ESCAP
Economic and Social Commission for Asia and the Pacific

TRANSPORT DIVISION

POLICY BRIEF

Integrated Public Transport Systems

Good Practices from Asia and the Pacific

Disclaimer: The designations employed and the presentation of the material in this policy brief do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries. Where the designation "country or area" appears, it covers countries, territories, cities or areas. Bibliographical and other references have, wherever possible, been verified. The United Nations bears no responsibility for the availability or functioning of URLs. The opinions, figures and estimates set forth in this publication should not necessarily be considered as reflecting the views or carrying the endorsement of the United Nations. The mention of firm names and commercial products does not imply the endorsement of the United Nations.

For further information on this policy brief, please address your enquiries to:
Transport Division
Economic and Social Commission for Asia and the Pacific (ESCAP)
Email: *escap-td@un.org*

Tracking number: *ESCAP / 3-PB / 70*

Acknowledgements

The *Integrated Public Transport Systems: Good Practices from Asia and the Pacific* policy brief was developed by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP). The examples of good practices were presented and discussed at series of national workshops and a regional meeting organized by ESCAP during April-June 2024. The policy brief was developed by Madan B. Regmi (ESCAP), Shivanand Swamy (CEPT University) and Surya Sugathan (CEPT University). This policy brief is part of the outcome of the project on *"Building capacity for the integration and application of digital technologies in urban public transport systems in Asia-Pacific cities"*.

Table of Contents

Acknowledgements iii

Table of Contents iv

Summary v

1. Introduction 1

2. Steps in Integration of Public Transport Systems 1

2.1 Institutional Models for Integrated Public Transport Systems 2

2.2 Planning Integrated Public Transport Systems 4

2.3 Public Transport Modes 5

2.4 Public Transport Operations – Network Integration 7

2.5 Public Transport Operations – Interchanges and Terminals 8

2.6 Data and Digital Applications 10

2.7 Integrating Fare Systems 11

2.8 Gender and Social Inclusion 12

3. Way Forward 14

References 15

Summary

The Asia-Pacific region stands at a crucial juncture in the electrification of public transport. The rapid urbanisation and population growth have put increasing pressure on existing urban public transport systems in Asian cities. While growing motorisation is the main culprit behind congestion, traffic jams are also exacerbated by the lack of integration of the public transport systems. Each transport mode competes for limited road space, while travellers must make inconvenient transfers and navigate the complexities of multiple fare payment systems.

Even when new transit systems are built, transport planners and engineers design them without considering the physical and virtual connectivity between modes. To ensure that passengers are not faced with difficult transfers between modes, it is recommended that transport systems should be planned and operated in an integrated manner. This is achieved by bringing together transport agencies and operators to coordinate planning and operations, integrate ticketing systems, and provide comprehensive transport information.

To address these challenges and help policymakers and transport planners, ESCAP developed *Integrated Public Transport Systems: A Guidebook for Policymakers*, a guide on how to integrate urban and transport planning and incorporate application of digital technologies. A collection of good examples from countries and cities in the region are compiled in the *Integrated Public Transport Systems: A Compendium of Good Practices from Asia and the Pacific*.

This policy brief identifies existing practices and presents selected examples of good practice in developing integrated public transport systems. The logical process of integration with the following key elements needed to achieve an integrated public transport system is described briefly.

- Institutional Models for Integrated Public Transport Systems
- Planning Integrated Public Transport Systems
- Public Transport Modes
- Public Transport Operations – Network Integration
- Public Transport Operations – Interchanges and Terminals
- Data and Digital Applications
- Integrating Fare Systems
- Gender and Social Inclusion.

1. Introduction

Cities in the Asia-Pacific region, large and rapidly growing, are facing urgent challenges due to the rapid pace of urbanization. This is driven by rapid economic progress and population growth, leading to a significant increase in private vehicle use. The result is severe congestion on streets, increased travel time and costs, worsening road safety, poor air quality, and growing greenhouse gas emissions[i].

As cities grow, introducing rapid transit modes becomes necessary to make public transport competitive. However, the problem arises when multiple modes are introduced at different timelines and operate in cities as independent competing systems, making their operations inefficient and inconvenient to customers.

Integration of public transport systems holds the promise of transforming urban mobility. Key components of integrated public transport systems are land use and transport coordination, considerations for gender equality and social inclusivity, and the integration of multiple modes of public transport. There are six elements of integration, multimodal integration, institutional integration, integrated operations, the creation of interchange facilities, data utilization and digital applications (information integration), and integrated fare systems. Adopting these elements facilitates smooth transitions between different modes of travel, improves the passenger experience, and optimizes the efficiency of operations.

2. Steps in Integration of Public Transport Systems

The logical process of integration of public transport systems addresses the following eight key elements in a sequential manner:

- Institutional Models for Integrated Public Transport Systems
- Planning Integrated Public Transport Systems
- Public Transport Modes
- Public Transport Operations – Network Integration
- Public Transport Operations – Interchanges and Terminals
- Data and Digital Applications
- Integrating Fare Systems
- Gender and Social Inclusion.

This policy brief showcases selected examples adopted by various Asian and Pacific cities to integrate public transport systems.

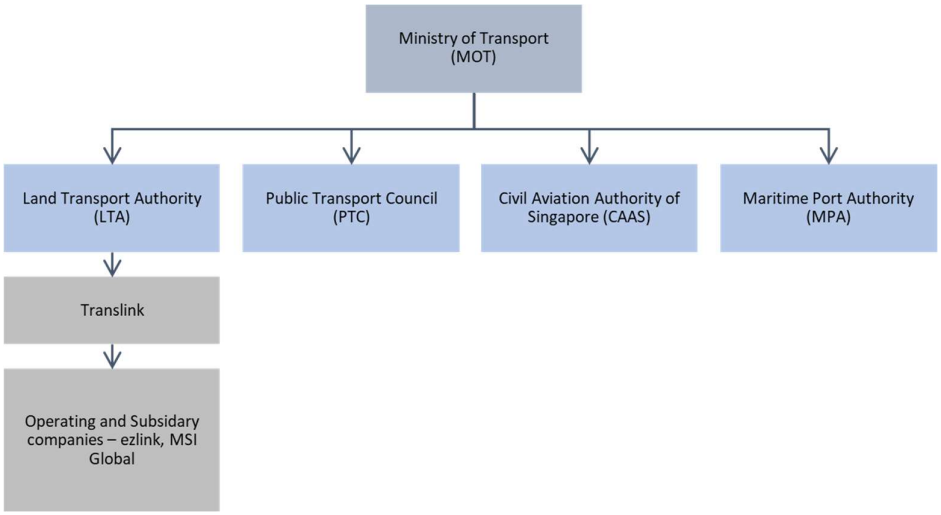
2.1 Institutional Models for Integrated Public Transport Systems

The key to successfully integrating public transport is an effective institutional model that brings different agencies together while avoiding overlapping responsibilities. Cities have approached institutional integration by adopting different models. Three models are presented below.

The first is a single authority managing land use and transport system; second, a single agency as coordinator of multiple agencies; and third, an empowered urban local body entrusted with integrated land use and transport system planning and public transport development and operations.

- **Singapore** established the Land Transport Authority (LTA)[ii] , a statutory authority, in 1995, by bringing together entities such as the Mass Rapid Transit Corporation (MRT), Roads and Transportation Division of the Public Works Department, Registry of Vehicles, and Land Transportation Division of the former Ministry of Communications, as a singular entity vested with the ultimate responsibility and decision-making power over the design and planning of land use and public transport. It supports the integrated development and operations of bus services, Mass Rapid Transit (MRT), and Light Rail Transit (LRT) systems.

Figure 1: Institutional structure of transport in Singapore



Source: ESCAP

- **India** established the Bengaluru Metropolitan Land Transport Authority (BMLTA) in 2022 to redefine functions/jurisdictions and regulate and coordinate the planning and management of the city's integrated urban transport system. By bringing together various transport agencies, stakeholders, and governing bodies, the primary aim of BMLTA is to improve coordination, streamline decision-making, and enhance public transport service quality. This is an example of a single agency that acts as regulator and coordinator of urban transport functions, together with existing institutions.

Figure 2: Bengaluru Bus Station

Source: Sarath KT - Elements Creative

- **Surat** in **India** presents an evolving story of an empowered urban local body that planned public transport from scratch and achieved an integrated public transport approach with a fair amount of success[iii]. With an estimated population of 8.3 million in 2024, Surat operates three bus-based public transport systems, including the Bus Rapid Transit System (BRTS), the city bus service, and the High Mobility Corridor (HMC). All three systems operate on an integrated network with defined interchanges, a fully operational information system, a single fare structure, and a single ticket for the entire journey.

Figure 3: Surat BRT

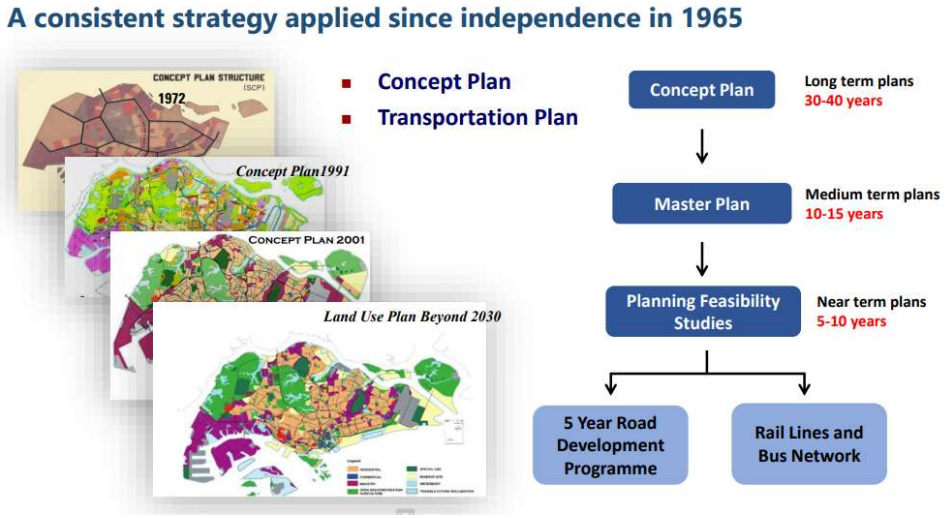
Source: CEPT

2.2 Planning Integrated Public Transport Systems

Urban form and design can greatly influence travel patterns and infrastructure needs. The process of land use and transport integration is long-term, dynamic, and cyclical, where these components can influence each other. A holistic approach to harmonize land use and transport shall create sustainable, efficient, and liveable urban environments.

- In **Singapore**, the government controls all aspects of urban and transport planning. The city's development for the next 40 to 50 years is outlined in the concept plan, a strategic land use and transport plan that is revised every ten years. The master plan then translates the broad and long-term strategies of the concept plan into detailed plans to guide development over 10 to 15 years. The Land Transport Authority (LTA) prepares and updates the Transport Master Plan every five years.

Figure 4: Planning Framework in Singapore

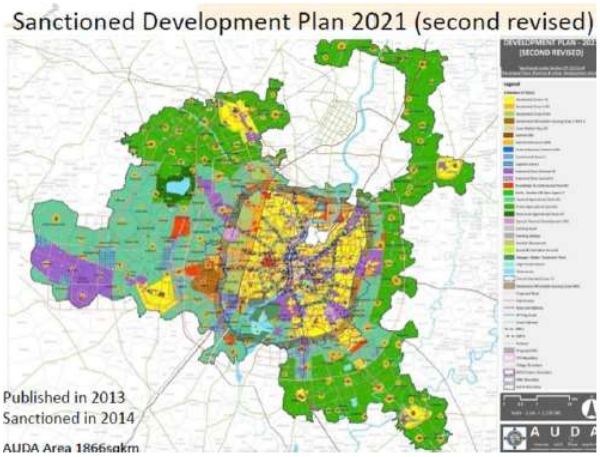


Source: Soon, 2020

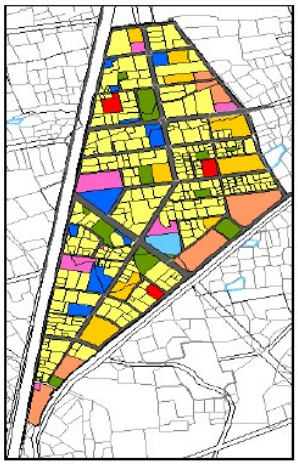
- Since 1999, Transit-Oriented Development (TOD) has shaped the city's development in **Hong Kong, China**. As a result, 90 percent of motorized trips now use public transport, with the mass transit railway (MTR) system playing a pivotal role. TOD adheres to three key principles: high-density development in station walk-in catchment areas, land use mix for community vitality, and high-quality interchanges for seamless connectivity, pedestrian safety, and green spaces. Hong Kong, China has adopted a successful business model, 'Rail + Property (R+P)' to develop areas at stations or depots along the metro line with private participation.

- **Ahmedabad**, **India**, attempts to restructure the city to support public transport following a three-fold planning procedure: first, the integration of a Development Plan (a land use plan) and a Comprehensive Mobility Plan (a strategic transport plan) to provide an overall development framework in and around municipal boundaries; second, the crafting of Town Planning Schemes (TPS) (a land readjustment tool), to adapt agricultural land for urban use and assign land areas for public purposes; and third, Local Area Plans (LAP) to redevelop areas along rapid transit corridors as TOD zones.

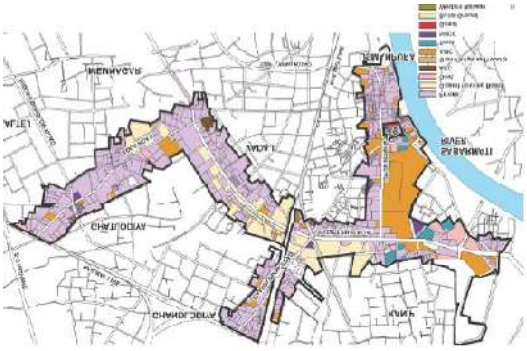
Figure 5: Urban Development Plans in Ahmedabad



Development plan



Town Planning Schemes



Local Area Plan

Source: CEPT

2.3 Public Transport Modes

The Asia-Pacific region is home to some of the oldest and newest modes of public transport. Mass transit systems in the region tend to be bus-based, rail-based or use specialised transport vehicles. Many cities use different modes of transport as part of the integrated public transport systems. The following section illustrates the examples of Kuala Lumpur, Seoul and Mumbai.

- **Kuala Lumpur** has been undergoing rapid urbanisation. The Klang Valley Integrated Transit System is the city's public transport system and is comprised of rail-based and bus-based systems. The rail-based system includes light rapid transit (LRT), commuter rail, mass rapid transit (MRT), monorail and airport rail links. The LRT lines with four-car configuration connect the city centre with major suburbs by three lines on standard gauge tracks. The MRT and commuter rail lines link the city centre with other major towns and cities. The KL Monorail with 11 stations is a straddle-beam supported system connecting Kuala Lumpur Sentral in Brickfields to Titiwangsa terminal in Jalan Tun Razak and passing through the Golden Triangle CBD. The airport rail link is an express service provided by KL Sentral-Terminal Skypark Line to the Subang Airport, as well as the KLIA Express line. The city's bus network of 177 routes is operated by Rapid Bus and has an average daily ridership of 332,000 passengers.

Figure 6: KL Monorail

Source: Beam Creative Design Sdn Bhd

- **Seoul** public transport network includes rail-based and bus-based systems. The Seoul Metropolitan Subway consists of multiple systems that form a larger network, including mass rapid transit, light metro, commuter rail and automated people movers. Seoul's bus services are classified into trunk, feeder, inter-regional, and circular lines. They are colour-coded: trunk lines are served by blue buses which connect the city centre, subcentre, and suburbs; red buses connect the metropolitan area with the city centre; green buses connect trunk lines and subway stations; and yellow buses offer circular operations within CBDs. A Bus Rapid Transit system with an exclusive median bus operates in 12 routes.

- Public transport system in **Mumbai** consists of suburban rail, metro, monorail and bus. The Mumbai suburban railway is the oldest commuter rail in Asia. It is the most economical transport system in the city as it is subsidised by the Government of India. The first monorail in India began its operation in Mumbai in 2014. The elevated operational Line 1 connects south and eastern Mumbai. The Mumbai Metro has three operational lines with a network length of 30.15 km. The bus service is operated by Brihanmumbai Electricity Supply and Transport Undertaking (BEST). With a fleet of 3,228 buses, it served 3.3 million passengers daily in 2023.

Figure 7: Mumbai Metro

Source: Sharat KT

2.4 Public Transport Operations – Network Integration

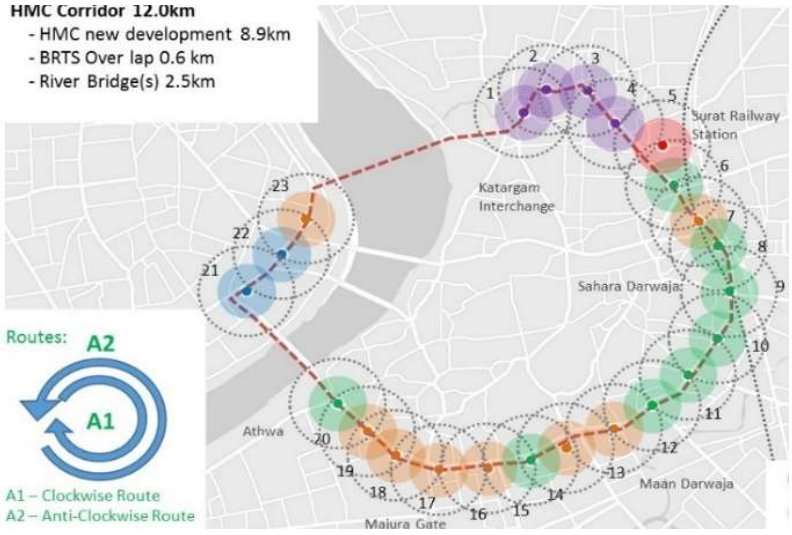
The public transport journey is always a multi-leg journey. An effective operational strategy involves network integration to match supply and demand and creating cohesive physical infrastructure to facilitate easy transfer between different modes within the public transport system.

- **Jakarta** launched TransJakarta in 2004 and is currently the world's longest BRT network, having over 250 km. The extensive corridor-based system covers multiple neighborhoods and important destinations, with high-frequency service and extended operating hours[iv]. What makes the network especially effective is the integration of the BRTS with paratransit operators through a multi-year contract, which allows passengers to use a combination of buses and Mikrotrans services under an integrated fare for a three-hour period. These smaller vehicles can run through narrow roads and kampongs, making the city even more accessible than before.

- **Thiruvananthapuram**, with a population of 2.7 million in 2021, operates approximately 1,000 buses run mainly by the Kerala State Road Transport Corporation (KSRTC) on 607 routes. While its bus network covers 88 percent of the urban area and 89 percent of the population, it has seen declining ridership in recent years. Following a study on "Route Rationalization and City Bus Improvement" undertaken in 2019, authorities distinguished the city and suburban services and restructured routes to successfully operate new circular routes, terminating most suburban services outside of the city limit and bringing a few services to the city center with high frequency. The interchanges enable passenger transfers on ring and radial/ trunk routes.

- **Surat** introduced a bus-based public transport system with a 30 km Bus Rapid Transit Systems network in 2014. This has been extended to 102 km by 2021. Along with the BRT, city bus route networks with a high mobility corridor were designed to complement BRT with formal interchanges on the BRT network.

Figure 8: Surat High Mobility Corridor



Source: CEPT

2.5 Public Transport Operations – Interchanges and Terminals

Coordinating transit networks connecting different locations and well-designed physical interchanges enable efficient transfers. As the passenger enters the station, several decision points are present where the passenger decides on activities related to the trip, such as ticketing, waiting, boarding, and alighting the modes. The various types of spaces in interchanges play a crucial role in ensuring the smooth flow of passengers and the effective operation of the transport system.

- The Krung Thep Aphiwat Central Terminal Station in **Bangkok**, also known as Bang Sue Grand Station, first opened in August 2021. Owned and operated by the State Railway of Thailand, the station is expected to become the new railway hub of Bangkok. In addition to MRT and bus services, the station will be the terminus of most regular train services as well as the high-speed railway network, which is currently under construction between Bangkok and Nakhon Ratchasima. This interchange offers direct transfers between regional services and urban services. Developed on TOD principles, the objective is to create a new business district around the station, including a "smart business complex" and government offices. The project is one of the pilot projects under the ASEAN Smart Cities initiative[v] .

Figure 9: Krung Thep Aphiwat Central Terminal Station

Source: iStock/Wirestock

- At the central railway station of **Hiroshima**, Japan, passengers can take local and bullet train services from the station and change to trams, city buses, and taxis. A new station building is being constructed to directly integrate the City's Light Rail Transit system into the main station building. The new station building is scheduled to be completed by 2025.

- The Intercity Bus Terminal in **Surabaya**, **Indonesia**, was developed as a public-private partnership project and is a state-of-the-art intercity bus terminal enabling transfers between intercity and suburban buses

to urban buses. It is the busiest terminal in South-East Asia. In 2016, the terminal handled 16,151,715 arrivals and 16,071,055 departures, using 577,820 arrival and 575,794 departure buses. The terminal is well-managed and features a mosque, bus information, ticketing booths, passenger waiting areas, kiosks, restaurants, toilets, and two-level departure halls with an overpass leading to 25 intercity and suburban bus bays and ten central city bus bays.

Figure 10: Hiroshima tram

Source: Varun Varghese

Figure 11: Purabaya Intercity Bus Terminal

Source: Madan Regmi

2.6 Data and Digital Applications

Digital technologies are increasingly being utilised in urban public transport systems across the globe. These include a range of innovative and integrated technologies and services designed to enhance the efficiency and reliability of public transport operations, including real-time passenger information. These applications enhance the smooth integration of services, fares, information exchange, and other components that make up public transport systems.

- The **Republic of Korea** leads in digital transport technology with the Master Plan for Intelligent Transportation System 2030, focusing on Artificial Intelligence (AI), autonomous vehicles, and the Internet of Things (IoT) to enhance safety and convenience. By 2021, the municipal government of **Seoul** had also established free Wi-Fi on all 35,006 city buses, while 2,340 of Seoul's 4,080 bus stops were equipped with free, high-speed, wireless access points. The bus information systems have had several positive impacts, including improving user safety, reducing emissions, and increasing service efficiency.[vi] "Smart Shelter" bus stops have been installed across the city, which feature digital screens to notify passengers when approaching buses and provide other relevant transport information. Another innovative initiative launched in 2012 is the late-night bus service, the "Owl Bus", which fills the gap of reduced services at night, especially for low-income or vulnerable groups. The project extensively used big data, such as mobile phone usage and smart card data from taxis to identify pick-up and drop-off destinations for late-night transport users.

- The Greater **Sydney** Commission and Transport for New South Wales are implementing the 30-minute city initiative to enhance connectivity between 34 Greater Sydney's strategic centers.[vii] The aim is to enable residents to travel to critical points (work, school, shopping, health, and recreational activities) within 30 minutes, regardless of the method of transport. An essential tool in the planning of the 30-minute city is data. To better understand the City's traffic flows, big data derived from Sydney Metro's Opal Smart Cards and general transit feed specifications are used to calculate the movement trajectories of public and private vehicles. Findings from this analysis indicate that transport agencies can utilise large-scale visual analytics of open-source big data to plan route management and increase the livability of cities.

- **Moscow** Transport has utilized data and intelligent systems to enhance the operations and efficiency of public transport systems. The data is collected from a wide range of mobile sources, including on metro and bus trips, photo and video recordings of violations, vehicle tracking, tracking of mobile applications, and Wi-Fi use. Troika transport cards were introduced in 2013 for all types of public transport, consolidating various transit systems into a single ticket and being a major data source.[viii] This data provides the Mayor with Transport feedback from passengers, informs the department about up-to-date happenings across the city, and makes public transport within Moscow more dynamic and responsive to the needs of commuters.

Figure 12: Light Rail Tram in Sydney

Source: iStock/asiafoto

2.7 Integrating Fare Systems

Fare integration makes interchanges between modes and operators convenient and effortless. However, linking various modes can be challenging as they often have different fare rules and collection systems.

- In **Almaty**, Kazakhstan, due to concerns about inefficiency and potential revenue leakage of up to 19 percent of total potential revenues, the city decided to revamp the public transport payment system with the launch of a new electric ticketing system, Onay cards.[ix] The Onay electronic ticketing system functions as an online platform where the card serves as an identifier for an electronic wallet, using technology similar to banking systems. The Onay card does not retain the holder's account details, funds, or personal information. There are various methods to top up the balance in the card. Users can top up their balance online or at one of the over 1,200 'Onay' distribution points. Additionally, cards can be bought directly on-board buses or trolleybuses. To encourage the switchover to the new card system, the Transport Holding of Almaty doubled the price of a cash-paid single ticket. According to the Transport Holding, after the first day of the Onay ticketing system, the combined earnings of all fleets reached 42,041,240 tenge, a 61 per cent rise compared to the revenue reported on the previous day. This indicated that there was a decrease in revenue leakage.

Figure 13: Onay Card

- In **Queensland**, **Australia**, in line with the National Policy Framework for Land Transport Technology, several initiatives are currently being piloted across Australia, including applications of Mobility as a Service (MaaS). The Department of Transport and Main Roads, iMove, and the University of Queensland have partnered to trial a MaaS mobile application called Odin Pass.[x] The Odin Pass offers customers the freedom to select the most appropriate mode and trip combination through an app on their smartphones. The service offered a fixed monthly price for University of Queensland staff and students for unlimited access to transport on buses, trains, and ferries. Unlimited access to bicycles and e-scooters is an optional addition for a separate fixed price increase, while discounted ride-shares are also offered through the applications as part of the package. Though currently limited to students and staff at the University of Queensland, this pilot project is a useful example of how a MaaS application facilitates fare payments across different modes and changes passenger travel behaviours.

- In **Surat**, **India**, a transformative journey to establish a robust and comprehensive bus system, including a Bus Rapid Transit (BRT) system, a City Bus system (CBS), and a High Mobility Corridor (HMC). All public transport systems are operated by Sitilink, a special-purpose vehicle established by the Surat Municipal Corporation. The city employs a unified ticketing and fare structure for both single and multimodal journeys based on traveling distance. However, the fare remains the same regardless of transfers, with the city's transport network divided into stages. A comprehensive Automated Fare Collection System (AFCS) is in operation. Off-board fare collection is conducted at BRTS stations and terminals, where stations are equipped with Tripod-Fare Gates. The payment medium is the open-loop Smart Card, widely known as the Surat Money Card, managed by ICICI Bank. These cards are versatile and can be recharged using cash, debit, or credit cards. Barcoded paper tickets are also an option for cash payments, but digital payment methods are steadily gaining popularity in the city.

2.8 Gender and Social Inclusion

Acknowledging gender and social inclusion is crucial to ensure an accessible public transport system for vulnerable individuals or groups. Transport has a significant role in enhancing gender equality and increasing women's productivity.

- The Capital Region Urban Transport (CRUT) in **Bhubaneswar** has proactively implemented initiatives to promote gender-inclusive transport. They have implemented a policy of hiring more than 50 percent of female fare collectors to make public transport in Bhubaneswar one of the most inclusive in the country.[xi] The agency provides separate washrooms for different gender groups in the depots. Bhubaneswar was also the first Indian City to introduce gender-based ticketing in public buses to collect disaggregated data for informed decision-making to enhance women's safety. In order to ensure safer first and last-mile connectivity, CRUT deployed 50 e-rickshaws with women or transgender drivers.

- Since its establishment in 2017, **Kochi** Metro Rail Limited (KMRL) has taken a strong women-centric approach to its operations[xii], with a total female workforce of 555, including seven women pilots among a total of 39 pilots and 60 transgender persons, which is the largest female workforce in any Indian metro system[xiii].

- In **Kathmandu**, Nepal, about 700 Safa Tempos, electric three-wheeler vehicles with a carrying capacity of 12 persons, provide intermediary public transport service since 1990. Many of these were operated by female

micro-entrepreneurs, making it one of the first public transport sectors in the world to feature women workers in their workforce. Unlike the pink auto initiative in Indian cities, the Safa Tempos offer services to everyone, not just female passengers.

Figure 14: Mo E-ride drivers

Source: Capital Region Urban Transport

Figure 15: Female Tempo Driver in Kathmandu

Source: Aloi Private Limited

3. Way Forward

The integration process of public transport systems involves multiple challenging tasks and is best approached incrementally, recognizing the unique characteristics and needs of the local context. The implementation should be a persistent transition from old to new, not a sudden change, and should align with current public transport operations to ensure passengers adapt to changes smoothly.

These suggestions are further expanded in ESCAP publications, *Integrated Public Transport Systems: A Guidebook for Policymakers* and *Integrated Public Transport Systems: A Compendium of Good Practices from Asia and the Pacific*. The Guidebook and Compendium of Good Practices provide possible policy options and good practices from the region. These are part of ESCAP's ongoing efforts to build capacity of the cities and countries in the region to enhance overall sustainability, accessibility, integration and social inclusion of the urban public transport systems and services.

References

[i] United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) (2022). *Tracking Sustainable Mobility in Asia-Pacific Cities*. Bangkok.

[ii] Land Transport Authority (n.d.). Getting Around. Singapore. Available at https://www.lta.gov.sg/content/ltagov/en/getting_around.html.

[iii] Swamy, H.M.S., Sinha, S., et al. (2018). Comprehensive Mobility Plan 2046. Surat Municipal Corporation. Available at http://suratmunicipalcorporation.org:8020/News/6126_1.pdf.

[iv] EURACTIV (2019). 15 Years of TransJakarta: The Evolution of Jakarta Public Transportation towards an Integrated and Environmentally Friendly Multi-Modal Rapid Transit Bus Service, 24 October. Available at http://jobs.euractiv.com/pr/15-years-transjakartaevolution-jakarta-public-transportation-towards-integrated-and

[v] ASEAN (2023). ASEAN Smart Cities Network Monitoring and Evaluation Report 2023. Available at https://asean.org/wp-content/uploads/2023/09/2023-ASCN-ME-Report-Final_14Aug2023-for-public.pdf

[vi] United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) (2019). *Using Smart Transport Technologies to Mitigate Greenhouse Gas Emissions from the Transport Sector in Asia and the Pacific*. Bangkok. Available at https://www.unescap.org/resources/using-smart-transport-technologies-mitigate-greenhouse-gasemissions-transport-sector-asia

[vii] Greater Cities Commission (n.d.) “PI 2: 30-minute city”. Available at https://greatercities.au/pulse-of-greatersydney-2020/pi-2-30-minute-city

[viii] International Association of Public Transport (UITP) (2020). Demystifying Ticketing and Payment in Public Transport. Belgium. Available at https://cms.uitp.org/wp/wp-content/uploads/2021/03/Report-Ticketing_NOV2020_update.pdf

[ix] City of Almaty (2017). City of Almaty Sustainable Transport Strategy. Almaty.

[x] iMove Australia (2021). ODIN PASS: A Mobility as Service trial at UQ, 29 July. Available at https://imoveaustralia.com/project/odin-pass-a-mobility-as-service-trial-at-uq/

[xi] Mahapatro, D. (2023). Bhubaneswar – How Inclusive Processes Create Better Transport Systems for All.Sustainable Transport Award. Available at https://www.itdp.org/wp-content/uploads/2023/03/Dipti-Mahapatro_Bhubaneswar_How-Inclusive-Processes-Create-Better-Transport-Systems-for-All.pdf

[xii] Swamy, H.M.S., Sinha, S., Hari, G.P. and Jose, D. (2021). Gender Sensitive Mobility Policies: Case Studies from Two Indian Cities, Kochi, and Surat. *ESCAP Transport and Communications Bulletin for Asia and the Pacific*, No. 91.

[xiii] Olliver, G.P., Nikore, M., Lnu, S.N.; Vasudevan, V., Shah, S.N., Singhal, A., Banerji, A., Varghese, A. (2022). *India - Toolkit for Enabling Gender Responsive Urban Mobility and Public Spaces: Volume 1 The ‘What-To-Do’ Note for Policymakers*. Washington, D.C.: World Bank Group. Available at https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099651410192229435/idu01ef8184c02ec004af50ae850e22d67ee8c62

TRANSPORT DIVISION

ESCAP
Economic and Social Commission for Asia and the Pacific

Follow us:

unescap
unitednationsescap
united-nations-escap
unescap.org