

# EXECUTIVE SUMMARY: ADVANCING ELECTRIC BUSES IN INDIA



## INTRODUCTION

India's commitment to climate leadership is reflected in its ambitious pledges under the Paris Agreement, its Net Zero target by 2070, and the COP28 UAE Declaration on Climate and Health. In line with these objectives, India is rapidly transitioning its urban public transport systems toward electric mobility. The electric bus (e-bus) segment has emerged as a critical enabler of this shift, supported by national policies such as Faster Adoption and Manufacturing of (Hybrid and) Electric Vehicles (FAME) I & II Schemes, the National Electric Bus Programme (NEBP), and the PM-eBus Sewa Scheme.

The 'Advancing Electric Buses in India' project was conceived to support this momentum through a multi-level, systems-based approach. Led by UITP India, the project focused on improving the supply landscape, supporting city-level deployment strategies, and strengthening the institutional capacity of key public transport stakeholders.

## OBJECTIVES

The project aimed to fast-track India's transition to electric buses through three integrated objectives:

1. Enhancing the national supply ecosystem for electric buses
2. Providing tailored technical assistance to cities
3. Building institutional capacity through targeted training and stakeholder engagement.

**These three pillars were strategically interlinked to support both the demand and supply side of India's electric bus ecosystem.**

## ACTIVITY 1: NATIONAL-LEVEL SUPPORT ON SUPPLY IMPROVEMENT OF E-BUSES

Despite India's strong policy backing and rising demand for electric buses, challenges on the supply side continue to impede progress. Limited participation from domestic Original Equipment Manufacturers (OEMs), coupled with delivery delays and low tender responsiveness, has restricted procurement outcomes across many states. To address this, UITP India worked closely with NITI Aayog to create a welcoming environment for international electric bus manufacturers.

### NATIONAL WORKSHOP FOR INTERNATIONAL ELECTRIC BUS OEMS

UITP engaged more than 20 global OEMs through bilateral consultations and shared detailed insights into India's market structure, policy incentives, and localisation opportunities. The culmination of this effort was the National Workshop for International Electric Bus OEMs, organised on 30 November 2023 in New Delhi, in collaboration with NITI Aayog. The workshop hosted over 60 delegates, facilitating structured dialogue between global suppliers, Indian transport agencies, and state representatives.





UITP played a pivotal convening role, facilitating matchmaking between OEMs and states such as Kerala, Himachal Pradesh, and Andhra Pradesh, which showcased industrial land banks and financial incentives. The event catalysed investment interest and initiated long-term engagement between Indian agencies and international OEMs.

## PUBLICATION OF KNOWLEDGE PRODUCTS

In parallel, UITP produced a **knowledge brief** named ***Enablers and Barriers for E-Bus Manufacturing in India*** identifying critical enablers—including India's robust policy frameworks, FAME-II, Production Linked Incentive (PLI) schemes, and stable electricity tariffs—and barriers such as fragmented technical standards, policy uncertainty beyond five-year cycles, and lack of homologation capacity. UITP also **published a paper** on ***Payment Security Mechanism (PSM) ushering a new era of Electric Bus deployment in India*** in response to Government of India's ₹34,353 crore Payment Security Mechanism (PSM), launched in October 2024, to ensure timely payments to operators and improve market confidence.

## ACTIVITY 2: TECHNICAL ASSISTANCE TO CITIES

Recognising that successful e-bus deployment hinges on local execution, UITP India provided tailored technical assistance to three cities—**Thiruvananthapuram**, **Chandigarh**, and **Bengaluru**. Each city represented a distinct operating context, enabling UITP to develop targeted, scalable solutions and showcase diverse implementation pathways.

## THIRUVANANTHAPURAM – KERALA STATE ROAD TRANSPORT CORPORATION (KSRTC)

In Thiruvananthapuram, UITP worked with KSRTC and its Special Purpose Vehicle, KSRTC-SWIFT, which operates 145 e-buses under an outright purchase model. The intervention focused on optimising charging infrastructure and energy usage across the fleet. A detailed analysis was conducted on battery discharge rates, charger locations, and route lengths. UITP developed a schedule-wise charging strategy, reducing dead kilometres and aligning charging demand with operational patterns. The study also identified key charging terminals—such as East Fort and Vikas Bhavan—for infrastructure upgrades and recommended the use of outer depots like Vizhinjam and Neyyattinkara for future suburban services.

## CHANDIGARH – CHANDIGARH TRANSPORT UNDERTAKING (CTU) AND CHANDIGARH CITY BUS SERVICES SOCIETY (CBSS)

In Chandigarh, UITP supported the city's Special Purpose Vehicle (SPV), CCBSS, and CTU in updating its 10-year e-bus expansion plan. Building upon existing Service and Business Plan of Centre for Environmental Planning and Technology (CEPT), UITP modelled multiple procurement and fleet mix scenarios, evaluating operational performance and financial sustainability. A scenario featuring a combination of midi and standard buses—supplemented with revenue from carbon credits and operational subsidies under PM-eBus Sewa—was found to be the most financially sound. The model projected over ₹33 crore in potential carbon credit revenue through 2035, reducing the city's reliance on Viability Gap Funding (VGF) and enhancing long-term sustainability.

## BENGALURU – BENGALURU METROPOLITAN TRANSPORT CORPORATION (BMTc)

In Bengaluru, BMTc engaged UITP to align its e-bus expansion with the city's Comprehensive Mobility Plan (CMP). UITP developed four fleet deployment scenarios with varying fleet targets (60%–100%) and procurement models (full Gross Cost Contract vs. mixed). An 80% CMP-aligned fleet with complete GCC model and a mixed GCC-outright model were found to offer optimal cost-efficiency and deployment flexibility. UITP also provided a phased depot investment strategy to synchronise infrastructure rollout with e-bus procurement schedules.

## CROSS-CUTTING OBSERVATIONS

Common challenges observed across all three cities included limited access to disaggregated operational data, underdeveloped depot strategies, and a lack of integration between energy planning and service design. UITP's tailored, data-driven assistance helped each city move beyond short-term deployment toward building **institutional capabilities** and developing **long-term transition strategies**. These models offer valuable insights for other Indian cities aiming to embark on or scale up their e-bus programmes.

## ACTIVITY 3: CAPACITY BUILDING PROGRAMMES

Institutional capacity is the cornerstone of a successful e-bus transition. Recognising this, UITP India organised three focused training programmes aimed at enhancing the capabilities of State Transport Undertakings (STUs), SPVs, city officials, and mobility professionals. These sessions were designed to respond to the evolving operational and planning needs of Indian public transport agencies transitioning to electric buses.

### 1. MANAGEMENT OF ELECTRIC BUSES

The training was organised on 28-29 November 2023 in New Delhi and was attended by 40 participants representing 12 STUs, representatives from OEMs, component manufacturers, and other non-profit organisations. This training introduced participants to electric bus technologies, service planning considerations, and key performance indicators for fleet operations. Topics covered included operational scheduling, lifecycle costing, safety protocols, and procurement models such as GCC, lease, and outright purchase. Participants gained clarity on how to align operational strategy with energy needs and contract structuring.



### 2. DEPLOYMENT AND INFRASTRUCTURE MANAGEMENT FOR ELECTRIC BUSES

The training was organised on 27-28 June 2024 in Pune, India with support of Pune Mahanagar Parivahan Mahamandal Limited (PMPML). The training had 36 participants representing 16 STUs across India along with participation from representatives of other non-profit organisations, indicating the widespread interest and need for such specialised knowledge. This training focused on planning and managing charging infrastructure in urban contexts. UITP experts covered site selection, grid integration, energy optimisation, and depot layout design. Special emphasis was placed on inter-agency coordination with DISCOMs and planning for multi-modal integration. Real-world examples helped participants understand the complexities of charger placement and energy management across fleet types.





### 3. EMERGING PRACTICES IN ELECTRIC BUS MANAGEMENT AND SUSTAINABLE OPERATIONS

The training was organised on 6-7 March 2025 in Bengaluru, India with support of Bengaluru Metropolitan Transport Corporation (BMTc). The training programme witnessed 47 participants from 18 organisations, including 12 state transport undertakings from different parts of India. This training programme explored global trends in zero-emission bus deployment, including battery-swapping models, opportunity charging, digital scheduling systems, and carbon financing mechanisms. A case-based approach encouraged dialogue on how to adapt international practices to Indian conditions. The training also explored emerging business models and strategies for ensuring financial resilience.



All training programmes of UITP and all related processes are certified for ISO29990:2010 – the standard for learning services for non-formal education and training. UITP's skilful and diverse trainers are international experts, domestic experts, and professionals with extensive experience and knowledge in the domain. **Across the three training programmes, over 100 professionals from 30+ Indian cities participated.** The comprehensive training programmes designed with classroom sessions, coupled with group activities and technical visit ensured a perfect blend of knowledge sharing and practical exposure. The post-training feedback highlighted increased confidence in strategic planning and a strong interest in follow-up support, particularly around financing and digital operations in electric buses.

## INTERNATIONAL BUS SEMINAR: ADVANCING ELECTRIC BUSES IN INDIA

The UITP India International Bus Seminar, held on 21–22 November 2024 in New Delhi, brought together over 100 participants from across India and abroad to explore strategies for accelerating electric bus deployment. Organised by UITP India and supported by NITI Aayog, Ministry of Road Transport and Highways (MoRTH), and Association of State Road Transport Undertaking (ASRTU), the two-day event featured rich exchanges amongst policymakers, STUs, OEMs, multilateral agencies, and technology providers.

Opened with a high-level plenary on India's e-bus policy landscape, reflecting on the progress under FAME, PM-eBus Sewa Scheme, the newly launched PM E-DRIVE Scheme and Bharat Urban Megabus Mission. Senior officials from Tamil Nadu government, Convergence Energy Services Limited (CESL), Ministry of Heavy Industries (MHI), KfW Development Bank and JBM Group discussed how national missions are reshaping public transport finance and manufacturing ecosystems.



Technical sessions delved into priority areas: digitalisation for e-bus operations, infrastructure planning, and strategies to overcome range anxiety. City-level experiences and international perspectives enriched the discourse, offering insights into real-time scheduling systems, depot planning, and financial innovation. Speakers from agencies such as GIZ, Telangana State



Road Transport Corporation (TSRTC), Delhi Integrated Multi-Modal Transit System Limited (DIMTS), and TMB Barcelona shared operational strategies to improve efficiency and reduce cost.

On the second day, participants visited the Rajghat-2 electric bus depot of Delhi Transport Corporation (DTC), observing first-hand the layout, charging infrastructure, and vehicle design of JBM's e-bus fleet. The visit reinforced discussions on real-world operational planning and depot-level innovation.



The seminar served as a platform not only for knowledge sharing but for building long-term partnerships. It reaffirmed UITP India's role as a neutral convener and knowledge catalyst, supporting cities and states in navigating the complex transition to sustainable, scalable, and smart e-bus systems.

## CONCLUSION: PATHWAYS FOR SCALABILITY, REPLICATION, AND UITP'S ROLE

The “*Advancing Electric Buses in India*” project has demonstrated that a well-integrated approach—combining policy-level engagement, city-level technical support, and institutional capacity building—can deliver tangible outcomes across multiple fronts.

The interventions piloted through this project offer **replicable models** for other cities, regardless of fleet size, business model, or stage of adoption. The tools, scenarios, and planning methodologies developed under this initiative can be adapted to suit different urban contexts, helping cities navigate the transition to cleaner, smarter, and more sustainable public transport systems.

From national supply facilitation to granular operational planning, UITP's work has laid the foundation for a scalable e-bus ecosystem in India. The organisation now stands ready to:

- Serve as a neutral technical partner to states and cities
- Guide cross-sector collaboration between OEMs, financiers, and regulators



- Build long-term institutional capacities across India's public transport sector

As India moves toward its 2030 climate and mobility goals, UITP remains committed to supporting inclusive, data-driven, and financially viable solutions for public transport decarbonisation.

## READ MORE: KNOWLEDGE PRODUCTS PUBLISHED UNDER THE PROJECT



### PAYMENT SECURITY MECHANISM (PSM) USHERING A NEW ERA OF ELECTRIC BUS DEPLOYMENT IN INDIA

MARCH | 2025

#### INTRODUCTION

In 2015, India made a landmark geopolitical decision by signing the Paris Agreement and taking a major step in its goal of attaining a sustainable future. At present, India is in its transformation path and is standing strong to its commitment to achieve Net Zero Emissions target by 2070. Over the years, India has formulated robust regulatory frameworks to support its ambition of shifting towards clean energy alternatives, thereby creating a strong foundation for Viksit Bharat. In recent years, India has aggressively pushed for promotion and deployment of Electric Vehicles (EVs), largely in the public transport sector. Several states have come up with their respective State Electric Vehicle Policy that promotes and incentivises the use of EVs. However, the market of clean energy alternatives, especially electric buses (e-buses), is still at a recent stage of development in India and being a sunrise sector, it presents a heavy capital expenditure. In the context of the rapid expansion of the e-bus market in India, this publication aims to critically analyse the preconditions that led to need for introduction of PSM in India, its working, and scope for improvement that could be considered for the fruitful implementation of the same.



#### PAYMENT SECURITY MECHANISM (PSM) IN THE CONTEXT OF PUBLIC ELECTRIC BUS SERVICE IN INDIA

##### WHAT IS PSM?

In India, e-bus service is predominantly managed by State Transport Undertakings (STUs) or Special Purpose Vehicles (SPVs). The recent adoption of e-buses by STUs/SPVs has led to a reduction in operating costs by at least 50% compared to diesel or Compressed Natural Gas (CNG) buses. However, the upfront cost of e-bus is nearly two to four times higher than conventional options, presenting a significant barrier to their direct purchase. New business models, such as the 'Bus-as-a-Service' approach, which involves purchasing e-bus services through a fixed contract, significantly lower the financial and operational risks for STUs/SPVs. This led to the growing popularity of the Gross Cost Contract (GCC) model of e-bus operations in India, over the previously existing Outright Purchase Model where the STUs owned the buses.

Under the GCC model, STU/SPV pays the operator or Original Equipment Manufacturer (OEM) a per kilometre rate for operations. In exchange, the operator/OEM supplies a designated number of e-buses for operations as specified in the contract. Responsibilities such as e-bus scheduling, route planning, fare box revenue collection, providing conductors, and allocating land for depot construction rest with the STU/SPV.



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KNOWLEDGE BRIEF

### ENABLERS AND BARRIERS FOR E-BUS MANUFACTURING SECTOR IN INDIA

MAY | 2025

India's initiative to modernize its public transportation system through the deployment of electric buses represents a critical step toward achieving national sustainable development and climate goals. The Government of India has laid a strong foundation for this transition by introducing robust policy frameworks, financial incentives for both demand and supply side, and enabling regulations that support the growth of the electric bus ecosystem. Despite these progressive measures, the rate of adoption across cities remains slower than anticipated, resulting in delays in the implementation of nationwide deployment targets. A key contributor to this lag is the difficulty Original Equipment Manufacturers

(OEMs) face in meeting delivery timelines for electric buses, which affects the overall supply chain and rollout schedules.

This knowledge brief seeks to identify and analyse the key enablers and barriers to electric bus manufacturing in India, drawing on insights from both domestic and international OEMs. It outlines the critical challenges impeding timely supply, and presents recommendations to foster a cohesive, responsive, and resilient manufacturing ecosystem. The insights presented aim to inform and support government stakeholders in refining strategies, optimising policy interventions, and accelerating the transition to electric public mobility.



Source: <https://transport.in/india/electric-buses-on-CEBS-as-per-their-own-vehicle-potential-to-be-greater-changes-to-transport-sect/> (07/2024)

#### INTRODUCTION

India is undergoing rapid urbanisation, which has significantly increased the demand for efficient and accessible public transportation. Buses serve as a vital mode of transport, offering affordable mobility solutions that connect citizens to employment, education, and essential services. Moreover, the electric bus transport sector contributes meaningfully to the national economy by generating employment and supporting allied services. In addition to economic benefits, a robust bus-based public transport system delivers substantial co-benefits, including reductions in air pollution and traffic congestion. Currently, India operates approximately 150,500 public transport buses, falling significantly short of projected demand of approximately 504,000 buses by 2031—a



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REPORT

### NATIONAL WORKSHOP FOR INTERNATIONAL ELECTRIC BUS OEMS

NOVEMBER | 2023



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REPORT

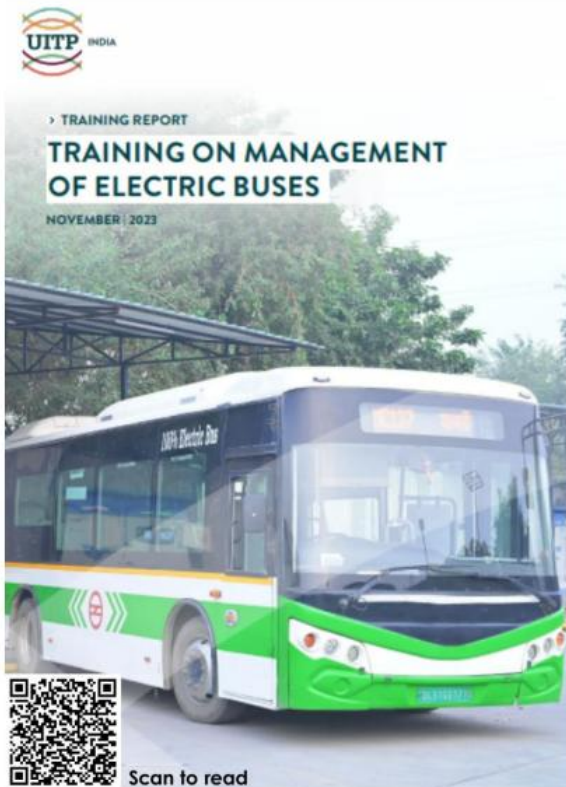
### DELVE INTO THE ADVANCEMENT OF ELECTRIC BUSES IN INDIA

HIGHLIGHTS FROM  
THE UITP INDIA INTERNATIONAL BUS SEMINAR 2024

DECEMBER | 2024



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## KNOWLEDGE BRIEF

### PLANNING FOR ELECTRIFICATION OF RURAL AND INTERCITY BUSES

STRATEGIES FOR ROUTE, DEPOT AND CHARGING LOCATION SELECTION

OCTOBER | 2022

#### INTRODUCTION

Electric bus (e-bus) adoption efforts in the India bus sector, like in many other places globally, have predominantly focused on urban bus services, given their lower daily-kilometre (km) characteristic compared to rural and intercity buses, making it relatively easier to overcome the range constraints of e-buses. However, the bus landscape in India is dominated by rural and intercity buses, which account for 70% of the Nation's entire bus fleet, with about 1,02,541 out of 1,46,559 public buses operated by State Transport Undertakings (STUs) operating in the rural and intercity market at the end of March 2022, while the remaining 44,018 buses are in urban areas. India has about 2,000

operational e-buses by the end of June 2022 while about 7,000 more buses are contracted to be deployed by 2023. Government of India (GoI) has recently announced a National Electric Bus Program (NEBP) which aims to deploy an additional 50,000 new e-buses in the near future of which rural and intercity buses are expected to form a significant share.

The key constraints (operational requirements) to be addressed in replacing conventional internal combustion engine (ICE) buses powered by diesel or compressed natural gas (CNG) with e-buses include the limited range (km run on a single charge) of e-buses compared to ICE buses and the time needed to charge e-buses, which is significantly longer than the time needed to refuel ICE buses. Rural buses provide connectivity from villages to the nearest urban centres, markets and services while intercity buses provide connectivity between cities and typically operate more km per day compared to rural buses as they operate on highways. Hence, rural and intercity bus services require buses to have longer range than urban buses, thereby adding to the battery requirements and e-bus cost. E-buses' range constraints can necessitate the use of additional buses to provide the ICE-equivalent number of trips<sup>1</sup>. However, the higher



▶ AC Shaper intercity bus service - Andheri



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## ACTION POINTS

### ELECTRIC BUS PERFORMANCE EVALUATION LESSONS FROM SIX INDIAN CITIES

NOVEMBER | 2022

#### NEED FOR PERFORMANCE EVALUATION OF E-BUSES

India is witnessing an accelerated uptake of electric buses (e-buses) as about 2,000 units have been deployed over the past three years while an additional fleet of about 6,500 buses are contracted and expected to be operational before the end of 2023. Building on this momentum, Government of India (GoI) has announced the National Electric Bus Program (NEBP) to procure an additional 50,000 electric buses in the years to come. Large scale procurements combined with various fiscal and non-fiscal incentives at the National, State and City levels are all set to accelerate e-bus adoption further. In-parallel, as more electric buses are being deployed, it is important to evaluate the performance of already deployed e-buses to improve their operational performance and build knowledge base to inform future procurement choices.



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The introduction and scale up of electric buses is ushering in a new era of bus service provision in India. Firstly, the e-bus technology is still evolving. Secondly with the operations, planning and maintenance practices being significantly different compared to Internal Combustion Engine (ICE) buses as well as between different models of e-bus provided by different Original Equipment Manufacturers (OEMs). Cities are yet to make informed choices and identify the best-fit e-bus technologies available on the market for their operating conditions. Secondly, e-buses are predominantly introduced through Gross Cost Contract (GCC) mode of procurement wherein the technology risk and investment for the buses is covered by the operator, while the contracting authority takes responsibility for service planning and delivery and the revenue risk. Efficient and transparent monitoring of the performance is critical to the success of the GCC model.



## KNOWLEDGE BRIEF

### FINANCIAL PLANNING FOR THE ELECTRIC BUS TRANSITION

A CASE STUDY OF RURAL AND INTERCITY BUS ELECTRIFICATION IN KARNATAKA

DECEMBER | 2022

#### INTRODUCTION

Government of India's financial support of more than ₹54,000 crore (USD 6.8 billion) in the form of the Faster Adoption of Manufacturing of Hybrid and Electric Vehicles (FAME) scheme along with decreasing battery prices, and economies of scale, reduction in Goods and Services Tax (GST), Motor Vehicle (MV) tax & permit fees, and state-level subsidies have contributed to price reduction and popularity of Electric Buses.

In April 2022, GoI under the largest global tender for an aggregated procurement of 5,450 e-buses for five cities on a Gross Cost Contract (GCC) model<sup>1</sup> realised 23-27% cheaper prices per km for electric buses compared to their internal combustion engine (ICE) counterparts<sup>2</sup>.



Increasing operating costs of diesel and CNG buses due to fuel price increase, subsidised electricity rates to promote EVs and public transport has led to lower lifecycle costs for e-buses and energy and emission efficiency benefits.

Fleets as electric buses have range constraints, EV component manufacturing is limited in India and 70% of public bus operations in India concentrated in rural areas<sup>3</sup>.

Careful planning of service schedules and charging infrastructure can support electrification of a significant share of rural and intercity services with available e-bus vehicle and charging technologies, as demonstrated in the UITP knowledge brief on 'Planning for electrification of rural and intercity buses' (2022)<sup>4</sup>.

Long-term planning for bus services needs to first focus on estimating the fleet needed to adequately meet the current and future demand and then build in the cost of transitioning these fleets to e-buses.



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## WORKING PAPER

### FLEET WIDE TRANSITION TO ZERO EMISSION BUSES

A ROADMAP FOR THE CITY OF BANGALURU

AUGUST | 2023

#### 1. NEED FOR A FLEET WIDE TRANSITION ROADMAP

Indian cities have been witnessing concentrated economic activity leading to a rapid growth in population and their travel needs. Bus based public transport is the mainstay of urban mobility in India, providing dignified, affordable, and safe mobility services for citizens to access economic opportunities, educational institutions, commercial centres and other activities. Over the past two decades, however, bus service volumes and quality haven't kept pace with increasing travel demands and users' aspirations. Lack of adequate public transport combined with increasing disposable incomes with users has led to most cities witnessing an exponential increase in personal vehicle ownership and usage. Despite this and a steady increase in rail based public transport, buses continue to achieve a modal share of more than 30% of vehicular trips in most cities they operate. Their prominence in providing affordable and well-connected services to Indian cities and rural areas has become even more pronounced in the wake of the Coronavirus pandemic and the downturn in the economy which led to reduced disposable income of users thereby limiting their access to more expensive private vehicles and other commercial mobility services like taxis and auto-rickshaws.

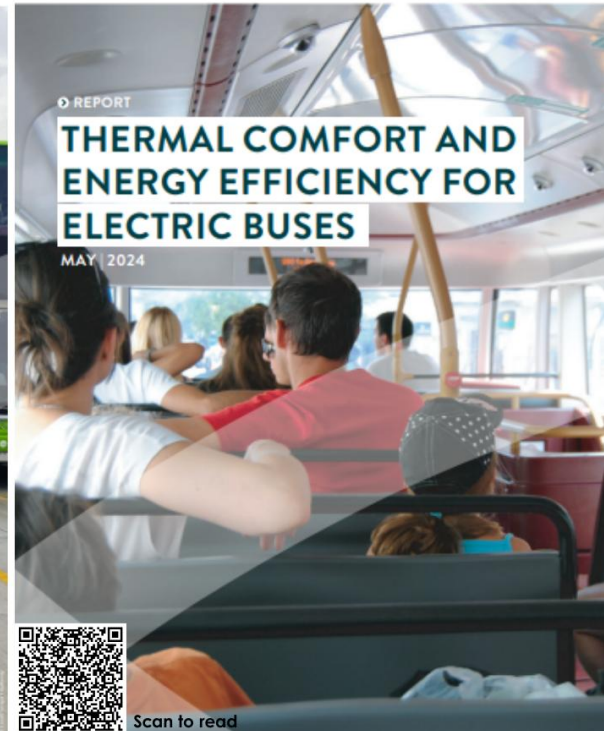
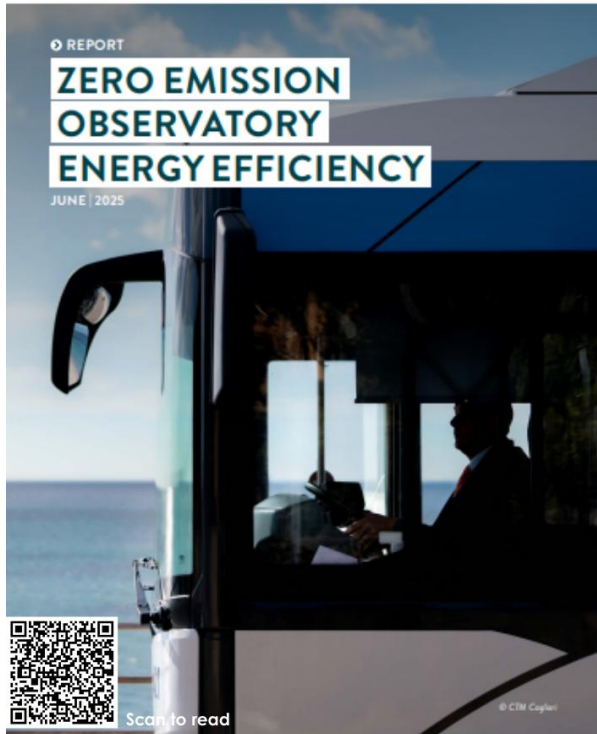
In addition to the overall service backlog, bus agencies have significant proportion of old fleets with Bharat Stage (BS) I, BS II and BS III emission standards which cause disproportionately high air pollution compared to their share of the total vehicular fleet. Government of In-

dia (GoI)'s adoption of BS VI standard vehicles and fuels from April 2020 and the increasing availability of electric bus technologies at affordable prices, bus agencies have the opportunity to transition to cleaner vehicle technologies. Indian cities are also amongst the most polluted in the world and the transport sector is a major contributor to air-pollution. Therefore, the combination of increasing public transport usage in cities and transitioning their fleets to zero-emission (BS VI) and zero emission (electric) buses provides the best opportunity to address the mobility and air-quality challenges faced by Indian cities. This transition also comes with significant technological and financial challenges which are new for Indian cities given their limited experience with BS VI and electric buses. The current paper presents a roadmap for the city of Bengaluru, with the aim to support the city's transition to a better and cleaner bus system while also providing a reference for other Indian cities aiming for a similar transition.



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## IN MOTION CHARGING TROLLEYBUS SYSTEMS

SEPTEMBER | 2024

### INTRODUCTION

The transition to zero-emission bus fleets is a critical component of the global effort to combat climate change and reduce urban air pollution. Governments and cities worldwide are increasingly setting ambitious targets to eliminate fossil fuel use in public transport, which, in turn, offers an opportunity to enhance the passenger experience, increase safety, optimise operations, and improve fuel economy. Sustainable and efficient public transport systems are instrumental to achieving broader carbon-neutral goals, as they include renewable energy sources and

sustainable practices and eliminate emissions generated by other public transport modes with higher negative externalities.

By adopting zero-emission bus fleets, cities and regions can significantly lower their carbon footprint and contribute to a cleaner, healthier and more energy-efficient environment, leveraging renewable energy sources to power public transport networks. There is a wide array of zero-emission bus technologies to consider when planning and implementing the energy transition, including hydrogen buses, battery electric buses (BEBs), and trolleybuses, just to mention the most popular applications.

Several hundred cities around the world operate conventional trolleybuses. They have electric powertrains and are zero-emission buses. Their power networks consist of substations, power cables, and overhead wires. In many cases, major parts of the electric feeding infrastructure can be shared by electric buses (e-buses) with different charging technologies or even rail modes, as these modes are often operated under the same public ownership. This makes this infrastructure a public asset of strategic importance. Many cities nowadays are actively implementing zero-emission buses, but, unfortunately, in some cases, they are simultaneously dismantling existing operational trolleybus systems. A couple of the main arguments against conventional trolleybuses are that the overhead wire network is a form of visual pollution and trolleybuses have various disadvantages like



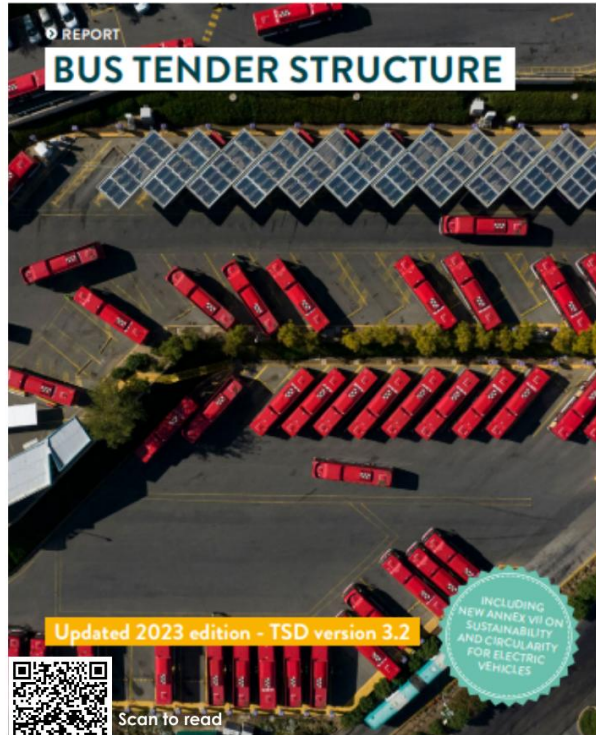
© iStockphoto.com/charging trolleybus (Caglan)



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### REPORT

## BUS TENDER STRUCTURE



Updated 2023 edition - TSD version 3.2

INCLUDING  
NEW ANNEX VII ON  
SUSTAINABILITY  
AND CIRCULARITY  
FOR ELECTRIC  
VEHICLES



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SERIES  
1

### FACTSHEET

## DEPOT ADAPTATIONS FOR CLEAN BUS TECHNOLOGIES

JANUARY | 2022



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CLEAN BUS  
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### FACTSHEET

## DEPOT ADAPTATIONS FOR CLEAN BUS TECHNOLOGIES

NOVEMBER | 2023



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## ABOUT UITP

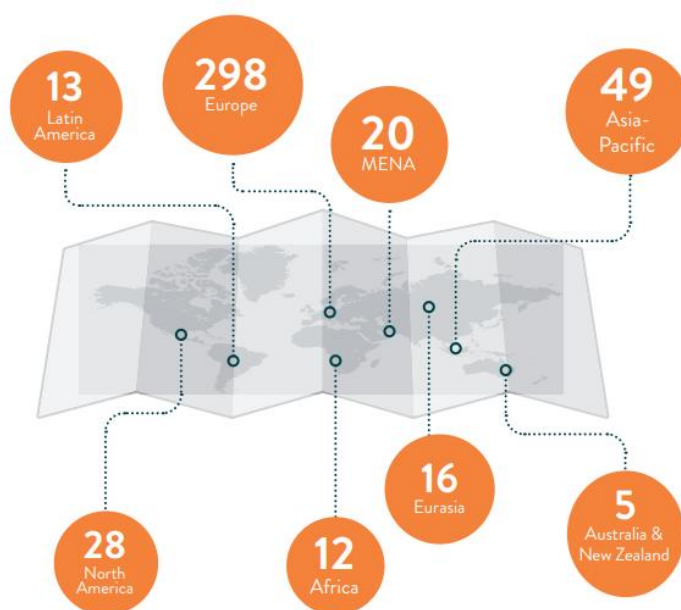
UITP (Union Internationale des Transports Publics) - International Association of Public Transport is the only worldwide association bringing together all public transport stakeholders. Established in Brussels, Belgium in 1885, UITP has over 140 years of expertise and a presence in more than 100 countries as a leader in advancing sustainable urban mobility. With over 1,900 members across the world, UITP is widely known for inspiring excellence and innovation by generating cutting-edge knowledge and expertise along with engaging with decision makers and key international organisations to promote sustainable mobility solutions by bringing people together to exchange ideas, finding solutions and forging partnerships.

### UITP INDIA

UITP opened its office in India in 2007 with the aim to better address the specific needs of the regional members as well as work closely with the stakeholders of the Indian public transport sector for its advancement. UITP India supports development of Indian public transport system through its membership services, research projects, conferences, seminars, webinars, training and capacity building programmes by working in close association with Ministries, NITI Aayog, STUs, urban rail organisations, OEMs, municipal corporations, government bodies, think tanks, and organisations who are key stakeholders of the public transport sector in India.

### UITP BUS DIVISION

Bringing together 400+ organisations and operators from around the world, the Bus Division is the largest modal community in UITP. Collectively, the Division provides a global platform for the exchange of knowledge and business opportunities. UITP truly brings a global perspective to the table with representation of members in the Bus Division spanning across all the regions of the world.





The UITP Bus Division, through its Bus and Trolleybus Committees, drives the global transition to zero-emission buses (trolleybuses, battery-electric and hydrogen) by developing decarbonisation strategies, Life Cycle Assessment, Total Cost of Ownership tools, and methodologies for vehicle consumption evaluation (SORT/eSORT). It provides recommendations for bus tendering, guidance on e-bus safety, operations optimisation and thermal comfort, while also advancing work on Bus Rapid Transit (BRT), network design and priority measures, on-demand transport, accessibility (incl. UN Regulation R107), digitalisation, artificial intelligence, and the implementation and operational use cases of autonomous buses to ensure innovation delivers practical value for operators.

Discover more about how to get involved: <https://www.uitp.org/members/membership/>

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