of the mass transit project to its operation. 	
4	What is the overall cost?	<ul style="list-style-type: none"> It will depend on the level of detail of the mapping survey of paratransit stakeholders (consulting costs); paratransit vehicle scrapping and compensation policy (compensation costs); capacity building and training modules (training costs). 	
5	What are the pre-requisites for implementation?	<ul style="list-style-type: none"> Recognising that paratransit can play a role in the new public transport organisation with the mass rapid transport project. Ensuring that a budget “component” (from the upcoming mass rapid transit project) is dedicated to the integration and modernisation of paratransit. 	
6	Which expertise to associate?	<ul style="list-style-type: none"> Paratransit expertise. Public transport expertise (engineering / institutional / financing). Social expertise (professional retraining). 	

The implementation of a mass transit project (e.g. Bus Rapid Transit, subway, tramway) requires most of the national and local levels measures to be carried out first (e.g. the creation of a local Public Transport Authority). However, when a city is planning to invest and build a mass transit system, it is also a time of opportunity to act directly on the paratransit services.

A mass transit project typically comes with a dedicated budget of a few hundred million USD.⁶⁷ With this opportunity, after negotiations between the International Financial Institution (if such a stakeholder is involved) and the beneficiaries (i.e. city authorities or/and national authorities), **a certain percentage of the budget can be (re)allocated to the integration and modernisation of paratransit as one of the project components.** It can be labelled as an “Environmental and Social Management” component as it aims to mitigate the negative externalities of paratransit vehicles (described in Section 3.4.) and could propose a professional retraining to the labour involved in the sector.

Second, at the city level, the development of a mass transit project raises two additional issues related to the financial viability of the equipment:

- (i) There is a need for feeder services to channel mobility flows towards the new mass transit project to ensure high ridership levels;
- (ii) There is a need to avoid unnecessary competitors along the planned corridors to ensure a modal shift towards the new mass transit project.

Involving and dealing with paratransit stakeholders upstream of a major investment programme could help set up safeguards to ensure the successful implementation of a mass transit project.

⁶⁷ For reference, it is understood that project costs depend on the chosen technology and length of the lines and network. A BRT cost average is between USD 1 to 5 million/km; Trams/Light rail cost is between USD 10 to 30 million/km; Elevated rail is between USD 50 to 100 million/km; Subways USD 50 million to 300 million/km (indicative range prices).

○ Initiating paratransit transition and integration at all the phases of a mass transit project

The development of a mass transit project provides a range of opportunities for taking actions in favour of the modernisation and integration of paratransit. The “Environmental and Social Management” component discussed above should encourage stakeholder engagement with the existing paratransit industry (as well as the existing conventional bus stakeholders) in order to start a negotiation process enabling existing operators to participate in the new mass transit system. Careful attention should be paid to the paratransit labour, especially with a view to securing employment opportunities for these workers into the new mass rapid transit system.

Proposing the integration of paratransit into the new mass transit system can help prevent and avoid conflicts between existing paratransit and upcoming formal public transport. This required including the existing paratransit operators and labour into the new mass transit system staff as much as possible. This can also require leasing and contracting agreement with paratransit operators. **Actions can be taken from the early planning stage of the mass transit project until the delivery of the infrastructure and its operation, across the four phases identified and detailed below** (see Figure 35).

The integration of paratransit in the context of a mass rapid transit system remains complex and challenging as it covers a very diverse range of issues: the physical integration, economic integration as well as institutional integration, etc. Accordingly, it is to be expected that the integration remains an iterative process with trial and errors.

The proposed approach (phase by phase) developed in the following sections is based on the assumption that implementing a mass transit project will require a restructuring and reorganisation of paratransit. This is expected to potentially jeopardise paratransit’s business model and livelihoods but also to provide opportunities to maintain economic activities in a more formal way.

The main objectives of such an approach are:

- (i) to anticipate and minimise the potential conflicts between public authorities and paratransit stakeholders,
- (ii) to prevent any competition between paratransit services and the mass transit system, and
- (ii) to ensure large catchment areas and high ridership levels for the upcoming mass transit project.

This win-win situation should ensure that paratransit stakeholders also benefit from the project being implemented. All actions proposed in the following sections have to be initiated by the public authorities, with the Public Transport Authority (if it exists) as a lead.

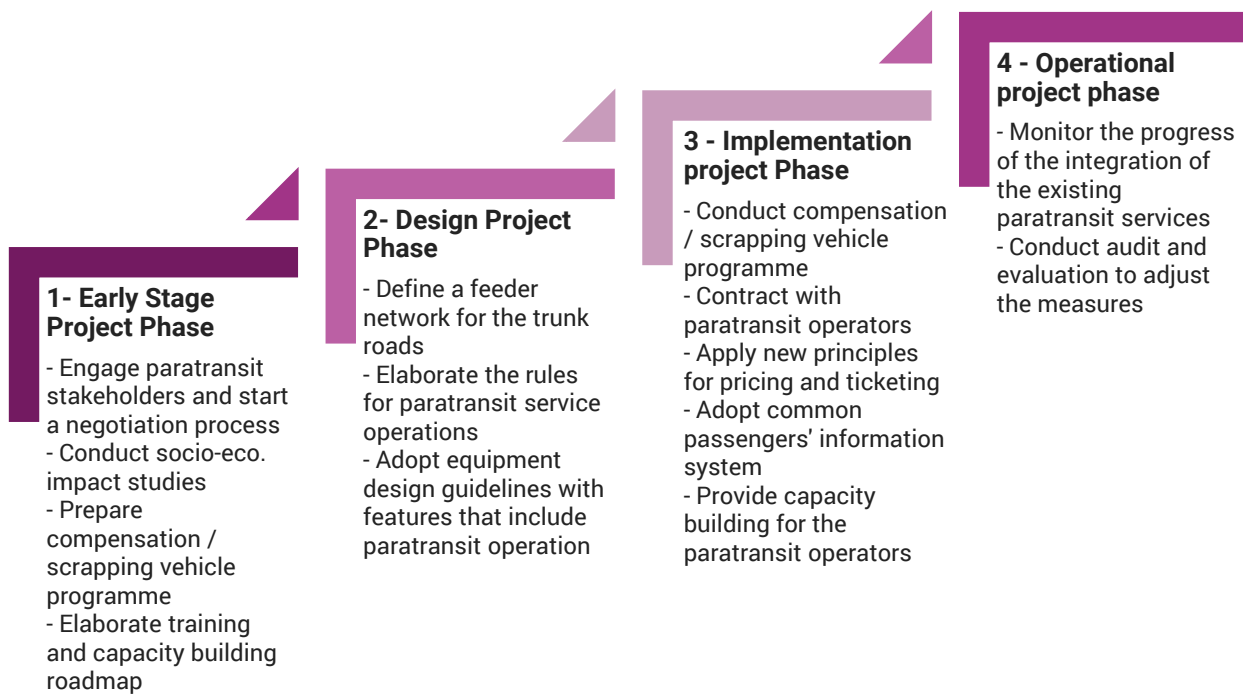
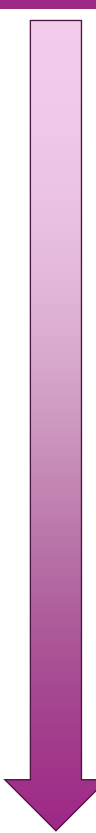


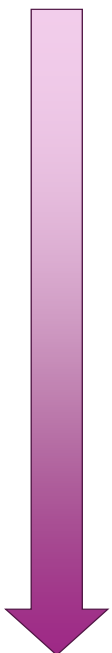
Figure 35 Paratransit Transition Path: Key Project Phases to Integrate Existing Paratransit Services, Source: Consultant

1/ Early-stage project phase

Main objective: beyond the technical aspects of a mass transit project, the public authorities need to ensure the economic and social acceptability of such a project for the paratransit stakeholders.

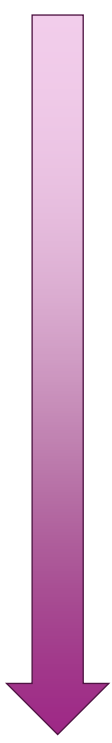
Progress	Type of action	Detail (To support elaboration of the action depending of the local context)
	Engage paratransit stakeholders and start a negotiation process	<ul style="list-style-type: none"> • Identify the paratransit key stakeholders (associations, cooperative, Ride Hailing Apps driver associations). • Communicate about the mass transit project with the identified paratransit key stakeholders (organised by the local authorities).
	Conduct socio economic impact studies	<ul style="list-style-type: none"> • Conduct a survey about the local paratransit services to identify the supply (fixed route vs. on demand / frequency / vehicle) which could overlap (fully / partially) with the mass transit project corridor. • Conduct a survey to elaborate a categorisation of the stakeholders (vehicle owners, drivers, route owners, etc) to understand (i) their business models (including revenues/costs/expenses) and (ii) how the mass transit project could affect their activities (operation and revenues). • Conduct a survey about the vehicles to identify their number, their level of registration, and quality (capacity, age of the vehicle, emissions level), including both fixed route and on demand services.
	Compensation / scrapping vehicle programme	<ul style="list-style-type: none"> • The municipal level (e.g. PTA if it exists) is in charge of elaborating a compensation and scrapping vehicle programme (based on criteria such as registration of the vehicles and services, age of the vehicles, etc.). • Compensations are elaborated depending on the categorisation of paratransit stakeholders affected by the mass transit project (i.e. vehicle owners operating on the paratransit route overlapping with the project; vehicle owners operating on the



Progress	Type of action	Detail (To support elaboration of the action depending of the local context)
		<p>paratransit route partly overlapping with the project; drivers; route owners); this is a “business loss compensation”.</p> <ul style="list-style-type: none"> The scrapping proposal depends on the vehicle (age, cost, level of registration). Criteria and prices are elaborated by the public authorities.
	Elaborate training and capacity building roadmap	<ul style="list-style-type: none"> The municipality (e.g. PTA if it exists) has to anticipate the number and the education/training level of employees that the mass transit project should employ. The municipality (e.g. PTA if it exists) has to communicate about the needs (and potential job offers) linked to the mass transit project operation. This communication campaign should emphasise on the potential working conditions improvement and job security offered. Based on the result of the social survey, retraining plans for paratransit labour to access new positions in the project must be proposed. Regular communication campaigns about both the social and economic benefits of joining the mass transit system operation companies should be conducted.

2/ Design project phase

Main objective: increase the complementarity between paratransit technical operations and mass transit project service.

Progress	Type of action	Detail (To support elaboration of the action depending of the local context)
	Define a feeder network for the trunk roads	<ul style="list-style-type: none"> Based on the mass transit project Pre-FS, and the survey of the existing paratransit service (fixed route), the Municipality (e.g. PTA if it exists) should define a feeder service network that serves the “trunk” (i.e. mass transit system). Feeder lines and shared stops (between the feeder lines and the mass transit corridor) should be clearly identified by the PTA. PTA should determine the feeder services which should be provided and could get access to the trunk roads or not (fixed route or / and on demand).
	Design equipment	<ul style="list-style-type: none"> During the design phase of the mass transit project, careful attention should be paid to the physical articulation of feeder services in the corridor (e.g. in the case of BRT, parallel paratransit lanes could be adapted). In multimodal hubs (i.e. stations), there will be a need to include transfer equipment between mass transit system and paratransit feeder services (e.g. dedicated platforms or special decks). This physical integration will ensure a smoother transfer for passengers. Establish regulations and management rules for the right to access the multimodal transport hubs for paratransit operators (fixed routes or / and on demand).
	Elaborate the rules for paratransit service operations	<ul style="list-style-type: none"> The municipal level (e.g. PTA if it exists) has to elaborate criteria and regulation that allow paratransit stakeholders to operate in the mass transit corridors. Criteria can be based on business registration of the company and tax payment (if fixed route), registration of the route (if fixed route), and/or registration of the vehicles, registration of the drivers (e.g. driving licence).



3/ Implementation project phase

Main objective: conduct the paratransit reform and ensure its integration with existing (or upcoming) public transport services.

Progress	Type of action	Detail (To support elaboration of the action depending of the local context)
	Implement compensation / scrapping vehicle programme	<ul style="list-style-type: none"> Finalise the scrapping phase, determine the price and proceed to the payment, with eligible paratransit vehicle owners. Finalise the “business compensation” phase, determine the price and proceed to the payment, with eligible paratransit route owners and drivers. Plan for audit and due diligence of the programme with independent supervisors.
	Provide capacity building for the paratransit operators	<ul style="list-style-type: none"> Based on the social survey, propose positions to workers who may be affected by the project. These positions can include the following occupations: drivers, conductors, security staff, station staff, cleaning staff, ticketing staff, maintenance staff, administration, management, and public relation agents. Organise training for the identified paratransit employees.
	Contracting	<ul style="list-style-type: none"> With the new paratransit operator, establish agreements/ contracts defining all relationships (technical, pricing and financial) with upcoming mass transit system.
	Price and ticketing	<ul style="list-style-type: none"> Define an intermodal pricing system which is not detrimental to feeder traffic and protects the economic model of paratransit operators. Adopt a policy of equalisation of the revenues among the operators (i.e. adjust the revenues for the different operator, support the weak ones). Implement integrated ticketing.
	Passenger information	<ul style="list-style-type: none"> Define operators’ duties regarding passenger information. Edit plans and brochures. Equip stops with relevant information. Encourage the creation of agencies and information desks.

4/ Operational project phase

Main objective: ensure the sustainability of the complementarity between paratransit services and public transport services by a transparent evaluation process.

Progress	Type of action	Detail (To support elaboration of the action depending of the local context)
	Monitoring the progress of the integration of the existing paratransit services	<ul style="list-style-type: none"> Monitor the scrapping and compensation programme (provide answers if there is any claimant). Monitor the registration of the paratransit operators that are allowed to provide feeder services. Coordinate with municipal departments and especially traffic police to ensure the enforcement of the rules and regulations along the rapid transit corridors and at the multimodal hubs.
	Conduct audit and evaluation to adjust the measures	<ul style="list-style-type: none"> Conduct an independent audit of the scrapping and compensation programme. Conduct an evaluation of the training provided to former paratransit staff transitioning into new roles with the rapid transit system company.

Example 20 - Integrating paratransit into a mass-transit system in Peshawar⁶⁸

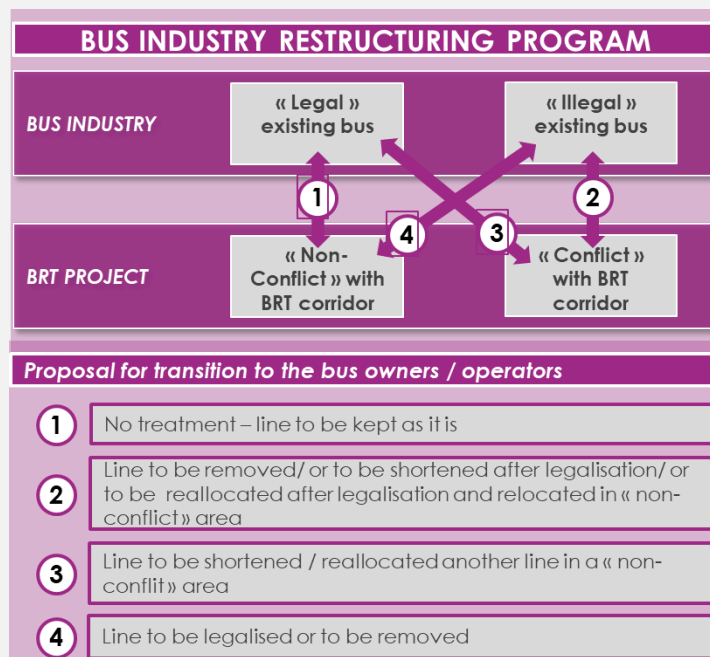
- Objective: avoid competition between paratransit and the new BRT service
- Implementation of a compensation programme for paratransit operators differentiating overlapping and non-overlapping operations, legal and illegal operators

When investing in the first Bus Rapid Transit (BRT) line in Peshawar in 2018, the Asian Development Bank (ADB), i.e. the main donor, included in the project a component entitled “Bud Industry Restructuring Programme.” The ADB proposed that, in parallel to the development of the BRT corridor, the city of Peshawar engages a programme to reorganise the paratransit fixed route along the corridor. The purpose was to avoid any disturbance of the BRT operation and to avoid competition between transport services.

This programme included buses (the iconic “rocket” buses, the mini-buses (Mazda), the Ford Wagon) and some lighter vehicles (Susuki, Datsun and Qingqi) which were operating on fixed routes. On-demand services (mainly provided by auto-rickshaws) were excluded. After a large consultation survey, a total of 517 vehicles were considered for the restructuring programme and a total of nearly 400 vehicle owners, 126 owners-drivers, 517 drivers and 510 conductors. These vehicles were operating on the BRT corridor totally or partially. During the consultation phase, solutions for compensations and vehicles scrapping as well as re-employment training programmes for the operators, owners, drivers and conductors who may lose their livelihoods were proposed.

The authorities defined specific rules in order to access the compensation programmes. A distinction was made between “conflict” and “non conflict” route (i.e. overlapping or not with the BRT corridor). Legal criteria were taken into consideration i.e. a distinction was also made between legal and illegal paratransit operation (for instance nonregistered bus services). A complex system was set up (see figure below), aiming to be as inclusive as possible.

Figure 36 Synthesis of the Peshawar Authorities’ Compensation Proposal to the Paratransit stakeholders, Source: Consultant (adapted from ADB, 2018)



⁶⁸ Example adapted from the report produced by ADB (2018).

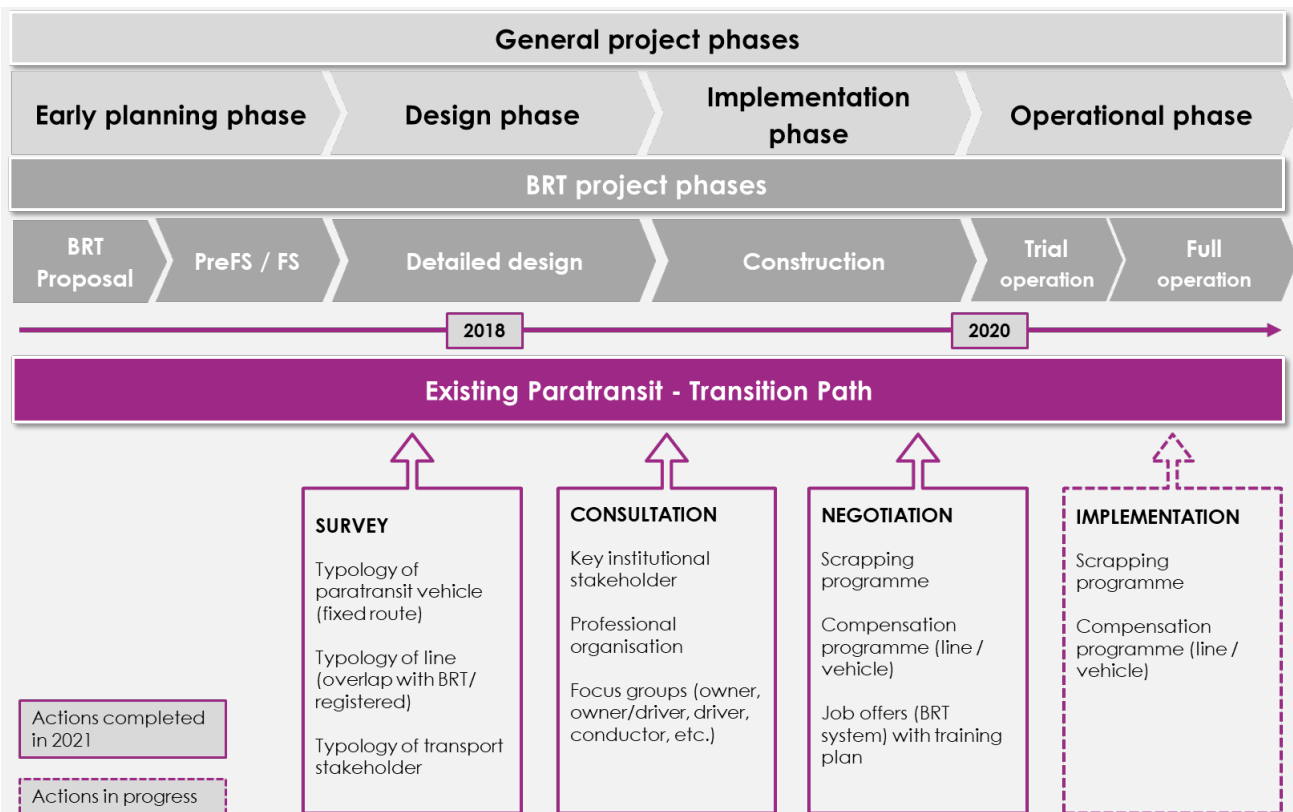


Figure 37 General Timeline and Process of the Peshawar Bus Industry Restructuring Programme, Source: Consultant (adapted from ADB, 2018)

Overall Limits of the Restructuring Programme:


Despite the launch of the bus industry restructuring programme in 2018 (see Figure 37), this programme is still ongoing. The first phase of the programme started with a large round of negotiations. This phase was crucial to ensure a smooth development of the mass transit project in itself and the bus restructuring as well.

From this phase, some lessons learnt, or at least warnings, have been identified, namely:

- Prepare the institutional bodies (from the public authorities who is in charge of what and need to include very early in the process the existing “associations”)
- Prepare clear programme with exact figures and eligible criteria of compensation and scrapping (define a budget and timeline)
- Explain clearly the benefits of the new jobs and position that will be proposed in the BRT system (social advantages, working hours, working conditions)
- Consultation should be transparent and documented to avoid the spread of false rumours (communication campaign from the public authorities).

4.4.3. Reforming paratransit as a standalone project

○ Action P2 - Aid schemes to renew fleets with low-emission vehicles

		P2 - Aid schemes to renew fleets with low-emission vehicles
0	Overall objective(s)	<ul style="list-style-type: none"> • Modernise operations, secure sustainable livelihoods
1	Which stakeholder to involve?	<ul style="list-style-type: none"> • Public Transport Authority • Ministries in charge of transport, environment and industry • Operator grouping structures (see above) • Banking and credit institutions
2	What is the length of the process?	<ul style="list-style-type: none"> • The implementation of the action can take from six months to two years. It is then an ongoing process.
3	What are the major steps or phases?	<ul style="list-style-type: none"> • i) Diagnosis of the state of the fleet, of the financial capacities of the operators in terms of renewal (including access to credit) and of the local production capacities of vehicles • ii) Definition of the stakes and objectives • iii) Study and comparison of action scenarios • iv) Consultation of the operators • v) Choice and refinement of the selected mechanism • vi) Implementation • vii) Assessment
4	What is the overall cost?	<ul style="list-style-type: none"> • Impossible to determine a priori, depending on the mechanism chosen, which may range from a loan guarantee to a full purchase by the PTA.
5	What are the pre-requisites for implementation?	<ul style="list-style-type: none"> • An operational Public Transport Authority with the financial capacities or action (with possible intervention from international donors) • A willingness to cooperate on the part of operators. • A service scheme adopted or under development • Preferably, the grouping of operators in cooperatives or EIGs
6	Which expertise to associate?	<ul style="list-style-type: none"> • It may be useful to be accompanied by a project management assistant to help define the project and conduct negotiations.

Integration of paratransit into the mobility ecosystem is a key action in the SUMP process. However, it is possible for a local authority (e.g. PTA) to initiate targeted policies and specific projects to support the future reform.

The gradual replacement of often old vehicles by vehicles with a positive image, with higher transport capacity and running on less polluting or renewable energy, is another way of bringing paratransit closer to the formal sector without challenging the model of operation by individual entrepreneurs or small businesses.

However, in many cases, operators do not make financial provisions for their vehicle's renewal, and they extend their lives as much as possible. In addition, they are usually used to one type of vehicle and engine and may be reluctant to change vehicle type and acquire the technical skills to maintain them.

Therefore, it would be inappropriate to consider a system of aid for fleet renewal only based on 'one-shot' subsidy mechanisms. This would generate windfall effects or even fraud without ensuring the sustainability of the approach.

On the contrary, **the provision of funding to help operators renew their vehicles should be seen as an opportunity to introduce major changes in the way the system works, by imposing a number of conditions for obtaining this funding.**

These conditions may, for example, relate to:

- The ownership of the goods: the vehicles can be made available without transfer of ownership in exchange for a deposit, or leased or offered for hire purchase;
- An obligation for operators to group in professional structures that would sign a provision or rental agreement with the PTA;
- The conclusion of an agreement or contract defining the operator's obligations in terms of quality of service, itineraries, vehicle maintenance and reporting
- Training obligations, professional qualifications, etc.

The intervention of the PTA can then take various forms, from the lightest to the most important:

- Negotiation of a loan framework with one or more banks, allowing a reduced rate or a reduction of the guarantee requirements;
- Guarantee (total or partial) of loans granted to operators for the renewal of their vehicles;
- Granting of a total or partial equipment subsidy, possibly supplemented by a loan guarantee on the part still to be financed;
- Direct acquisition by the PTA (or an agency mandated by it) of a fleet of vehicles, and provision to operators through a hire-purchase system allowing them to acquire the asset for a small sum at the end of the lease.
- Direct acquisition by the PTA (or an agency commissioned by it) of a fleet of vehicles, as above, and then making it available to operators in return for a fee and a security deposit.

Example 21 - Fleet renewal programmes

- Access to modern vehicles with improved travel conditions and safety standards, reduced impact on the environment
- Consolidation of the sector to get access to financial facilities
- Scrapping allowance
- Implementation of a financial scheme to facilitate the access to loans and financing mechanisms for operators

In the frame of the PUVMP programme already presented above, a fleet renewal programme has been implemented. This fleet renewal programme relied on several mechanisms involving: improved regulation, vehicle modernisation, access to financing and maintenance.

Regarding the regulation component, it has been established that franchises can only be granted to operators whose fleet are compliant with a number of environmental, safety and user comfort standards (Omnibus Franchising Guidelines, OFG). The vehicles are expected to be (at a minimum) Euro 4-compliant and should include a number of features such as seatbelts, CCTVs, ramps, Wi-Fi, GPS, and AFCS. Three classes of PUVs were given as options by DOTr:



- Class 1 are 9–12-seater PUVs are better suited for municipal/provincial roads.
- Class 2 and 3 have a seating capacity of up to 23 passenger and are seen as the new jeepneys.

The modernisation of vehicles component represents a huge investment for operators. The average price for Euro 4-compliant vehicle is variable but new vehicles' prices typically range from 1.8 million to 2.4 million PHP (equivalent USD) (Interview D). It is estimated that 10% of operators who can afford to modernise select electric jeepneys (Interview E). It is worth noting that the Government is providing incentives to car manufacturers under its Comprehensive Automotive Resurgence Strategy (CARS) programme to revitalise the Philippines automotive industry and fix the manufacturing capability gaps.

In order to facilitate the access to financing, the Government in partnership with national Development Bank of the Philippines (DBP) and Landbank of the Philippines (LBP), have developed a financial assistance programme in order to support operators in making the necessary investment in modern vehicles.

This model was coined the “5,6,7,8 model” as it entails:


- 5% down-payment,
- 6% annual interest,
- 7-year amortisation term (with a six-month initial grace period),
- A subsidy of PHP 80,000 (≈USD 1,555) for surrendering old franchise. This subsidy was recently revised to reach PHP 160,000 (≈USD 3,110) as the initial amount was considered too low.

To benefit from this financing scheme, the operators have to (i) consolidate, (ii) file an application for the substitution of old units or apply for a franchise (in the case of developmental route) and (iii) apply for a loan from DBP or LBP.

Eventually, the component of the programme dealing with maintenance ensures the appropriate treatment of the vehicles during their useful life, including approval of, inspection system and scrappage at the end of the vehicle life. The scrappage is necessary to improve the acceptability of the programme and to ensure that that the old vehicles will not be re-circulated back into public transport systems elsewhere in the country.

The implementation of a fleet renewal programme is a typical action to be undertaken without the frame of a global reform of urban transport, and as a first step to professionalise, modernise and structure the paratransit sector. This approach was developed in South Africa for instance, where already in 1999, a few years after the “taxi war” during which minibus-taxi operators and associations fought violently over the control of routes, the Government introduced the “Taxi Recapitalisation Programme”. With this programme, owners whose vehicles did not comply with security and safety standards had to scrap their vehicle, in exchange for subsidies to purchase a new vehicle. Even though this programme has been considered as a partial failure due to the many strategies of diversion elaborated by owners to get the subsidies and keep the vehicles, it also paved the way for the next reforms, leading to the implementation of the BRT in 2010 and the transition of the minibus-taxi industry. Indeed, through the fleet renewal programme, a first step was made to identify the number of operating vehicles, and it was also a first engagement from the National Government towards the minibus-taxi operators and a means to initiate a dialogue on positive terms.

○ Action P3 - Developing the implementation of digital tools

 P3 - Developing the implementation of digital tools		
0	Overall objective(s)	<ul style="list-style-type: none"> Integrate paratransit into the mobility system, modernise operations, reduce negative externalities
1	Which stakeholder to involve?	<ul style="list-style-type: none"> Operator grouping structures (see above) Formal transport operators Banking and credit institutions (including international donors)
2	What is the length of the process?	<ul style="list-style-type: none"> Depends on the type of action chosen. The study of the needs and the strategy to be adopted can be carried out over six months, the implementation over six months to two years.
3	What are the major steps or phases?	<ul style="list-style-type: none"> i) Diagnosis of the level of equipment and needs (on the formal and informal network), identification of issues and proposal of a digital strategy ii) Depending on the needs, search for funding iii) Consultation of operators iv) Drafting of the necessary documents (consultation of companies, calls for projects, specifications, agreements) and negotiations v) Acquisition of systems, implementation, fine-tuning vi) Ongoing assessment
4	What is the overall cost?	<ul style="list-style-type: none"> Impossible to determine in advance, but the implementation of ticketing systems or operational assistance systems are costly operations (which can exceed one million euros on a large network) and which generate operating and updating costs.
5	What are the pre-requisites for implementation?	<ul style="list-style-type: none"> An operational Public Transport Authority with the financial capacities for action (with possible intervention from international donors) A willingness to cooperate on the part of operators. A service scheme adopted or under development Preferably, the grouping of operators in cooperatives or EIGs
6	Which expertise to associate?	<ul style="list-style-type: none"> Strong expertise in the field of digital systems applied to transport is essential. It can take the form of project management assistance for the entire project or focus on the preliminary study.

Digital tools (aka Intelligent Transport Systems, ITS) can be divided into several categories:

- E-hailing tools:** more particularly adapted to services operating in taxi mode, they help secure the customer access to transport service, to improve access to the market for the operator by regulating competition, to secure financial transactions and to trace the various operations. They gather ticketing, passenger information and reporting tools.

The most widely known are Uber and Grab. In all cases, these are products offered by private companies to private operators and the general public, based on a self-propelled economic model and without the public authorities' intervention. These applications profoundly change the operator's way of working, but also the image of the service among customers. However, they can lead to a drift by inciting operators to work more and more, insofar as the providers of these applications are paid by taking a share of the passengers' fares. In this regard, applications might contribute to the worsening of the precarious working conditions of paratransit operators.

The other digital tools concern the fixed route mode, with the aim of bringing them closer to the operating tools of traditional bus networks.

- **Ticketing applications:** although it is unlikely, even in the long term, that vehicles will be equipped with validation systems comparable to those used in formal transport, it is possible to develop payment options on smartphones, either of the e-ticket type (which has the disadvantage of requiring advance purchase) or by debiting an electronic wallet.
- **Geolocation and operation support tools:** these tools make it possible to geolocate a set of vehicles and to record the routes taken, which allows to carry out live operation from a centralised control station, for example within an economic interest group, and to check that the routes comply with the contractual commitments.
- **On-demand transport management tools:** it is possible to try to bring fixed route operation closer to "on-demand transport" as practised in Europe, where the route and even the timetable are adapted to requests made by customers in advance, within the limits defined by amplitude, route or frequency. This mode of operation facilitates the integration of transport services that are by nature very flexible into a formal transport system.
- **Passenger information tools:** data from geo-location and operational support systems can be used to inform customers of the time of next services in real time, or the location of the vehicle that will pick them up (a common feature in e-hailing apps). This information can be presented on real-time information boards (scrolling banners, TFT screens), on the website or on the app. On bus stops and bus shelters, a QR Code can be displayed to direct the customer to the correct web page or app. These systems, which are widely used in formal transport, could be adapted to certain fixed route paratransit service configurations.

The commonality between these systems is that they are not based on a self-supporting economic model: they are tools developed by IT companies and offered to operators and PTAs. While they make a significant contribution to facilitating the operation of the service and modernising the image of this type of transport, they also represent an additional financial burden for the operator. This additional burden has to be recouped in some way, either through a rate increase or through support mechanisms. The PTAs can intervene in different ways:

- By **financing** the investment and the development and implementation costs, particularly with the support of international donors;
- By **entrusting the implementation** of these tools to formal transport operators for deployment to paratransit operators, and by financially supporting any additional investment and operating costs involved;
- By **requiring** the provision of **open data** by paratransit and formal transport operators,
- By **launching** and supporting **calls for projects** for the development of specific tools, particularly in the field of passenger information based on open data resources.

In principle, public intervention is most relevant for fixed-route services whose integration into the multimodal transport offer is sought. For the taxi mode, experience shows that the economic model is self-supporting, with operators amortising the costs of acquiring and operating digital tools thanks to the resulting increase in ridership.

Example 22 - Partnering between RHAs and mobility stakeholders

- Identifying the data collected and used by the RHAs
- Building capacity within the PTA to analyse the data and prioritise its use according to the PTA’s responsibilities
- Monitoring the activity of RHAs and elaborating regulatory framework for their activity

Due to its vast popularity in Southeast Asia and its millions of users, Grab has the ability to collect a massive amount of valuable data which can prove useful to mobility stakeholders and practitioners.

In early 2015, Grab announced a data sharing partnership with The World Bank’s Open Traffic Project to provide real-time data streaming that reported service volume, location tracking and historical journey times. This partnership was promising and had the potential to help governments improve mobility systems (at both the local and national levels). Practitioners can plug into the platform in order to better model traffic, examine historical data, understand congestion patterns and plan infrastructure, as well as improve emergency response and disaster preparedness.

Later on, in 2019, Grab launched a new project, “Grab Posisi”, that has the ambition to be Southeast Asia’s first comprehensive Global Positioning System (GPS) trajectory dataset. This project started with data collection from Grab drivers’ phones in Singapore and Jakarta (at the metropolitan scale). The data recorded included time and location, as well as speed, headed direction, area and distance covered. To date, the dataset contains in total 84,000 trajectories that consist of more than 80 million GPS pings and cover over 1 million kilometres. Trajectory patterns from users’ GPS data are a source of information for urban applications (e.g. solving transportation problems, traffic prediction, transportation planning). Grab is offering to use the datasets for research purposes (Huang *et al.*, 2019) and will extend its data collection to other cities.




Figure 38 Grab motorbike driver Source: Consultant

While building partnerships with RHAs such as Grab can have great potential to improve mobility systems, it can also put mobility stakeholders/practitioners, including city governments, at risk. Governments of emerging cities sometimes lack financial and/or human resources, making them vulnerable when entering partnerships with wealthy tech giants such as Grab. Additionally, Grab has become the region’s sole dominant ride-hailing player and this quasi-monopoly means that governments can become overly reliant on private stakeholders pushing their own agendas.

The necessity for local and national authorities to engage with the digitalisation of mobility is also stressed in the context of the SUMP implemented in Medan, Indonesia. Consultants mention the unequal appropriation of digital tools among the ecosystem of urban mobility, with paratransit and MaaS growing substantially, whereas

authorities have difficulties to make disruptive changes. However, it is also stressed that MaaS offers fruitful perspectives in terms of regulation, passenger information and modernisation of operations.

○ Action P4 - Professionalisation and capacity building programme

		P4 - Professionalisation and capacity building programme
0	Overall objective(s)	<ul style="list-style-type: none"> Secure sustainable livelihoods, modernise operations, integrate para-transit into the mobility ecosystem
1	Which stakeholder to involve?	<ul style="list-style-type: none"> Public Transport Authority Consultation structure with paratransit operators Local training centres
2	What is the length of the process?	<ul style="list-style-type: none"> A continuous process, based on a needs assessment and the deployment of programmes that may take one to two years.
3	What are the major steps or phases?	<ul style="list-style-type: none"> i) diagnosis of training needs and targets ii) identification of available or potential training resources iii) definition of educational programmes in partnership with one or more training organisations iv) project set-up: available financial resources, type of intervention, counterparts on the part of operators v) negotiations with operators vi) implementation vii) assessment
4	What is the overall cost?	<ul style="list-style-type: none"> Depends on the choices made regarding the possible coverage of training costs, and the number of beneficiaries envisaged. In order to prevent cost overruns, it will probably be preferable to identify a maximum annual budget, which may amount to several tens to thousands of euros per year.
5	What are the pre-requisites for implementation?	<ul style="list-style-type: none"> An operational PTA with the financial means for action (with possible intervention from international donors) The local existence of suitable professional training centres
6	Which expertise to associate?	<ul style="list-style-type: none"> A preliminary study should be carried out by a vocational training expert.

Increasing the skills and professional capacity of paratransit operators is an essential requirement for the integration of this sector into the multimodal mobility offer.

This skills improvement can and should concern all the parties involved:

- **Company managers** regarding commercial relations, project financing, accounting, the use of digital tools and reporting;
- **Drivers**, regarding road risk management, economic and ecological driving, customer relations, improving mechanics and the use of digital tools
- **Assistants** regarding road risk management, customer relations, or orientation to driving or car mechanics professions.

Individual operators are concerned by all these subjects.

Appropriate training programmes hardly exist, and when they do, operators rarely have the resources to follow them. The possibility for states to promote the introduction of appropriate training programmes has already been mentioned at national level. However, **the PTA will have an essential role to play in this area:**

- **By encouraging the deployment of national programmes** (if they exist) among local training bodies
- **By encouraging local training centres to propose such programmes** and by helping to define their content, or even by intervening financially in the set-up;
- **By proposing to cover part of the operators' training costs** in exchange for obligations to be defined (contracting, renewal of vehicles, quality of service obligations)
- **By organising targeted training sessions for specific needs**, or by producing adapted teaching material, with the help of external speakers.

Example 23 - Professionalisation and capacity building programmes

- professionalisation relies on pooling resources between operators and improving working conditions (fixed salaries, fixed working-hours, etc.)
- capacity building programmes shall be set up to benefit both paratransit operators and the local authorities in charge of the regulation

Long-lasting reforms of the paratransit sector call for actions regarding the professionalisation of stakeholders. Professionalisation initiatives are often bound to the creation or structuring of professional organisations. Indeed, professionalisation aims at improving skills and capacities of operators, which can be encouraged by pooling resources and improving working conditions. To do so, the first action often consists in reforming the target-system and introduce a minimum wage for the drivers and associated jobs, as it has been introduced within the PUVMP in the Philippines for instance. Improving working conditions also relies on fixed working-hours for operators (as it has been the case for e-rickshaws operators in Kochi), getting social protection such as social welfare and easier access to loans. In Dakar, since the implementation of the reform of the paratransit sector (named Cars Rapides), leading to the creation of the “Association Faitière des Transports Urbains,” operators and owners benefit from the services of a fleet manager hired by the Association, drivers and helpers have access to social protection and the loans of the vehicle owners are guaranteed by the Association.⁶⁹

In many cities, training programmes are being provided to paratransit operators in order to optimise their business model, the fleet management or the customer relationships for instance. Pioneer programmes have been developed in South Africa for instance (Schalekamp, 2017), and are being developed in many cities. In South-East Asia and in India, several initiatives can be mentioned.

In Kochi for instance, the urban transport reform, which include the integration of e-rickshaws to provide first and last mile connectivity, offered trainings to paratransit operators. In the Philippines, training and social programmes have been implemented to provide stakeholders with skills and capacity to meet the needs of the transport system:

- Capacity training for vehicle owners includes finance training. Vehicle owners need to build their knowledge on the operation and maintenance of the modern vehicles to feel comfortable taking financial and technical risks.

⁶⁹ For more information, see Baffi & Lannes (2021b) section “Promote and support the creation of paratransit organisations” (Action 4.2).



- Social support programme (Tsuper Iskolar programme) includes skills and entrepreneurship training (e.g. mechanics training) to provide new livelihood options for affected drivers. Participants in the programme are given a daily stipend of PHP 350 (≈USD 6,8) for the duration of their training.

As mentioned above, the reform undertaken in the Philippines also provided an original approach by offering trainings and capacity building for the local government officials, as they had to acquire new competencies and skills to implement the reform.

Eventually, the Filipino's case study also advocates for the possibility to shape training programmes at the national level when cities do not have the competencies to do and implement the training locally according to the needs and the opportunities for reform. Indeed, in many medium and small cities implementing capacity building and training programmes require resources which are unavailable, whereas paratransit often represent the main transport offer.

Conclusion

- Asian cities show some specific trends regarding the evolution of the paratransit sector: the use of digital tools and new technologies of vehicles.** Since a few years, the region has been facing tremendous dynamics regarding the development of digital tools (e.g. Ride-Hailing Apps by start-ups and “tech” companies) that are rapidly absorbed and used by a large percentage of urban inhabitants due to convenient access to Internet and smartphones. In addition, backed by market players and manufacturers, some national governments (e.g. in India, Thailand, Vietnam, the Philippines) set up strategies and regulations to speed up the production of electric and cleaner vehicles to be aligned on the global energy transition agenda. These specific features make Asian cities at the forefront of the transformation of the paratransit industry.
- From the public authorities’ perspective (national and local levels), this context opens up perspective both regarding the modernisation of the paratransit vehicle fleets and by extension the improvement of the overall quality of service.** This context also brings to the public authorities’ **opportunities in terms of regulation** as the introduction of new technologies and tools offer the possibility **to define and legalise paratransit services.** **From paratransit stakeholders’ perspective, digital tools mainly can help to improve operation and profits due to the possibility to catch a wider patronage. The adoption of cleaner vehicles remains often inaccessible due to high entry costs.** These specific features recall the resilient dimension of the paratransit sector, its constant and rapid transformations as well as its capacity to adapt the service to the demand. **However, these specific characteristics also call for monitoring and regulation from the public authorities,** otherwise leading for instance to increase competition between mobility services on profitable urban axis, or more precarious work conditions for paratransit employees. If the expected improvements that shall bring the technology is not overseen/regulated, the development of more sustainable urban mobility offers and sustainable livelihoods conditions for paratransit workers will be jeopardised.
- Compared to other regions in the world, public authorities in some of the cities studied in this paper show resources, competencies and the ambition to reform the paratransit sector and seek for better inclusion of the paratransit services in the mobility ecosystem.** However, this remains the case mostly in major cities where mass-transit projects are planned and implemented. Indeed, for many decision-makers opportunities to modernise urban mobility systems are often correlated to heavy investments in mass transit systems. Building a metro line or a BRT (and even sometimes road improvement) is still seen as modernity flags, whereas modernising existing mobility systems (as paratransit is often) is seen as a complementary option (to mass rapid transit) or a later option (after other projects). However, for most of the small and medium cities, urban mobility service often only relies on paratransit as the main public transport mode. Unfortunately for those cities transport investments are often not dedicated to improving paratransit that is still carrying bad reputation, notably due to the negative externalities.
- Besides the effort made within the case of mass-transit projects, more initiatives and projects should aim at reforming the paratransit service *per se*.** Digital tools therefore represent a window of opportunities and a lever to modernise and better integrate the paratransit services. Nonetheless, they shall not be considered as an end, but only as a means. The promises offered by digital tools in no way take away the needs to strengthen the capacities of the public departments in charge of organising and managing

urban mobility. In addition, **reforming and integrating paratransit services overcome the frame of a mass-transit project as it is a long-lasting commitment made by all stakeholders after consulting with the paratransit operators and identifying the relevant stakeholders** (e.g. “big players,” smaller individual entrepreneurs, as well as trade union and professional organisations) to prevent political opposition. **In short, modernising and reforming paratransit cannot be limited to digital tools or technology but must include social engineering and economic incentives.**

- The implementation of several reform programmes at the national and local level enables the study team to identify some lessons from the success and the limits of these programmes. First, **the lack of enforcement of the regulation by the public authorities remains one main obstacle to change and transformation of the paratransit industry.** Second, **a change of mindset and capacity building are necessary both on the side of the operators and decision-makers as well as civil servants.** These two elements overcome the outcomes expected from short-term projects (for instance mass transit projects). The need for training is of particular importance for operators when the introduction of new technologies (e-vehicles) and new tools (digital tools) is promoted by the public authorities and require specific skills. However, supporting fleet renewal remains the cornerstone of most of the paratransit reforms – a type of project that can be undertaken with the support of International Financial Institutions. But it is important to bear in mind the reimbursement capacities of all the operators, as often only a few of them are able to keep up with the financial schemes implemented, especially when it involves a change of vehicle technology. **Many paratransit reforms failed or missed specific goals due to the lack or partial understanding of the operators’ business models and ad hoc financial scheme.**
- Training of the different stakeholders (i.e. paratransit operators and public authorities) represent a crucial point to reform the paratransit sector and promote more inclusive and sustainable services. Indeed, most Asian states have power and means, and the private sector is particularly dynamic, creating a fertile environment for innovations and public-private partnerships. However, **capacity building still remains necessary on the side of decision-makers and public authorities, as well as on the side of operators and related service providers (Ride-Hailing Apps for instance) to create a comprehensive understanding of the paratransit ecosystem and its possible integration within the urban mobility system.**
- On the side of the paratransit operators, **it has to be recalled that those transport providers remain often low-income workers and do not always have access to the sources of information regarding the policies set up at the national and local levels.** Thus, they often do not benefit from the measures in place that are directly aimed at improving paratransit services and activities. Even when reform programmes are orientated towards paratransit operators, often only a few individual operators have created a legal entity and benefited from the programme. **Capacity building programmes can then be implemented with the assistance and support of International Financial Institutions’, both at the national and the local level, in the frame of a mass rapid transit project, or not.** When cities do not have the competence or means to implement those capacity building and training programmes, support from the national level can be considered to support small and medium size cities implementing these programmes. Eventually, even though programmes aiming to reform the paratransit industry are often elaborated according to the time frame of a project and the support from International Financial Institutions’, sustainable and inclusive reforms shall be considered as a process with several steps and over the long-term.



Appendices

Appendix 1: literature reviewed by theme and by geography

Table 15 Thematical Focus of Literature Reviewed, Source: Consultant

Theme Covered		Number of Sources by Type			
		Technical Doc. ⁷⁰	Grey Literature ⁷¹	Academic Literature ⁷²	Total
Global	Paratransit features (technical operation, business model & institutional regulatory framework)	/	14	12	26
	Digital tools	/	6	3	9
	Vehicle transition	/	2		2
Asia	Paratransit features (technical operation, business model & institutional regulatory framework)	/	2	11	13
	Digital tools	/	4	3	7
	Vehicle transition	/	5		5
Total Number of Sources Reviewed:					62

Table 16 Geographical Focus of Literature Reviewed, Source: Consultant

Country		Number of Sources by Type			
		Technical Doc.	Grey Literature	Academic Literature	Total
South Asia	India	/	22	20	42
	Pakistan	3	1	3	7
	Bangladesh	/	/	3	3
	Nepal		11	3	14
Southeast Asia	Philippines	3	12	11	26
	Indonesia	6	7	20	33
	Vietnam	/	2	2	4
	Myanmar	/	3	2	5
	Malaysia	/	/	4	4
	Cambodia	/	2	6	8
	Thailand	2	1	5	8
Total Number of Sources Reviewed:					154

⁷⁰ Technical doc. refers to technical studies for mass transit systems and planning documents such as SUMP baseline assessments) produced by international donors and involved (or not) consultant firms.

⁷¹ Grey literature refers to documents and reports produced organisations (e.g. AFD, ADB, GIZ, UN Habitat, Shakti foundation, UITP, ITDP, etc.)

⁷² Academic literature refers to scientific articles and scientific reports collected via Google Scholar and university library databases.

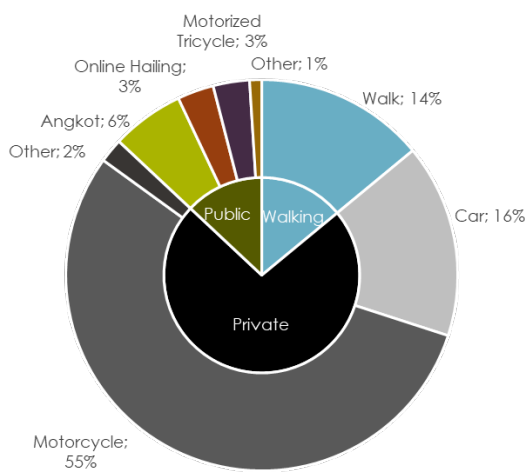
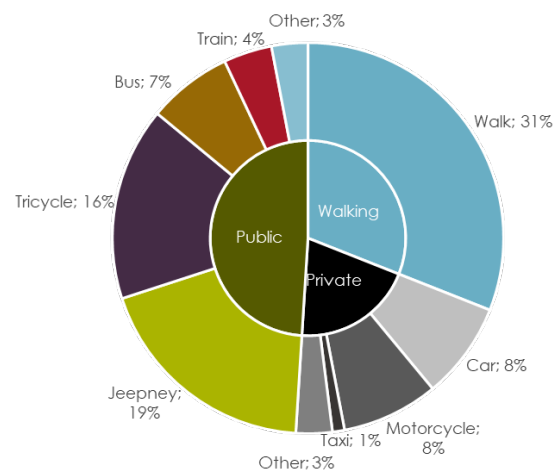
Appendix 2: list of interviewees

Table 17 List of Interviewees*, Source: Consultant. *All interviews were conducted online

Ref.	Geography	Name	Role (Organisation)	Date
A	Medan, Indonesia	Ferdinand Marterer Rizki Herdian	Project Coordinators/Officers involved in Medan BRT Study and Medan SUMP (EGIS)	21/05/2021
B	Jakarta, Indonesia	Rémi Desmoulière	Researcher (Université Gustave-Eiffel / CESSMA)	24/05/2021
C	Manila, Philippines	Joemier Pontawe	Project Manager (Department of Transportation)	08/06/2021
D	Manila, Philippines	Elmer Francisco	Founder & Chairman (Elmer Francisco Industries)	10/06/2021
E	Manila, Philippines	Robin Kaenzig	Transport Economist (Independent Consultant)	11/06/2021
F	Dehradun, India	Gaurav Mittal	PhD Candidate (University of Singapore)	16/06/2021
G	Bengaluru, India	Ravi Gadepalli	Researcher (Independent Consultant)	16/06/2021
H	Ho Chi Minh, Vietnam	Ruslan Karabukaev	Co-Founder and CEO (GoDee)	07/07/2021
I	Bangkok, Thailand	Bert Fabian	Programme Officer (UN Environment Programme)	15/07/2021
J	Phnom Penh, Cambodia	Veng Kheang Phun	Researcher (Institute of Technology of Cambodia)	02/08/2021
K	Mumbai, India	Varun Varghese	Assistant Professor (Hiroshima University)	1/09/2021
L	Mumbai, India	Subhadeep Battharjee	Mobility Expert (WRI India)	6/09/2021

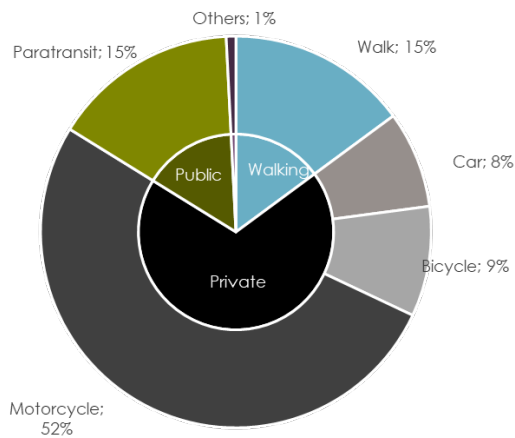
Appendix 3: modal share and integration of paratransit in Asian cities

Table 18 Paratransit Modal Share & Integration of Paratransit with Other Public Transport Modes in Southeast Asian Cities, Source detailed below

Modal share & Integration with Other Transport Modes	
MEDAN METROPOLITAN AREA (INDONESIA)	
 <p>Reported choice of transport mode Source: Results of Survey from Egis, 2020</p>	<ul style="list-style-type: none"> • Modal Share: Egis' survey shows that 13% of Medan households choose public transport as their main mode of transportation with paratransit services being the top three of the public/hired transport modes: angkots (5.4%), online hailing (3.5%) and motorised tricycles (2.9%) (Egis, 2020). It is important to note that, in terms of fleet size, angkots account for 46% of the total fleet of Mebidangro road-based systems. • Integration: There is a lack of formal integration of paratransit vehicles with other public transport modes e.g. there is no system in place to transfer seamlessly from one mode to another such as ticketing. This has resulted in competition with formal bus lines instead of mutual collaboration. Bus and minibuses only represent 15% of rail access and egress trips, showing a poor multi modal integration (Egis, 2020).
MANILA (PHILIPPINES)	
 <p>Number of daily trips Source: Results of 2014 Household Survey from JICA, 2015</p>	<ul style="list-style-type: none"> • Modal Share: Out of 35.5 million daily trips around Metro Manila and from the surrounding provinces of Cavite, Laguna, Rizal, and Bulacan: jeepneys and tricycles accounted for 19% and 16% respectively of all trips. Bus and trains accounted for 7% and 4% respectively of all trips. The share of public transport is higher in Metro Manila: out of the 21.5 million trips per day, 70% are by public transport. Out of these 15 million trips, around 7 million are by jeepneys. • Integration: Four railway lines are in operation in Manila: 2 LRT lines, 1 MRT line and 1 PNR. Two Bus Rapid Transit (BRT) lines are also being implemented. A lack of connection between various transport modes is reported, including between railway lines (e.g. MRT Line 3 does not include the appropriate connections and transfers)

Modal share & Integration with Other Transport Modes

PHNOM PENH (CAMBODIA)



Number of daily trips

Source: Results from 2012 Survey reported in Phun, 2018

• **Modal Share:** In 2012 in Phnom Penh, the modal share (in terms of daily trips) was as follows: car (8.0%), motorcycle (51.8%), bicycle (9.1%), walking (14.9%), public transport* (15.4%), and others (0.8%) (Phun, 2020).

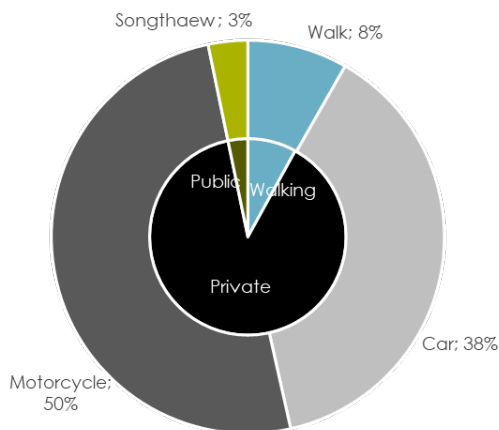
* Public transport here is understood to be the equivalent of paratransit as public buses were only introduced in 2014 in Phnom Penh.

• **Integration:** The bus – introduced in 2014 – is the only available mass transit system in Phnom Penh.

The bus is reported to be relatively cheaper than paratransit and its introduction was perceived as a threat for paratransit providers who were concerned about having fewer daily passengers. There is no proper space allocation for paratransit services near bus stops, meaning it is difficult for paratransit to operate as feeders.

A survey conducted in 2015 (Phun *et al.*, 2015) found that *motodop* drivers can serve as feeder services for the bus. However, *remork* drivers are in direct competition with buses.

PHUKET (THAILAND)



Number of daily trips

Source: Household Survey 2020, conducted as part of Sustainable Urban Transport and Heritage Project (SUTRHE) –DVDH-EGIS-AREP (2020)

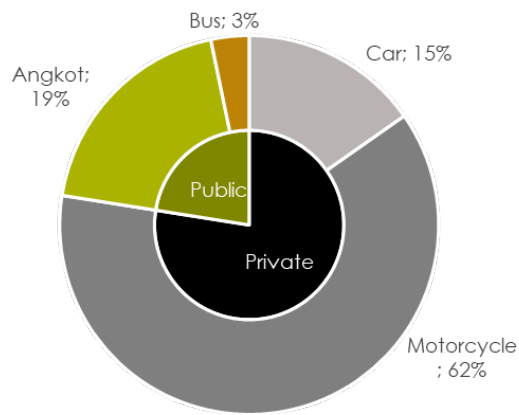
• **Modal Share:** Out of all the daily trips, 88% are made by private motorised transport (including 50% by motorbike and 38% by car). Walking represents only 8% of total trips. Public transport is used in only 3% of the trips – public transport here is composed largely of “*songthaew*”, a paratransit vehicle. *Songthaews* are pick-up trucks with two wooden benches for seating at the back on either side of the vehicle. *Songthaews* travel on almost all ‘fixed’ routes in the island, but they do not operate with fixed stops. Passengers can be picked-up and dropped off on-demand.

• **Integration:** There is no formal integration between transport modes in Phuket. The high modal share of private mode is understood to reflect the lack of efficient public transport system and high rates of vehicle ownership (87% of households had at least one motorbike, and 58% at least one car).



Modal share & Integration with Other Transport Modes

BANDUNG (INDONESIA)



Number of daily trips

Source: Global Future Cities Programme

- **Modal Share:** In Bandung, private vehicles comprise the lion's share of daily trips (62% by motorcycles and 15% by cars), while only one in five trips are taken by public transport (19% by *angkot* and 3% by bus). The active transport modes (walking, cycling) are not taken into account in this modal split.

- **Integration:** It is understood that there is no formal integration between transport modes in Bandung. The lack of public transport is a major issue leading to congestion. However, plans are currently being drafted to propose new *angkot* routes that would contribute to improved and integrated public transport services in the city.

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Table of acronyms

Acronym	Description
AC	Air Conditioning
ADB	Asian Development Bank
AFCS	Automatic Fare Collection System
AFD	Agence Française de Développement (French Development Agency)
ASEAN	Association of Southeast Asian Nations
ARAI	Automotive Research Association of India
AUV	Asian Utility Vehicle
BRT	Bus Rapid Transit
BTS	Bangkok Mass Transit System
CCTV	Closed-Circuit Television
CDIA	Cities Development Initiative for Asia
CNG	Compressed Natural Gas
EV	Electric Vehicle
EIG	Economic Interest Group
EUR	Euros
FAME	Faster Adoption and Manufacturing of hybrid and Electric vehicle (India)
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GPS	Global Positioning System
GSMA	Global System for Mobile Communications Association
GTFS	General Transit Feed Specification
IDR	Indonesian rupiah
ICAT	International Center for Automotive Technology (India)
ICLEI	International Council for Local Environmental Initiatives
ICT	Information and Communications Technology
IDR	Indonesian rupiah
INR	Indian rupee (India)
IPT	Intermediate Para Transit
ITDP	Institute for Transportation and Development
KRL	Kereta Rel Listrik (KRL) Jabodetabek / Commuter Rail System
LAMAT	Locally Adapted, Modified and Advanced Transportation
LGU	Local Government Unit (Philippines)
LPG	Liquefied Petroleum Gas
LRT	Light Rail Transit
LTFRB	Land Transportation Franchising and Regulatory Board
MBRS	Motorcycle-Based Ride-Sourcing
MRT	Mass Rapid Transit
NMT	Non-Motorised Transport
NUMP	National Urban Mobility Plan
PNR	Philippine National Railways
PTA	Public Transport Authority



Acronym	Description
PUVMP	Public Utility Vehicle Modernization Programme
PHP	Philippine peso
RHA	Ride-Hailing App
RTA	Regional Transport Authority (India)
RTO	Regional Transport Office (India)
SSATP	SSATP (Africa Transport Policy Programme)
SUMP	Sustainable Urban Mobility Plan
UITP	International Association of Public Transport
USAID	United States Agency for International Development
USD	United States Dollar
VREF	Volvo Research and Educational Foundations
WRI	World Resources Institute