



IMPACT-DRIVEN INVESTING IN NEW MOBILITY ENTERPRISES: PERSPECTIVES FROM KAMPALA, UGANDA, AND HYDERABAD, INDIA

THE HEIN TUN, TRAVIS FRIED, CHAITANYA KANURI*, ANNA OURSLER*, ADAM DAVIDSON, BENJAMIN WELLE

EXECUTIVE SUMMARY

Highlights

- Due to the growing recognition that socially and environmentally responsible solutions can generate impacts and financial returns across the risk spectrum, private investments present a critical funding opportunity to achieve the Sustainable Development Goals.
- Innovative new mobility solutions—especially when driven by impact-oriented investments and enabled by inclusive policies—can be part of a vital solution for sustainable and equitable transport.
- As is illustrated by the two case studies in Kampala, Uganda, and Hyderabad, India, impact investing in mobility enterprises is not common due to difficulty in accounting for impact, dilution of impact amidst cross-cutting sectors, and systemic challenges such as entrenched stakeholders holding back investments and regulatory regimes and political risks that could hinder the running of mobility businesses.
- Establishing transport impact metrics and a clear narrative of outcomes to impacts is difficult because the mobility sector serves as a critical but often unacknowledged, sometimes indirect, linkage for areas such as health, education, gender equity, urban development, and climate change.
- For impact investing in mobility enterprises to work, investors, governments, and other stakeholders must understand the enterprises’ market and institutional barriers and net impacts—both positive and negative—and be prepared to partner and support them in overcoming the barriers.

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* These authors contribute equally to the two case studies in the research paper.

Access to sustainable transportation is a prerequisite to economic growth and job creation, mitigating the climate emergency, and improving public health and gender inclusion. While conventional public transport infrastructure investments, such as bus rapid transit, are important, they are often insufficient for the most vulnerable communities that have complex travel needs. Investments in smaller-scale, sustainable mobility technologies and services present an opportunity to improve urban transportation and satisfy the diverse needs.

Funding and financing represent one of the biggest hurdles for realizing the Sustainable Development Goals (SDG) agenda. The United Nations (UN) estimates an annual US\$2.5 trillion investment gap to achieving the SDGs across all indicators (UN DOCO and Dag Hammarskjöld Foundation 2018). Private investments present a critical funding opportunity to achieve the SDGs, due in part to the growing recognition among investors that socially and environmentally responsible solutions can generate impact and financial returns across the risk spectrum. The Global Impact Investing Network (GIIN) estimates a total market value of roughly \$715 billion for achieving the SDGs across industry sectors (Hand et al. 2020).

Private sector innovations in the mobility space, from cashless ride-hailing and trip-planning apps to safer electric motorcycle taxis and bikeshare, are fundamentally reshaping the way we move about cities. These models are defined through a “new mobility” paradigm, which is based on using transportation assets, like vehicles, more efficiently through the active and ubiquitous use of data and/or information and communications technologies (ICT). On one hand, new mobility enterprises can positively contribute to the city—for example, through improved road safety, reduced air pollution and greenhouse gas (GHG) emissions, and increased accessibility, especially for transport-disadvantaged groups such as women, the elderly, and children. On the other hand, entrepreneurship does not mean that these mobility enterprises are void of negative externalities, nor are they always aligned with the public sector’s interest at large. The new mobility technologies and innovations—when enabled by inclusive policies, planned for integration with public transport, and driven by impact-oriented investments—can be part of a vital solution for a more equitable and sustainable transport system.

About This Working Paper

The purpose of this paper is to evaluate the compatibility between impact investing and the mobility sector and identify opportunities and barriers to amplifying net-positive impacts among new mobility enterprises, illustrated through two case studies. Different from grant funding, philanthropy, or purely profit-seeking investing, “impact investing” explicitly seeks to yield a financial gain while generating measurable societal benefits. Though several studies have evaluated the role of private and impact-based funds in development studies—for example, in the clean energy and microfinancing sectors (Gregory and Volk 2020)—fewer studies have focused on impact investing within sustainable mobility. Specifically, this research examines Kampala, Uganda, and Hyderabad, India, as case study cities in order to understand the nature of mobility enterprises in each city and their investment landscape, with a focus on the role of impact financing.

This paper highlights the urgent needs for private sector investment in innovative, impactful, and inclusive mobility. Venture capitalists, impact investors, development finance institutions (DFIs), and development banks can use this resource to help identify impact-driven mobility enterprises, assess institutional and financial barriers, and navigate impact measurement challenges to jumpstart private sector involvement in sustainable mobility.

Key Findings

Our research finds that impact investing in mobility enterprises is not common in the two case study countries. Mobility enterprise investment in Uganda is currently dominated by foundations and philanthropic projects, as well as support from bilateral and multilateral development partners who provide subsidized loans and grants. While private sector investments in startups on the African continent have been increasing in recent years, impact investments remain a niche space. In comparison, although road-based mobility enterprises in India have received \$6.1 billion in funding since 2010 (Tracxn 2021), nearly all of them are driven by venture capital, with very few impact investments in the sector.

At the sectoral level, we identify three main barriers to impact investments in mobility enterprises:

- **Impact metrics do not account for the cross-sectoral benefits of sustainable mobility.** While impact investing metrics gravitate toward both discrete and direct metrics whenever possible,

establishing such one-to-one, outcome-to-impact connections in transport is difficult. The mobility sector often serves as an unacknowledged yet critical linkage for areas such as health, education, gender equity, urban development, and climate change. Any impacts on specific SDG targets (including SDGs 3, 5, 7, 8, 9, 11, and 13) tend to be under-recognized or diluted, since sustainable mobility is a second-order effect, not easily captured by direct interventions nor usually explicitly mentioned.

- **True impacts in the transport sector are hard to quantify as even clearly laid out objectives can bring both synergies and trade-offs at the systemic level.** While innovative solutions by mobility enterprises can bring many benefits (for instance, improving quality of services for customers and operators), a firm-based impact evaluation can also discount real and visible negative externalities of transport services, from mobility services adding to city congestion (Bliss 2019) to the potential to exploit gig workers (Chaudhary 2020; Prabhat et al. 2019; Snider 2018). The contextual nature of transport impacts warrants examination of both enterprise-

level direct impacts and actual or projected systemic impacts—positive and negative—at the city level or broader.

- **Significant market and institutional barriers make mobility enterprises appear to be an unattractive investment for impact investors.** Indeed, the high degree of regulatory control in the transport sector is an absolute barrier for any investments—impact or commercial. Sustaining mobility enterprises can require significant capital: patient capital flow and long windows for return are normal in transport investment (Leijonhufvud et al. 2019), as are direct or indirect subsidies in the form of public contracts or public infrastructure. At the same time, these are the some of the same conditions that allow for high impact, and catalytic impact funds, especially for early-stage enterprises, are most indispensable.

Table ES 1 summarizes three barriers to impact investing in Kampala and Hyderabad, highlighting uncertainties around government regulations; the financial returns to enterprises, especially over the long term; and the complex calculus of impacts generated by mobility enterprises.

Table ES-1 | **Barriers to Impact Investing among Mobility Enterprises in Kampala, Uganda, and Hyderabad, India**

BARRIERS	DESCRIPTION
Government policies and regulations are often unclear and not transparent.	<ul style="list-style-type: none"> ▪ Competition with entrenched industries (e.g., the existing informal paratransit sector) is a key systemic barrier for nascent enterprises to enter the market and for growth-stage enterprises to scale. ▪ In Kampala, a lack of transparent regulation, excessive bureaucracy, and rent-seeking behavior hinder mobility enterprises' ability to grow, scale, and make positive impacts. Reform of the <i>matatu</i> and <i>boda</i> (informal or paratransit) industry has potential for great impacts but is politically complicated. ▪ In Hyderabad, a lack of clear governance and policy frameworks, as well as restrictive procurement practices surrounding new mobility enterprises, heightens the regulatory risk to business models. For a significant number of mobility enterprises—especially those in public transportation, road safety, and other data-centric business models—government is a key client, which poses a further revenue risk to enterprises.
Financial returns are uncertain.	<ul style="list-style-type: none"> ▪ Providing quality service provision incurs costs for enterprises. In Kampala, since most residents have limited disposable income, they cannot directly pay more for positive externalities like those required for safer, cleaner, or more efficient commuting. There is a need to develop a market ecosystem and pipeline, most likely through grants from impact-oriented foundations and philanthropic organizations. ▪ In Hyderabad, the transport sector is dominated by venture capital funds. Enterprises that want to focus on impacts cannot compete with profit-driven firms without patient capital.
Calculation of impacts is complicated.	<ul style="list-style-type: none"> ▪ Impact isn't clearly thought out or explicitly defined by most mobility enterprises in either city. ▪ Many mobility enterprises in the two cities prioritize financial profit. The trade-off of business sustainability and impact generation leads to difficult operational decisions at the risk of neglecting impact parameters. ▪ Impact investors may not be aware of investment opportunities in the mobility sector in Kampala and Hyderabad.

Source: WRI Authors.

Recommendations

This paper discusses three important measures that can help improve the understanding of mobility impacts for sustainable development and remove policy barriers in Kampala and Hyderabad in order to unlock the impact investments and patient capital that are urgently needed in the transport sector.

- **In both cities, there is a clear need for mobility enterprises to navigate the policy landscape, be in dialogue with policymakers, and support evidence-based processes of institutional and policy reform.** One approach is to understand city and state government priorities, articulate and link innovative mobility solutions to existing objectives, and help governments achieve their sustainability goals (for example, enabling transport reforms such as minibus or paratransit reorganization). Another approach is to raise awareness among government officials and impact investors about the impacts and development outcomes linked to transport enterprise solutions.

In Kampala, philanthropic organizations and development banks are increasingly considering service provisions beyond infrastructure investments, recognizing that poor mobility is setting back their development agendas. In Hyderabad, the negative externalities of unsustainable mobility pathways have become increasingly evident, with growing congestion, worsening air pollution, and diminishing service quality of public transportation. At the same time, however, new mobility services in the city are demonstrating potential for shared and decarbonized urban transport systems.

- **To avoid loose and nebulous definitions of impact, create tailored impact measurement indices accepted among stakeholders to capture sustainable mobility outcomes.** Moreover, impacts on transport service provision must be measured at the system level alongside impacts at the individual level, and need to include efficacy of integration with other services and negative externalities. Because many direct and indirect impacts of transport services are often realized over a longer time horizon, strategic longitudinal data collection and impact assessment is warranted.

New mobility solutions present opportunities for data generation and collection through digital technologies and real-time communication. That data can then be

used to evaluate impact at a granular level over time and leveraged to improve mobility in cities.

Starting with a theory of change developed with a sectoral understanding of sustainable mobility, enterprises and investors can use industry-developed or standardized global metrics, such as the SDGs and GIIN, as a foundation to build impact metrics. To create a widely accepted impact measurement framework among relevant stakeholders, a participatory approach with broad-based consultations of different groups is recommended.

- **Creating coalitions among enterprises, development partners, and investors, together with demonstration platforms for sustainable mobility, can advance interest in and knowledge of impactful mobility solutions.**

Transport sector networks thus far have focused on technical knowledge dissemination, without much emphasis on the intersection of impacts and business models in achieving sustainable development.

Sandbox programs and pilot projects supported by governments and development partners offer excellent opportunities to develop new use cases, demonstrate potential partnership arrangements, and collect evidence for impact. Unfortunately, due to inadequate commitment and lack of long-term perspective, they often fail to scale when funding runs out. In order to be successful, these initiatives must have committed leadership with a long-term vision.

1. INTRODUCTION

Access to sustainable transportation is a prerequisite for economic growth and job creation, improving public health and gender inclusion, and mitigating the climate emergency. Cities that prioritize highway and road investments over public transport and compact development benefit wealthier residents while leaving poorer residents disproportionately impacted by poor air quality, unaffordable transport options, dangerous walking infrastructure, and exclusion from opportunities (Lucas et al. 2016). Sprawling and disconnected cities are also more emission-intensive and less economically productive per capita than compact, transit-oriented cities (Coalition for Urban Transitions 2019). At the same time, while conventional public transport investments like bus rapid transit are extremely important, they are not always planned in a way that allows accessibility or is affordable for the most vulnerable urban communities.

Today, funding and financing represent one of the biggest hurdles for achieving the 2030 Sustainable Development Goals (SDGs). The United Nations (UN) estimates an annual US\$2.5 trillion investment gap to achieving the SDGs across all indicators (UN DOCO and Dag Hammarskjöld Foundation 2018). Official development assistance, in which national governments obtain development funding in the form of grants, secured only \$146.6 million in 2017. This is far from closing the investment gap for reaching the SDGs. Within the international development community, there is a shifting consciousness to move “from funding to financing,” which aims to balance public and private investments in order to maximize available resources (World Economic Forum 2019). With burgeoning entrepreneurship, an increasingly wide range of investors—including venture capital or angel investments and impact investments—are becoming promising financial drivers for sustainable development (UN DOCO and Dag Hammarskjöld Foundation 2018).

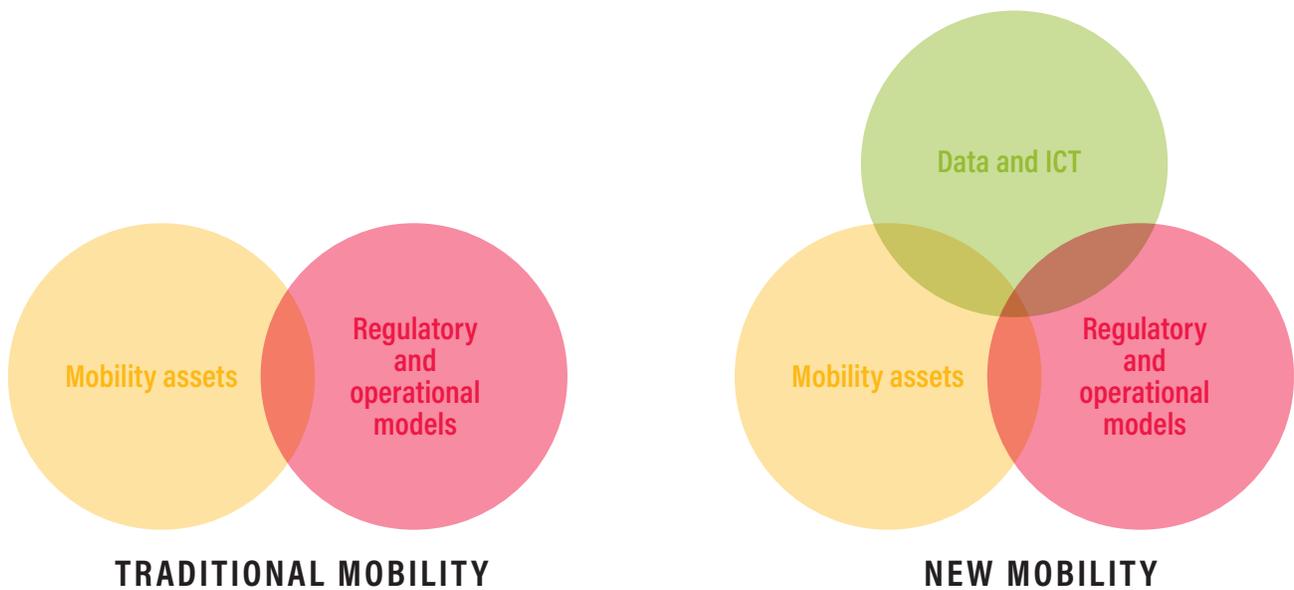
Given the complexities of transportation needs, investment in smaller-scale, sustainable mobility technologies and services is also critical to achieving sustainability

goals. Around the world, a rapidly growing number of enterprises are using disruptive technology and innovative operations to improve urban transportation. Increasingly, these privately provided solutions, such as ride-hailing, bike-sharing, and transit route mapping, are known as “new mobility” technologies and services. Working together with city officials, these mobility enterprises can be part of an integral solution for a more equitable and sustainable transportation system.

What Is New Mobility?

New mobility is a paradigm based on using transportation assets, like vehicles, more efficiently through the active and ubiquitous use of data and/or information and communications technologies (ICT). A result of the new mobility ecosystem is, in some cases, reconfiguration of ownership, storage, and delivery, as assets can be spatially dispersed, centrally monitored, and used on-demand. Based on this definition, the mobility services are not necessarily provided by players in the transport domain, but these services could be provided by existing or even conventionally non-mobility enterprises (Figure 1).

Figure 1 | **Comparing Traditional Mobility and New Mobility**



Source: Jyot Chadha (WRI) and Adam Davidson (WRI).

New mobility services (henceforth, “mobility enterprises”) are often developed in response to local challenges and are shaped by specific political, economic, and social landscapes. As of 2020, we estimate that there are over 150 mobility enterprises in cities across the African continent, and more than 1,200 in Indian cities (Briter Bridges 2019; Tracxn 2021). To explore the diverse and evolving range of these services and products, this report characterizes enterprises into four cross-cutting groups with important interplays: shared mobility, user experience, data-driven decision-making (D3M), and product innovation (Figure 2). These classifications are used in the case study chapters to analyze the mobility enterprises in Kampala, Uganda, and Hyderabad, India.

On one hand, new mobility enterprises can positively contribute to the city—for example, through improved road safety, reduced air pollution and greenhouse gas (GHG) emissions, and increased accessibility, especially for transport-disadvantaged groups such as women, the

elderly, and children. On the other hand, entrepreneurship does not mean mobility enterprises are without negative externalities or are always aligned with the broader public sector’s interest. There is also a lack of clarity on the positive impacts of mobility services (such as access and job creation)—partly due to impact dilution and uncertainties in quantification—and how we communicate these impacts along with those of the negative externalities created and those avoided. For mobility enterprises to be successful, their market barriers and net impacts on the urban environment and human development must be better quantified by investors, government regulators, and especially by enterprises themselves.

1.2 Study Approach

This paper examines the practice of impact investing—which explicitly seeks to generate measurable societal and environmental benefits along with yielding a financial gain—in the context of the transport sector, evaluates

Figure 2 | Taxonomy of New Mobility Services, Cross-Cutting Subcategories, and Examples



Source: Canales et al. 2017; Chadha 2017.

the compatibility between impact investing and transport, and identifies opportunities and barriers to amplify net-positive impact among private mobility enterprises. Inclusive and sustainable transport means enabling social and environmental benefits by improving accessibility for all, and the mantras of impact investing are well-aligned with these mobility goals. We use a bottom-up approach based on two pilot cities, Kampala, Uganda, and Hyderabad, India.

We selected Kampala and Hyderabad because both are rapidly growing cities bustling with entrepreneurship in economically developing regions. Uganda's capital, Kampala, is an up-and-coming hub for entrepreneurial activities in East Africa (Giuliani and *Digest Africa* 2018). Hyderabad, the capital of the Indian state of Telangana, hosts one of the largest enterprise ecosystems in India and the world (Kummitha and Crutzen 2019). Because of urbanization and population growth, both cities face significant gaps in their existing transportation service provision. As a result, multiple opportunities for innovations and impacts exist in the sector. Table 1 summarizes transport profiles of the two cities.

Between September 2019 and February 2020, the authors conducted a series of semi-structured and structured interviews with 56 enterprises and investors in Kampala and Hyderabad (Appendix A). Enterprises and investors were selected based on evidence of operations in the

pilot cities, desktop research, and the World Resource Institute (WRI)'s past project work. Enterprise interviews were conducted in person, using a set of 10 to 15 standard questions about the companies' challenges and successes in operations, growth goals, and desired or documented impacts. Investor interviews also used a standard set of questions to guide a conversation about perceived risks and future interest in transport sector investments (see Appendix B).

Prior to conducting interviews, the WRI research team introduced itself as a third-party, non-profit research organization, collecting data for a research paper that aims to highlight opportunities for investment in the new mobility sector in the pilot cities. This frame of orientation and many of the interviewees' pre-existing knowledge of WRI's work positioned WRI as an advocate and potential partner to the companies being interviewed, creating a trusting environment. Interviews were transcribed and reoccurring comments were analyzed to guide the findings and recommendations of this study.

Regardless, the interview sample selection has potential biases. In Kampala, where online information about firms is scarce or inaccurate, there might be a small subset of enterprises that operate in the city that we were unable to identify. Similarly, Hyderabad has dozens of mobility enterprises, but the internet-based desk research was likely to identify the more prominent ones and miss smaller-scale firms.

Table 1 | **Transport Profiles of Kampala and Hyderabad**

KAMPALA, UGANDA	HYDERABAD, INDIA
<ul style="list-style-type: none"> ▪ About 1.6 million residents (5% annual growth rate) ▪ Fragmented services, dominated by privately-owned, lightly-regulated minibuses (<i>matatus</i>) ▪ Private vehicle motorization is growing among middle- and upper-class residents ▪ Walking is dominant among low-income residents, though conditions are unsafe ▪ New mobility enterprise ecosystem <ul style="list-style-type: none"> □ More than 30 mobility enterprises, 40% of which are shared mobility services 	<ul style="list-style-type: none"> ▪ About 9.5 million residents ▪ Public transport ridership decreasing across India, despite increasing travel demand ▪ Private vehicle motorization is increasing ▪ 22% of commuters walk or bike ▪ New mobility enterprise ecosystem <ul style="list-style-type: none"> □ Over 100 mobility enterprises, with more than 50% accounting for shared mobility □ Several enterprises work in Internet of Things (IoT)-related innovations and e-mobility space

Sources: WRI authors, based on Comprehensive Transportation Study (CTS) for Hyderabad Metropolitan Area (HMA), Tracxn (2021), and WRI mobility surveys.

2. DEFINING IMPACT INVESTING

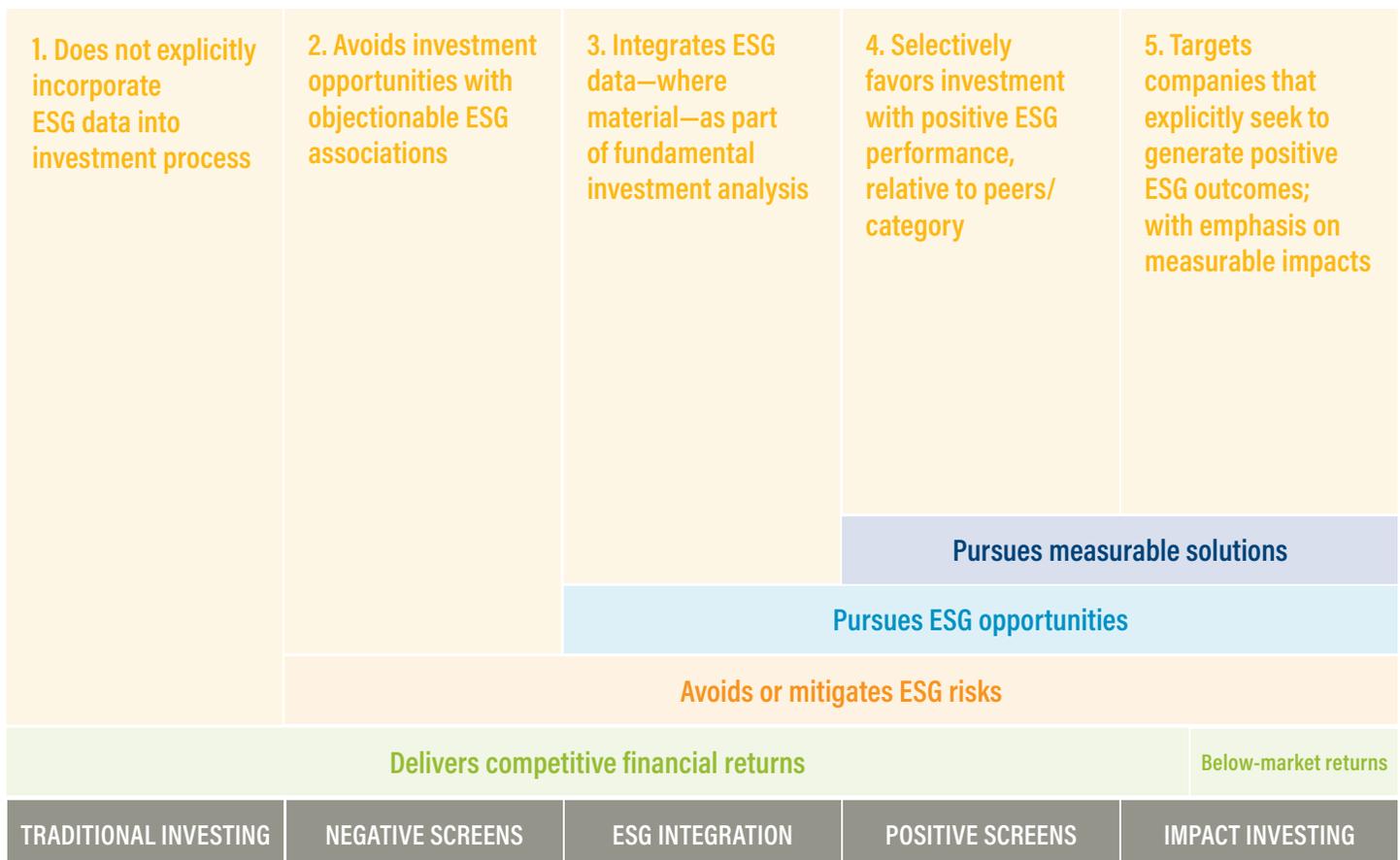
“Impact investing” was first coined in 2007 by the Rockefeller Foundation to differentiate the concept from grant funding and philanthropy, in that it explicitly seeks to yield a financial gain while also generating measurable societal and environmental benefits (Figure 3). Impact investors, as opposed to regular investors, not only plainly declare their intention to achieve positive environmental, social, and governance (ESG) impacts, but also measure and communicate them in a transparent and accountable manner while seeking a positive financial return (GIIN 2021). By the end of 2019, the market size of impact investing was estimated to total \$715 billion (Hand et al. 2020).

Depending on the type of the organization and its mandate, impact investments often—but not always—target the so-called “bottom of the pyramid” to improve the livelihoods of vulnerable communities and to provide broader environmental and climate benefits (Horster

2018; O’Donohoe et al. 2010; Trelstad 2010). As socially and environmentally responsible business models become more commonplace, assets under management (AUM) by impact investors are growing at a compound annual growth rate of 17 percent. In general, the minimum expected financial returns, or “hurdle rates,” from impact investing vary by organization type. While pension funds, insurance companies, and most for-profit managers (also known as “finance first” investors) target risk-adjusted, market-rate returns, non-profit asset managers and foundations (“impact first” investors) are more likely to accept below-market-rate returns in return for greater impacts. Figure 4 illustrates the relative spectrum of impact investing.

Over the last decade, emphasis on return-impact trade-offs has become blurry with the emerging blended finance vehicles in some places. According to the 2020 GIIN survey, 67 percent of investors seek market-rate returns, while less than one-third target (concessionary) below-

Figure 3 | **Impact Investing and Other Sustainable Investment Strategies**



Source: Lewis et al. 2016.

Figure 4 | Typical Spectrum of Financing Sources in Relation to Financial and Impact Performances



Source: Ding et al. 2017.

market returns, gradually shifting away from the notion of inherent compromise between financial performance and impact (Hand et al. 2020; Morgan Stanley Institute for Sustainable Investing 2019).

Catalytic or patient capital is risk-tolerant and accepts concessionary returns—for instance, accepting a longer timeframe than conventional investments, thereby enabling impact that would otherwise be impossible through traditional investment criteria. The rationale for those with organizational impact mandates, for example, is to spur innovation by supporting new and untested business models in their early stages while they gain traction, or to serve populations in hard-to-reach locations that can add significant risks and costs (Leijonhufvud et al. 2019; Randazzo 2019). Particularly in the transport sector in the developing world, where government-provided services are limited, impact investments and grants are instrumental in supporting private sector startups in order to reduce the risk of commercial capital and escape the “valley of death” (Figure 5).

As with other types of investments, data is crucial. The impact investing community still has challenges with accurately quantifying its impacts. One prominent leader of an impact investing organization commented that “in the absence of data (or more broadly, evidence) all we have is our deeply held personal convictions” and that it is difficult to distinguish good “market-rate impact investing” from “impact washing” (McCreless 2017). Impact washing—making impact-focused claims disingenuously without demonstrable socioenvironmental results—is partly due to the disparity between the funders’ expectations that emphasize impacts and the intricate reality of

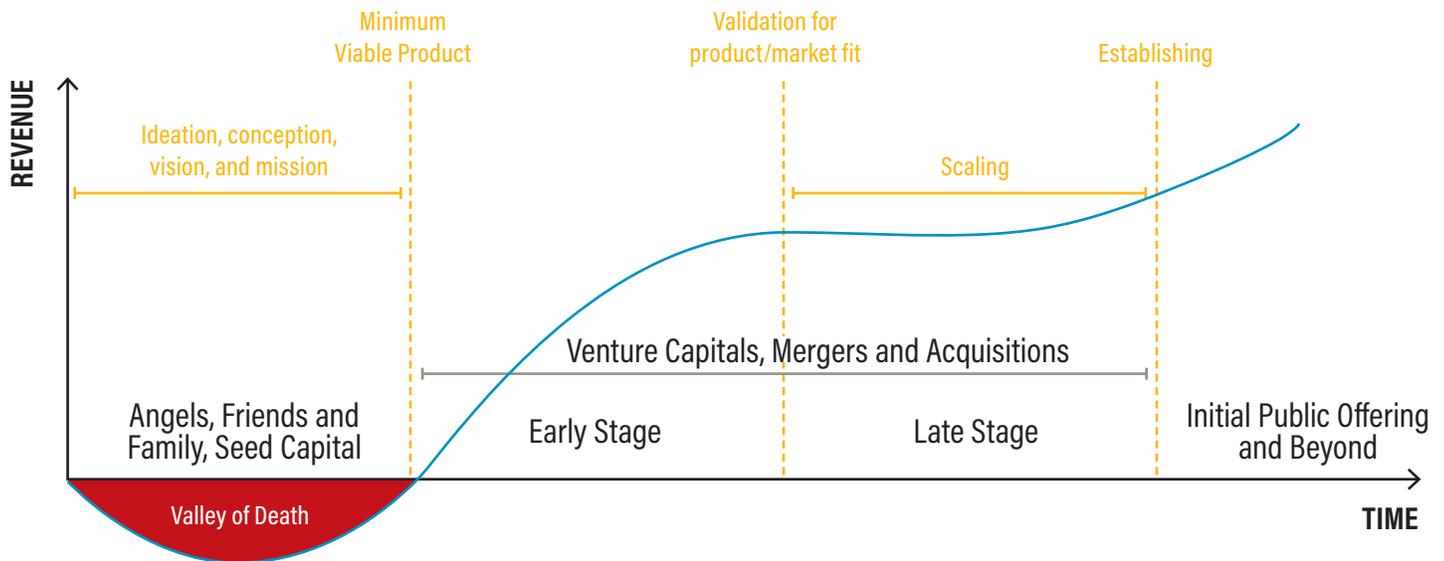
social changemakers, markets, and the population served (Deiglmeier and Greco 2018). Organizations such as 60 Decibels and GIIN, through the IRIS+ system, are continuing to develop more robust and transparent measurements to understand impact per investment dollar in the impact investing space. Moreover, data generated from digital tools are being used more extensively to capture and evaluate impact (GSMA 2021; Holl et al. 2021).

2.1 Is Impact Investing Compatible with Mobility Enterprises?

Given the desire to obtain both social and financial returns, impact investing has matured around problems and programs that deliver the highest benefits based on minimal inputs (monetary or otherwise) to achieve greatest impact. Because of the challenges in accounting for impact, impact investments gravitate toward discrete and direct metrics whenever possible. A good example would be the number of vaccinations achieved by a medical service. On the other hand, many impact investors in this study were unaware of or had not considered sustainable transportation (unlike agriculture, energy, or education sectors) as an impact theme.

Transport is a derived demand—almost always a means to an end, and often subsidized to enable those ends (Venter et al. 2019). The primary effect of transportation is to provide access to other people, goods, and services. In this sense, impact investing is aligned with inclusive and sustainable transport as it aims to increase access to opportunities, especially for the under-served. The act of transport enables social benefits to be measured; the social impact happens within the context of the trip’s purpose

Figure 5 | **Enterprise Lifecycle**



Source: WRI authors, adapted from Reisdorfer-Leite et al. (2020).

and its alternatives, which unfortunately can be a complex and individualized calculation. Data from this study suggest that social impacts vary widely depending on the mobility enterprise, profit generation or service provision goals, and the existing mobility options and spatial layout of the city. The research highlighted three primary issues in assessing the compatibility of mobility enterprises and impact investments:

- Transport service provision is cross-sectoral.
- True impacts from mobility enterprises are difficult to quantify.
- Impact potential in transport is paramount, but barriers are high.

Transport service provision is cross-sectoral.

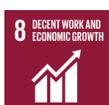
Transport services provide access to opportunities—be that jobs, education centers, or other urban amenities—and are critical for areas such as health, education, gender equity, urban development, and climate change. In recent years, more and more impact investors are aligning themselves with the SDGs as a means to standardize, track, and communicate their project impacts. However, among the 17 SDGs that are the most cited and tracked, transporta-

tion is embedded not as a standalone goal, but rather as an intersecting enabler that is directly and indirectly linked to many other SDGs. Transport impacts, therefore, tend to be under-recognized or diluted, since sustainable mobility is not easily captured by direct interventions nor usually explicitly mentioned. This makes impact measurements more complex, and therefore harder to communicate. The research for this report has identified seven SDG targets where the transport sector plays a prominent role—SDGs 3, 5, 7, 8, 9, 11, and 13—and provided corresponding approaches for achieving those targets (Figure 6).

True impacts from mobility enterprises are difficult to quantify.

Defining impacts can be problematic. A common mistake is focusing on a practical yet limited set of dimensions (typically just one) when the issue is in fact multi-faceted. For example, the climate impact resulting from transport electrification is frequently discussed. The transition toward electric vehicles (EVs) often emphasizes GHG emissions, but this emphasis can overlook the challenges in emerging markets, where economic developments are perceived as having greater importance to society (Martinez et al. 2019; Tørstad and Sælen 2018).

Figure 6 | **Transport-Related SDG Targets and Corresponding Approaches**

SDGS	SDG TARGETS	MOBILITY ACTION AREA
 3 GOOD HEALTH AND WELL-BEING	Health & Well-being <ul style="list-style-type: none"> By 2030, halve the number of global deaths and injuries from road traffic accidents By 2030, substantially reduce the number of deaths and illnesses from pollution 	<ul style="list-style-type: none"> Speed calming and management measures Safety training and equipment for drivers Transport modes and tech that improves air quality
 5 GENDER EQUALITY	Gender Equality <ul style="list-style-type: none"> Achieve gender equality and empower all women and girls 	<ul style="list-style-type: none"> Inclusive labor and employment in mobility and transport operator sector Enforcement and accountability to eliminate sexual harassment
 7 AFFORDABLE AND CLEAN ENERGY	Affordable, Reliable, Sustainable and Modern Energy for All <ul style="list-style-type: none"> By 2030, double the global rate of improvement in energy efficiency 	<ul style="list-style-type: none"> Renewable energies and resources in the entire lifecycle of vehicle production to end of life disposal Compact, connected and coordinated urban growth based on well-integrated land use and transport planning
 8 DECENT WORK AND ECONOMIC GROWTH	Inclusive and Sustainable Economic Growth for All <ul style="list-style-type: none"> Achieve higher levels of economic productivity through diversification, innovation Focus on high-value added and labor-intensive sector 	<ul style="list-style-type: none"> Investment in a variety of mobility systems to provide direct job creation opportunities
 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	Resilient, Inclusive Infrastructure <ul style="list-style-type: none"> Develop quality, reliable, sustainable and resilient infrastructure that is equitable, to support economic development and human well-being 	<ul style="list-style-type: none"> Robust and reliable public transport with inclusive access, particularly to low-income areas Affordable mass transit and last mile connectivity
 11 SUSTAINABLE CITIES AND COMMUNITIES	Make Cities Inclusive, Safe, Resilient and Sustainable <ul style="list-style-type: none"> By 2030, provide access to safe, affordable, accessible, and sustainable transport systems for all, notably by expanding public transport, with special attention to the needs of those in vulnerable situations By 2030, reduce the environmental impact of cities, particularly in areas of air quality and waste management 	<ul style="list-style-type: none"> Bike and pedestrian infrastructure that is safe, complete, and integrated with mass transit Open data to improve trip planning, transit operation, and service planning
 13 CLIMATE ACTION	Climate Action <ul style="list-style-type: none"> Implement the Paris Climate Change Accord, which seeks to rationalize inefficient fossil-fuel subsidies in accordance with national circumstances 	<ul style="list-style-type: none"> Adoption of e-mobility and stricter emission standards Emphasis on sustainable, non-motorized modes of transport

Source: WRI authors.

While many transport impacts are naturally broad, its depth is more difficult to account for, and the task of assigning the appropriate value can become fraught. Impacts, such as emissions, social equity, and access to opportunities are largely second-order effects that can be better measured within the context of a socioeconomic system rather than a specific mobility enterprise. Even what appears to be a straightforward metric of creating and increasing job opportunities contains layers of nuance. Evaluating social impacts becomes more burdensome and expensive when secondary positive externalities are included, such as increasing riders' access to additional jobs and indirect job creation in the transport sector. Similarly, a firm-based impact evaluation focusing solely on positive impacts discounts the very real and visible negative externalities of transport services, such as the potential to exploit gig workers among mobility services (Chaudhary 2020; Prabhat et al. 2019; Snider 2018).

Transport impacts can also be very different when analyzed at the city level, as opposed to at the individual level, considering competing enterprises with similar business models or across different modes. For example, a ride-hailing service might be able to facilitate an individual user's travel need, but it can also inadvertently add to city congestion (Bliss 2019). At the same time, if the same enterprise were to use pricing to incentivize trips to mass transport routes (last mile connectivity), it has the potential to increase access to transport for urban residents, generating a positive impact on the city. Figure 7 provides some considerations of potential synergies and trade-offs in assessing transport impact objectives at the system level. Since mobility enterprises can generate a multitude of impacts based on various business models, the assessment must also be more granular in mapping out the impacts based on the verticals of business models.

The contextual nature of transport impacts requires an analysis of longer-scale time horizons for both customer-level direct impacts, market-level impacts, and actual or projected systemic impacts—positives and negatives—at the city level or broader, all of which can be challenging.

Impact potential in transport is paramount, but barriers are high.

Significant market and institutional barriers make mobility enterprises appear an unattractive investment, yet these are the some of the same conditions that allow for impact. New entrants in mobility must contend with a market that is often highly politically influenced, with constraints from pre-existing infrastructure and competition from public and private service providers (Table 2). Service providers must also find ways to overcome high operating and capital expenses typical of transport. Low margin per customer or trip means enterprises seek volume-based opportunities, relying on network effects. Moreover, the high degree of regulatory control in the transport sector is an absolute barrier for any investments, impact or commercial.

Sustaining mobility enterprises thus can require significant capital: patient capital flow and long windows for return are normal in transport investment (Leijonhufvud et al. 2019), as are direct or indirect subsidies in the form of public contracts or public infrastructure. Even among successful new mobility players, Uber's low performing initial public offering (IPO), despite its disruptive business model and initial investor excitement, is a high-profile example of the struggle to achieve profitability (Sherman 2017).

Additionally, many investors view existing subsidies and/or large investments from government or conventional equity investors as obstacles that tilt the market away from new entrants. Their presence sometimes gives impact investors the impression that their funding is not appropriate to the sector. On the other hand, the substantial advantages that up-and-coming digital platforms can provide to widen the market to previously inaccessible demographics have already created many opportunities for start-ups (Bauer et al. 2020). Especially in places with limited government capacity and institutional blind spots, tech-based mobility enterprises can offer great impacts, expanding markets in ways that bring service to the under-served.

Figure 7 | Potential Synergies and Trade-offs to Consider when Evaluating Common Urban Transport Objectives

	UNIVERSAL ACCESS		GREEN MOBILITY		SAFETY	
SYSTEM EFFICIENCY	<ul style="list-style-type: none"> Increasing efficiency can increase capacity to move people and lower costs, increasing access. Higher accessibility leads to benefits related to job density and market competition. 	<ul style="list-style-type: none"> Providing public transport to areas with low population may be financially unsustainable. Frequent stops for universal access means slowing down the service or increasing financial burdens. 	<ul style="list-style-type: none"> Energy efficient vehicles and systems cut resource requirement and leads to lower GHG emissions and improved air quality. Efficient management of empty transport services. 	<ul style="list-style-type: none"> Increases in road use efficiency can trigger increased demand, and may lead to congestion. Future technologies such as driverless cars may increase urban sprawl. 	<ul style="list-style-type: none"> More efficient allocation of road space (bus lanes, BRTs, active modes) along with safety measures (e.g., traffic calming) helps organize traffic and make it safer. 	<ul style="list-style-type: none"> Improving traffic flow while efficient, can trigger higher speeds.
UNIVERSAL ACCESS			<ul style="list-style-type: none"> Improving mass transit accessibility and quality for all, with a shift away from private vehicles, can cut overall vehicle travel and thus emissions. 	<ul style="list-style-type: none"> Increased use of motorized transport for greater accessibility can trigger more environmental externalities. 	<ul style="list-style-type: none"> Encouraging shared and mass transport modes can reduce vehicle travel in terms of total vehicles on the road, improving safety. Improving access to transit stations or stages, especially for vulnerable members, can help improve safety. 	<ul style="list-style-type: none"> Increased vehicle travel can increase the total amount of fatalities, injuries, and crashes if road safety systems are not improved.
GREEN MOBILITY					<ul style="list-style-type: none"> Increasing shared mobility and public transport use improves system safety while cutting emissions. Better vehicle design and eco-driving can improve safety. 	<ul style="list-style-type: none"> When appropriate infrastructure (cycle lanes, sidewalks) is not implemented, pedestrian and cyclists are at a higher risk.

Source: Adapted from Sustainable Mobility for All (2017).

Table 2 | **Barriers and Opportunities in Shared Mobility: Cost, Competition, and Congestion in Ride-Hail Services**

	BARRIER		IMPACT OPPORTUNITY
	DESCRIPTION	EXAMPLE FROM RIDE-HAIL	
Cost	<p>Before a trip can happen, major investments by public and private entities must be made in civic infrastructure, vehicles, and safety systems—i.e., roads need to be built and vehicles bought. These diverse costs need to be recouped. Financing strategies like direct funds, viability gap funding, loans, taxes, or fares, among others, back capital investments. Because of these expensive prerequisites, new entrants require high capital expenditures or ways to leverage existing capital.</p>	<p>One of ride-hailing companies' key business model innovations was to remove the major capital expense of car ownership and maintenance by sub-contracting drivers with their own vehicles. In other words, they transferred some of the costs—and risks—to the drivers, who must somehow absorb them.</p>	<p>Combining existing systems in different ways, using partnerships, and responding to regulatory incentives are ways for new services to leverage existing capital.</p>
Competition	<p>Transport is a service where many alternatives can exist. While many people may have a primary or preferred mode, if that becomes unavailable there are often substitutes. Any new service will have to compete with different modes, or even similar modes that offer different compromises for the users. This competition also exists at the industry level, where organized interests may band together to keep out new entrants.</p>	<p>Ride-hailing faces competition on at least two fronts. In the first, between modes, many users use the service one way, meaning that ride-hail is a mode substitute. The second front is between platforms, as many markets have a few ride-hail services to choose from. This leads to multi-homing, a practice in which users or drivers can easily deploy multiple platforms for the trip to find their best outcome.</p>	<p>New entrants and new business models can improve accessibility and resilience. The existence of alternatives adds options to a transport system, making overall outcomes more reliable. Users can depend on mobility services for longer phases without need to purchase or upgrade personal transportation.</p>
Congestion	<p>Widespread usage can also create good and bad externalities. Generally, if a resource such as mobility is accessible and affordable, people will consume more of it. There are benefits for many, until increased levels of travel result in congestion, at which point new travel has a large social cost.</p>	<p>While ride-hail has improved access and comfort for many users, it has also been credited with adding to congestion in already busy areas. A vehicle's space needs are the same whether it's a personal automobile or a taxi. The combination of easier access and high space utilization per person has led to more congestion. Shared and active modes offer the greatest space efficiency.</p>	<p>Policy can more easily promote and incentivize space-efficient services. Space-efficient bike- and scooter-sharing systems are part of a virtuous cycle in which increased supply leads to increased demand.</p>

Source: WRI Authors.

Although the three issues described above are real challenges, they also offer opportunities for impact. Better measurements and more transparent communications of the positive and negative downstream impacts of mobility enterprises are integral for attracting investment for these enterprises and creating a more supportive regulatory environment. The next two sections take a closer look at the mobility enterprise impact investing landscapes in Kampala and Hyderabad.

3. IMPACT INVESTING IN MOBILITY ENTERPRISES IN KAMPALA, UGANDA

As the capital city and largest urban center of Uganda, Kampala is the heart of commerce, entrepreneurial innovation, trade, education, and political activities in the country, generating more than 30 percent of Uganda's gross domestic product (GDP) (Kathage and Wadie Hobson 2017). Privately operated 14-seater minibuses (locally called taxis or *matatus*) and motorcycle taxis (*boda bodas*) provide an estimated 70 percent of all motorized trips in Kampala, yet operate with minimal government oversight. There are also a small number of 30- and 60-seater intra-city buses serving key corridors and a passenger rail with just two routes bringing commuters into the city. The city has plans for mass transit expansion, including the expansion of intra-city bus services and existing commuter rail services and implementing a new bus rapid transit (BRT) system. Limited financing and political challenges have made implementing these projects difficult and slow. Meanwhile, the lack of reliable and affordable transportation options, coupled with increasing congestion, air pollution, and traffic fatalities, has elevated mobility as a key issue in the city (Spooner et al. 2020; Vaca et al. 2020; Vermeiren et al. 2015).

3.1 Mobility Enterprises in Kampala

This study identified over 30 new mobility enterprises in Kampala as of December 2020, in addition to existing traditional services (Table 3). However, new mobility in Kampala is still in its fledgling phase and most of these enterprises have been operating for fewer than five years.

The mobility enterprises can be categorized as follows:

- **Shared mobility**, predominantly in the form of ride-hailing and vehicle pooling, represents the largest category. Ride-hailing services and their enabling technologies have attracted the attention of traditional motorcycle and taxi service providers. Partnerships between traditional transportation providers and new mobility service providers are growing. Such trends echo the rise of on-demand transport services seen in large cities throughout Africa.
- **User experience** apps—namely, crowdsourced traffic apps, online or app-based inter-city ticketing firms, and cashless payment services—are the second most common category. Recent mobile or cashless payment transportation apps emerged thanks to the 2018 MTN Open API App Challenge, in which entrepreneurs built innovative phone-based applications based on MTN's API for core banking functionalities (Kisekka 2018).
- **D3M** enterprises are scarce but tend to be business-to-business enterprises. They offer app- and web-based analytics tools for fleet and parking management, as well as software solutions for vehicle monitoring, crash alerts, and diagnostics systems.
- **Product innovation** centers around EVs, especially two-wheelers. While one enterprise uses recycled lithium-ion batteries and assembles electric motorcycles, another offers solar charging stations along with their electric *boda bodas*. The latter is also collaborating with ride-hailing enterprises to convert their fleet to electric.

There are also a growing number of financial enablers using innovative finance mechanisms to help entrepreneurs access transport vehicles for business operations. These companies offer loans and/or sell vehicles, supported by training in road safety and business operations for new vehicle owners, making it easier for drivers to enter the market and offering a path toward vehicle ownership. Others enable transport businesses (often to minibus taxis) by offering micro-credits for fuel and insurance.

Table 3 | **Mobility Enterprise Landscape in Kampala, as of March 2020**

BUSINESS MODEL	EXAMPLE SUBCATEGORIES	EXAMPLE ENTERPRISES
Shared mobility	Boda boda ride-hailing	SafeBoda, Uber, Taxify/Bolt, MakBoda, YellowBird, SOT-Boda
	Cab ride-hailing	Uber, Taxify/Bolt, Little Ride, Seconds Technology, Spesho Taxi
	Delivery	Glovo, Jumia, SafeBoda, Uber
	Minibus hailing	EasyMatatu, Ollie Taxi
	Bus company	Tondeka, Pioneer, Awakula Ennume
	Car sharing	Safari Share
User experience	Cashless/mobile payment, online bus ticketing	Endobo, PowellPay, QuickTap Uganda
Data-driven decision-making (D3M)	Traffic app	Traffica
Product innovation	Asset financing	Tugende, Watu, Boda Banja, Asaak, Centenary Bank
	Electric bodas	Zembo, Bodawerk, IUEA, Motorcare (Nissan)
	Electric buses	Kiira Motors

Source: WRI Authors.

3.2 Investments in Mobility Enterprises

According to 2019 data from Briter Bridges, more than 150 new mobility enterprises¹ are currently operating in Africa (Briter Bridges 2019). Mobility and related technology enterprises on the continent are young and growing. One recent study documents a 620 percent increase in equity funding across late-seed to growth-stage startups across all sectors, between 2015 and 2019 (Partech Africa Team 2020). Briter Bridges and Founders Factory Africa report that investments come from a range of equity and philanthropic sources, including venture capital (55 percent), accelerators and competitions (14 percent), angel investors (11 percent), foundations (5 percent), impact investment (3 percent), and development finance (1 percent) (Giuliani and Haro Murima 2020). However, mobil-

ity as a sector receives less impact investment compared to other development sectors, such as agriculture, health, education, and energy.

Enterprise investment across all sectors in Africa is generally concentrated in a few countries: approximately 75 percent of investments in 2019 occurred in Nigeria, Kenya, Egypt, and South Africa (*Digest Africa 2019*). But there is a growing appetite for investing in emerging African economies such as Uganda, Rwanda, and Senegal. As of December 2020, WRI’s research team had identified 19 global impact investors that focus on Uganda across different sectors. Most of their investment portfolios are in non-transport sectors, such as health care, agriculture, financial inclusion, and education (Table 4).

Table 4 | **Impact Investors across Different Sectors in Uganda, as of December 2020**

▪ Acumen Fund	▪ iungo Capital*
▪ BLI Global Capital	▪ Kampala Angel Investment Network (KAIN)
▪ Denali Venture Philanthropy*	▪ Oikocredit*
▪ DOB Equity	▪ Pearl Capital Partners
▪ Global Innovation Fund*	▪ PG Impact Investments*
▪ Global Social Impact Fund*	▪ Segal Family Foundation
▪ Global Partnerships*	▪ Symbiotics*
▪ Goodwell Investments	▪ XSML Capital
▪ GroFin	▪ Yunus Social Business
▪ InfraCo Africa	

Note: * Impact investors that provide or have provided equity investment or debt capital in the transport sector in Uganda

Source: WRI authors.

Based on available data from multiple sources, Kenya has the greatest number of mobility enterprises in East Africa, with 50–60 registered enterprises operating² in the capital, Nairobi, followed by Uganda. Like many countries with a developing economy, Uganda has one primary city, the capital city of Kampala, where the majority of financial sector and enterprise activities are concentrated. As a result, this section takes a country-level approach to discuss Uganda’s transport sector investments.

There are relatively few impact investors supporting the mobility sector in Uganda. Global Innovation Fund has invested in a shared motorcycle taxi enterprise in Uganda (SafeBoda), and several other impact investors have supported transport logistics and financing enablers. These include Global Partnerships, Denali Venture Philanthropy, and Segal Foundation investing in a Ugandan finance enabler, Tugende, and PG Impact Investments, Symbiotics, Global Social Impact Fund, and Oikocredit, which offer debt capital to the enterprise (Tugende 2020). Another investor, iungo Capital, has invested in Transco, which provides tours and safaris (iungo Capital 2020). Regionally there is a growing number of investments in transport logistics, including DOB Equity, InfraCo Africa, GroFin, XSML Capital, and Goodwell Investments. The increase in interest from impact investors is promising, but this study found limited evidence of impact invest-

ment into new mobility enterprises providing public transport services to urban residents in Uganda.

Meanwhile, venture capital and angel investment activities are growing in Uganda. This type of investment began with international entrepreneurs making a debut in East Africa, and recently, more local and regional investment entrepreneurs have emerged to support East African startups. However, most investments are concentrated in a select few enterprises—often those which provide the most convincing business and impact case, have well-developed products and services, and/or have stronger connections to international funding. This trend benefits, for instance, startups with a foreign founder. This can lead to monopoly dynamics, in which the enterprises already receiving money attract more money, and less established, less connected enterprises quickly go out of business.

Based on study data and interviews, transport enterprises in Uganda receive philanthropic support through international aid agencies, development banks, development finance institutions (DFIs), and other philanthropic foundations, which provide loans, grants, patient capital, and in-kind support to entrepreneurs who offer products and services with societal and environmental benefits (Table 5). While historically, DFIs and development banks invest in large-scale transport infrastructure, these agencies have demonstrated a growing interest in supporting private sector innovation and development. For example, the United Kingdom High Commission recently launched the Green Sustainability Manufacturing Africa program, in which the Foreign, Commonwealth and Development Office (FCDO) directly supports growth of private sector manufacturing, including support of the EV manufacturing industry. The Embassy of the Netherlands in Uganda operates a small grants program for the innovation sector, including but not limited to fintech, the backend service of many new mobility enterprises. Because transport is cross-sectoral, there is even further interest among development and philanthropic programs in Uganda to support mobility enterprises which offer significant social or environment impacts to the city if a compelling case can be made. These resources, combined with financial support from friends and family, are significant in helping mobility enterprises address early-stage growth challenges. However, many of these funds are a one-off or small investment, and capital from these sources is usually low compared to seed investment amounts.

Table 5 | **Select Organizations That Have Provided Grants, Loans, Prizes, and/or In-Kind Support to Mobility Enterprises in Uganda, 2018-20**

• ADA Microfinance	• MAN Impact Accelerator
• Ademe	• Miller Center for Social Entrepreneurship
• AFD	• Mobility 54
• Agora	• RENEW LLC
• Bloomberg Initiative for Global Road Safety	• Shell Foundation
• Bond’Innov	• Siemens Foundation
• Business Partners International Uganda	• Toyota Mobility Foundation
• Echoing Green	• Shona (formerly Unreasonable Institute)
• EEP Africa	• UN Capital Development Fund
• European Union	• UN Habitat
• Frankfurt School Financial Services	• US Development Finance Corporation
• French Facility for Global Environment	

Source: Compiled by WRI authors.

3.2 Barriers and Opportunities to Impact Investments in Mobility Enterprises

Outside of Kenya, Nigeria, and South Africa, funding for early-stage enterprises in sub-Saharan Africa is scarce. Impact investing for transport in Uganda is no exception. In study interviews, impact investors operating in Uganda cited a lack of information about the transportation sector as a key reason for lack of investment. Information asymmetry means impact investors are often unaware of existing mobility enterprises in Kampala. Moreover, though enterprises have a digital presence (usually on Facebook or a third-party website), the digital information that is accessible to impact investors often does not reflect the situation on the ground. Because many impact investors are located abroad with limited local presence, they can perceive commuter needs, investment risks, and evaluation of enterprise impacts differently than someone more familiar with the local context. As a result, many funding decisions are made based on the investors’ perceived impression of enterprise trustworthiness and success, with limited contextual knowledge (Bouri et al. 2015).

While there are several barriers to ensuring a return on investment in transport enterprises in Uganda, many of

them encompass opportunities that could be leveraged by enterprises and investors willing to take a risk and make an impact. These include the four obstacles detailed below.

Uganda’s regulatory environment is unclear and difficult to navigate, and this is especially true for the transportation sector.

In Uganda, there is limited regulation of the transport sector, and irregular enforcement of what regulation there is, despite the government’s mandate to carry out both tasks. This is encouraged by the excessive amount of bureaucracy at national and local government levels, and a culture of rent-seeking, or informal extraction behavior—both of which hinder enterprises and investors’ relationships with the government. Control over transport regulation can also be used for political gain by political leaders, especially during elections or other periods of changing policy and regulatory directions. For example, the minibus taxi and boda boda industries are essential stakeholders in improving transport in Kampala, but due to limited government oversight, taxi and boda operations are often unsafe, polluting, and provide fragmented, unscheduled service across the city. Transport operations are at the same time seen to be shielded by the government because many vehicle owners have political connections, complicating enterprise efforts to compete with entrenched industry actors (Goodfellow 2017).

The lack of regulation and oversight is also seen by mobility companies and some investors as an inspiration for change, encouraging innovation in the search for better transport solutions. In fact, the absence of regulations enables small, informal enterprises space to test potentially disruptive ideas and develop a proof-of-concept to fulfill residents’ transport needs. While taxi industry reform at large is something only the government can achieve, and must therefore be backed by strong political will, our interviewees believe that investors can play an intermediary role in facilitating and advancing government reform efforts by promoting improved service provision driven by technology advances and institutional innovations.

Public transport is provided almost entirely by the private sector in Uganda, and current service provision is poor quality and insufficient, creating a market gap for enterprises and investors.

Public transport is a basic urban service, often provided and/or subsidized by government in cities around the world. In Uganda, aside from a limited-extent commuter

rail, the government does not operate mass transit services, creating a need for innovation and thinking outside the box when it comes to transport provision. Although many existing options such as minibus taxis (or paratransit) satisfy market needs, they are unsafe, crowded, and often ply on lucrative routes, thus potentially marginalizing already transport-disadvantaged residents.

Our research indicates that government agencies in Uganda have the opportunity to provide incentives for enterprises working in this space. For example, there is an ongoing initiative in Uganda to organize all paratransit (taxi and boda boda) service providers into associations. This initiative could be augmented to build impetus and confidence in enterprises through future partnerships with the government-backed private banking sector and small and medium enterprise (SME) financing departments of DFIs, allowing improvements and innovations to existing operations.

Transport enterprises in Uganda struggle to grow steadily due to insufficient access to financing.

While the need for improved mobility services in Uganda is clear, establishing a viable business model is challenging. On one hand, most Kampala residents live below the poverty line with limited disposable income and, without some forms of subsidies or innovative financing, they cannot directly pay more for positive externalities such as safer, cleaner, or more efficient commuting. On the other hand, offering higher quality services translates into more professional driver trainings and improved maintenance of vehicles and customer interface, among other measures, incurring additional costs for the enterprises. Several enterprises have had initial success improving the quality of transport provision, partly due to grants and impact funds they received, but scalability and business viability remains uncertain.

Access to financing for local enterprises is a major issue (Inoue 2019). Many of the most successful enterprises in Uganda are international companies or local companies with strong international connections, and sometimes international founders. These mobility enterprises can mobilize more funding, offering competitive and predatory pricing to customers while inadvertently influencing the services and business models of indigenous, homegrown enterprises. The launch of Uber and Bolt (formerly Taxify) into the Ugandan market in 2016 inspired a wave of local companies to initiate similar services, but most struggle to achieve price parity with their international competitors.

At the same time, financial access is challenging even for Ugandans who have a bank account, as commercial banks are risk-averse and not willing to invest in early-stage mobility enterprises without high collateral due to concerns around viability and scalability of the product being offered (Bouri et al. 2015). Currently, foundations and donor organizations are most likely to provide early-stage funding to mobility enterprises through competitions or small grants.

There are few investment-ready transport enterprises in Uganda, but there are many great seed ideas and startup initiatives in need of support. It is necessary to develop a market ecosystem and pipeline in the sector.

Based on study data, Uganda lacks a pipeline of investment-ready mobility enterprises, but it does have a growing number of committed entrepreneurs who have valid and tested ideas about how to transform urban mobility services. According to our interviewees, homegrown enterprises can have deep cultural knowledge, be better at navigating the political economy and addressing needs of low-income commuters, and can garner support among users and government who want to promote Ugandan solutions with a sense of national pride.

The market ecosystem pipeline in Uganda could be developed by increasing grant and foundation capital through opportunities like enterprise educational programs and accelerators that strengthen the skills of local enterprises—from understanding business finance, to coming up with technology-driven and market-ready services and products.

Existing transport enterprises in Uganda also need capacity building support. Based on interview data, most mobility enterprise founders are first-timers with little experience of starting a company, and 30 percent of the entrepreneurs interviewed had side jobs to ensure regular income. Challenges range from inefficient operations and unclear scaling strategies to inexperienced financial management. Highly trained and experienced staff also command high wages that enterprises cannot afford, as they rely on bootstrapping funds.

Another challenge faced by young enterprises considering impact investment is the long diligence and reporting process required by investing agencies. This often requires companies who are short-staffed, resource bound, and lack experience in reporting to quantify impacts and report extensively on achievements. With a few exceptions

like SafeBoda and Zembo, mobility enterprises in Kampala do not explicitly focus on achieving environmental and social benefits. For these reasons, first round capital funding may require flexibility in reporting and documentation requirements, so that second rounds can be raised based on the relative growth of the company and the investor's established performance requirements.

All of these illustrate a need for grant funding to grow the sector. That, in time, can lead to impact investments that facilitate analysis of social and environmental impacts of transport companies. This will likely have a knock-on effect of attracting more finance and growth of transportation enterprises in Uganda.

4. IMPACT INVESTING IN MOBILITY ENTERPRISES IN HYDERABAD, INDIA

With a population of almost 10 million, the city of Hyderabad is one of India's largest and fastest-growing metropolitan areas. While the city has traditionally been served by a range of public transport and informal options, the rapid expansion of the city and a growing reliance on private motorized transportation have led to increased traffic congestion and emissions in Hyderabad (Annavarapu 2020). Chronic under-investment in the city bus fleet and a restriction on the number of paratransit vehicles (auto rickshaws) in the city have reduced access for urban residents who do not own personal vehicles. While the new metro rail adds to the transit network, it has limited coverage and can be more expensive than bus services, making it less accessible for low-income groups. For instance, a typical 12 kilometer trip costs INR ₹20 by bus, as compared to ₹40 by metro (approximately \$0.27 and \$0.54, respectively).

The new mobility landscape in Indian cities is rich and varied, with over 1,200 mobility enterprises currently operating in road transport service provision, EVs, and smart vehicle technologies, among others. In recent years, Hyderabad has risen as a recognized tech hub, rivaling the cities of Bengaluru, New Delhi, and Mumbai (Das 2015; NASSCOM and Zinnov 2019).

4.1 Mobility Enterprises in Hyderabad

Hyderabad's new mobility landscape has more than 100 mobility enterprises, comprised of both locally founded enterprises and other Indian companies with operations in Hyderabad (Table 6).

- **Shared mobility** services, with more than 50 enterprises accounting for half of all mobility-related enterprises in the city, are by far the largest category of new mobility solutions in Hyderabad. They can be subcategorized into ride-hailing, ridesharing, and vehicle-sharing solutions. Ride-hailing solutions are predominantly car-based, with auto-rickshaws and bike taxis being other popular choices. Innovations in the shared mobility space have impacted traditional taxi operators and vehicle rental services, many of which began to adapt and offer mobile app-based services.
- **User experience** enterprises generally fall into four types: parking booking, driver for-hire, safety and security, and passenger information services. Hyderabad is also home to several enterprises that allow online and app-based bus ticket bookings, but they mainly focus on inter-city buses.
- **D3M** solutions can be divided into insights for businesses and insights for city administrators. D3M enterprises typically provide solutions for private sector clients and corporate employee transportation. GPS-based vehicle-tracking and fleet management solutions are the most common. There are only a few instances of enterprise collaboration with government agencies, with potential solutions thus far limited to pilot demonstrations. An early-stage enterprise provides software-as-a-service (SaaS) solutions for dynamic traffic signal management with the city's traffic police, while another uses machine learning and computer vision techniques to tackle road safety and traffic management issues in Hyderabad.
- **Product innovation** in new mobility is primarily within the electric mobility domain. This is partly due to the national government's FAME Scheme Phase II (Faster Adoption and Manufacturing of (Hybrid and EV), which strives to boost EV demand in the country (Ministry of Heavy Industries & Public Enterprises 2021; Mohanty and Kotak 2017). Consequently, electric vehicle assemblers and/or manufacturers exist across all modes in Hyderabad—from bikes, rickshaws, and scooters to buses—although the sector is currently driven by two- and three-wheelers (Kumar and Kanuri 2020). A few enterprises focus on EV retrofit kits, battery technologies, and charging infrastructure. As the new EV industry is being built in India, EV-as-a-service slowly emerges, currently with two young enterprises offering shared mobility services with EVs.

Table 6 | **Mobility Enterprise Landscape in Hyderabad, as of March 2020**

BUSINESS MODEL	EXAMPLE SUBCATEGORIES	EXAMPLE ENTERPRISES
Shared mobility	Cab ride-hailing	Uber, Ola Dot Cabs, Prydo, Rideasy, OFU
	Carpool	QuickRide, Sride
	Shuttle buses	Shuttl, EasyCommute
	Car rentals	Zoomcar, Drivezy, Revv
	Bike rentals	Bounce Vogo
	Bicycle sharing	Smartbike, Yulu
	Auto rickshaw ride-hailing	Uber, Ola, ETO
User experience	Multimodal transport information (bus, metro, local trains, cabs)	Instops
	Parking aggregator	GetmyParking, ParkINSlot, Parkeze, Pick Pay Park
	Driver-on-demand	DriveU, Hopp
	Crash detection and assistance	MyCall, Cyrrup
	Driver assistance systems	Trackyo
Data-driven decision-making (D3M)	Corporate employee transport	MoveinSync, WhistleDrive, Lithium Caps (EV fleet)
	Road safety and traffic management	RHPD Software Solutions, RoadBounce
	Transit efficiency and planning	Lumiplan
Product innovation	Electric two-, three-wheeler manufacturers	Virtus Motors, Uton Energia, Pure EV, Gayam Motor Works, ETO Motors, Adapt Motors
	EV charging station manufacture/operations	Cellerite Systems Fortum
	EV battery development	Calory Tech
	Electric bus manufacture/operations	Olectra BYD

Source: WRI authors.

4.2 Investments in Mobility Enterprises

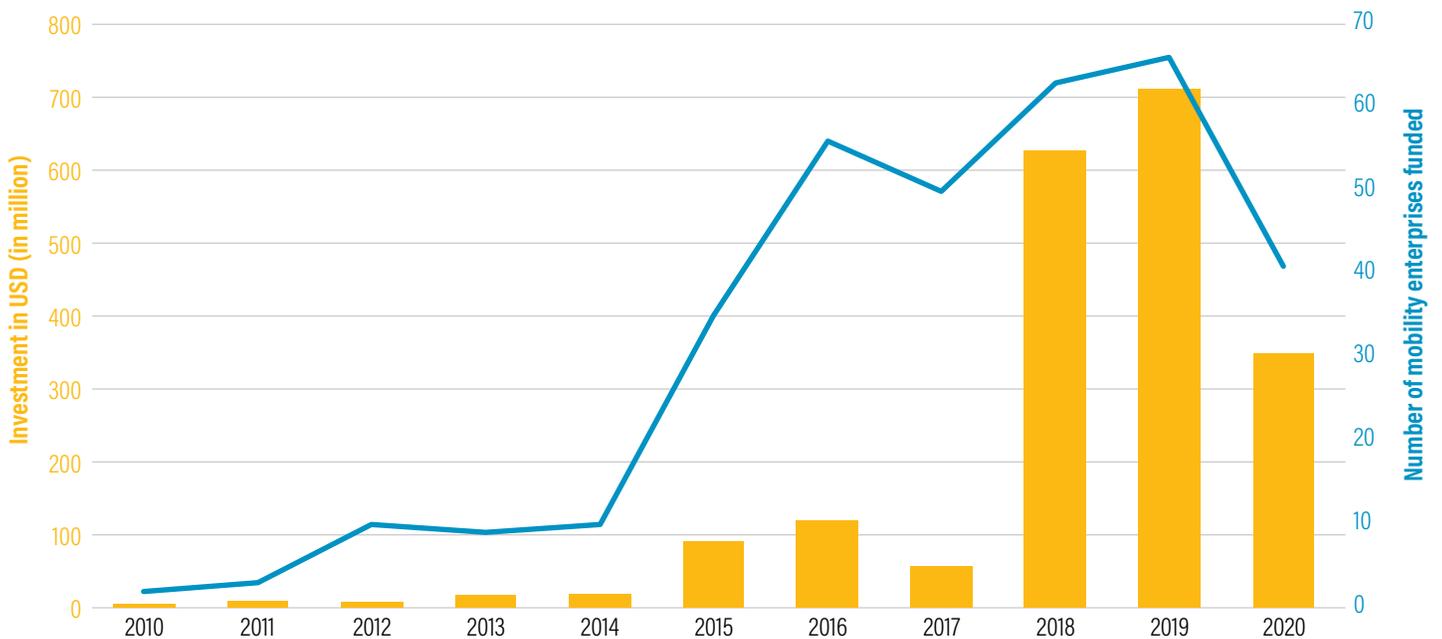
To understand current investment trends in mobility enterprises, we adopt a pan-Indian perspective, as Hyderabad's new mobility landscape comprises a large proportion of enterprises in the country, with a mix of locally founded enterprises and non-local enterprises operating at a significant scale.

Collectively, road-based mobility tech enterprises in India have received \$6.1 billion in funding since 2010 (Tracxn 2021). This is based on publicly disclosed investment data, but some share of investments in the sector remains undisclosed. It is important to note that this estimate only considers India's domestic enterprises and excludes firms such as Uber. The funding amount is primarily accounted

for by Ola, which has disproportionately received \$4.1 billion over 30 investment rounds, compared to other major players like Zoomcar and Bounce, which received investments hovering around \$190 to 250 million (Crunchbase 2021). The trend has been toward a relatively small number of mobility enterprises receiving larger investment sums, indicating growing maturity of enterprises in the sector, which in turn poses challenges to new, impact-driven enterprises looking to enter the market.

Excluding Ola, shared mobility enterprises have captured approximately 69 percent of all investments, while product innovation enterprises received about 20 percent. User experience and D3M enterprises together have received about 10 percent of all investments since 2010. Figure 8 shows mobility enterprise investments (excluding Ola) in

Figure 8 | Annual Mobility Enterprise Investments in India, 2010-20



Note: Ola is excluded in the chart as an outlier that has received an astounding \$4.1 billion over 30 investment rounds since 2010.

Source: Tracxn 2021.

India over the past decade. While investments grew drastically in 2018 and 2019—with average investment received per enterprise around \$10 million for each year—both the number of enterprises founded and total investments in 2020 were severely affected by the COVID-19 pandemic.

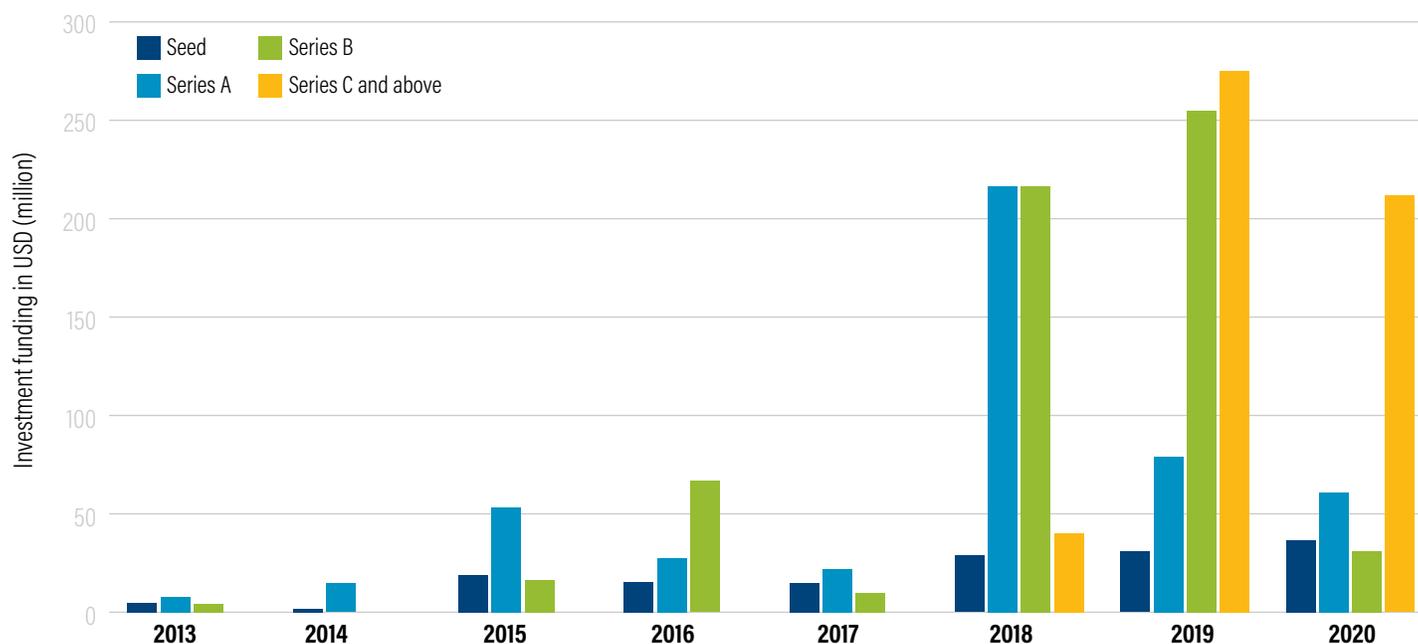
Figure 9 further reveals that the investment recipients belong to growth-stage enterprises using Series B (later stage) and beyond. While there was a slight increase (19 percent) of seed investment between 2019 to 2020, the rest of the funding categories decreased dramatically as a result of COVID-19’s wider impact on the Indian economy, with Series B being affected the most adversely (87 percent decrease).

Due to its entrepreneurship, population size, and potential to impact millions of lives, India has received impact investments of \$10.8 billion across various sectors during the last decade, with an annual growth rate of 26 percent (Desai et al. 2020). According to the database of 586 India-focused social enterprises compiled by Impact Investors Council and Asha Impact, mapping India’s impact investment flow to SDG priorities reveals that SDG

5 (Gender Equality) tops the chart, while only 5 percent of investments goes toward SDG 11 (Sustainable Cities and Communities) (Desai et al. 2020). Nearly all mobility tech funding in India is driven by venture capital (VC), with very few impact investments in the sector. Key VC investors in mobility tech include Sequoia Capital, Lightspeed Venture Partners, InnoVen Capital, Qualcomm Ventures, Accel, and Blume Ventures. Impact investors and foundations focused on supporting enterprises include Omidyar Network, Unitus Ventures, LGT Lightstone Aspada, Shell Foundation, and Yunus Social Business, which have invested in a handful of mobility startups such as Bounce, Lithium Urban Technologies, DriveU, Vogo, and SMV Green.

4.3 Barriers and Opportunities to Impact Investments in Mobility Enterprises

A landscape assessment of new mobility in Hyderabad demonstrates that the growth of mobility enterprises has not improved the quality of transport in an equitable manner. As detailed in Table 7, while low-income groups remain largely confined to using state-run bus transport

Figure 9 | **Mobility Enterprise Investments in India by Funding Stage, 2013–20**

Note: Ola is excluded in the chart as an outlier that has received an astounding \$4.1 billion over 30 investment rounds since 2010.

Source: Tracxn 2021.

and informal services, the rise of shared mobility and services to improve the user experience has provided more transport options for middle- and high-income urban populations, even reportedly affecting private car sales before COVID-19 (Gurung 2019).

A review of secondary literature and analysis of primary data collected in interviews with mobility enterprises, investors, and government representatives, yielded the following key barriers and opportunities for enterprises in raising fund from impact investors.

Impacts in the mobility sector are not clear for investors, and impact investors view the space for commercial funding that does not require de-risking.

Impact investments in the country flow more typically into the sectors of health care, education, agriculture, and financial inclusion more directly related to the SDGs (Ravi et al. 2019). This mirrors the global perception of which sectors are most impactful. Because the more cross-

cutting impacts of transportation across the SDGs are less evident and more difficult to capture, a lower number of impact investments are made in the mobility sector. Since the predominant consumer markets for mobility enterprises in India are urban middle- and upper-middle class groups, impact investors have typically seen the new mobility ecosystem as a space for VC funding, as in the case of funding for ride-hailing and vehicle rental services like Ola, Zoomcar, Bounce, and Vogo. The lack of impact investments leads to under-investment in key areas of potential socioeconomic and environmental benefits, such as shared mobility solutions for low-income groups and transit and road safety technologies.

Unfriendly regulations and procurement practices hamper the growth of impact-oriented enterprises, and there is a role for neutral third-party organizations or multi-stakeholder partnerships to voice and advocate for potentially impactful enterprise models based on research and pilot projects.

Table 7 | **Mobility Enterprises and Their Unequal Benefits in India**

BUSINESS MODEL	DESCRIPTION
Shared mobility	<ul style="list-style-type: none"> Services such as on-demand cab-hailing, carpooling, and car rentals remain unaffordable for low-income urban residents. Bike rentals and bike taxis, which are priced more affordably, show potential to serve low-income groups, but yet to scale due to lack of awareness among vulnerable groups.
User experience	<ul style="list-style-type: none"> Parking enterprises, which primarily serve car owners, are greater in use than multimodal transit applications.
Data-driven decision-making (D3M)	<ul style="list-style-type: none"> Lack of enterprise and government collaboration is stymieing the realization of benefits in terms of traffic congestion management, transit efficiency, and greater road safety.
Product innovation	<ul style="list-style-type: none"> The livelihood generation potential of EV-based shared mobility has yet to be realized.

Source: WRI Authors.

Government regulations are slow to change in the face of rapid technological changes and business model innovations. This means that early-stage enterprises often work doubly hard to educate regulators and advocate for reform to enable scalability of operations. A clear example is that of electric mobility, in which existing policies concerning permit caps for commercial vehicles and rules for electricity supply for charging infrastructure are hampering the uptake of EVs and ecosystem growth.

At the same time, government procurement practices that are biased toward larger corporations and public sector companies can also impede startup growth. For instance, public bus services are a government monopoly in Hyderabad, as a result of which, private bus aggregators and other bus services are not permitted to ply except in limited numbers in the city. For transit or road safety technology companies hoping to work with the government to improve system efficiencies and service quality, restrictive procurement practices and low government capacity hinder potentially improved transport outcomes.

For companies operating in such contexts, a third-party organization like a university or non-profit organization collaborating with relevant stakeholders can act as a neutral convener to undertake the necessary advocacy and time-intensive processes based on pilot projects and research agendas to help facilitate government reforms.

Mobility enterprises in Indian cities do not need capital, per se—but they need patient capital in order to enable impact-oriented business models that particularly focus on serving low-income communities and vulnerable groups, creating productive livelihoods for marginalized groups, and providing affordable and environmentally sustainable transport services.

In the competitive, VC-driven transport sector, impact-driven enterprises find it difficult to bring in the patient capital needed to scale up. Mobility entrepreneurs in Hyderabad also struggle to tackle entrenched informal sectors such as auto rickshaw services and parking operations, which are ripe for reform but protected by vested interests. With more lucrative opportunities in other sectors and commercial enterprises, impact-driven mobility enterprises are unable to hire and retain talented staff due to lack of funding.

Moreover, high-impact areas such as women’s livelihood generation as part of the transport labor force require sustained, long-term funding to overcome structural barriers. Similarly, as smartphone access and digital literacy grows among low-income groups, there are more opportunities for enterprises to create targeted, impactful solutions for urban transport access and sustainability. But this requires patient capital invested in bottom-up solutions that can create sustainable and systemic change.

Table 8 | Opportunity Areas for Impactful Mobility Solutions in India

	DESCRIPTION	SOCIOECONOMIC AND ENVIRONMENTAL IMPACTS
Micro-mobility	Short-term, self-driven rentals of smaller vehicle modes meant for trips by 1-2 users, including low-powered segments such as bicycles, low-speed e-scooters, and conventional motorized two-wheelers, offering access to a shared fleet of vehicles	<ul style="list-style-type: none"> Improved transport access for low-income neighborhoods with narrow streets, distant from public transit Last-mile connectivity option to mass transit Two-wheeler rentals are 60-75% cheaper than cab hailing, bicycle sharing services are more affordable Faster transport mode in congested traffic, saving time for commuters Lower carbon footprint and emissions, especially for non-motorized modes and electric micro-mobility
Paratransit services	Aggregation platforms for traditional paratransit services such as auto-rickshaws, bike taxis, and shared autorickshaws, with doorstep pick-up, real time tracking, and digital ticket payments	<ul style="list-style-type: none"> Improve access to transport with fare transparency and reduced rate of refusals Affordable alternative to taxis, last-mile connectivity to mass transit Livelihood creation for low-skilled workers; higher income opportunities for women and other marginalized groups
EV charging infrastructure	Service providers offering networks of EV charging stations/ charging points for semi-public or public use to “refuel” EVs	<ul style="list-style-type: none"> Promote increased adoption of electric mobility for decarbonized transport Livelihood creation for low- and middle-skilled workers Lower refueling costs for passenger or goods transport, with higher daily incomes for drivers
EV financing solutions	Fintech services offering credit financing for EV consumer loans, using a range of technologies to support decision-making on loan disbursements and tracking repayments	<ul style="list-style-type: none"> Promote increased adoption of electric mobility, for decarbonized transport Access to asset ownership for livelihood creation, for low-income individuals
Bus aggregators	Aggregation platforms that identify high-potential transit routes and deploy high-capacity vehicles (ranging from 9-seaters to 54-seaters) to operate on these routes, with dynamic route modifications, assured seating, real-time vehicle tracking, and digital ticket payments	<ul style="list-style-type: none"> Improve access to individuals living in transit-deficient areas Improved system efficiency of mass transit services, with data-driven operations for operators and reliable services for consumers Affordable transport options with good service levels Lower per capita carbon footprint and emissions
Transit technologies	Use of digital ticketing, vehicle tracking, telecommunication technologies for service planning, and delivery solutions for transit networks	<ul style="list-style-type: none"> Improve system efficiency of public transit, with data-driven operations planning and reliable services Promote transit use, which has a lower per capita carbon footprint and emissions

Source: WRI Authors.

These solutions range from last-mile commuting models that improve access to mass transit networks (Kanuri et al. 2019) to platforms for organizing paratransit services for efficient and affordable transportation while also offering job opportunities, and technology solutions for public transport information and transit planning and operations, among others. Table 8 highlights six areas of new mobility that have high socioeconomic and/or environmental impact potential, as well as market growth opportunities in India.

5. THE WAY FORWARD

Despite the significant impacts of sustainable mobility across the SDG agenda, mobility is not yet a focus sector for impact investors in either Kampala or Hyderabad. In Kampala, mobility enterprise investment is dominated by foundations and philanthropic projects, as well as support from bilateral and multilateral development partners, providing subsidized loans or patient capital financing. In comparison, nearly all mobility enterprise funding in India

is driven by venture capital, with very few impact investments in the sector. Existing VC-led funding incentives in Hyderabad are designed more to capture the market, often by running the businesses in an economically and/or environmentally unsustainable manner.

In spite of their differences, there are three common barriers for limited impact investing in the mobility sector in the two cities (Table 9): uncertainties around government regulations; the enterprises' financial returns, especially over the long term; and the complex calculus of impacts generated by mobility enterprises.

5.1 Recommendations

Below are some important measures that can help improve the understanding of mobility impacts for sustainable development and remove policy barriers in Kampala and Hyderabad, and perhaps similar cities in emerging markets, in order to unlock impact investments and patient capital in the transport sector.

Table 9 | **Impact Investing Barriers among Mobility Enterprises in Kampala and Hyderabad**

BARRIERS	DESCRIPTION
Government policies and regulations are often unclear and not transparent.	<ul style="list-style-type: none"> • Competition with entrenched industries (such as the existing informal paratransit sector) is a key systemic barrier for nascent enterprises to enter the market and for growth-stage enterprises to scale. • In Kampala, a lack of transparent regulation, excessive bureaucracy, and rent-seeking behavior hinder mobility enterprises to grow, scale, and make positive impacts. Reform of the matatu and boda (informal or paratransit) industry has potential for great impacts but is politically complicated. • In Hyderabad, a lack of clear governance and policy frameworks, as well as restrictive procurement practices surrounding new mobility enterprises, heightens the regulatory risk to business models. For a significant number of mobility enterprises—especially those in public transportation, road safety, and other data-centric business models—government is a key client, which poses a further revenue risk to enterprises.
Financial returns are uncertain.	<ul style="list-style-type: none"> • Providing quality service incurs costs for enterprises. In Kampala, since most residents have limited disposable income, they cannot directly pay more for positive externalities such as safer, cleaner, or more efficient commuting. There is a need to develop a market ecosystem and pipeline, most likely through grant funds from impact-oriented foundations and philanthropic organizations. • In Hyderabad, the transport sector is dominated by venture capital funds. Enterprises that want to focus on impacts cannot compete with profit-driven firms without patient capital.
Calculation of impacts is complicated.	<ul style="list-style-type: none"> • Impact isn't clearly thought out or explicitly defined by most mobility enterprises in both cities. • Many mobility enterprises in the two cities prioritize financial profit. The trade-off of business sustainability and impact generation leads to difficult operational decisions at the risk of neglecting impact parameters. • Impact investors may not be aware of investment opportunities in mobility sector in Kampala and Hyderabad.

Source: WRI Authors.

Demystify policy frameworks and advocacy processes for progressive reforms.

In both cities, there is a clear need for mobility enterprises to navigate the policy landscape, be in dialogue with policymakers, and support evidence-based processes of institutional and policy reform. One approach is to understand city and state government priorities, articulate and link innovative mobility solutions to existing objectives, and help governments achieve their sustainability goals. Examples include using proven technology solutions to support multimodal transport services and planning; facilitating the city's non-motorized, road safety and air quality improvement strategies by working together with motorcycle drivers; improving first/last-mile connectivity by collaborating with rickshaw services to metros; creating employment opportunities for minorities and women; and enabling any transportation reforms such as minibus or paratransit reforms.

Another approach is to raise awareness among government officials and impact investors about the impacts and development outcomes linked to transport enterprise solutions. To achieve this, enterprises can work with development partners and research organizations to define the socio-economic and environmental impacts of new mobility services and develop meaningful engagements with government bodies. In Kampala, philanthropic organizations and development banks (such as the United States International Development Finance Corporation and the World Bank) are increasingly considering service provisions beyond infrastructure investments, as they have begun to realize that poor mobility is setting back their development agendas. In Hyderabad, the negative externalities of unsustainable mobility pathways have become increasingly evident, with growing congestion, worsening air pollution, and diminishing service quality of public transportation. At the same time, however, new mobility services in the city are demonstrating potential for shared and decarbonized urban transport systems. Using evidence-based advocacy to highlight the positive impacts and minimized externalities of new mobility solutions, enterprises can create the necessary momentum for policy reform and government support, in turn attracting impact investors and other forms of patient capital.

Create tailored impact measurement indices to capture sustainable mobility outcomes.

Creating and mainstreaming appropriate impact assessment frameworks with tailored mobility-specific indicators is necessary to avoid loose and nebulous definitions

of impact. However, impact assessments for mobility are often less straightforward and more complex than for other sectors. For example, while energy access can often be measured as a binary indicator, access to transport is more often along a spectrum, with the additionality of transport access as the indicator of measurement. Further, impacts of transport service provision must be measured at the system level alongside impacts at the individual level, and need to include the efficacy of integration with other services and trade-offs or externalities by acknowledging and quantifying net impacts, rather than partially accounting for positive impacts alone (Brest and Born 2013). Finally, since many direct and indirect impacts of transport services are often realized over a longer time horizon, such as the impacts of improved access to opportunities, strategic longitudinal data collection and impact assessment is warranted.

Standardized global measures can help facilitate transparency and accountability, especially for risk-averse impact investors (Ravi et al. 2019). New mobility solutions, in particular, offer new possibilities for data generation and collection through digital technologies and real-time communication that can be used to evaluate impact at a granular level over time and leveraged to improve mobility in cities. To create a widely accepted impact measurement framework for the mobility sector, it is necessary to adopt a participatory approach with broad-based consultations of stakeholder groups. Funders who want to show results and impacts should keep expectations in line with the everyday realities confronting mobility enterprises. Starting with a theory of change developed with a sectoral understanding of sustainable mobility, enterprises and investors can use industry-developed metrics as a foundation to build out impact metrics for mobility enterprises. Any impact frameworks thus developed should be closely linked to existing frameworks, such as the SDGs, to highlight the cross-cutting direct and indirect impacts of mobility at individual and systemic levels.

Create coalitions and demonstration platforms for sustainable mobility.

Sustainable mobility enterprises require enabling policy environments and increased flows of patient capital for achieving scalable growth and impact. Attaining these objectives requires creating a common understanding of sustainable mobility pathways as well as the key policies and partnerships needed to arrive at these pathways. Enterprises, development partners, and investors in the mobility sector can create coalitions for advancing the

interests and knowledge of impactful mobility solutions to reach stakeholders in the investor ecosystem and in government. Coalitions have been effectively used in the energy access sector, for example, with global networks such as SE4All and Power for All creating effective advocacy platforms for sustainable and impactful energy solutions and innovations. Transport sector networks, on the other hand, have thus far focused on technical knowledge dissemination, without much emphasis on the intersection of impacts and business models in achieving sustainable development.

Another approach to developing multi-stakeholder partnerships and demonstrate the positive impacts of mobility enterprises is through sandbox programs and pilot projects supported by governments and development partners. These platforms provide excellent opportunities to develop new use cases, demonstrate potential partnership arrangements, and collect evidence for impact; however, they often fail to scale when funding runs out, due to inadequate commitment and lack of long-term perspective. To be successful, these initiatives must have committed leadership and a long-term vision for scalability.

Overall, as the case studies of Kampala, Uganda, and Hyderabad, India, highlight, there is a need for impact-driven investing to play an important role in supporting new mobility, collaborating with the public sector, and helping enterprises deliver much-needed safe, clean, and inclusive transportation alternatives to vulnerable urban residents, particularly in the emerging cities of the Global South.

LIST OF ABBREVIATIONS

API	Application programming interface
AUM	Assets under management
D3M	Data-driven decision-making
DFI	Development finance institutions
ESG	Environmental, social, and governance
EV	Electric vehicles
FAME	Faster Adoption and Manufacturing of (Hybrid and) Electric Vehicles
GDP	Gross domestic product
GIIN	Global Impact Investing Network
IoT	Internet of Things
IPO	Initial public offering
SaaS	Software-as-a-service
SDG	Sustainable Development Goals
VC	Venture capital

APPENDIX A: ORGANIZATIONS INTERVIEWED

	KAMPALA, UGANDA		HYDERABAD, INDIA
Mobility Enterprise Interviews	▪ Awakula Ennume	▪ Powell Pay	▪ Bykerr
	▪ Buu Pass (Magic Bus)	▪ PublicTransportApp Kampala	▪ Easy Commute
	▪ Easy Matatu	▪ QUICK Tap	▪ Gayam Motor Works
	▪ EAZY-TRIPS	▪ Safe Boda	▪ GetmyParking
	▪ Endobo	▪ Spesho Taxi	▪ inGO Electric
	▪ Kiira Motors	▪ Taxify/Bolt	▪ Kickstart Cabs
	▪ LITTLE Ride	▪ Tondeka Metro	▪ QuickRide
	▪ Maaso Awo	▪ Tugende	▪ Rapido
	▪ MamboPay Ltd	▪ Uber	▪ Roadbounce
	▪ MobileBooking	▪ UgaBus	▪ SnapCommute
▪ Ogmous Travel		▪ Sride Carpool	
▪ Pioneer Easy Bus		▪ ValetEZ	
		▪ WhistleDrive	
		▪ Women Cabs	
Investor Interviews *	▪ BID Network	▪ Makerere University Business School (MUBS) Entrepreneurship Center	▪ Aspada Investments
	▪ Cities and Infrastructure for Growth	▪ Norwegian Embassy	▪ Caspian
	▪ Diamond Trust Bank	▪ Open Capital Advisors	▪ Endiya Partners
	▪ Foreign, Commonwealth & Development Office (FDCO), UK (formerly DFID)	▪ Stanbic Bank Innovation Hub	▪ Micelio
	▪ French Agency for Development (AFD)	▪ United Nations Capital Development Fund (UNCDF)	▪ Unitus Ventures
	▪ Insight2Invest		▪ Villgro
	▪ International Trade Centre (ITC) - Uganda		▪ WE-Hub
		▪ Yunus Social Business	

Note: Due to the limited availability of impact investors operating in Kampala, Uganda, the study interviewed investors and philanthropic organizations who have interest or experience in transport and related sectors.

APPENDIX B: INTERVIEW QUESTIONS

Mobility Enterprise Interviews	<ul style="list-style-type: none">▪ What does your company do and where do you operate?▪ When and why did you start your company?▪ Who is your target audience/client?▪ How do we use your service?▪ How big is your enterprise? (in terms of staff, vehicles operating, revenue – whatever they want to share)▪ Are there any goals you want to achieve? (growth targets, quantitative impacts such as targets for number of users, trips made, or app registrations)▪ Do you collect data about your company's impacts? For example, how many people you serve, demographic characteristics of users or drivers, trip routes, etc.▪ What are the biggest challenges you faced in starting your company? What are the biggest challenges you face in daily operations?▪ Do you have competitors? Who?▪ Do you work with local or national government? If so, how frequently do you coordinate with them?▪ Other comments
Investor Interviews	<ul style="list-style-type: none">▪ Year in which the firm was started▪ Firm vision/mission/investment strategy▪ Number of funds or number of investments by type (if applicable)▪ Stages of investments▪ Geographic focus▪ Return mandate or characteristics/funding requirements▪ What is the view of mobility as an investment sector?▪ (If firm has a portfolio company that is a mobility startup,) Can you provide a deeper understanding of why this company was selected, how it creates impact, how is the firm supporting it?▪ Other thoughts and wrap up▪ Who else should we speak to in the region (ecosystem builder, partner, or investor)?

ENDNOTES

1. This number is likely to be underestimated, as the same research identifies 10 enterprises in Uganda, compared to over 30 identified by WRI's on-the-ground research. Many of those enterprises do not have an identifiable online presence.
2. WRI calculation based on several websites, including crunchbase.com, tracxn.com, vc4A.com, and angel.co.

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ABOUT THE AUTHORS

Thet Hein Tun is a Transportation Research Associate with the Urban Mobility team at the WRI Ross Center for Sustainable Cities. He conducts research on innovative mobility enterprises, transport electrification, open mobility data and transport mapping, and paratransit systems in the developing world.

Contact: thet.tun@wri.org

Travis Fried is a former Transportation Research Analyst within the Urban Mobility team at the WRI Ross Center for Sustainable Cities. He is currently pursuing a doctoral degree in Civil Engineering at the University of Washington.

Chaitanya Kanuri is a Senior Manager of Electric Mobility at the WRI India Ross Center for Sustainable Cities. She leads and manages the electric mobility team in Hyderabad, India, and is also involved in research, outreach, and coordination for day-to-day operations of the Inclusive, Impactful and Innovative Mobility (3IM) Program.

Anna Oursler is an Urban Mobility Coordinator at the WRI Africa Ross Center for Sustainable Cities. She also teaches Urban Design at the College of Engineering, Design, Art and Technology (CEDAT), Makerere University.

Adam Davidson, PhD is a Research Associate with the Urban Mobility team at the WRI Ross Center for Sustainable Cities. Based in Washington, DC, Adam conducts research on the rise of modern shared mobility systems and the use of information to alter transport behavior.

Benjamin Welle is the Acting Director of Urban Mobility and Director of Integrated Transport and Innovation at the WRI Ross Center for Sustainable Cities. His work includes leading global research and projects, particularly in the areas of public transport, minibus services, mobility planning, access to opportunities, new mobility and innovation, traffic safety, walking and cycling, and public space.

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