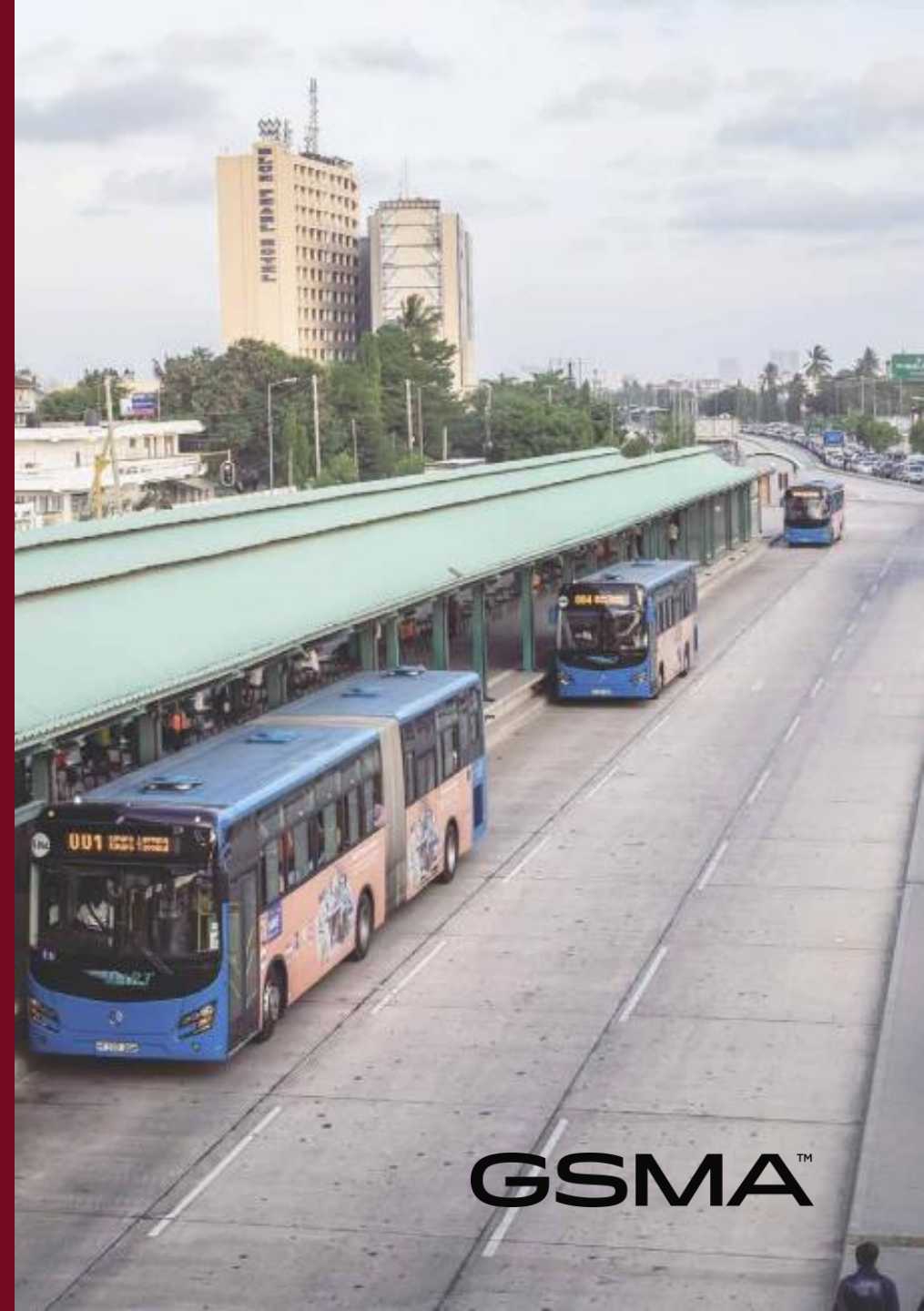# Powering mobility: The rise of digital transportation in Africa

World Resources Institute
Digital Transport 4 Africa Webinar Series

13.09.23

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Today's agenda

Introduction and overview of recent GSMA research

- George Kibala Bauer, Director, Digital Utilities

- Brian Njoroge, Insights and Advocacy Analyst

Presentations

- Daniel Gatura, CEO and Founder, Ace Mobility

- Muhammad Ihtsham Ikram, Head of Passenger Transport, BasiGo

Q&A and Discussion

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GSMA Digital Utilities
Programme overview

Who we are

The GSMA represents the interests of **mobile operators worldwide**.

The GSMA Mobile for Development team drives innovation in digital technology to reduce inequalities in our world. Singularly positioned at the intersection of the mobile ecosystem and the development sector, we stimulate digital innovation to deliver both sustainable business and large-scale socio-economic impact for the underserved.

Programme Mission

The Digital Utilities programme supports urban resilience in low- and middle-income countries by enabling access to essential utility services through digital solutions and innovative partnerships.

Inclusive utility services, such as **energy, water, sanitation, waste management and transport support urban resilience**, which allows cities in low-and-middle-income countries to better withstand challenges related to population growth, climate change, and inequality.

UKaid
from the British people

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GSMA Digital Utilities
What we do

Catalysing innovation

Provide grants to private sector innovators *to test and demonstrate the role of digital urban service solutions.*

Research and insights

Generate rigorous evidence on innovative solutions to essential service provision by gathering insights from Innovation Fund grantees, conducting research with partner organisations with deep expertise in utility service provision.

Partnership facilitation

Drive replication and scale through convenings and leveraging our own networks (particularly mobile operators) as well as those of key partners that work to enable similar solutions.

Technical advice

Provide advice on the role of digital innovation for improved utility service provision and insights on how to achieve multi-stakeholder partnerships.

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The GSMA Innovation Fund

Across the all of the sectors the GSMA works

Energy | Water | Sanitation | Climate | Waste Management | Agriculture | Digital Inclusion | Humanitarian

To date we have achieved

$21m disbursed to over 120 orgs

**36 million people impacted**

$679 million crowded-in

80 mobile operator partnerships

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The role of transport in sustainable development

Across Africa and Asia, World Bank and Asian Development Bank studies show that **the poorest 20 per cent of the urban population have to spend a significant proportion** of their household income to access motorized transport services.
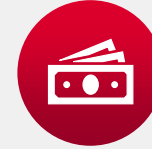
Residents in African cities pay a **42 per cent premium on transport** as compared to those in other cities across the world. This is a drag on firm-level productivity and perpetuates inefficient urban land use resulting in African cities being less competitive.

20 per cent of road fatalities occur in Africa despite having the lowest rates of motorisation in the world**.**

Some of our past work

- **Innovative data for urban planning: The opportunities and challenges of public- private data partnerships**

- **Digital solutions for the urban poor**

- **Scoping exercise for the Innovation Fund round on Digital Urban Services**

- **Digital Urban Utility Forum in Lagos, Nigeria**

- **Harnessing technology and data for sustainable urban mobility in Malaysia**

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Report objectives

The report seeks to provide a landscape of the transport sector in African cities and understand the role of digital innovation in the sector.

It combines desk research for relevant literature, key informant interviews with 4 stakeholders as well as a previously conducted desk study report on digital solutions in transport in Africa (16 stakeholders)

Through this report, the GSMA aims to:

1

Present an overview of transport in Africa by looking at the main transport modes and options as well as the challenges in the sector
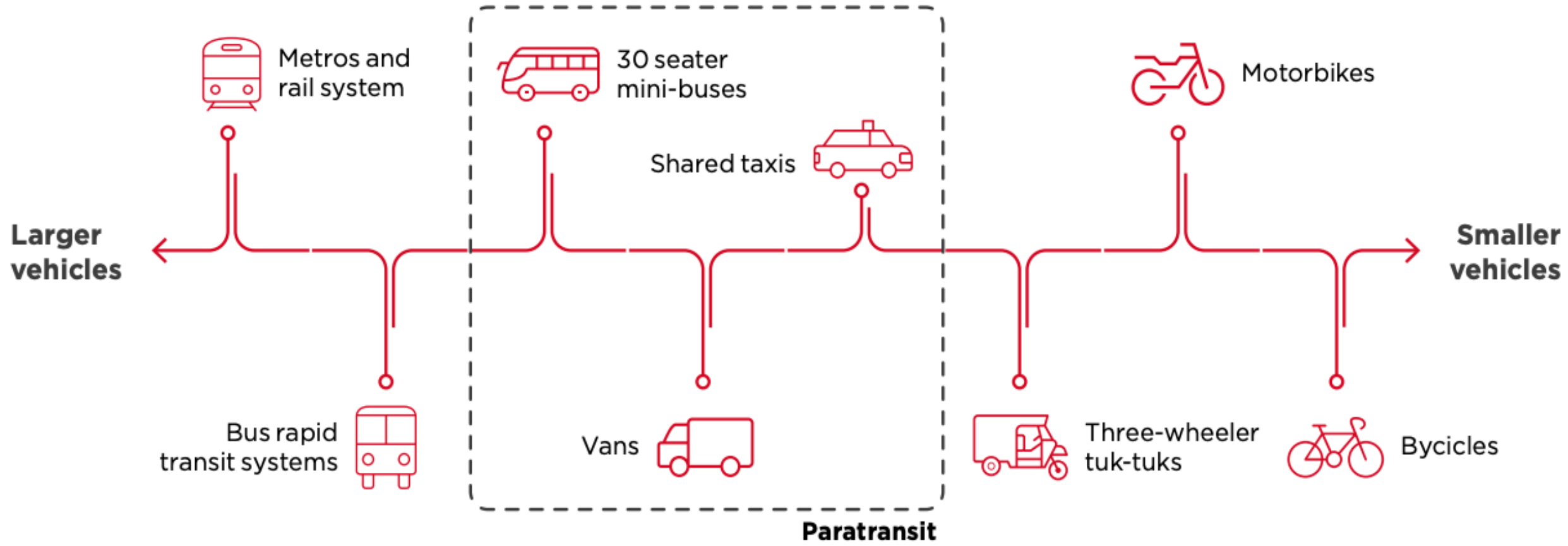
2

Highlight use cases for digital solutions in transport and the role these solutions are playing in shaping the mobility sector

3

Explore the future role of digital in the transport sector, highlighting recommendations and actionable steps for the GSMA Digital Utilities Program and other stakeholders

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African urban transport systems (motorised)

Larger vehicles ← → **Smaller vehicles**

- Metros and rail system
- Bus rapid transit systems
- 30 seater mini-buses
- Shared taxis
- Vans
- Motorbikes
- Three-wheeler tuk-tuks
- Bycicles

Paratransit

Adapted from the Volvo Research and Educational Foundations (2020)

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The challenge

Urban residents are facing multiple challenges moving within and out of the city

Congestion

In Nairobi, it is estimated that traffic jams cost the country's economy almost $1 billion in lost productivity every year

Pollution

10% of Africa's GHG emissions are from transport, with 90% of this from road transport

Cost

More than 50% of household expenditure is spent on transport for poorest quintile in Addis Ababa

Safety

The rates of road traffic deaths are highest in Africa at a rate of 26.6 per 100,000 people, nearly three times higher than in Europe
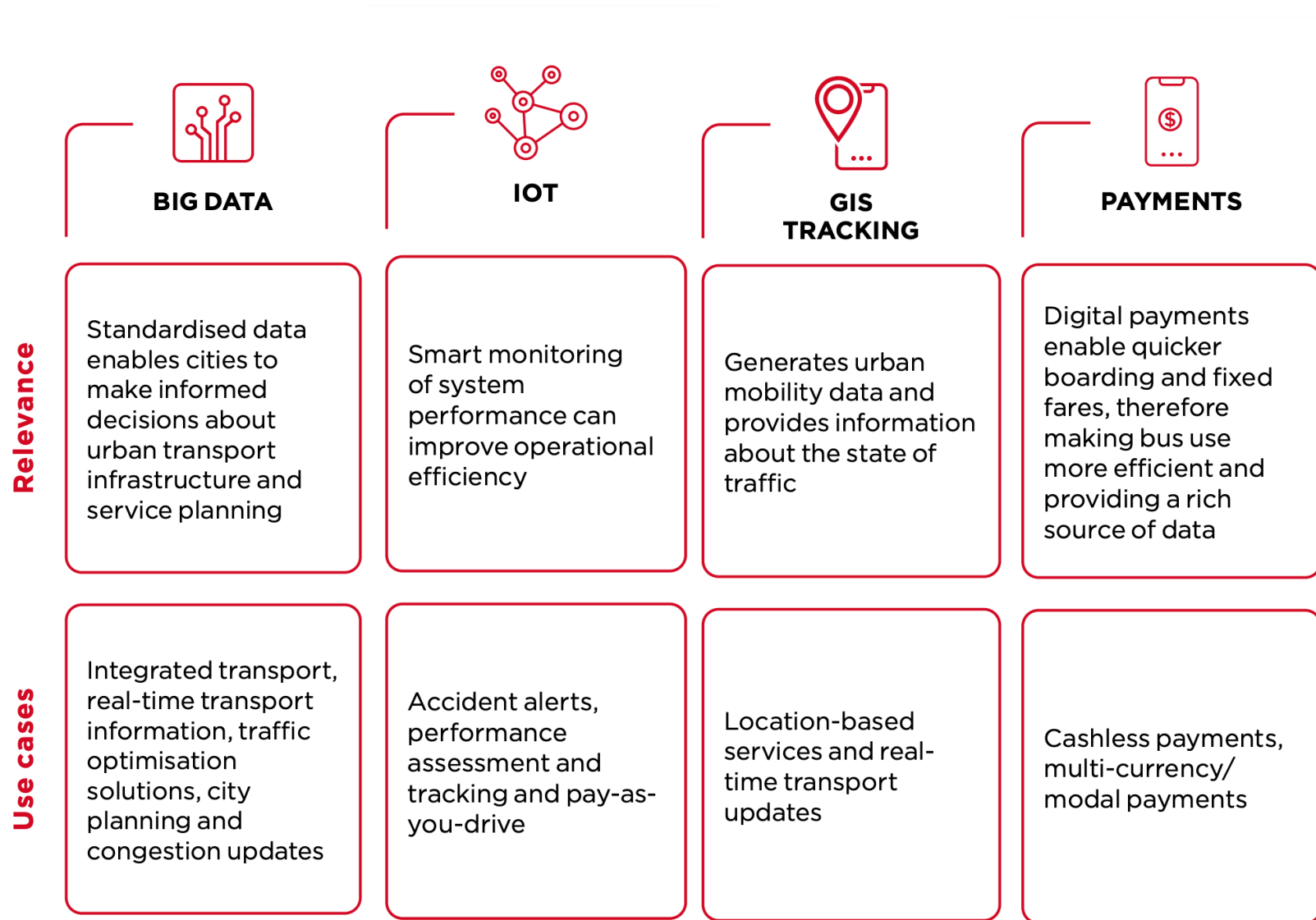
Sprawl

The average population density in Accra, Ghana declined by 40% between 1985-2000

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The opportunity

How digital solutions are unique positioned to improve urban service delivery

The expansion of mobile connectivity has enabled the emergence of digital solutions that are making transport more accessible, affordable, reliable, safe, and sustainable.

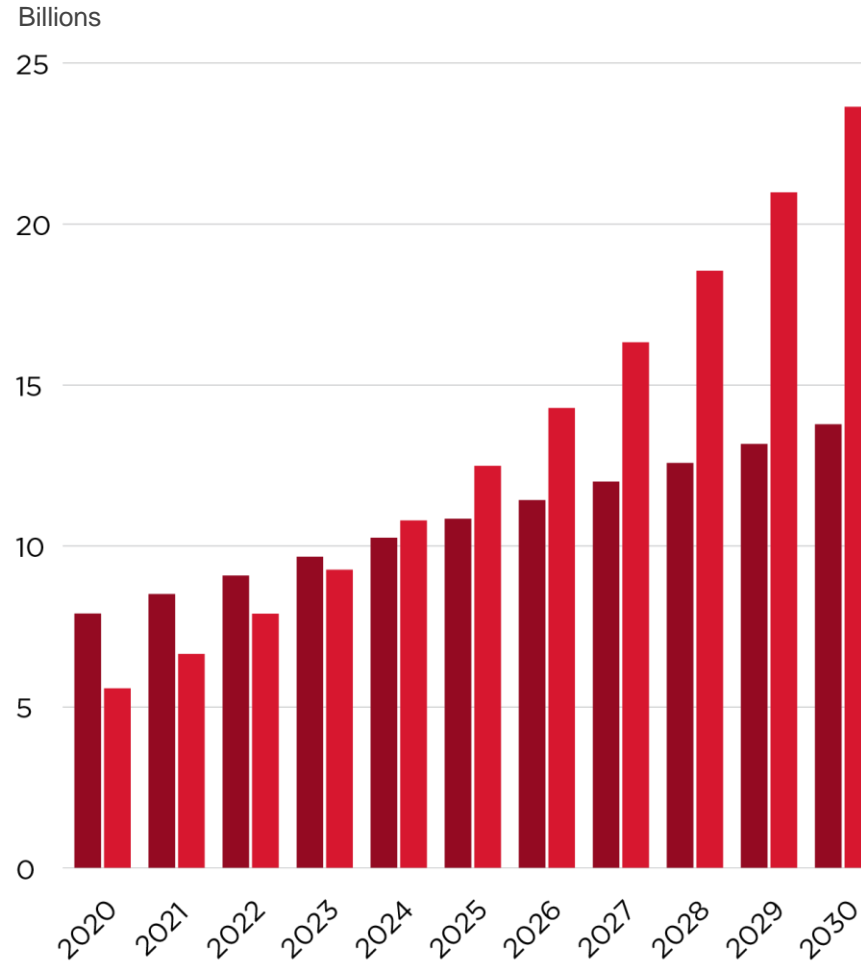These solutions are set to play a vital role in increasing mobility in cities.

	BIG DATA	IOT	GIS TRACKING	PAYMENTS
Relevance	Standardised data enables cities to make informed decisions about urban transport infrastructure and service planning	Smart monitoring of system performance can improve operational efficiency	Generates urban mobility data and provides information about the state of traffic	Digital payments enable quicker boarding and fixed fares, therefore making bus use more efficient and providing a rich source of data
Use cases	Integrated transport, real-time transport information, traffic optimisation solutions, city planning and congestion updates	Accident alerts, performance assessment and tracking and pay-as-you-drive	Location-based services and real-time transport updates	Cashless payments, multi-currency/ modal payments

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A focus on IoT

IoT connections to 2023 (global)

IoT connections total

Legend: Consumer IoT, Enterprise IoT

Billions — bar chart from 2020 to 2030 (values 0–25)

Regional IoT connections
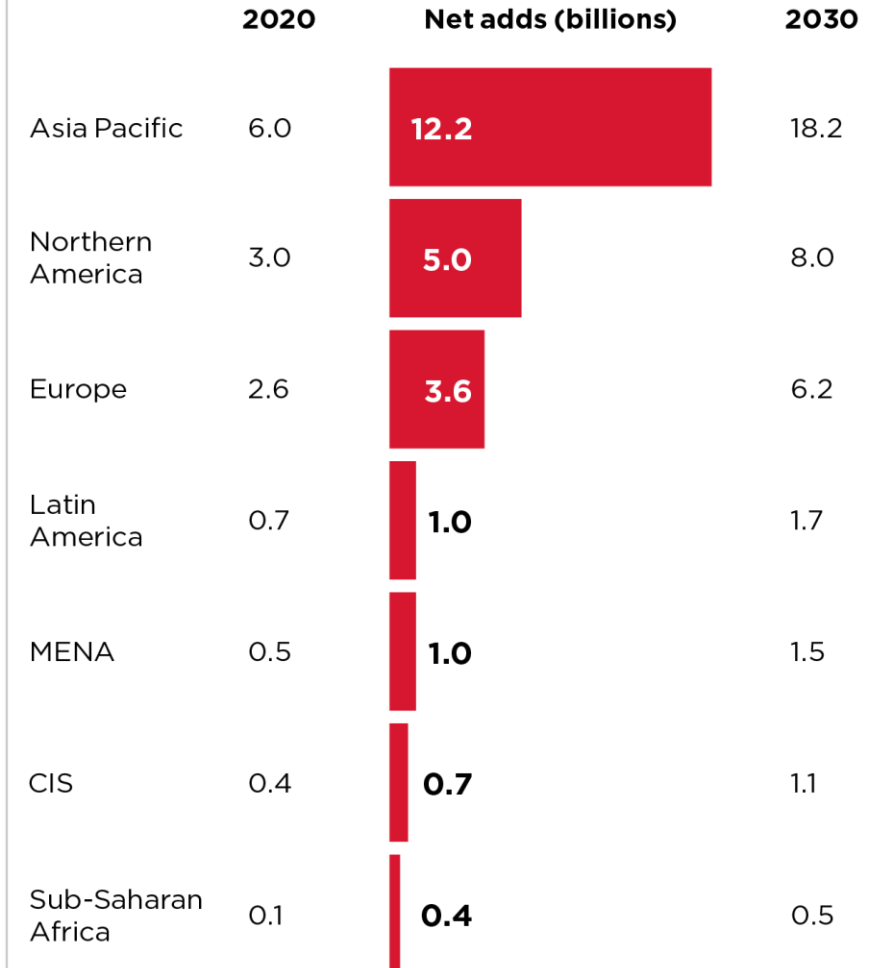
Region	2020	Net adds (billions)	2030
Asia Pacific	6.0	12.2	18.2
Northern America	3.0	5.0	8.0
Europe	2.6	3.6	6.2
Latin America	0.7	1.0	1.7
MENA	0.5	1.0	1.5
CIS	0.4	0.7	1.1
Sub-Saharan Africa	0.1	0.4	0.5

→ Read it at gsma.com/IoT4D

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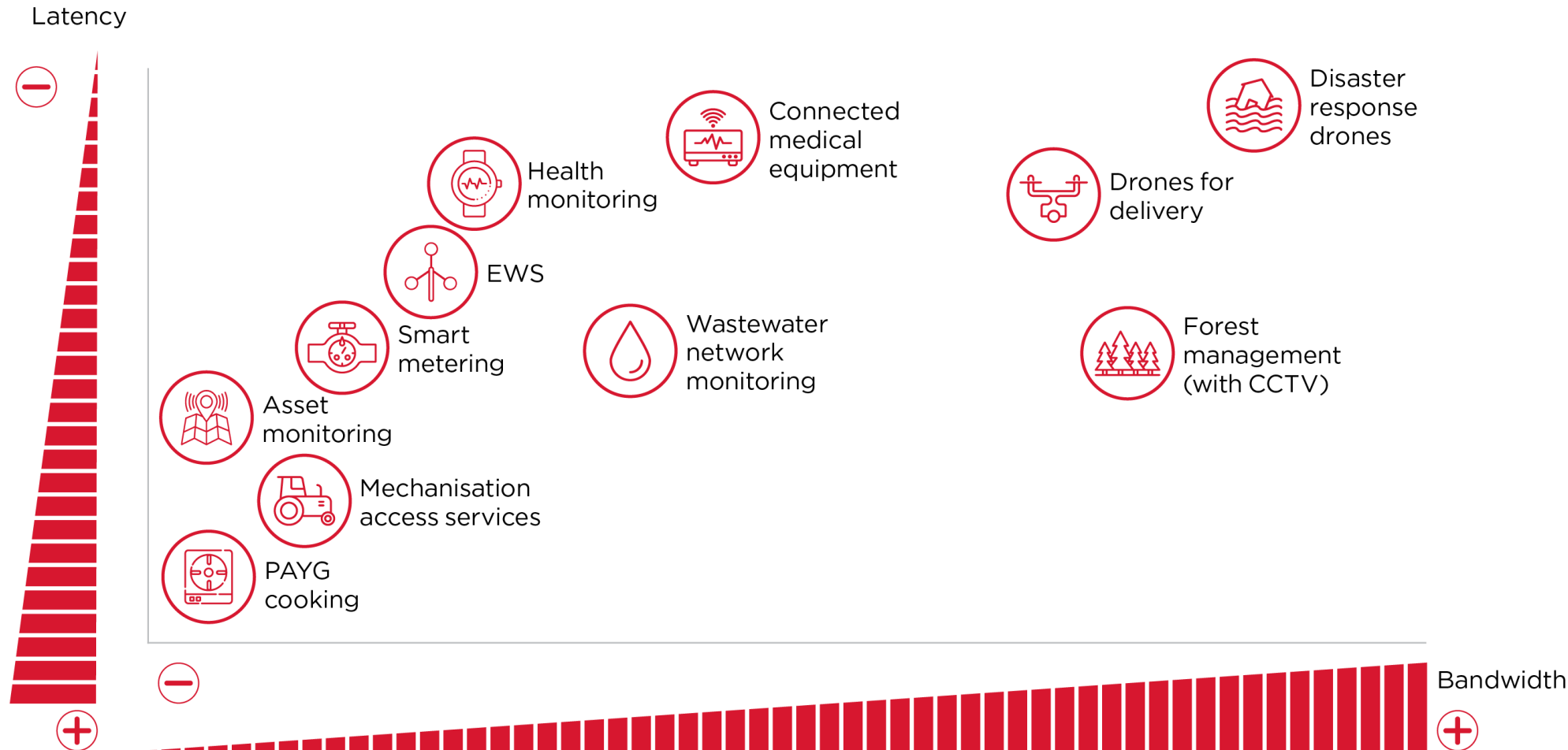
Use cases: Bus rapid transit systems

A look at Africa

Cities with operational and planned BRT systems

- Cities with BRT planning or implementations
- Cities with operational BRT (or BRT-lite and quality bus service)

Dakar, Ouagadougou, Addis Ababa, Lagos, Abidjan, Douala, Accra, Kigali, Nairobi, Luanda, Dar es Salaam, Tshwane, Windhoek, Maputo, Johannesburg, Cape Town, George
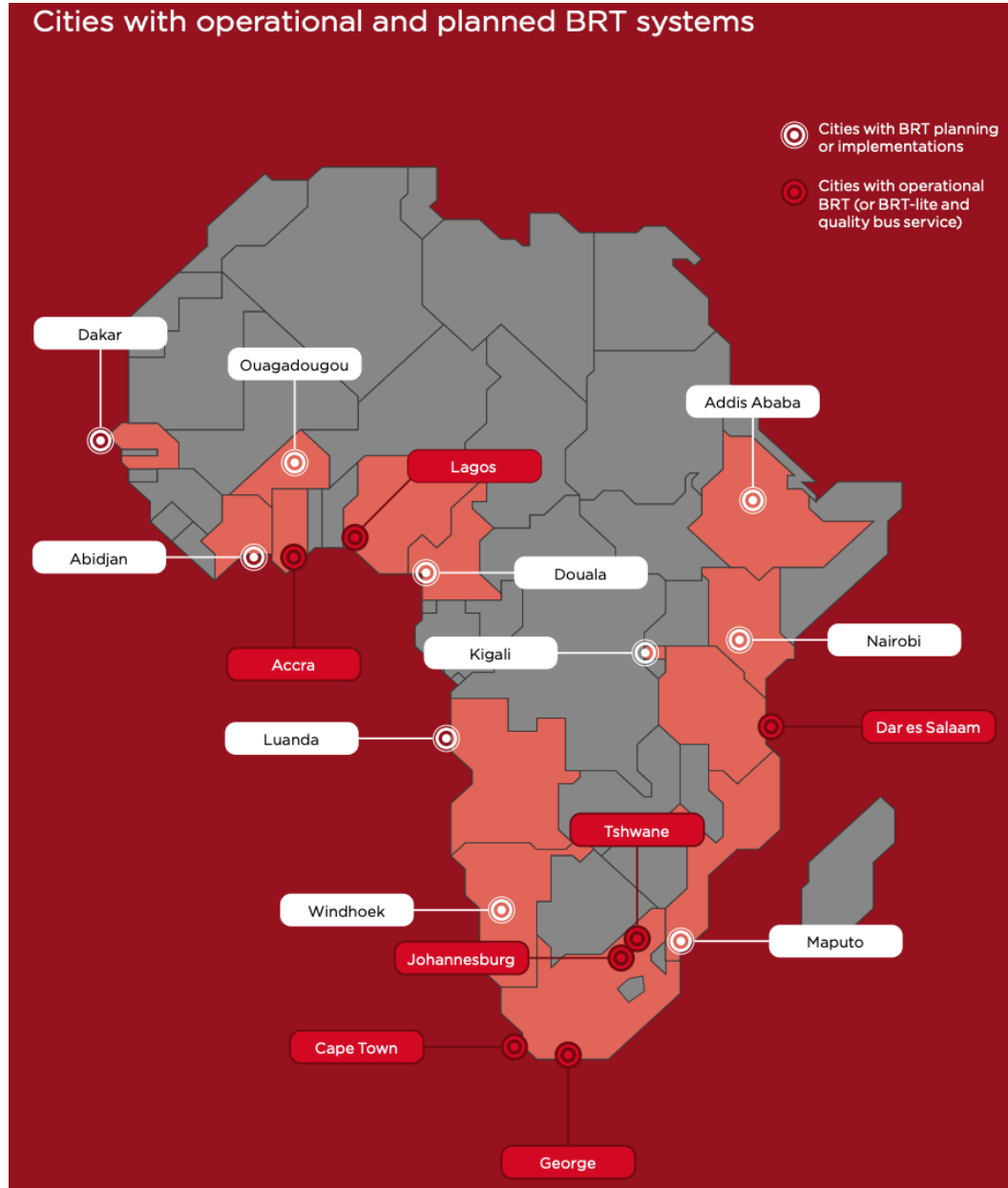
Use cases: Electric vehicles

One of the many benefits of e-mobility

Impact of Ampersand's model on motor income

AMPERSAND DRIVER — **PETROL DRIVER**

Spends only **$3.51** on fuel, saving **$1.17** per day

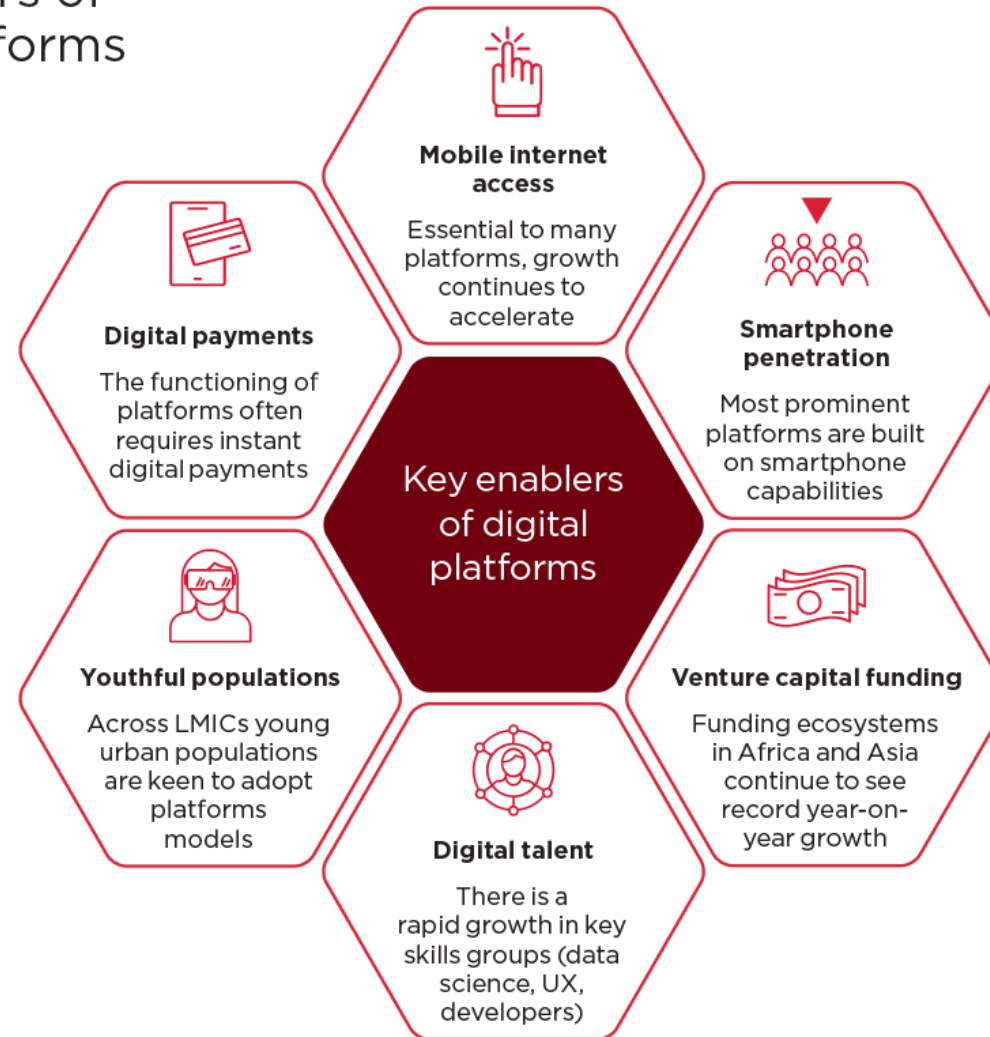Spends **$4.68** on fuel per day

Takes home **$3.89** per day

Takes home **$2.75** per day

41% increase in take home pay for an **Ambersand** driver

Source: Ampersand

Use cases: Platforms

Key enablers of digital platforms

Mobile internet access

Essential to many platforms, growth continues to accelerate

Smartphone penetration

Most prominent platforms are built on smartphone capabilities

Digital payments

The functioning of platforms often requires instant digital payments

Key enablers of digital platforms

Venture capital funding

Funding ecosystems in Africa and Asia continue to see record year-on-year growth

Youthful populations

Across LMICs young urban populations are keen to adopt platforms models

Digital talent

There is a rapid growth in key skills groups (data science, UX, developers)

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Use cases: Platforms

Potential sources of value of digital platforms

1 **Trust:** rating, verification and review systems or other safety features

2 **Traceability and open ledgers:** value generated simply by transparently recording exchanges

3 **Revealed prices:** the act of many buyers and sellers using the platform means prices are revealed

Potential sources of value

4 **Network effects:** value increases with the number of users

5 **Removals of barriers to entry:** platform disrupts closed-shops markets

6 **Market creation:** the platform creates the possibility for trade where none existed

7 **Efficiency:** the platform facilitates more efficient exchange between parties

Source: GSMA (2021)

- Platforms also have their drawbacks

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The big picture on transport funding

Total financing sources in Africa broken down by infrastructure investment
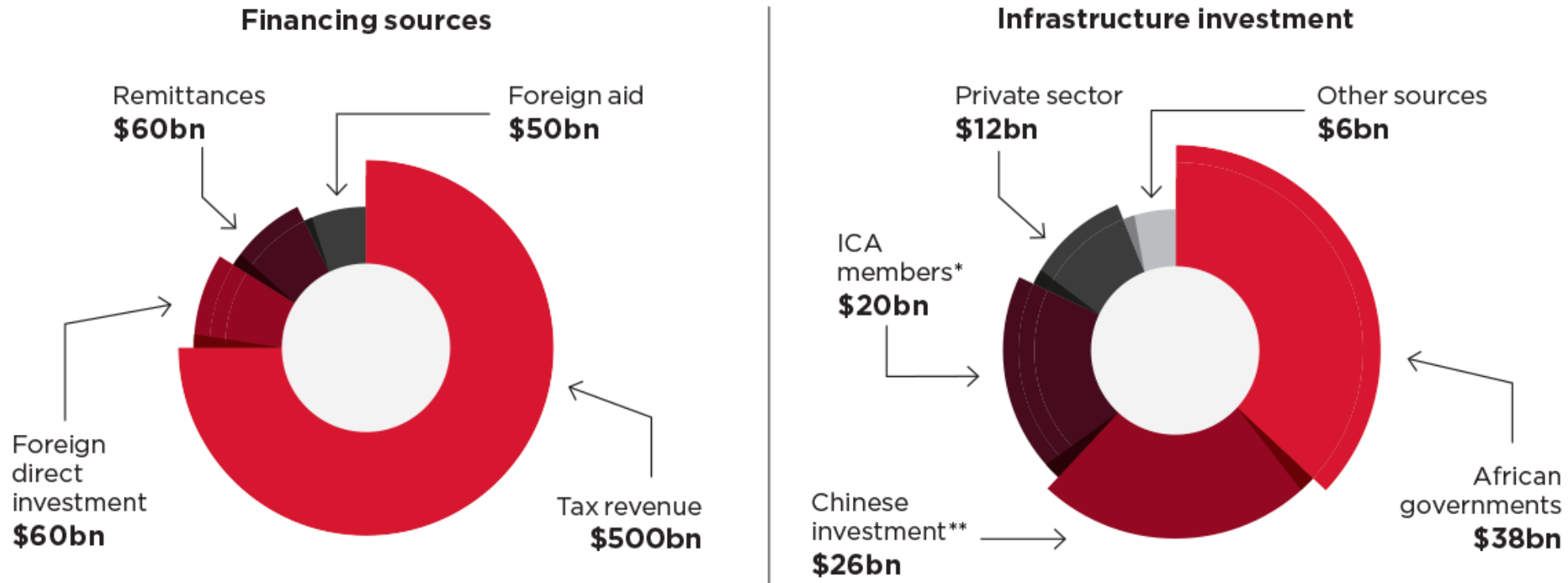
Financing sources

Remittances
$60bn

Foreign aid
$50bn

Foreign direct investment
$60bn

Tax revenue
$500bn

Infrastructure investment

Private sector
$12bn

Other sources
$6bn

ICA members*
$20bn

African governments
$38bn

Chinese investment**
$26bn

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Start-up funding: 'Big Deal' database analysis

Cumulative investment by sector 2019–2022 (USD, millions)

Legend:
- Fintech
- Energy and water
- Logistics and transport
- Retail
- Agriculture and food
- Education and jobs
- Healthcare
- Deeptech
- Telecom, media and entertainment
- Other*
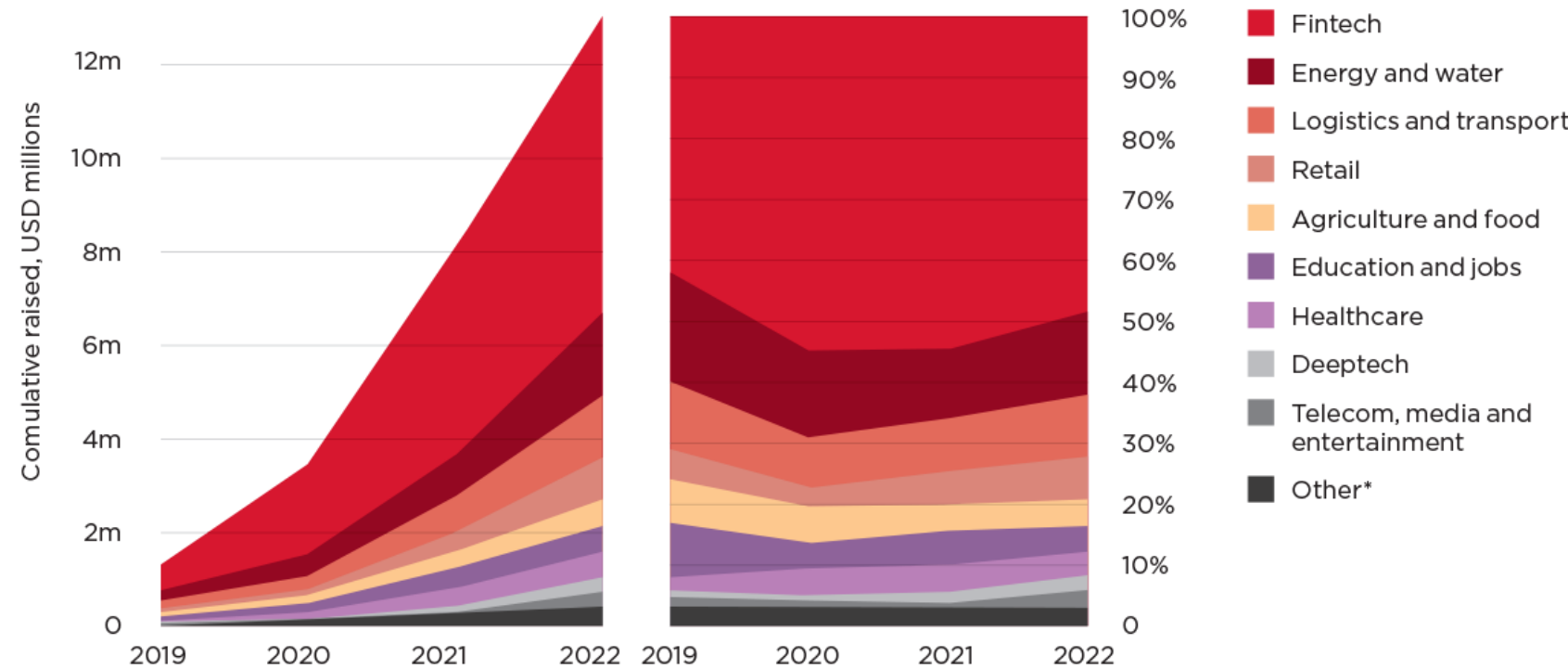
* "Other" is the total for Housing ($68 million since 2019), Waste management ($94 million) and Services ($262 million)

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Financing trends in Africa: Tier and solution type

The need for digital solutions in transport is clear, and successful companies are bringing tailored offerings that address some of the most pressing needs: access to finance for individuals, coordination in a fragmented sector and accelerated adoption of electric mobility.

Proportion of sector funding distribution by solution

PASSENGER **48%**	**4%** Other
	21% Multi-tier
	23% Mass transit
MULTI TIER **23%**	**23%** Multi-tiers
LOGISTICS **24%**	**14%** Freight
	7% Delivery
	3% Logistics
N.A.* **5%**	**5%** n.a.
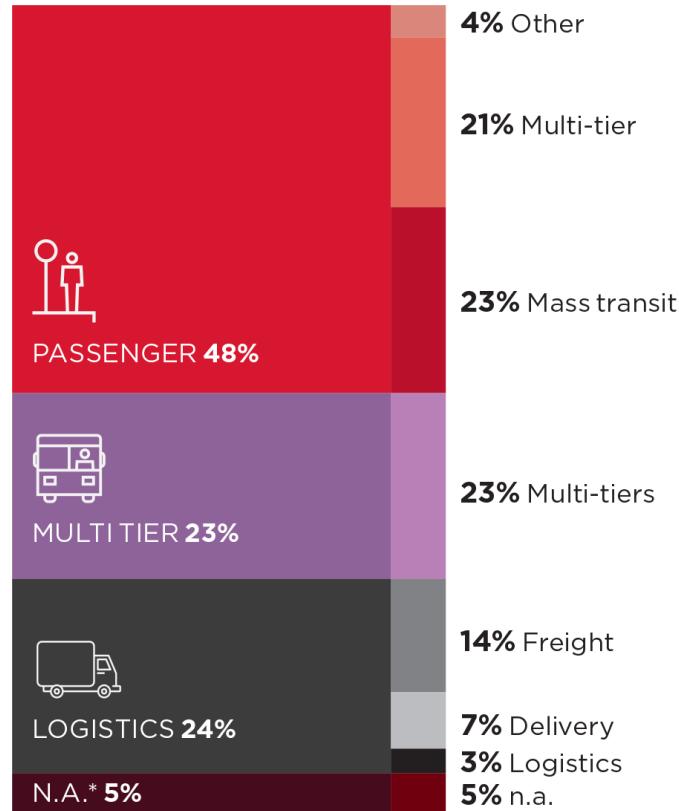
*Note: for some companies in the database there was insufficient information to code focus, they had pivoted away from transport or deal details were confidential. These companies are marked "n.a.".

Source: Authors' analysis of Africa: the Big Deal database

Distribution of funding compared across logistics, passenger and multi-tier sectors in transport

Legend:
- Super-app offering
- PAYG e-mobility
- Manufacturing and retail
- Fulfilment and delivery
- Drone delivery
- Digital platform/marketplace
- Digital management tools and analytics

(USD, millions — categories: Logistics, Multi-tiers, Passenger)

Source: Authors' analysis of Africa: the Big Deal database

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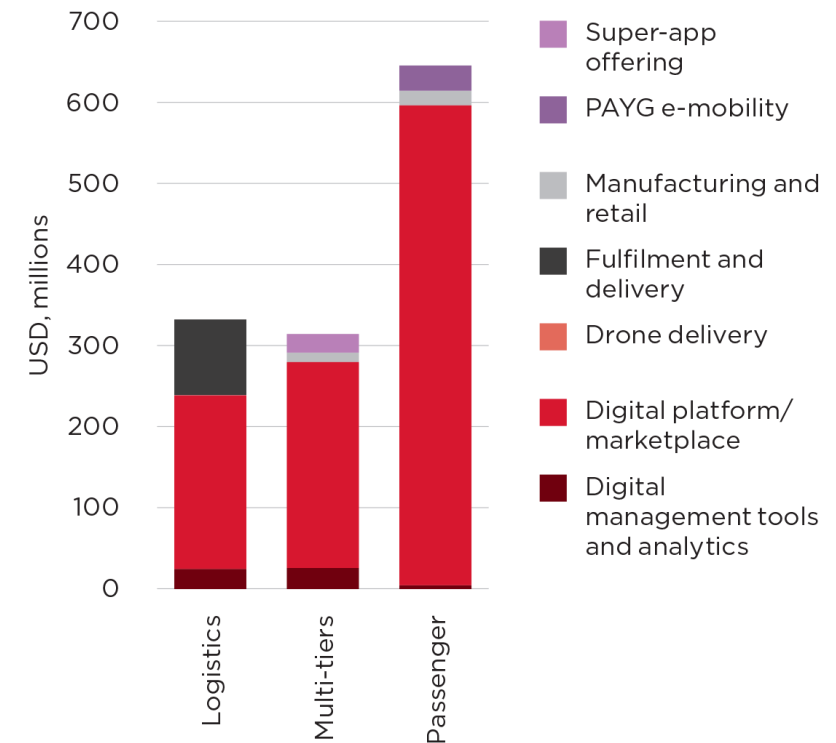
Start-up funding: Logistics trends

Solution type	Example companies	Total raised
B2B platforms for matching shippers to truck drivers with asset tracking and other services	Kobo360	$78 m
	Trella	$54 m
	Lori Systems	$34 m
	Naqla	$11 m
All-in-one warehousing and delivery, and logistics services	Sendy	$22 m
	Sote	$11 m
B2B parcel delivery for e-commerce	Mylerz	$10 m
	Bosta	$13 m
Platform for small shops to source fast-moving consumer goods (FMCG)	Jabu	$18 m
Platform for food ordering and delivery	Elmenus	$18 m
E-commerce enablement	Sabi	$28 m

Source: Authors' analysis of Africa: the Big Deal database

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Start-up funding: Passenger trends

Solution type	Example companies	Total raised
Revenue-based vehicle financing platform for the ride-hailing market	Moove	$266 m
Digital platform for accessing mass transit	Swvl	$252 m
Ride hailing / super-app	Yassir	$180 m
	Gozem	$16 m
Electric mobility manufacturing and supply	Max	$63 m
	Ampersand	$13 m
	Basi-go	$12 m
	Shift-EV	$9 m
	JET Motor	$9 m
	Roam*	$8 m
Marketplace for second-hand vehicles	Autochek	$17 m
	Sylndr	$13 m
Mobility data and services	WhereIsMyTransport	$24 m

* Formerly Opibus | Source: Authors' analysis of Africa: the Big Deal database

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Key recommendations

Funders and donors
- Provide early-stage funding for emerging digital use cases in the sector
- Support impact evaluations and research initiatives to better understand and quantify the developmental and commercial returns associated with different innovations and business model

Government and regulators
- Support capacity building for the public sector to understand the role of technology in transport
- Bring together both the private and public stakeholders

Enabling organisation
- Adopt a bottom-up approach in managing transport services to understand the needs of the urban population
- Integrate the use of data in urban planning processes
- Create policy that allows and encourages private actors to work in the sector
- Empower local governments to be at the forefront of transport planning

Mobile network operators
- Engage with public sector to develop data sharing systems that allow for informed decision making in urban planning
- Have dedicated teams supporting innovators who to integrate mobile services in their models
- Encourage interoperability across systems

Innovators
- Develop solutions that bring value to both transport users and providers, and that can be incorporated into the existing models

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Looking ahead

- Increasing financing for the transport sector

- E-mobility is playing a critical role in accelerating the transition to greener economies and improved livelihoods

- Need for improved linkages across large and secondary cities as well as rural areas to grow the economies

- Look at the long-term sustainability of digitalisation of a largely informal sector

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Thank you

Get in touch:
bnjoroge@gsma.com

For further information on our programme, please go to:
gsma.com/digitalutilities

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Will on wheels

The gentleman in the wheelchair was involved in a road accident when I was about seven years old. As a result, he became physically disabled. I got to witness his challenges in accessing transport services. This even lead to his dismissal from work. Since he was a Mechanical Engineer, he is now my mentor and an advisor to Ace Mobility. That gentleman is my father

AceMobility

Problem

My father represents many People with disabilities, who lack accessible, affordable and convenient transportation options that bring employment, health care, education, and community life within reach.

Problem

3 Number of seats
a wheelchair user
has to pay for

3X Triple the cost
for regular
commuters

3 Number of hours
PWDs have to wait to
use public transport

1 Number of people that
acquire permanent
disabilities every hour

AceMobility

Solution

A fast, convenient and efficient on-demand accessible car hailing service on mobile phone for persons with disability.

With drivers trained to be caregivers during the commute.

How it works

An app that connects persons with disabilities with accessible means of transport
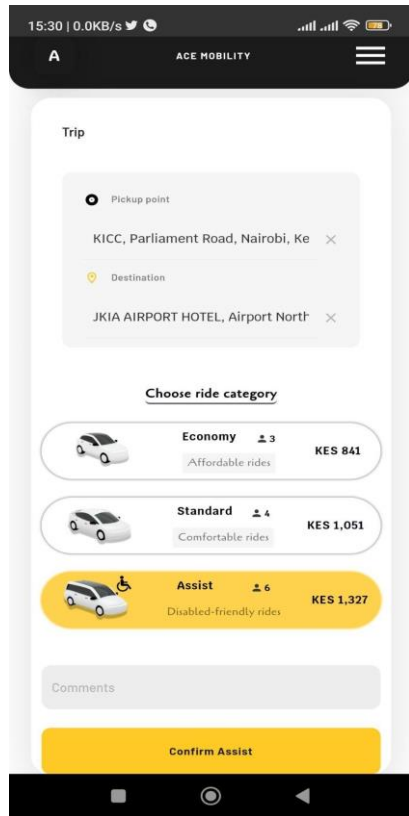
HAPTIC NAVIGATION

This is the use of haptics to deliver inclusive navigation. The tool uses machine learning and AI to create a virtual corridor that guides users to an end location with vibrational feedback
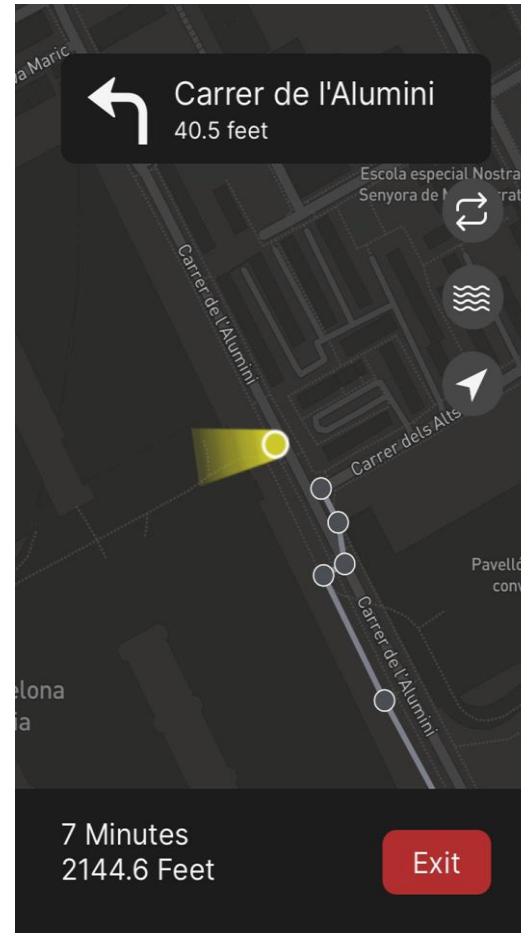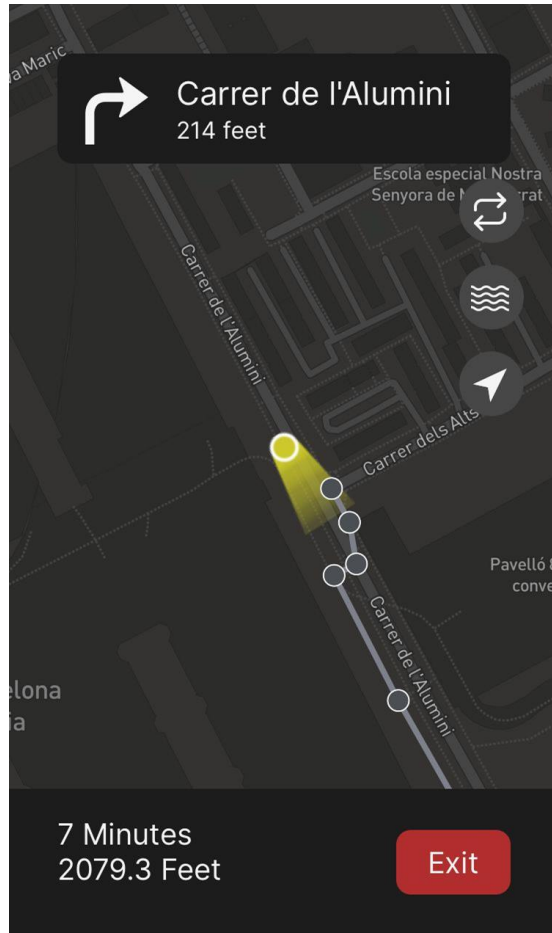
➢ Direction based Vibration for Visually Impaired People

➢ Change of color for Low Vision People

Opportunity

According to the 2019 census, 2.2%(0.9 million people) of Kenyans live with some form of disability.

SAM +1 Million

According to the 2019 National Census Report the population of older persons in Kenya was 2,740,515 (aged 65 years and above)

2.7 Million

TAM +80 Million

More than 80 million Africans are disabled, according to the United Nations, including those with mental health conditions as well as birth defects and other physical impairments.

AceMobility

Competition Analysis

	Local Specialised	Uber	Access Travel	ACE Mobility
Experience in handling PWDs	✔	✘	✔	✔
PWDs Organisation Partnerships	✘	✘	✘	✔
Accessible car	✔	✘	✔	✔
Affordability & Technology	✘	✔	✘	✔

Traction

7	7000	400	69%
FLEET	**COMPLETED RIDES**	**DAYS OPERATED**	**WOMEN COMMUTERS**

AceMobility

LET'S TALK

Instagram	@ace_mobility_
Facebook	@acemobility
Twitter	@acemobility
LinkedIn	@acemobility
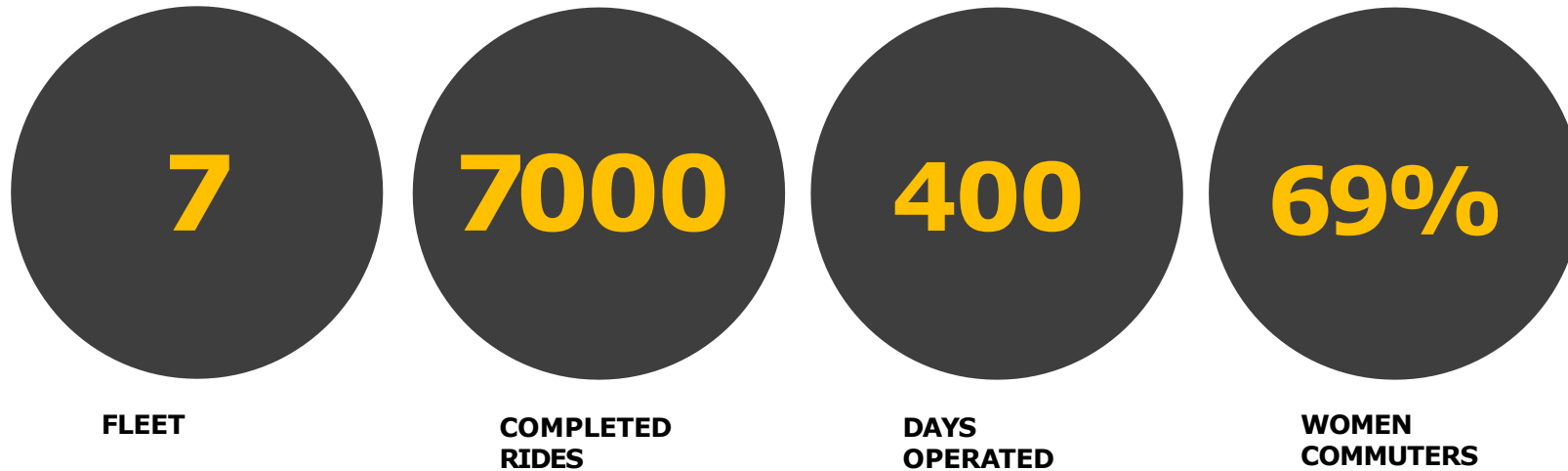
Email	info@acemobility.co.ke
Website	www.acemobility.co.ke
Phone	+254 708 696 448
Play Store	ACE Mobility

AceMobility

BASIGO

Mission
Create the future of clean, electric public transport in Africa

We make safe, electric transport **ACCESSIBLE** to all people in Africa.

We **REVOLUTIONIZE** the bus experience for owners and passengers.

We build solutions that **SCALE** to meet the urgency of the climate crisis.

We succeed as a **TEAM** by helping each other grow and thrive.

jani

ride bila hustle

CHALLENGES OF PSV OPERATIONS

Bus Operators...

- Struggle to increase daily revenue

- Lose income to cash leakage

- Have no visibility into # of passengers

- Want an efficient cash collection system

Passengers...

- Fight for space on Electric Buses

- Want greater predictability when traveling

- Are tired of being harassed for cash fares

- Want to get rid of long wait times

JANI SOLVES THESE PROBLEMS

Enabling Electric Bus owners to maximize revenue by pre-selling seats during commute hours.

1

Pick
your Route, Time, and your preferred Electric Bus

2

Purchase
your seat securely using Mpesa.

3

Proceed
to your E-bus stop knowing your seat is reserved.

WHY JANI?

Increase Revenue

More round trips during commute hours by avoiding queues

Higher ATF on Direct Routes that bypass CBD

Daily Settlements

Guaranteed disbursements to owners on a daily basis

All fare collections are secured in an escrow account until disbursement

Reduce Leakage

Digitizes majority of fares, increasing return for owners

Pre-sale of seats secures revenue before operations

Improve Efficiency

Data showing time and location of passenger demand patterns

Efficient scheduling through auto-dispatch

Lower Loan Cost

Fare digitization will give owners access to lower cost financing and insurance options at more favourable terms

Customer Experience

Seamless and efficient booking process resulting in improved customer satisfaction

In-app feedback to improve the quality of service

THANK YOU.

Q & A and Discussion

GSMA