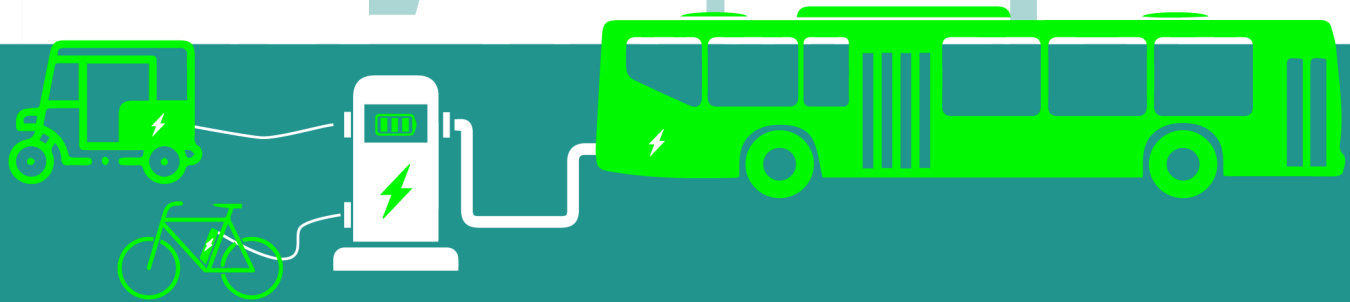


INTEGRATION IS KEY:

**THE ROLE OF ELECTRIC MOBILITY FOR
LOW-CARBON AND SUSTAINABLE CITIES**





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FOREWORD



We live in a rapidly urbanising world, and cities provide many opportunities for unprecedented socioeconomic development and innovation. At the same time, the demand for resources to meet the needs and aspirations of this increasing urban population is growing, a development often dependent on the increasing use of fossil fuels. Greenhouse gas emissions from the transportation sector are growing faster than any other energy-end use sector. Conventionally fuelled vehicles are also a major source of urban air pollution. Meeting the mobility needs of citizens while reducing emissions and air pollution from the transport sector therefore requires urban planners and policymakers to shift their focus from planning for personal cars to planning for low-carbon mobility by promoting public transport, shared mobility and improved walking and cycling infrastructure and facilities. Simultaneously, a shift towards renewable energy is also pivotal to reducing the sector's reliance on fossil fuels. Guided by the New Urban Agenda, cities must align their transport, climate, energy and urban development plans to achieve both the Sustainable Development Goals and the Paris Agreement goals.

Electric mobility solutions should be part of a new culture of integrated mobility planning, focussing on high quality public transport services, well integrated with shared mobility options, walking and cycling. For cities to fully benefit from the transition to electric mobility, these efforts need to be implemented in the overall context of better and more compact urban planning with a focus on accessibility and urban liveability. This will require close collaboration between public and private actors in which governments can bring forward enabling regulatory frameworks and provide incentives to encourage the uptake of electric mobility.

This report, "Integration is key: the role of electric mobility for low-carbon and sustainable cities", is meant as guidance for cities, providing recommendations and principles to implement electric mobility strategies. It is my hope that policymakers, city planners, engineers, and entrepreneurs alike will find this guidance useful in their continued efforts to foster a more sustainable urban future.

Raf Tuts

Director, Global Solutions Division

UN-Habitat

A handwritten signature in white ink, appearing to read 'Raf Tuts', with a long, sweeping underline that extends to the left and then curves back under the signature.

Executive Summary

Key highlights

- The use of electric vehicles is rising in many cities around the world, underpinned by the urgent need to reduce levels of air and noise pollution, and tackle the ever-growing energy-related greenhouse gas (GHG) emissions from conventionally fuelled vehicles. The Intergovernmental Panel on Climate Change (IPCC) recognises electrification of short-distance vehicles as a powerful means for reducing emissions. The strong increase of renewable energy sources in electricity generation, observed over the past decade and expected to further grow, maximises the climate benefits of electric mobility. Chapter 1
- Transport electrification can simultaneously contribute to sustainable urban mobility by enhancing vehicle energy efficiency and supporting the shift towards public transport and active mobility. Electric mobility expands the mobility options in our cities, with a range of lightweight, new electric vehicles including electric bicycles and kick e-scooters which can act as a catalyst for behavioural change. Proactively integrating these small electric vehicles as feeders into mass transit can promote the shift from private cars and bolster the role of public transport as the backbone of the urban mobility system. In addition, electrification can also catalyse investments in clean public transport and new bus fleets, which, in turn, can raise the attractiveness of public transport through modern and more silent vehicles. Chapter 1
- The right accompanying policies need to be developed and adopted at national and local levels, supporting the electrification of public and shared vehicle fleets as the most cost-effective options among electrification strategies, and increasing the share of renewable energy sources in electricity generation. Ensuring that the deployment of electric vehicles and infrastructure fits within a sustainable urban mobility paradigm is crucial to reap the benefits of this transition. Many publications focus on electric private passenger cars. These, however, do not address issues of congestion and unfair distribution of urban space. Electric vehicles are in fact more diverse, ranging from lightweight two- and three-wheelers such as electric bicycles, cargo bikes, scooters, mopeds and tuk-tuks (private, shared or commercial forms), to electric light duty vehicles, and electric heavy-duty trucks and buses.

- Electric mobility should be guided by a set of ten core principles: Chapter 2
 - Integrate electric mobility in the context of improved urban planning and in a balanced “Avoid-Shift-Improve” framework
 - Prioritize people and public transport over private cars
 - Plan and design to accommodate a rich mix of electric mobility options integrating active and high-capacity modes of transport
 - Identify opportunities for multimodal transit hubs through the strategic location of electric mobility charging infrastructure
 - Design an integrated transport policy approach seeking synergies between national and local measures
 - Build cross-cutting institutional cooperation
 - Engage with all relevant stakeholders across multiple sectors, strengthen public-private partnerships, and create co-ownership of the transition
 - Promote equity and inclusion in the deployment of electric mobility
 - Increase the share of renewable energy sources and move towards a zero-emission future
 - Provide adequate access to information on electric mobility to users.

- Rolling-out electric mobility is not without challenges: policymakers and stakeholders are frequently confronted with four types of challenges: Chapter 3
 - financial and investment barriers,
 - policy, regulatory and institutional barriers,
 - technical challenges,
 - behaviour and knowledge concerns.

- To tackle these challenges, cities can gain experience from other cities which have already designed and rolled-out electric mobility programmes. Policies can support the uptake of integrated electric mobility via measures addressing four dimensions: planning and infrastructure measures, fiscal measures, institutional and regulatory instruments, as well as communication campaigns. It is recommended to follow a Sustainable Urban Mobility Planning (SUMP) approach to implement electric mobility at the local level. National measures can also support the deployment of electric mobility at city level. Sections 3.1 and 3.2

- Innovative business models are paramount to facilitate the transition to electric mobility, reaping the benefits of lower running costs while addressing higher upfront investment costs. Shared systems and innovative procurement models for electric buses are presented in this publication. Section 3.10

- Electric mobility can improve urban logistics, for instance via electric cargo bikes. Section 3.11

- The entire lifecycle of batteries should be considered, adopting a circular economy approach, making use of “reuse, repurpose and recycle” opportunities, and avoiding environmental and health hazards in the recycling of batteries. The second life use of electric vehicle batteries as energy storage systems can facilitate the integration of variable renewable energy sources into electric grids. Sections 3.15, 3.16

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