ITDP | Institute for Transportation & Development Policy

Opportunities and Barriers for HVT Systems in India and Sub-Saharan Africa

July 2021

OPPORTUNITIES AND BARRIERS FOR HVT SYSTEMS IN INDIA AND SUB-SAHARAN AFRICA

AUTHORS AND ACKNOWLEDGEMENTS

Gashaw Aberra
Kashmira Dubash
Gabriel Gitau
Jonas Hagen
Christopher Kost
Jacob Mason
Njeri Mburu
Cyprine Mitchell

CONTRIBUTORS TO THE REPORT

The authors would like to acknowledge the support of ITDP staff in India, Kenya, and Ethiopia for their support in this research, Aimee Gauthier for overall guidance, and Holger Dalkmann for technical feedback and guidance.

SUPPORTED BY

This research was funded by the UK Department for International Development (DFID) Applied Research Programme in High Volume Transport (Project: 11271-HVT/006: Theme 2).

Cover Photo
Source: ITDP India, Flickr

CONTACT

Institute for
Transportation &
Development Policy

9 E 19th Street, 7th Floor
New York, NY 10003

T: +1-212-629-8001
E: mobility@itdp.org
W: www.itdp.org

ITDP

Table of Contents

List of Acronyms and Abbreviations

A/C	Air-Conditioned
AFD	French Development Agency (*Agence Française de Développement*)
BRT	Bus Rapid Transit
BRTS	Bus Rapid Transit System
Cess	Assessment
CMR	Chennai Metro Rail
CSR	Corporate Social Responsibility
DFID	Department for International Development
DP	District Plan
DPR	Detailed Project Report
GPRTU	Ghana Private Road Transport Union
HIC	High-Income Country
HVT	High Volume Transport
ITDP	Institute for Transportation and Development Policy
IIT	Indian Institute of Technology
INR	Indian Rupee
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
KeRRA	Kenya Rural Roads Authority
KURA	Kenya Urban Roads Authority
LIC	Low-Income Country
LRT	Light Rail Transit
MIC	Middle-Income Country
MoHUA	Union Ministry of Housing and Urban Affairs
NGO	Non-governmental organisation
NMT	Non-Motorised Transport (walking and cycling)
NUTP	National Urban Transport Policy
PBS	Public Bike Share
PCMC	Pimpri-Chinchwad Municipal Corporation
PMC	Pune Municipal Corporation
PMU	Programme Management Unit
PT	Public Transportation
TDM	Transport Demand Management
ULB	Urban Local Body
UMTA	Unified Metropolitan Transport Authority
YASHADA	Yashwantrao Chavan Academy of Development Administration

1 Introduction

With fewer resources and rapidly growing urban populations, cities in middle-income countries (MICs) and low income countries (LICs) often lack the capacity to plan and manage urban transportation systems. This has led to large-scale informal settlements and transportation services in these cities. As countries grow wealthier, motorisation rates have increased as well. According to the International Association of Public Transport (UITP), cities in LICs and MICs saw a strong increase in private motorisation rates between 1995 and 2012 (4.6% average annual growth) (UITP n.d.). This growth is leading to social, economic, and environmental losses due to the increased traffic congestion, noise and air pollution, and road traffic crashes (Sum4all n.d.; Litman 2018). If these trends continue, motorisation will increase significantly in the coming decades, exacerbating existing issues of poor and inequitable access, injury and death, air pollution, and increasing travel costs.

Conventional transportation planning has created urban transportation systems that are deficient in terms of social equity, safety, and environmental sustainability, especially in high-income countries (HICs) (Deka 2004; Noland 2013; Santos et al. 2013). These systems are deficient largely because they prioritise transportation via automobile as opposed to modes such as walking, cycling, and public transportation.

Building on concepts of 'access' (Fol and Gallez 2014) and 'sustainable transportation' or 'sustainable mobility', we use the term "High Volume Transport" (HVT) which we define as 'policies, infrastructure, and services that improve access to destinations in a way that enhances safety, addresses inequity, minimises environmental impact, and uses resources efficiently' (ITDP 2019; Metz 2008; Sclar and Schaeffer 1980; Banister 2008; Goldman and Gorham 2006; Handy 1993). Specifically, in this paper we examine HVT in the urban context. An important difference between HVT and 'sustainable transportation' is the focus on access. For example, while sustainable transportation often includes electric automobiles as a solution to environmental problems (Santos et al. 2014), HVT does not emphasise these because they do little to increase access, social equity, or road safety.

The broad objective of this paper is to identify key challenges and opportunities to the implementation and sustained operation of HVT systems in cities in South Asia (SA) and Sub-Saharan Africa (SSA). These include issues related to the broad topics of governance, capacity, stakeholder involvement, and funding. This paper was created under the UK's Department for International Development's (DFID) Applied Research Programme in HVT.

This paper uses qualitative data gathered from interviews with public, civil, and private sector stakeholders in these regions. Researchers analysed the qualitative data to discover facilitating factors for, and barriers to, the implementation of HVT systems in the urban areas covered by the sample. To the best of our knowledge, this is the first study that examines this topic in SA and SSA specifically. As such, this study may be of great use to researchers and practitioners who seek to improve HVT systems in either region, or in other low- and middle-income countries (LICs and MICs) that may face similar challenges.

After presenting a review of literature on governance and HVT, we provide background on SA and SSA. We then describe the methods we used for the study. Finally, we present the results of the qualitative data and conclude with a discussion of the results and policy implications.

1.1 Literature Review

This review examines literature that has examined issues related to the creation, operation and maintenance of HVT systems. It includes literature on high, low, and middle-income countries (HIC, LIC, and MIC).

Much of this literature is related to the broad topic of governance. Although there is no universal definition of 'governance,' it is often used to describe how societal actors (including governments and private organisations) exercise authority, formulate and implement policies, and provide services (Kaufmann et al. 1999; Le Galès and Vezinat 2014). Governance can be conceived at various levels, including national, state and local government, and no there is no single generic model of governance, but rather it is context-specific (Brenner 2004). Our review of governance and other topics related to creating HVT systems does not pretend to be exhaustive, but rather it gives a brief overview of the broad issues examined in this paper.

Good governance can improve decisionmaking for HVT, leading to better planning (strategic planning, programming, and project development) and delivery (construction, operations, maintenance) of sustainable transportation systems (Gudmundsson et al. 2016). Policy documents also point to governance as a crucial factor that can enable mobility policies (UN Habitat 2010; Diaz and Bongardt 2013; Mobereola 2009). Governance also includes transparency and accountability, and researchers have described these as key enablers of engagement with the private sector and civil society stakeholders to enact HVT measures (LSE Cities 2014).

Governance for HVT is related to both the public and private sectors. Scholars have argued that national governments can best support HVT through a combination of strong and consistent political support, urban development frameworks, policy guidance, and regulations that empower local governments (Barter 2018; Dimitriou and Gakenheimer 2011; Hickman et al. 2013). In formal public transport systems, tendering public transport services to private companies has become increasingly common in HICs. Tendering public transportation operation has been, on the balance, favourable in the HIC context of the Netherlands, Poland, Australia, and Scandinavian countries, with some disappointments in France and Italy (Iseki et al. 2011). Flores-Dewey compares the cases of Mexico City and Santiago, where the planning, implementation, and regulation of Bus Rapid Transport (BRT) systems have followed different paths, depending on the capacity of the government to generate an institutionalised space for negotiating with private operators (Flores Dewey 2013).

Participation from the public and other civil society stakeholders in processes to create urban transportation systems can improve these systems' sustainability and resilience (Banister 2008; Banister et al. 2007; Baumann and White 2013; Zenias and Whitmarsh 2013; Carter et al. 2015). In the EU,

projects like “CH4LLENGE” offer support to stakeholders who wish to incorporate public involvement in the implementation of Sustainable Urban Mobility Plans (Kovachev et al. 2018).

An important stakeholder in urban transportation systems in MICs and LICs is informal public transportation (also referred to as ‘paratransit’). Informal transport is highly adaptable to local needs and context, offering a robust and wide range of services that are often the only transport option for the low-income population (Behrens and Bruun 2016). In South Africa, these types of services are responsible for 65% of all public transport trips (Booysen et al. 2013). Booysen says that informal transit also presents key challenges, including poor safety, long waiting times, and a lack of data collection. According to Kumar and Barret (2008), informality in the public transport sector in Africa leads to unreliable operations and fare policies.

Another key element related to creating HVT systems is funding. The existence of funds, through direct government resources or loans, has a role in making projects a reality (Medina 2016). Multiple scholars describe financial constraints as barriers to effective HVT planning and implementation (Suzuki et al. 2013; Lindau et al. 2014; Deng and Nelson 2013; Filipe and Macário 2013). India’s National Urban Transport Policy, has enabled cities to access transport improvements funds through Jawaharlal Nehru National Urban Renewal Mission (JNNURM), as evidenced by the largely successful implementation and operation of the Janmarg BRT system in Ahmedabad (Pai n.d.). The Indian Ministry of Urban Development requires cities seeking JNNURM funding to align their mobility plans with funding (Hidalgo et al. 2013).

Academic and grey literature concerned with HVT diverge on governance issues related to ‘political will’ and ‘capacity building’ (e.g., training government staff on HVT). Grey literature and the discourse of international NGOs and development organisations commonly emphasise these elements as crucial to achieving HVT (ITDP n.d.; Penalosa 2005; Weber et al. 2011; UN Habitat 2013; TUMI n.d.; United Nations Secretary-General’s High-Level Advisory Group on Sustainable Transport 2016).

However, academic research on these topics is sparse. We did encounter references to “sustained political commitment” (Cervero 2013, p. 18) being key to Curitiba, Brazil’s success in coordinating BRT and urban development, and “political leadership” (Banister et al. 2007, p. 24) as crucial for improving equity and quality of life through sustainable urban transportation. However, in general, while policy documents often state that factors needed to achieve HVT systems include political will, public involvement, the ‘right’ institutional arrangement, and ‘proper’ implementation, in general, the peer-reviewed literature we encountered provided a more nuanced view (Willoughby 2013; Mallqui and Pojani 2017; Pojani and Stead 2017; Leichenko 2011; de Oliveira et al. 2017; Rizvi and Sclar 2014; Marsden and Stead 2011; Kovachev et al. 2018). These researchers emphasised local conditions and the socially embedded nature of the conditions needed to achieve sustainable urban transportation systems and eschewed generalisations in favour of a more context-specific approach.

Additionally, while capacity building also features heavily in policy documents referenced above, we did not encounter academic literature on this topic as related to sustainable urban transportation. While we did find scholarship on capacity building from areas outside of transportation, including public health, agriculture development, and the non-profit organisation sector, we did not encounter research on capacity building efforts for HVT.

1.2 Background

This section presents background information in the target regions of this paper: South Asia and Sub-Saharan Africa.

1.2.1 South Asia

With an estimated population of 1.8 billion people, South Asia is the most populous of the regions defined by the UN Geoscheme (United Nations Statistical Division n.d.). Although there are eight countries in South Asia (India, Bangladesh, Pakistan, Sri Lanka, Nepal, Afghanistan, Bhutan, and the Maldives), the three largest countries (India, Bangladesh, and Pakistan) account for over 95% of the region's population, and India alone accounts for about 75% of the region's population. South Asia also contains some of the planet's most populous cities, and Delhi (25 million), Karachi (24 million), Mumbai (18 million), and Dhaka (16 million) (India, Pakistan, India and Bangladesh, respectively) are four of the largest mega-cities in the world.

South Asian cities have seen staggering growth in recent decades. South Asian cities added 130 million residents (the population of Japan) between 2001 and 2011 and are forecast to add an additional 250 million residents by 2030 (Ellis and Roberts 2015).

Cities in the region face large challenges regarding urban access. Relatively large portions of trips are made via walking and cycling (including rickshaws). For example, more than half of passenger trips and goods are made via these modes in the region's densest, most congested cities; however, these modes "invariably" (United Nations Statistical Division, p. 1) lack dedicated and safe rights of way. Further, public transportation can generally be characterised as overcrowded, inconvenient, and is often perceived as a mode for the poor. Motorisation often outpaces population growth in the region, e.g., increases in auto ownership are around 15-20% in most Indian cities, and motorcycles are also a burgeoning personal transportation mode (Jain 2013; Reddy and Balachandra 2010). With this growth, the sustainable modes of walking and cycling now take a back seat to motorised transport in many cities in India.

In South Asia, researchers gathered data in one country, India. Because India is extremely large and diverse, the researchers have chosen three states that reflect different conditions in that country: one in the South (Tamil Nadu), one in the West (Maharashtra), and one in the North (Jharkhand).

The following sub-sections present more detailed information on the three Indian states where we conducted interviews.

Tamil Nadu

Located in the southeast corner of India, Tamil Nadu is its sixth largest state, with a population of 72 million (as per Census 2011 data), and India's second largest economy. With over 48% of its population in urban areas, the highest rate in India, the state has had to grapple with a myriad of urban transport

and related infrastructure issues. In 2017 alone, the state reported 16,000 traffic fatalities. The research examined the state government of Tamil Nadu as well as the city of Chennai, the largest urban area in Tamil Nadu, the sixth largest in India, and the seventh largest in South Asia.

Jharkhand

Coming into existence at the turn of the 21st century, the state of Jharkhand has a population of 33 million (as per Census 2011 data). While only 24% of the population reside in urban settlements, a wave of urbanisation is underway. The research includes the Jharkhand state government and the city of Ranchi, the largest urban area in Jharkhand, 42nd largest in India, and 56th largest in South Asia.

Maharashtra

The 2011 Census data rounds Maharashtra's population at 112 million, of which 50.8 million is urban, making it the most densely urbanised Indian state. Its 15% contribution to the GDP helps power the country's economy. The research examined the state government of Maharashtra as well as the city of Pune, the second largest urban area in Maharashtra, the ninth largest in India, and the 12th largest in South Asia.

1.2.2 Sub-Saharan Africa

According to the World Bank's regional classification, Sub-Saharan Africa contains 46 of Africa's 54 countries. Of the continent's 1.2 billion people, over 90% (1.1 billion) live in the Sub-Saharan region. The largest urban agglomerations in Sub-Saharan Africa include Lagos, Nigeria and Kinshasa-Brazzaville, Democratic Republic of Congo and Republic of Congo (both with 13 million people), Johannesburg, South Africa (9 million), and Dar es Salaam, Tanzania (5 million).

Urban population growth in Africa, while not as rapid as in Asia, has been historically high in recent decades (Awumbila 2017). Research has shown that without affordable, effective public transportation options, expenditures on transportation are a major component for urban dwellers in the region, and that regular use of motorised transport is unaffordable to poor residents (Diaz Olvera et al. 2008). Related to the relative high cost of motorised transportation (including public transportation), many African cities have very high percentage of walking trips, e.g., about 70% in Dakar, Senegal, and Addis Ababa, Ethiopia, and about 45% in Nairobi, Kenya and Dar Es Salaam, Tanzania (Godard 2013; Pirie 2013). Despite these high levels of walking, infrastructure for pedestrians is generally deficient, and efforts to improve conditions for people walking and cycling are scarce (Sietchiping 2012). A result of this is that more than half of the African sub-region's traffic deaths are pedestrians, making it the world's region with the highest percentage of pedestrian deaths (Naci et al. 2009). The elevated number of traffic deaths in many African countries threatens economic and social development (Chen 2010).

Much of the urban growth in Africa is unplanned and is concentrated in informal areas far from city centres, in areas with poor accessibility and infrastructure (Diaz Olvera et al. 2008). These conditions related to urban transportation exacerbate social inequalities in urban Sub-Saharan Africa (Diaz Olvera 2013). Despite these difficulties, some researchers highlight the innovative capacity of the urban transport sector in African cities as evidenced by motorcycle taxis becoming a major public transport mode, and others see existing low motorisation rates in urban Africa as a major opportunity to promote sustainable transport modes (Diaz Olvera 2012; Lall et al. 2017).

We conducted interviews in four countries in three sub-regions of Sub-Saharan Africa—East Africa, Southern Africa and West Africa—and chose one national government and one city in each:

Ghana

Ghana, in West Africa, is the sixth largest country in Africa, with a population of 72 million (as per Census 2011 data). It is also Africa's 12th largest economy. With over 54% of its population in urban areas, it is the 18th most urbanised country in Africa. The research examined the national government of Ghana as well as the city of Accra, the largest urban area in Ghana and the 27th largest in Africa.

Ethiopia

Located in East Africa, Ethiopia is the second largest country in Africa, with a population of 102 million (2016 UN estimate), and Africa's eighth largest economy. With less than 20% of its population in urban areas, it is one of the least urbanised countries in Africa. Research examined both conditions at the national government level as well as in the city of Addis Ababa, the largest city in Ethiopia and 11th largest urban agglomeration in Sub-Saharan Africa.

Kenya

Kenya, the seventh largest country in Africa with a population of 49 million (2016 UN estimate), is also located in East Africa, sharing a border with Ethiopia. Kenya is home to Africa's ninth largest economy. With less than 26% of its population in urban areas, it is among the less urbanised countries in Africa. Research in Kenya was limited to Mombasa, the second largest city in Kenya located along the Indian Ocean. Mombasa is the 39th largest urban area in sub-Saharan Africa.

Zambia

Located in southern Africa, Zambia is a middle-sized landlocked country. It has the 22nd largest population in Africa (17 million according to a 2016 UN estimate) and the 17th largest economy. With just over 40% of its population in urban areas, it is near the median of urbanisation among African countries. In Zambia, research included the national government as well as the governments of the two largest cities, Lusaka and Kitwe, the 23rd and 82nd largest urban areas in sub-Saharan Africa, respectively.

TABLE 1 | SAMPLE URBAN AREAS

CITY, COUNTRY	POPULATION	URBAN AREA (KM²)	DENSITY (POPULATION PER KM²)
CHENNAI, INDIA[1,2]	9,677,072	972	9,956
PUNE/PIMPRI CHINCHWAD, INDIA[3]	5,509,160	479	11,501
RANCHI, INDIA[1,2]	1,264,455	57	22,183
ADDIS ABABA, ETHIOPIA[3]	3,009,130	102	29,501
MOMBASA, KENYA[1,2]	1,103,065	85	12,977
KITWE, ZAMBIA[1,2]	583,210	117	4,985
LUSAKA, ZAMBIA[1,2]	2,187,180	179	12,219
ACCRA, GHANA[3]	4,429,649	971	4,562

SOURCES: [1] UN WORLD URBANIZATION PROSPECTS: THE 2018 REVISION (2015 ESTIMATES) [2] DEMOGRAPHIA.COM [3] ATLAS OF URBAN EXPANSION

2 Materials and Methods

This study uses qualitative methodology, using data gathered via open-ended interviews. Other researchers have used this method to shed light on complex issues surrounding transportation, including the use of autos and motorcycles, and decision making for a streetcar project (Beirão and Sarsfield Cabral 2007; Hagen et al. 2016; Lowe and Grengs 2018). Qualitative methods allow researchers to explore complex issues through rich, in-depth data (Creswell 2013; Flick 2014). While quantitative methods allow for statistical aggregation of a limited number of questions, qualitative methods allow for a wealth of detailed data and can be particularly effective at analysing broader topics and identifying emerging themes. Further, qualitative inquiry can be used with advocacy and participatory approaches to social sciences whereby researchers seek to address social justice issues and create positive change in society (Denzin and Lincoln 2011).

2.1 Sample

We sought to collect data in a diverse sample of countries and cities in SA (specifically, India, explained below) and SSA. We chose the countries and cities where we conducted interviews based on 1) our goal of collecting data in locales that represent the diversity of urban transportation conditions in

India and Africa and 2) our ability to gather high-quality qualitative data given the project's time and resource constraints. While we do not claim to have attained a statistically representative sample of countries, states and cities in both places, the intention of our selection process was to approximate a representative sample to the degree possible given the project's constraints.

The sample selected was a stratified sample. Stratified samples approximate representative samples by selecting observations based on key variables in the population; the countries, states, and cities chosen were based on their geographical distribution in India and SSA, and also to include diverse urban conditions, administrative practices, and cultures (Harding 2006).

2.2 Countries/States

In South Asia, researchers gathered data in one country, India. Because India is extremely large and diverse, we chose three states that reflect different conditions in India's six zones (Northern, Central, Eastern, North-eastern, Western, Southern): one in the South (Tamil Nadu), one in the West (Maharashtra), and one in the North (Jharkhand). We chose the four countries in Africa from three of four political sub-regions of Sub-Saharan Africa (West, East, Central, Southern): Ghana (West), Ethiopia (East), Kenya (East) and Zambia (Southern).

2.3 Cities

The cities in the sample are primary or secondary cities in their respective states (for the cities in India) and countries (for those in Sub-Saharan Africa). Primary cities are the most populous cities in their respective states or countries, and secondary cities belong to a second tier of cities in a country or state in terms of population (Rondinelli 1983). Compared with other parts of their respective countries and states, these cities' populations have higher levels of education and income, and are centres of culture, commerce, and administration.

2.4 Participants

The participants in the study were selected via convenience and snowball methods (Creswell 2013). Field researchers spoke to a total of 28 participants, 14 from each region (See Table 2). Participants were leaders in the general field of urban transportation who occupied important positions in their respective organisations. Study participants were overwhelmingly decisionmakers from the public sector, with a few participants from NGOs and some from the private sector (consultants). Most participants were male, which may reflect the subject population, given that many urban transport decisionmakers are male.

The Institute for Transportation and Development Policy's (ITDP's) field offices in India and Africa identified potential participants. Most were career technocrats, but a few were in political positions, including elected officials. Participants had considerable professional experience in the field, ranging from five years to several decades.

An important criterion for selecting participants was level of government; we sought to speak to participants from at least two levels of government in each country. In India, participants were from the national, state, and municipal levels. Partly due to India's large size, state governments are very important in the formulation of urban transport policy. The state level is, however, much less important in the African countries we researched. In Africa, participants came from the national level or from municipalities.

TABLE 2 | **STUDY PARTICIPANTS**

	PROFESSION					GENDER	
REGION	CONSULTANT	GOVERNMENT MUNICIPAL	GOVERNMENT NATIONAL	GOVERNMENT STATE	NGO	FEMALE	MALE
SUB-SAHARAN AFRICA	0	7	5		14	1	7
SOUTH ASIA	2	6	0	5	1	0	12
TOTAL	2	13	5	5	15	1	19

SOURCES: MADE BY AUTHORS.

2.5 Anonymity

Staff in ITDP's field offices in India and Africa made clear the importance of maintaining anonymity for study participants. The information participants shared was considered sensitive and participants' professional standing could be harmed should their identities be revealed. For this reason, we removed all names from the data and refer to the participants by region and interview number. For example, participant "I6" is the sixth interview from India, and participant "A12" is the twelfth interview from Sub-Saharan Africa. Throughout this paper we also intentionally do not specify the identity of the participants beyond the country (in the case of Africa) or the state (for India) that the participant came from, in a further effort to protect participants from any potential negative consequences as a result of this study.

2.6 Interviews

The interviews were open-ended, meaning that the questions and answers are not as specific as in a survey, which only has a limited number of possible responses. Field researchers in India and SSA

were provided with an interview guide that included questions on a wide range of topics related to challenges and opportunities for HVT in cities, including institutional arrangements, funding, and policies. The question drew from a literature review on Enabling Structures from the Urban Transport State of Knowledge report, conducted as part of Applied Research Programme on HVT (ITDP 2019). The field researchers tailored the interview guide to fit the local context and cultural norms while retaining the overall goal of identifying opportunities and barriers for HVT. Interviews lasted between 40 and 60 minutes.

Interviews were recorded and transcribed by field researchers, and the interview materials were stored in a central database. The researchers used "lean coding" to organise the content of the interviews into themes (Creswell 2013). The following sections provide the results of the qualitative analysis from India and Sub-Saharan Africa, followed by a discussion and comparison of these results.

Because the term 'HVT' is relatively new, field researchers generally asked participants about 'sustainable transportation.' Our use of the term 'HVT' when describing participants' responses is based on our definition of this term (in the introduction of this paper).

3 Results

3.1 Results from India

The data we gathered in India offered interesting insights to barriers and opportunities for creating sustainable urban transport systems in India.

Study participants identified a range of issues that hindered HVT, including: a lack of coordination among public sector institutions, a lack of capacity in public sector institutions, a lack of understanding of sustainable transport by politicians and the public, the prevalence of implementation of auto-based transport infrastructure, the tendency to favour large infrastructure projects, and a lack of funding for the operation of public transportation.

For other factors and topics, participants viewed as having more positive or mixed links toward supporting HVT. Participants mentioned that policy transfer from other Indian cities, collaborations with universities and international NGOs, and marketing for HVT had been successful in supporting HVT. However, participants had mixed reactions to several topics, including recent efforts to create unified institutions for urban transport in India (UMTA), and private sector involvement in urban transport (we used the term 'private sector' to refer to private, profit-seeking companies).

Emerging topics included the need to integrate vulnerable groups (e.g., the poor) and traffic police into efforts for HVT, and transport demand management (TDM) projects. The detailed results from the interviews are described in the subsections below.

3.1.1 Institutional Coordination

Almost all study participants from India mentioned a lack of coordination among government institutions—i.e., working in "silos"—as a major barrier for HVT systems in Indian cities. This was a primary concern for participants in all states and cities. A national-level administrator said that overlapping roles and lack of coordination was a problem across the country:

> "In India, at the National, State and City levels, mobility has a fragmented institutional set-up which has hindered the development of the sector. Typically, transport is governed both by the Roads/Transport Department and the Urban Development Department at all levels. Each department pursues its own transport development actions, which are often not integrated. In case of public transport, each mode of transport i.e., Metro, Bus and informal transport are all governed by different agencies, therefore leading to a lack of integration in policy, planning, fares and services." (I14)

Presumably in response to the lack of coordination, some participants spoke of the need to create a single agency to coordinate urban transportation. Specifically, several mentioned efforts to create a Unified Metropolitan Transport Authority (UMTA). The push to create UMTAs was led by the national government's Ministry of Urban Development. However, according to some participants, the UMTAs still needed considerable efforts to realise the aim of coordinating urban transportation. For example, a participant from Jharkhand spoke of the unrealised potential of the UMTA:

> "For sustainable mobility there was a reform when JNNURM [Jawaharlal Nehru National Urban Renewal Mission] was launched to create UMTA in every state where there is public transport provided by government. But hasn't happened anywhere except Mumbai. Sustainability can be achieved on a greater level if UMTA is created with bus operations and IPT [intermediate public transport] sector regulated under it. (I12)

Given the prominence of the issue of lack of coordination, it appears that the UMTA has the potential to be a particularly viable vehicle to improve urban transportation in India.

3.1.2 Capacity Building

Participants across states and cities also pointed to the poor capacity of government staff with respect to knowledge of HVT as a major obstacle for the creation of such systems and suggested that capacity building was needed to address this.

For a participant from the National Government, this lack of capacity for HVT leads to automobile-based solutions for urban transport:

> "There have been various efforts over the past decade on capacity building through training programs, technical guidelines, etc. Despite that, [the] majority of the key transport decision-making staff have limited technical capacity on sustainable transport. As a result, cities still prioritise road building over walking and public transport." (I14/5)

Several participants offered solutions on how to improve public sector capacity for HVT. A participant from Maharashtra was in favour of using road design exercises:

> "We can have short term courses for developing capacity. Say one-two week training programs. For example, a 1 km or even 200-300m road with 30m ROW is to be designed. It needs various elements like footpath, hawking-parking area, rickshaw/taxi stands, bus stops islands, etc., to regulate safe movement of all users in a given time. These practices should be inculcated in engineers and corporators of respective wards." (I1)

A participant from Tamil Nadu also mentioned that engineers would benefit from training on HVT:

> "Secondly, the typical civil engineer who joins a transportation department does not have adequate exposure to these concepts of sustainable transport. It should be even made mandatory that they should acquire a certification and have refresher programmes, before they get their next promotions." (I6)

A participant from Maharashtra said that although his staff was competent, capacity building would help keep them abreast of new developments:

> "Technically the staff we have is sound, has capacity. Capacity development is a continuous process, the updation required happens whenever there is knowledge available in the market. Nobody is 100% complete. Updation is important." (I12)

A participant from Jharkhand was confident that capacity efforts would eventually payoff:

> "Changing the perception of the people is a slow process because it's a behavioural change, similarly urban transportation is a mindset change from cars, flyovers, parking lots to public transport, cycling and complete streets which will happen gradually with constant capacity building on sustainable transportation." (I10)

Multiple participants echoed the statement above, also saying that automobile-based solutions (e.g., "flyovers") were currently standard practice in Indian cities, and that these types of solutions hampered efforts to create HVT systems.

For this participant from Maharashtra, time pressures and lack of knowledge of HVT combined to make automobile infrastructure a preferred option for politicians:

> "Between sustainable transportation versus so-called non-sustainable transportation, one other big problem is timeline. City transformation takes a long [time]. No politicians are willing to invest in that; they have short timelines. Concrete roads, flyovers etc. are deemed as quick fixes, short-term solutions offering more visibility, and with the amount of money involved and the looming elections; all coincide together for them to push such projects during tenure. They also truly believe in these solutions. I think there is lack of real understanding." (I2)

Participants mentioned capacity building for HVT as particularly important in the context of auto-based transport solutions, which some participants said were the default solutions to urban transportation problems. Despite the lack of capacity that some participants observed, others showed optimism that capacity building efforts would pay off.

3.1.3 Staffing

Related to a lack of capacity for HVT, participants mentioned issues with staffing that constrained institutions' capacity. For example, for this participant from Tamil Nadu, the combination of politics and staffing practises resulted in a lack of continuity:

> "The transportation engineers and planners in the cell should have a major say in the selection of people. Unfortunately, a lot of these decisions about the staff recruitment happens in a very ad hoc manner, invariably influenced by political aspirations and we are not able to ensure that continuity is there. Capacity constraints [are] a major issue." (I6)

A lack of staff continuity and knowledge of HVT were problems for implementing BRT in Pune, Maharashtra:

> "There are many lacunas in good projects because of lack of knowledge in particular sustainable urban transport, for example in a project like BRTS. Every two or three years there is a new Municipal Commissioner or a new City Engineer, they change plans many times according to their limited understanding. They dilute the main purpose of the project. They want to implement their ideas. Once planned, a project should be followed strictly as per the sanctioned plan till starting of operations. You can monitor it and evaluate the results after implementation and make corrections/alterations accordingly. But there should not be any changes in the very first stage of implementation." (I1)

For a participant in Tamil Nadu, more than training was needed to increase the effectiveness of government staff related to HVT:

> "The right incentives should also be given and not just training. So, not just fiscal incentives, but for instance, make it mandatory for someone who has prior experience in a field to be selected or a criterion for promotion. Also, try and add some glamour to the position. Sometimes even giving them fancy titles gives a boost, certain perks or facilities. I know people who were very skilled but were not recognised for their inputs and they eventually withered away. Rather than naming roads for instance, why not name it after the road engineer who made it happen?" (I6)

While lack of staffing continuity was an obstacle for HVT for some participants, one suggested creative way to increase the effectiveness of staff, was offering fancy job titles or naming roads after staff.

3.1.4 Study Visits

Participants in all states mentioned study visits as a good way to spread awareness of HVT systems among politicians and government staff. A participant from Tamil Nadu spoke highly of national and international trips that the Union Ministry of Housing and Urban Affairs (MoHUA) was organising as part of its Smart City Mission:

> "A properly done foreign trip is better than a million seminars. It needs to be well planned so that people observe the practical issues there. It needs to be systematised; it cannot be ad hoc. Every department must have a plan stating that x people are going to x cities every month." (I9)

However, another participant from Tamil Nadu had a different perspective on the value of study visits, and suggested a way to improve their effectiveness:

> "People go abroad for capacity building. They see metro, bus system, etc., and they like it a lot. But while returning back to India, they keep these ideas at the airport itself. Once they reach home/office, their behaviour is the same as before. Study tours are not helping much...When they return from study tour, they should be asked to sketch a new road, plan a particular road stretch by giving local exercises, and implement accordingly with certain budget. Politicians should also be involved." (I6)

While study visits appear to have potential to create awareness of HVT, it appears that these visits could be used more strategically in India.

3.1.5 Capacity of Traffic Police and Others

Several participants from Maharashtra and Tamil Nadu mentioned traffic police as particularly important stakeholders for HVT. According to a participant from Maharashtra, traffic police's practises were a major barrier:

> "[T]heir attitude towards traffic and their perception of their primary role in transportation is quite problematic. They think their primary role is to move vehicles. They might not have institutional capacity, no data, no analysis, no sectoral experience; they have no traffic transport planners. And they do influence the transport thinking within city. It also seems to align a lot with political thinking and also with the overall motorised travel demand." (I2)

Another participant from the same state mentioned the importance of educating traffic police, ULBs (Urban Local Bodies, municipal governments) and engineers for road safety and HVT:

> "Every person's life is important, be it a pedestrian, a car user, a bus user. This should be inculcated in the minds of traffic police as well as people from the ULBs... Engineers should not implement their own ideas. Else the engineers tend to remove bus lanes, cycle lanes and tracks and create more space for PMV [personal motorised vehicles]. Traffic police are also very vehicle centric. Engineers don't think about sustainable transportation due to lack of knowledge." (I1)

Given the prominence of traffic police in participant's responses, this may be a crucial stakeholder to engage in HVT projects.

3.1.6 Awareness of HVT

Multiple participants emphasised the need to raise awareness for HVT among multiple groups, including the public, politicians, and government employees.

A participant from Jharkhand commented about both politicians and the public needing "sensitisation" regarding HVT was typical of other participants' sentiments regarding this topic:

> "Most of the leadership is unaware of sustainable urban transport, therefore there is a need for widespread sensitisation on these aspects to develop a willingness to take up these projects.

> Not only political sensitisation but public engagement alongside is equally important to generate demand from the public." (I11)

Some comments were more specific. For example, a participant specifically spoke of the need to raise awareness about the National Urban Transport Policy (NUTP)—a policy launched in 2006 to promote sustainable transportation in India—among urban transportation public and private sector stakeholders:

> "NUTP is a good example. It is a very good policy well framed with a vision 'Move people and not vehicles'. But 99% people of municipal corporations and bus transport operators don't know about NUTP. But still they are working on urban transport project planned as per guidelines of NUTP. Most of the people in transportation domain don't know what is NUTP?" (I1)

At the national level, one participant said that Mumbai had been successful in raising awareness of HVT and that this bore fruit for implementation:

> "At the larger level, we have also seen that communication efforts are crucial in building political will. Mumbai is a case in point, where projects have been marketed well by senior officials. This marketing and communication has been targeted at both the political constituency as well as the common citizens. This has led to a situation where implementation is quite successful in Mumbai, because both citizens and politicians see the value of certain interventions." (I13)

While participants pointed out the need for increased awareness of HVT generally, educating government transport planners on the NUTP, and using Mumbai's communication efforts as a model may be particularly effective.

3.1.7 Political Will

Several participants pointed out the need for political will to successfully create HVT systems. For a participant from Jharkhand, political will had enabled bus improvement and a public bike system, and lack thereof was a barrier for a pilot parking program:

> "Political willingness is essential to drive sustainable projects. Talking about Ranchi, the city bus improvement strategy, the PBS [public bike share] implementation to promote greener modes of transport and ensuring last mile connectivity are few of the examples. And at the same time lack of political willingness hit the pilot parking management badly." (I11)

For a participant from the national level, BRT represented a case of successful harnessing of political will in Ahmedabad, Rajkot, and Surat, with less favourable results in Delhi due to lack of political support:

> "Development of Bus Rapid Transport is a classic case of political will making or breaking a sustainable transport solution. BRT in its essence is a political decision to give road space to public transport, walking and cycling, many times at the cost of personal cars and two-wheelers. The experience of implementing BRT varied widely across India. In Gujarat, the State Government and the politicians backed the initiative and generated the required political momentum. As a result, the state has the longest BRT system of India in Ahmedabad and also has other cities like Rajkot and Surat with operational BRTs. In contrast, the Delhi BRT faced the

> opposite fate. The political leadership did not invest adequately in promoting the system and deploying personnel and enforcing it efficiently. As a result it was discarded after the pilot project." (I14)

For a participant from Tamil Nadu, Delhi's metro was an excellent example of political will driving a successful project:

> "I would refer the Delhi Metrorail as one of the finest examples for a project implemented through political will. In spite of many internal setbacks, they implemented the project at once due to pure political will. After the implementation, it has become the most successful public transit venture in India, and most of Indian metropolitan cities are looking forward to adopt it. The whole credit goes to the then-government/political setup and bureaucratic setup." (I5)

However, for a different participant from the same state, more than political will was needed to deliver complex HVT solutions like parking management:

> "If you fund metro rail projects in India, at least you'll see a glamorous metro rail running up and down. This is not clear in other departments like parking management. There are many challenges and handholding is required. The system can't do it. Then politicians can't suggest parking management (as an initiative). When people complain of congestion, the easiest thing to do is create a flyover, because that is what the system is capable of delivering. Political will alone is of no use. Do you want political will to deliver a flyover or deliver a far more complicated thing which is so nebulous?" (I9)

For yet another participant from Tamil Nadu, more than political will, implementing HVT (including Non-Motorised Transport, NMT) depended on the interest of individual public officials:

> "Involvement in sustainable transportation measures depends on the (interest level of a) given official (bureaucrat). For example... [a previous senior manager of a municipal rail corporation] took a lot of interest and drove a lot of this. He realised the importance of intermodal integration. The Current [senior manager] and former Commissioner... played a very important role in pushing NMT. They realised the importance of (sustainable transport interventions such as) parking management, cycle sharing, footpaths, etc. It depends on the individual (officer). If the individual is not interested or is distracted by something else, then these things don't work." (I6)

While political will appears to be important for some, achieving it may be a difficult task. In the context of political will, some participants offered other alternatives areas to improve HVT, and it may be possible to make progress in these areas, including technical competence and interest of government staff in HVT solutions.

3.1.8 Stakeholder Involvement

This section includes participants' comments on the involvement of various stakeholders in HVT: the public, the private sector, informal transportation operators, and other stakeholders (universities, international NGOs, and research organisations).

1. Public Engagement

Participants from all three states spoke of engaging the public in HVT projects. This participant from Maharashtra spoke of the public engagement process related to District Plans (DPs) in Pune:

> "After a DP is prepared by district Planning offices, the municipal council publishes those plans, and it is a statutory requirement that we have to invite objections after the plan is published. In some instances, we have adopted a process not stipulated in act; that is after preparing existing land-use, we go before the public for their views. At the same time, especially for the newly formed ULBs (urban local bodies), the perception of people is taken into consideration. If they are in need of school or library or police chowki or they need a road linking certain areas, their needs and requirements are considered with a dialogue with them. Such an attempt was done in 2011 when we started DP for Malkapur where we received good suggestions from people regarding reservation and land-use. The residents are the real judges of what is important to the area. As planners we have equal weightage to everything like road, schools, etc., but from the eyes of the receiving end, we need to have perception change. The plan must lead to an acceptable one." (I4)

A participant from Jharkhand underscored the importance of public engagement but also noted the current deficiency of this practise:

> "It is very important to involve all these stakeholders [citizens, trade associations, media] from the inception of any project as they will be the end users, and the success of the project is largely dependent on their acceptance... We should focus more on citizen engagement, proper communication and outreach, creating awareness and sensitisation before implementation this will not only help to get communities feedback but will also have a wider acceptance. Similarly, the role of other stakeholders is equally important. If we talk about media, it can sensitise the idea of sustainable transportation because of its deep penetration... In my opinion, these are the most important pillars to support sustainability but ironically are often left out." (I10)

Experiences with public engagement seemed to vary across states. While a participant from Maharashtra reported a successful effort to involve the public in creating District Plans in that state, another from Jharkhand lamented the lack of citizen and stakeholder engagement.

2. The Private Sector

Participants often mentioned the private sector in the context of operating public transportation. Several participants mentioned unsuccessful attempts to involve the private sector in bus operations. For example, in Pune, Maharashtra, a participant mentioned potential projects involving the private sector that did not materialise:

> "They are interested in doing some work under CSR [Corporate Social Responsibility]. But once they realise the budget and return benefits (or absence of benefits), they don't come forward. They are mostly interested in advertisements only. If that is not possible, they don't do anything... Another example is for running Chakan to Hinjewadi A/C [Air-Conditioned] buses. Some companies like Corona, Tata, Ashok Leyland had shown interest initially. PCMC [Pimpri-Chinchwad Municipal Corporation] was willing to cooperate. But the companies backed off after

> doing cost-benefit analysis. Because capex [capital expenditure] is very high in PT, so they were not interested." (I1)

A participant from Pimpri-Chinchwad, Maharashtra mentioned unfavourable results after engaging private firms for urban planning projects:

> "We have had bad experience with involvement of private players in preparing of planning proposals... there are three types of professional consultants. The first are good in concept but poor in law and provisions, the second category are [sic] experts in law and administration but are confined conceptually, cannot think out of the box. The third category are [sic] good at both legal aspect and designing but they don't reach to people; they don't have dialogue with people. Then it remains a pseudo kind of planning." (I4)

A participant from Jharkhand pointed out the lack of capacity of government to evaluate consultants' work and lamented the lack of public sector capacity:

> "Internal capacity and manpower is a very important aspect for any institution not only to deliver projects; but also it is imperative to do a critical evaluation of the project proposal being submitted by the consultants. Unfortunately, most of the institutions lack these technical skill sets and thus are dependent on the other to carry out a small task." (I11)

A participant from Tamil Nadu echoed the concern that the public sector needed sufficient capacity to oversee the private sector:

> "The city needs to be able to help the private sector do the best job possible while the sector makes money. There is an issue of capacity here. If the city doesn't know what to ask for, the private sector can't help. The sector is already involved, whether it's road-laying, bus manufacturing, etc., where the contractor is from the sector. It ties into writing the RfP: how to ask, how to help them do their job, outcome-based monitoring of their results, checks and balances, etc. What do you ask for? Does the private sector have the capability to do these things? ...The private sector isn't the holy grail of solutions. How much capacity does the city have to deal with them?" (I9)

A different participant from the same state mentioned a nascent bike sharing programme in Chennai as a possible model for Public Private Partnerships (PPPs) in the state:

> "Cycle sharing, a flagship project of Smart City, is being implemented through PPP (Public-Private Partnership) in which COC [Corporation of Chennai] carries out planning and oversight activities and the private sector handles day-to-day operations. Cycle sharing being a successful system in other parts of world, in Tamil Nadu, Chennai is the first city pitching for this system. And after its success, it would be added as a part of other Smart City projects in Tamil Nadu." (I5)

A participant from Maharashtra mentioned the public bike sharing (PBS) system in Pune in the context of PPPs, reinforcing the role of the public sector in providing cycling infrastructure:

> "The scope of private players is limited beyond PBS in cycling. They still need cycling infrastructure by government. PBS is just a layer on top of that." (I2)

The same participant went on to raise the possibility that the privatisation of bus operations and reform of existing private sector urban bus provision should be considered:

> "Private transport services have always been operated in most bus-based transport sector. Whether unorganised or chaotic, small buses, tempo, six-seater [rickshaw], whatever scale, it's often the private sector that's doing it. One way to look at it is to strengthen that existing framework. Often when there has been talk of reforming public transport sector, it's been about taking out private sector and putting in a formal government-run agency instead. One needs to organise and regulate the private sector in a better way. In cities like Pune, the public bus sector is run by state and it's not going well. One should consider whether we need to privatise these services and to what extent." (I2)

About half of the participants, two from each state in India, mentioned the private sector in the context of pilot parking management projects.

In summary, it appears that the need for private sector participation in HVT provision is important in India. However, several participants brought up the deficiency of the public sector's capacity to manage the PPPs, and private sector's capacity to provide the needed services. As such, the capacity of both the public and private sector to play their respective roles appears to need improvement.

3. Informal Transportation

Informal public transportation was mentioned by a few participants. For this participant from Maharashtra, informal public transportation was a sustainable transport mode versus "high-ticket" modes such as metros:

> "High capital and sustainable are two different things. Imagine a local six-seater rickshaw running in a small town in Rajasthan that is not taking any subsidy; it is affordable, is transporting people, is reliable and adapts to new sprawl. Is it a sustainable transport? Yes, it is! It definitely can be improved organically, but that is still more sustainable than some high-ticket systems. I think high-ticket items are seemingly sustainable in terms of energy consumed at the operational level but are not even at constructional level (on a life cycle basis). It's not clear to me why is metro or which part of metro is sustainable. It constantly needs subsidies, from a climate point of view or carbon footprint it is still debatable. It may sustain partly as its high-ticket item, but you will always have to put money into it. It becomes a white elephant whom we will have to constantly feed. Nobody will stop feeding it as nobody wants a dead elephant. Nobody cares if a stray cat who feeds on lot less is dead. That's what is happening. No politician wants to go for sustainable transport. So many cities are now having a metro. There is no impediment in getting all the funds for metro. Clearly money is not an issue. Jaipur doesn't have decent bus service, no cycling-walking infra but will have a metro soon. They have Pod-car now in a city." (I2)

Another participant from the same city said that taxis and auto rickshaws should be integrated into intermodal transportation systems with public transportation (PT), calling for participation of these players and capacity building. The participant said that this could improve equity in urban transportation:

> "Taxi and autos [auto-rickshaws] are used by people and their organisations are quite supportive of PT. They should also be prioritised. We are not considering them in our planning. We should involve them during planning discussions. We should see how their business will

> improve. Then they will feel the PT project is theirs also. They reach the furthermost section of society, so their involvement will definitely improve PT... To create awareness in them, involve them in every stage of planning and implementation. Explain benefits and problems to them; understand their problems. Seek their inputs. If a rickshaw feeding to a PT route and earns more than what he earns today, they will cooperate. Explain in detail to them how this is possible. Their flexibility can be used to extend PT's benefit for door-to- door connectivity. If they are cooperative, and cultured and educated, they can improve night safety too. Educate them; develop their culture as they eye on roads for most of the time of a day. There are many good rickshaw-walas. Promote them. This will help common people, ladies, etc. use PT even at night. Else only the rich will be able to travel at night, in their private cars." (I1)

While a few participants did mention informal public transportation, this was not a very prominent topic. This may be a telling result given the relatively high amount of informal transportation in India. The possibility of integrating informal taxis and auto rickshaws to formal public transportation was an emerging theme that could be explored further. From the interviews, we did not observe differences between states.

4. Other Stakeholders

In addition to public participation, the private sector and informal transport operators, multiple participants also mentioned other stakeholders in the context of HVT, including universities, international NGOs (including the C40, ITDP and DutchAid), research entities and vulnerable groups.

A national-level participant pointed out the increasingly important role that universities and think tanks played in HVT:

> "Apart from consultants, academic organisations and think tanks are also playing a major role in the space currently. They help create a repository of knowledge and know-how. Governments at all levels are now realising their importance and are beginning to rely on them in a significant manner. The value that they bring forward is huge, and they are only beginning to be utilised to their potential." (I13)

A participant from Tamil Nadu reported gathering stakeholders to implement a project for walking and cycling:

> "For implementation of NMT, we ourselves have conducted a large number of meetings and brainstorming sessions with stakeholders, NGOs and institutions like IIT [Indian Institute of Technology] and Anna University, with our own resources. Based on the research output of those sessions, we were able to frame good policy documents. We did have multi-pronged approach to policy making so that it is not a one-sided way." (I5)

A participant from Maharashtra said their state led the way in creating a policy research institute:

> "Maharashtra is the first state in nation to have a policy research institute since 2017 under Yashwantrao Chavan Academy of Development Administration (YASHADA). It works as a separate entity and research and studies about emerging policies in new areas, review of current policies." (I4)

Multiple participants mentioned vulnerable groups in the context of HVT. These included "the poor" (I14), the "underrepresented class" (I2), rickshaw drivers, and women (I12).

A national-level participant said that making lower-income populations aware of the need for HVT could lead to more actions toward creating such systems:

> "Political will follows public demand more than technical studies. Challenges of sustainable transport—like poor walking infrastructure and inadequate public transport services—have been highlighted by various researchers and media over the years. However, political will lies in road building projects, despite those projects only benefitting a minority of the population. This is because transport is not at the top of the public agenda currently. The poor, who are most dependent on sustainable transport, prioritise issues of lack of housing and power and water supply more than transport. If they can be made aware of the value of improved access to facilities through better transport, it may lead to demands for more political action on sustainable transport." (I14)

Integrating vulnerable groups (the poor, women, and rickshaw drivers) into HVT planning was an emerging theme, as was the increasing importance of universities and research institutes for HVT initiatives in India. Both of these topics may be important opportunities to promote HVT in India.

3.1.9 Funding

Participants had a diversity of views on funding of HVT. Issues the participants brought up included the need to increase local funding, the possibility of raising funds through new mechanisms, and the difficulty of securing funding for lower-budget projects and for smaller cities.

For this participant from Maharashtra, the transport budget of the Urban Local Body (ULB) should be increased, and this would lead to increased funding from international organisations:

> "A 4-member family spends 20-25% on transport. Likewise, ULB should have a similar budget-spend 20-25% on urban public transportation. If ULBs create a history of spending their own funds on public transportation, then they can have debt from any global agency." (I1)

The same participant suggested that a new assessment (cess) should be added for public transportation (PT):

> "A PT Cess should be added in our tax base itself. This will benefit PT users. Non-PT users should also be charged cess." (I1)

A participant from Tamil Nadu also pointed to the need for increased funds for public transportation:

> "There has always been a difficulty in mobilising funds for a public transport system. For instance, we are not able to increase the number of buses above 3500, due to insufficient funding. Whereas the potential of public transport being enormous, we need to have better methods of funding." (I5)

However, a few participants felt that funding was sufficient or could come from other sources. For example, this participant from Maharashtra saw the possibility of using funding mechanisms for HVT:

> "There is an emerging philosophy that many cities' problems can be self-funded, don't need external funding. We ignore sources like parking fees, congestion charging, avoid high-ticket items and provide low-ticket items by route and fleet rationalisations, parcels of land that could be developed in conjunction with transportation projects." (I2)

The same participant thought that better planning and evaluation, and not increased funds, would lead to improved results:

> "I think there needs to be reduced funding to the projects and more funding for the processes. What will really benefit cities is if there is a better capacity, more data and analysis, better regulatory processes in place, good feasibility studies, alternative analysis, post project evaluations, etc. Sustainable transportation planning is all about this, not funding at all. More money will actually make it worse. Lot of the time we can find a cheaper alternative that works better. BRT came out of such need (lack of money)." (I2)

Another participant from the same state said better organisation was needed to gain access to existing funds:

> "A lot of funding is available; that is not a problem. But we should have projects of that type and implement them in a planned manner. They are ready to provide funds at low interest. We should match their guidelines, funding pattern, etc." (I1)

Multiple participants mentioned a preference among politicians for megaprojects, such as metros. For this participant from the national government, this had to do with the relative ease of securing a large loan for such a project:

> "Government of India's [the national government's] funds are exclusively focused on creating new infrastructure. Even from multilateral donor agencies, investments for transport have mostly been focused on capital for high-cost infrastructure creation like roads and metro systems. This is because projects like infrastructure for walking and public transport are lower in cost and are not attractive enough for donors, most of whom prefer few large loans than many small loans. As a result, sustainable transport—which has a cost more than the local Government's self-financing capability but less than international donors interest—has always missed out." (I14)

The same participant mentioned a bias toward funding for implementation as a barrier to HVT:

> "Further, there is a complete lack of finance available for maintenance and operations. This is particularly hurting bus-based public transport systems, where cities need more financing for the viability gap of operations than the upfront capital investment." (I14)

A participant from Maharashtra underscored the need for funding for operations of public transport:

> "Worldwide no mode of public transport is making profit, not even no-loss no-profit. All are always at loss. The loss is borne by corporations. But in the case of PMC and PCMC, there is a big gap which does not come under sustainability which should be brought under regulations." (I12)

For this national-level participant, funding has worked well for larger cities, but is more problematic for smaller ones:

> "If there are strong institutional structures and capacities and positive political will, it has been seen that money is not an issue. This is most evident in the case of cities which are doing well, where all these supporting structures are in place. These cities have also shown that once they receive the money, they also spend it well. However, smaller cities have had trouble in raising money and in their cases, it is important that the central and state governments intervene in ways to improve their capacities and help them to access money. There are several programmes and interventions taken up by the central government which can be of help in this regard. Therefore, rather than a blanket approach, differentiated strategies need to be taken into approach." (I12)

While participants often mentioned the lack of funding for HVT, the possibility of raising new funds specifically for HVT and using suites of measures to stimulate the use of HVT may be an interesting solution. The relative difficulty of securing funding for smaller projects should be of considerable interest to practitioners in lending institutions and government, as would the need for funding beyond implementation for operation and maintenance.

3.1.10 Policy Transfer

Multiple participants mentioned policy transfer as a way to improve HVT in India. Foreign countries and cities mentioned as models to follow included London, Singapore, Japan, Bogotá, Curitiba, Copenhagen, Barcelona, the Netherlands, and Jakarta. In addition to these foreign places, Ahmedabad, Rajkot, Surat (for BRT), Pune (for parking), and Mumbai (for administration and marketing of HVT) came up as model cities to follow.

Despite some participants' enthusiasm for adopting policies from other places, e.g., cycling from the Netherlands and BRT from Bogotá, many participants pointed out the need to adapt policies for HVT to the context of India and the specific region/city. For this participant from Maharashtra, directly copying public transportation practises from Japan and Singapore was not an option:

> "There are many things; contexts are different, and we can't just copy policies. Japan and Singapore have done nice metros but when we went to Japan, we realised that people spend roughly 90 INR for one station travel. Then we need to think are we economically ready for such pricing, the context changes, and policies have to be customised. We can't just copy them." (I4)

This need to consider the local context was also brought up by a participant from Tamil Nadu, in the context of engaging the private sector for HVT:

> "[T]here may be solutions that they can work on in London but not Chennai where the conditions are extremely difficult." (I9)

A participant from Tamil Nadu illustrated that infrastructure projects for walking often brought a host of issues:

> "Some of these projects are multi-layered. Problems pertaining to vending/ parking management crop up in footpath projects. It's no longer simply a footpath problem. India differs from western countries in this respect. For Indian conditions, we need to reinvent how we do things so that multiple things happen in parallel. Assume a DPR for footpaths based on

> Barcelona or another city. You'll fail because you haven't taken density and other factors into account. Other things are taken care of in cities abroad. For us, footpaths projects translate into many bigger projects (during implementation)." (I9)

A participant from Maharashtra spoke of the need to create manuals suitable for different contexts:

> "Provide some handbooks with sketches, of the present and the ideal situation, some handbook of standards too. They already are educated and capable of understanding. Also develop such books in the local language to explain to corporators and other local citizens. Then politicians and ULB administration will be in sync." (I1)

A national-level participant said that local buy-in for policy transfer HVT projects would improve if local governments could choose their own policies to adopt:

> "Many cases of replication happened when they were mandated as compulsory reforms to access national or international financing avenues. As a result, there was limited local buy-in for the policy being adopted, which typically leads to lack of seriousness in following up policy creation with effective implementation. An alternative approach where cities identify their own policies may be more time-consuming but is likely to be more successful." (I14)

Policy transfer from high-income locales did appear to have some promise, e.g., biking from the Netherlands and modal integration from London. However, using Indian cities as models for intra-Indian policy transfer also appeared to be a good option. The need to adapt imported policies to local contexts was another important emerging theme.

3.2 Results from Sub-Saharan Africa

The themes that emerged from the qualitative data from Sub-Saharan Africa were governance, funding, capacity building, awareness of HVT, stakeholders, and travel modes. All but two of these had sub-themes.

The data from Sub-Saharan Africa was notable in a number of ways. First, local control was the most important issue for participants related to governance. Participants also mentioned the lack of coordination between institutions as a barrier, as well as the lack of funding for HVT. Issues with staffing, including the lack of staff, high turnover rates, and lack of understanding of HVT were also mentioned. The need to build awareness of sustainable urban transportation in general, and the lack of a strong civil sector advocating for sustainable transportation specifically, was another important issue. Some participants also mentioned a lack of data on transportation as a barrier for HVT.

Participants also brought up issues that could be viewed as opportunities for HVT. For example, participants appeared to be very interested in projects for walking and cycling. A few participants also mentioned BRT as a possible solution. International organisations and informal transportation stakeholders were particularly important players in the region. Some participants mentioned that involving local leaders in HVT projects would be effective, and others reported working with informal public transportation providers. Using Traffic Demand Management tools such as metered parking was

also brought up by some participants. Participants saw study tours as particularly effective tools to raise awareness of HVT options. Emerging themes included new urban design manuals and adapting policies to local context. Detailed results from the interviews are described in the subsections below.

3.2.1 Governance

Participants from Sub-Saharan Africa brought up a number of topics related to governance. The most important of these was the need for local control, but participants also mentioned the need for improved coordination, and corruption was also mentioned as a barrier to HVT. Some participants also mentioned the need for projects in the region to be adapted to the local context.

1. Local Control

Themes related to governance were dominated by the relationship between national and municipal government institutions, with many participants emphasising the need for increased local control of issues related to urban transportation. The need for increased local control was emphasised by participants from both national and municipal-level governments in the four countries.

For example, consider the following observation by a participant from a national-level government institution from Ghana:

> "The city (local assembly) should take charge. They need more knowledge, skill ... the ministries need to give up some of their power." (A1)

A participant from Zambia said that local government needed improved ability to implement projects:

> "The current structure has not been favourable to local governments. We don't have the capacity to implement major projects nor review any projects being done by the national government or contractors, even when it is something that will have adverse effect on our people." (A8)

In Kenya, the conflict between levels of government was reflected in ownership of roads in Mombasa, which led to issues surrounding road design, drainage, and sidewalks:

> "KeRRA and KURA [Kenya Rural Roads Authority and Kenya Urban Roads Authority, respectively] were supposed to be redundant but they classified roads to suit them. The citizens don't know to whom to complain because they're not aware of what roads are whose. The KURA officers are still based in Nairobi. They are not on the ground in Mombasa. When you classify a road, is the footpath and drain part of that? The solution is simple: Give everything to the county government." (A9).

Participants observed that the lack of local control hampered the ability to effectively implement HVT measures. Specifically in Kenya, the lack of local ownership also made it difficult to manage roads and for citizens to engage authorities.

2. Coordination

Following the need for increased local control was the need for increased coordination between government institutions. Participants from all four countries also mentioned this issue in various ways, e.g., a participant from Ghana stated, "Fragmentation of governance is a big challenge" (A4).

For a participant from Zambia, a lack of coordination translated into concrete infrastructure deficiencies regarding roads:

> "[W]hat is missing is an integrated way of planning and implementing sustainable transport projects. Integrated planning is missing. In other words, coordination between various professionals is what is missing. That is why you find that some newly completed roads are experiencing flooding problems because relevant professionals were not consulted during project planning." (A5).

This lack of coordination was corroborated by another professional in the same country, although in this instance the participant emphasised the inconsistency between planning and implementation, which were carried out by different departments:

> "There is need to improve the coordination between various government departments. Planners carry out the planning before roads are constructed. Engineers in the Transport Department do not refer to development plans when they are designing roads. Transport infrastructure for Lusaka City does not follow the city master plan." (A7)

A participant from Ghana pointed out that improved coordination was needed among a multitude of stakeholders:

> "In few cases, even if there are policies that are good and will help to achieve a better output, due to lack of coordination between the agencies they have failed to work, a good synergy is mandatory... there are too many stakeholders involved in different projects that are doing the same thing." (A14)

While local control was the most prominent issue for the study participants we spoke with, coordination between government agencies was also an important issue.

3. Corruption

Three participants—each from a different country—mentioned corruption as a challenge for urban transportation. Corruption was mentioned as a reason for high construction costs, as a risk for implementing infrastructure for sustainable transportation, and as an issue for financing from abroad, with one participant saying that public sector officials need to "Make sure each fund coming to the country is free of corruption and other related issues." (A11).

Although corruption was not a particularly prominent issue for HVT, it did still appear to be a matter of concern for a few study participants.

4. Local context

Several participants mentioned the need to take local conditions into consideration when implementing HVT projects. For a participant from Ethiopia, failing to do this had adverse effects:

> "In the other part of the city there are also a lot of failed policies due to no or little consideration given to the existing assessment." (A12)

Another participant from the same country emphasised using a local strategy for project implementation that involved three stages:

> "Transport and land use policies are adopted based on different countries' experiences in implementation. Before implementing a policy, three stages need to be followed: announcement ("Awaje"), strategy ("memeria"), then implementation strategy ("masefestemeiya zede")." (A11).

Another participant said that more adaptation was needed in formulating local transport policies:

> "We need to stop those directly using the ideas and programmes adopted from other countries." (A12)

While HVT solutions from other places may be relevant to cities in SSA, several participants pointed out the need to adapt these solutions to local realities.

3.2.2 Funding

Another important obstacle was lack of funding. Several participants pointed out the need for increased funding for sustainable urban transportation, for example, in Zambia:

> "The structures are okay, but resources are very limited... Lack of funding within government structures impedes implementation." (A6)

Others pointed out the need for funding beyond planning efforts. For example, a participant from Ethiopia suggested that what was need was to "shift the current trend of fundraising that is only for infrastructure planning. There is a need also for maintenance, fundraisers for example support just for the NMT, administrative continuity to manage those infrastructures, operation and maintenance are missing." (A11)

The need to provide budgets beyond the implementation stage was echoed by another participant from the same country:

> "These days the government is allocating a lot of [funds] for infrastructure development, but it is also failing to manage them properly." (A14)

Related to the issue of local control, the (above) participant from Ghana said that municipalities needed better funding:

> "The local government deserves to have more of the funding because they are the ones who are closest to issues on the ground... The ministry wants to be seen leading the charge." (A1)

Finally, a participant from Zambia mentioned a novel revenue source:

> "As for the community, they have been very positive. Most of the paving projects were actually funded by people through donations... We haven't received any funding. We have only worked with donations from individuals and companies."

Besides the need for increased funding for HVT in general, participants also mentioned that funding beyond implementation was needed—that operation and maintenance were underfunded. A participant highlighted the funding difficulty municipalities face, which triangulated with the issue of local control mentioned above. Finally, donations as a funding source for urban transportation was an emerging theme.

3.2.3 Capacity Building

All participants mentioned the need for improved capacity for the creation and maintenance of HVT systems. Participants from all four countries pointed out areas for improvement regarding public sector capacity and several offered their views on how this could be achieved. Some mentioned that capacity had improved recently. One participant from Kenya noted a change recently, with government employees now more eager to work on transportation projects:

> "There was a lot of lethargy in the department. Most people were in the department to pay the bills at the end of the month. I went around the departments looking for people who are passionate about their work. Most of them were sitting and doing nothing in their old departments because no one would give them responsibility... Now people come to the office and share ideas." (A9)

Multiple participants perceived the need for frequent training for HVT (referred to as "sustainable transport" by participants). For example, a participant from Ethiopia suggested "frequent in-house training on sustainable urban transport, on 'what is sustainable urban transport?'" (A14)

For another participant from the same country, such training should involve multiple sectors:

> "The first thing to do is to provide frequent training and capacity building programs, for the professionals working in the transport sector and those working in the urban planning sector towards achieving sustainable transportation." (A13)

Also from Kenya, a participant suggested that capacity was adequate, but "what we need is more inspirational training: 'How will these things change our lives?'" (A9)

A participant from Zambia thought that the issue was not one of capacity, but rather of resources: "We do have qualified engineers; we just need resources." (A8)

The need to improve capacity, or to motivate existing government staff, was a very prominent issue for participants. It appears that offering courses on HVT solutions was one possible way to make progress on this issue. However, one participant suggested that capacity was sufficient, but more resources were needed. As such, capacity may differ across locales and institutions.

1. Study Tours

Many participants from Africa mentioned study tours as an effective way to raise awareness of HVT, particularly among the political class. A participant from Ethiopia suggested that the political class should "visit the most advanced cities in the world and bring the lessons learned back home" (A11). Another participant from the same country said specifically that the mayor would benefit from study visits: "The city mayor needs to be given a chance to see the process of sustainable transport in other cities around the world." (A14)

Another participant from the same country pointed out the need for such tours to be focused, stating, "study tours are helpful, but there should be consistency between the training topics and officials' job descriptions." (A13)

For a participant from Ghana, study tours could be particularly helpful to promote cycling:

> "People need to go see good NMT infrastructure in other cities and countries. They need to see, admire, and enjoy good infrastructure for NMT. You need to experience cycling. I told my husband he needs to buy a bike for me." (A4)

Study tours appear to be a promising way to raise awareness of HVT. However, as one participant pointed out, there may be ways to organise these tours so that they have a more meaningful impact on HVT projects in the participants' countries of origin.

2. Staff

Several participants mentioned a lack of continuity of staff as an important barrier to HVT:

> "Frequent management staff turnover is also a big challenge. Every newcomer wants to start his or her own way of work style and environment. For example, in 2016 over 800 planning officials in the different sub cities have been given training on how to implement the master plan, but recently all the members were fired from their jobs… Previously there was a training by the World Bank and the people who were trained at that time are no longer working on the subjects in which they were trained." (A13)

For a participant from Zambia, the main issue related to capacity was simply the lack of sufficient professionals available for HVT: "There are very few technical officers. They are overwhelmed with a huge volume of work." (A6)

Another participant from the same country, however, observed progress in the environmental sector and related staffing:

> "In Zambia we have recorded some improvement. Government is looking at green jobs, exploring how they can use green technologies, environmentally friendly and resilient roads. Most road sectors never used to employ Environmental Engineers. Today there are Environmental Engineers incorporated in road development." (A5)

While high turnover and understaffed institutions were obstacles to HVT, one participant mentioned the emerging theme of green jobs and green technologies; this may be an opportunity for government institutions.

3. Data and Indicators

Multiple participants mentioned the need for improved data for planning and evaluation of HVT. A participant from Ghana said:

> "There is a need for basic information about how people move around the city." (A1)

For a participant from Ethiopia, improved data was needed to effectively involve the private sector in HVT:

> "The institutions in the country do not have proper data on what private sector shall participate in the different projects." (A12)

For another participant from the same country, more consideration of data was needed:

> "Data collection from the lower level shall be taken into consideration, and the officials need to know well what they are doing." (A11)

Related to data, two participants from Ghana mentioned the need to improve indicators for HVT:

> "The indicator for Ministry of Roads and Highways is how many km of roads are built. The indicator for the Ministry of Transport is the number of buses procured. But all of these buses will be stuck in traffic." (A1)

> "Every assembly is assessed at the end of the year using several indicators to gauge the delivery per the Development Plans ("D-plans"). However, there are few or no indicators related to transport, so assemblies do not prioritise transport projects." (A3)

It appears that in some locales, basic data for transportation planning—e.g., on travel modes and origins and destinations of trips—was missing. Participants also said consideration of existing data and improved indicators for HVT was needed.

4. Manuals

Two participants mentioned outdated manuals as a barrier for HVT implementation:

> "The outdated and inflexible standards are being used in the city that makes it harder for the city to incorporate new ideas, a good example here could be the Addis Ababa City Road Authority design manual which is old and outdated it is a challenge now for the design of the BRT service." (A14)

The other participant who mentioned manuals also said that their previous conception of road infrastructure was based on auto travel and that new reference materials were needed that were more appropriate for urban areas:

> "Roads to us meant the carriageway. If there was anything beyond the carriageway it was the drainage... We don't have an approved urban design manual. The existing manual was created by the Ministry of Transport. This ministry typically deals with highways. This is a completely different concept from the urban area." (A10)

The possibility of local urban street design manuals was an emerging topic, one that may have important potential for promoting HVT in SSA.

3.2.4 Awareness of HVT

Multiple participants pointed to the need to improve awareness and knowledge of HVT for the public, government staff, politicians, and scholars.

In Zambia, a participant emphasised that politicians needed better information:

> "There is room for improvement in terms [of] knowledge on sustainable transport. Politicians do not have adequate knowledge on sustainable transport, yet they make key decisions affecting implementation of sustainable transport projects." (A5)

Another participant from Zambia mentioned that politicians needed to be more aware of sustainable transport and stakeholders could use a strong local media platform:

> "There is general lack of awareness of the benefits of sustainable transport among the politicians... Zambia has very powerful independent media, there are independent forums. The issue is the lack of a strong voice or advocates who can use the media to promote sustainable transport. The platform is available but there are no actors." (A6)

A participant from Ethiopia saw the need to educate the political classes on sustainable urban transport:

> "Different leaders have diverse educational backgrounds, so there is a need to work in the process of providing more information to the decision-makers to make sure that they fully understand the issues. There is a need to show the cost and benefit of the different projects in the long term, in addition, to explain the political gains." (A14)

For another participant from the same country, awareness of sustainable mobility was the most important priority to enable government institutions to perform effectively:

> "Before going to the 'institutions framework' to form a government body, there is a need for a clear understanding of what is sustainable mobility. Currently, the institutions are busy, and they are involved in the massive road and other physical infrastructure projects that are changing the transport system. Most of the regions in the country have the chance not to be congested. Walking and cycling have the potential to serve as major mobility options. So the main thing that needs to be done for the institutional framework is that cities need to be informed regarding sustainable transport." (A12)

A few participants mentioned the need to raise awareness in the university setting, for example, in Ethiopia a participant suggested that to improve awareness of HVT one should "Work on the education sector, including campus level transport studies at the universities. They should be well aware of sustainable transport." (A11)

Participants mentioned that increased awareness of HVT was needed in multiple sectors, including among politicians, government bodies, the public and universities. This is also related to capacity building, which looked more specifically at government institutions. In Zambia a participant reported the need for a media platform that could effectively communicate messages; this could be an opportunity for raising awareness of HVT.

3.2.5 Political Will

For multiple participants, leadership from politicians, or political will, was needed to implement HVT systems. For this participant from Ethiopia, politicians were distracted from HVT projects by election cycles:

> "Political leaders don't have the ear to listen to the project but focus only on the politically urgent issues that will benefit them in the next election." (A11)

A participant from Ghana said that leadership was necessary, but used an example from outside of transport to say that change was possible:

> "In this part of the world, things don't just happen. It depends on leadership. The Ghana president changed from wearing suits to African prints, and now everyone is doing it. It takes high-level leadership for changes like this to happen." (A4)

However, a participant from Kenya said that a recent project for pedestrians had shown that such initiatives could benefit politicians. This participant said that the governor "got a lot of mileage out of the project." This suggests that there could be increased political will for HVT projects.

3.2.6 Stakeholders

Participants mentioned multiple stakeholders for HVT, including international organisations, the public, civil society, and private sector stakeholders.

1. International Organisations

Many participants in Africa mentioned international organisations (e.g., development banks, NGOs) in the context of HVT projects. The types of projects involved public transportation, walking and cycling, and road safety. Some evaluations were quite positive, and others less so.

For example, projects for walking and cycling and road safety had positive results. A participant from Zambia said that a programme by the UN Environment Program (UNEP) and the Institute for Transport and Development Policy (ITDP) for the "formulation of NMT Strategy" had "a lot of impact on government" (A6). The same participant also positively evaluated the World Health Organization's efforts to collect data on road safety (for that organisation's "Country Status Report" on road safety), and that overall, "NGOs have had a significant impact" in Zambia (A6).

However, other participants perceived shortcomings of the involvement of international organisations. For example, a participant from Ghana said that a road safety project was not successful because it lacked local ownership:

> "If Bloomberg [Initiative for Global Road Safety] left, the project would end. We created a project because they came along, not because the city really wants it. It's just seen as a project—the city is not as interested in the outcomes. There must be ownership from the city." (A1)

A participant from Ethiopia noted the shortcomings of a light rail (LRT) project:

> "The LRT project is fully funded by the loan from the Chinese government and the city administration has assigned a team to follow up on the process. However, the Chinese companies that were assigned to design and construct the system failed to consider the concern of the local professionals. Now we are observing a few challenges, such as a lack of midblock pedestrian crossings... Most of the partner agencies coming to the country have their own political interests and these interests need to match with the city's plan." (A13)

The same participant noted a lack of continuity regarding a project regarding informal public transportation:

> "AFD (French Development Agency) gave support for mapping the trotros [privately owned minibuses] but after that, the work was never taken forward. What's the next step?"

Multiple participants also noted the lack of transfer of expertise in projects with some international partners. Consider these comments, the first from an Ethiopian and the latter two from Ghanaian participants:

> "The partner agencies need to show the technical ways of doing the different projects in the city, so that the local staff can work later after the partners leave." (A13)

> "The Ministry said there wasn't enough money to do an urban street design guide. JICA [Japanese International Cooperation Agency] offered to provide financial support, but they would have done it all themselves, without involving locals." (A1)

> "The government was more concerned with the financial inflows from the project rather than the technical outputs. There has been little skill building." (A2)

A participant from Kenya also pointed out the need for international partners' activities to take local context into consideration:

> "They [JICA] helped with the master plan through their consultant Padeco. They proposed a train system for the county. They county can't afford it... Donors are always looking out for their own interest." (A9)

Another participant from the same country also expressed the need for increased flexibility:

> "Different NGOs happen to come to the county to provide services and support the city. They allocate money and time to implement the projects and, usually due to the time, overrun in the projects. The city is left to finalise the project on its own after the NGO has left. For example, the BRT Project used to have financial support from the UN-Habitat but since the project is taking more time, the budget support from Habitat is now stopped... Since different projects need more time and money than their initial plan, then it is mandatory for the partners to be a little flexible in understanding the local situation." (A14)

A participant pointed out the need for African authorities to have clear priorities when dealing with international partners: "The primary thing before meeting the partner agencies is that we have to know what we need; because if you have money and you don't know what you want, then it's a challenge." (A13)

While international partners were often mentioned as having made positive contributions to HVT in the African countries we gathered data in, participants also pointed to serious issues related to projects with such partners. These included international partners mainly seeking to promote their own interests, a lack of continuity of projects, and a lack of skill transfer. A possible solution was for local governments to have clear priorities before meeting with international partners. These results are of particular importance to international development agencies and organisations and researchers interested in this topic.

2. Public Participation

Several participants mentioned the need to involve the public in HVT projects. For one participant from Ethiopia, this meant engaging people who walked for travel:

> "Think about who is the majority. In the Ethiopian case, pedestrians are the major part of the mobility system. So, there is a need to work on providing knowledge and capacity to the citizens... Most citizens have no information on the issues of sustainability, and the citizens are asking the government for the traditional new road." (A12)

To engage the public, some participants mentioned the need to involve local leaders. For example, in Zambia, participants mentioned important stakeholders who should be involved included traditional leaders and chiefs, as "Most land in Zambia is in the hands of local Chiefs." (A7)

In Ethiopia, this included leaders from neighbourhoods:

> "Identify the influential people from each city, at the very local level where they can get direct access to the citizens; if citizens own the projects; then they will sustain, for example, edir [local social associations at the neighbourhood scale] leaders." (A11)

Involving people who walk for transportation in HVT planning was an emerging theme, as was the possibility of involving traditional local leaders, such as chiefs and the heads of neighbourhood associations.

3. Civil Sector

The civil sector was another stakeholder brought up by multiple participants. Some participants mentioned that lack of civil sector organisations for urban transportation. For example, in Ghana:

> "In most sectors, like water and sanitation there are associations you can work with. But for transport there is no one." (A1)

> "There is no civil society in transport." (A4)

However, in Zambia, a participant reported that neighbourhood groups had been able to create a positive change for public transportation:

> "Civil society has some influence. For example, a group known as Hillcrest sometime back requested rerouting the bus route. Previously there were no buses serving to their area due to the condition of the road. Their request was granted." (A6)

In Kenya, the blind community had been involved in planning for pedestrians:

> "Before the footpath project in Mombasa, the blind community was called in for a meeting. People complained that they are always hit by vehicles. Steel drain covers were stolen. Footpaths were not usable by the blind, so they'd walk on the edge of the road, and they would fall into drains." (A9)

It appears that the strength of civil society may vary across different locales in SSA. Involving communities underserved by public transportation and the blind community (and perhaps other vulnerable communities) may be effective ways to promote HVT.

4. Private Sector

Participants mentioned the private sector most frequently in conjunction with public transport operation. A participant from Kenya pointed out the need to find the right balance between public and private sector involvement:

> "If government is to work alone, without involvement of private sector, there will be laxity. On the other hand, if private only is involved, there will be cartels. Therefore, the two have to work hand-in-hand." (A10)

A participant from Zambia mentioned foreign consultants involved in HVT projects, saying that they had been involved in policy formulation and planning. Notably, the participant mentioned that most of the consultants had been from Zambia:

> "Most consultants are local except a few cases where foreign consultants have been engaged. Involvement of consultants in policy formulation helps to fast-track the process. However, the private sector is mostly not involved in policy implementation." (A5)

While the private sector may have an important role to play in HVT provision in SSA, participants did not provide a wealth of concrete examples. Reasons for this could be explored in future research. Participants did, however, frequently mention informal public transportation providers (discussed in detail below).

3.2.7 Travel Modes

All participants spoke of various travel modes, including walking and cycling, public transportation (including informal transit) and automobiles.

1. Walking and Cycling

Multiple participants mentioned walking and cycling (often referred to by participants as non-motorised transport, or NMT) as an area for potential growth, or one that they were actively working on. Based on the participant's comments, these modes appear to have considerable potential in the countries and cities where the interviews took place. Participants mentioned walking and cycling with

regards to environmental concern, dominant modes of transport, equity, and road safety. For example, a participant from Zambia mentioned walking and cycling within the larger context of environmental sustainability:

> "Sustainable transport is related to environment and green infrastructure; with an increase in population there will be an increase in pollution. If non-motorised transport is not promoted in a city, we will not achieve sustainable development." (A6)

Several participants quoted data regarding trips by mode or infrastructure. For example, in Mombasa, 2% of trips were made by car and 53% on foot. The same participant stated that 75% of the budget of a county road project in the port area of that city supported by Trademark East Africa (a non-profit that seeks to improve trade in the region) would go to the road (as opposed to footpaths), although "the majority of port workers are walking" (A9).

A participant in Ghana highlighted the inequity of current infrastructure for walking and cycling:

> "In Wa [small city in northern Ghana], the main roads/highways have wide carriageways but 98% of the people are walking... Accra has 30 km of cycle tracks and 100 km of footpaths out of a total road network of 2,700 km." (A1)

Equity was also at the centre of providing infrastructure for walking in Kenya:

> "When you drive and you find somebody walking ahead of you, what is your inner reaction? You see this as a nuisance. You're not supposed to walk. You are a stupid man. You should be hit. If you're not hit by a vehicle, you'll be hit by a mugger or pickpocket. Walk means more than just space." (A9)

This participant reported success in implementing walking infrastructure ("footpaths"). The same participant reported removing cars that had parked illegally on the new footpath, including police cars. Many people were benefiting from this project in Mombasa, and many churchgoers were using the footpaths on Sundays. The participant also reported that the business community, which had previously been "sceptical," was now in support of the footpaths.

For another participant, lower speed limits meant improved safety for people on foot:

> "There is a 50 km/h speed limit in urban areas. You will break someone's leg but at least not kill him/her. The purpose of having a lower speed limit in urban areas is to create safer conditions for pedestrians." (A10)

This same participant reported changing attitudes regarding walking and cycling:

> "People were questioning why footpaths and cycle tracks were being done and yet the roads were in very poor condition. Before, the public would only make complaints on deteriorated roads, but now, the public are making complaints on areas that have deteriorated footpaths." (A10)

Participants from all four countries mentioned the need to create political will to promote walking and cycling. For example, a participant from Ghana said leadership was needed to show that these were legitimate modes of transport:

> "We have associated bicycling and walking to poverty. Or people think you're cycling for exercise or leisure, not transport." (A4)

A participant from Zambia reported success in relating walking and cycling to healthy living:

> "[T]he Ministry of health, through their national health week, involves the president as the role model to champion the walking and cycling initiatives. This has worked quite well. It influences healthy lifestyles."

Walking and cycling were one of the more prominent themes to come out of the interviews. Participants viewed promoting these modes as viable and a tool to improve social equity and public health, mostly in terms of traffic injuries but also regarding healthy exercise habits. Participants reported changing attitudes to walking and cycling and positive results for politicians.

2. Public Transportation

Participants' discussions regarding public transportation were dominated by Bus Rapid Transit (BRT) and informal public transportation.

Bus Rapid Transit

Participants from all four countries mentioned BRT in some context: either as a type of public transportation that had potential, that had or needed support, or specific projects that were in planning stages.

In Ghana, a "type 2 BRT" (also known as "BRT lite") was implemented and low-entry buses were purchased for this system, known as "Aayalolo." However, a participant mentioned that only 68 of the 235 total buses were in operation (A1). The same participant mentioned limited government support for BRT, and another participant from Ghana spoke of the need for local assemblies to "gazette" (announce) BRT corridors if these were to be established. (A2)

In Zambia, a participant mentioned that BRT was being promoted by "an organisation of Taxis and Bus Drivers Association." (A6)

In Mombasa (Kenya), a participant was particularly enthusiastic about the potential for BRT. In addition to reporting that a corridor was "in place," (Mombasa – Mariakani), the participant thought BRT could involve existing informal transport:

> "In Mombasa it will be easy to implement a BRT… BRT corridors should be considered at the median. Ferry to Malindi corridor should be designed with proposals for BRT. Matatus can act as feeder vehicles." (A10)

Another participant from Mombasa emphasised that BRT could be adapted to local conditions, and that doing so could help clear financial hurdles:

> "Let's find a way to do the BRT on our own… Let's solve the problem even with our own budget… Once you've taken the first step, it will attract funding. (A9)

Participants mentioned BRT relatively frequently when speaking of public transportation. Some saw considerable potential for this mode, reporting local support for BRT projects, and others spoke of the need to adapt BRT to local circumstances.

Informal Transportation

Many participants, including ones from all four African countries, mentioned informal public transportation.

In Ghana, a participant said that "taxis" (vehicles shared by 4-6 passengers) or "trotros" (shared minibuses) were being regulated by government, and received permits to operate based on the route, type of vehicle, and quality of vehicle (A3). A permit cost Ghanian Cedi 200 [27.69 GBP], with additional payments for stickers and commercial drivers' permits.

Another participant from Ghana mentioned that informal transport operators were viewed as civil society, and "Drivers' unions like GPRTU [Ghana Private Road Transport Union] are seen as the major stakeholders. They make a lot of noise" (A4). In Zambia, a participant also reported that informal transport operators were involved in the governments' stakeholder engagement efforts, specifically, that they were invited to workshops (A5).

Participants from Kenya mentioned that government worked with the matatu (minibus) owners' association, for example, to change routes (A9). However, this participant said that more public sector management was necessary, and that the effort to create owner cooperatives (saccos) was deficient:

> "If the government doesn't manage the public transport system we'll never succeed… Even the saccos never worked. They didn't solve the problem."

Another participant from Kenya pointed to risks involved with working with informal transportation operators:

> "The matatu industry is 'thug,' 'underworld.' There is a lot of money that changes hands. If you want to join a route, you have to pay. You don't get a receipt for that payment. If you don't pay, they will get the police to arrest [impound] your vehicle every day. If you try to interfere you can get shot." (A10)

While the above participant was critical of informal public transportation operators, others reported working together with these operators and regulating them to some degree. As such, there appears to be potential in working with existing informal transportation providers, at least in some of the locales that we conducted interviews in.

3. Automobiles and Traffic Demand Management

Some participants cited above mentioned transportation planning practises that favoured the use of automobiles. However, several participants mentioned efforts to curb auto use by providing information or using Traffic Demand Management (TDM) measures. For example, in Ghana:

> "The Road Fund is not for the Ministry of Roads and Highways. It's a fund for Ghanaians. The assemblies have no plans/priorities for using these funds. The government has announced a plan for a 98 million [cedi] (GHS) two-tier flyover at Obetsebey Laptey. Then another flyover was added, bringing the total cost to 247 million (GHS)… Only six to nine percent of Accra's households have cars. The budget for transport is disproportionately allocated to roads. AMA [Accra Metropolitan Assembly] is trying to highlight the externalities of cars." (A1)

And in Kenya, a participant mentioned using TDM in conjunction with improved public transportation:

> "Once we have good PT [public transportation] we can make entry into certain areas very expensive for cars. E-parking will be launched by December 1 [2018]. Performance pricing is planned... We want to discourage the use of private cars entirely." (A10)

Another participant from Kenya mentioned that 5,000 cars currently pay for parking in Mombasa (A9).

A participant from Ghana mentioned parking management as an area for growth for the Department of Transport (A3), and another participant from the same country suggested that "Areas currently used for street parking should be converted to bicycle facilities" (A4).

In Zambia, several participants mentioned tolled roads, although participants did not say this was an enabling factor for HVT.

Some participants displayed a considerable appetite for curbing auto use, using TDM measures, and promoting HVT modes instead of autos. This finding will be of considerable interest to researchers and practitioners interested in promoting HVT.

4 Discussion: Opportunities and Barriers in India and Africa

Participants from both India and Sub-Saharan Africa (SSA) provided rich qualitative data that allows for unique insights into the dynamics involved in projects to promote HVT. While there are many similarities between the two places, there are also important differences, which this section will briefly outline.

The main themes that emerged from the data are included in the table on the next page. The first group of themes is frequently discussed in policy documents, white papers, and academic literature. The next group, "emerging themes," are either entirely or relatively new, but may be of considerable relevance to researchers and practitioners. The priority assigned to the theme ("high," "medium," or "low") is based on our interpretation of the qualitative data we gathered, including frequency and way participants mentioned the topics. Priority cells were left empty if this topic was not addressed in one of the two places (India and SSA).

ITDP

TABLE 3 | **CAPACITY THEMES**

THEMES	PRIORITY	
	INDIA	SUB-SAHARAN AFRICA
Improve government coordination	High	Medium
Greater local control	Low	High
Build Capacity for HVT	High	High
Improve staff continuity	High	High
Use study visits	High	High
Increase funding for HVT	High	High
Adapt policies to local realities	High	High
Improve data and indicators	Medium	High
Use the media to promote HVT	Medium	Medium
Promote walking and cycling	Medium	High
Promote Bus Rapid Transit	High	Medium
Improve informal public transportation	Medium	High
Support TDM measures	Medium	Medium
Reduce auto-centric planning	High	High
EMERGING THEMES		
Use study visits more strategically	High	Medium
Improve cooperation with international stakeholders	Low	High
Promote "green jobs" in government		Medium
Create local street design manuals	High	High
Build Capacity for HVT with ongoing courses	High	High
Involve vulnerable groups (e.g., the poor, women, the blind) in HVT measures	High	High
Improve Private Sector Involvement	High	
Improve funding for smaller projects	High	
Improve funding for operation and maintenance	High	High
Donations as a source of funding		Medium
Improve oversight of funding to reduce corruption	Low	Medium
Sufficient funding is available/use TDM for funding	Medium	
Use creative methods to motivate staff	Medium	
Focus capacity building on traffic police	High	
Strengthen universities and research institutes	High	High

SOURCES: MADE BY AUTHORS.

In terms of governance, there was a striking difference between India and SSA. While concerns regarding coordination dominated discussions of governance in India, the most important topic in Africa for governance was local control of urban transportation. Coordination was a secondary topic of governance in Africa, and in India, local control was mentioned by one participant. Efforts to empower local governments have been underway in India for several decades; the relative omission of this topic by participants may be evidence that this effort has been somewhat successful. This is also consistent with literature on this topic. An assessment of India's attempts to empower urban bodies, via the National Urban Transport Policy (NUTP) and the National Urban Renewal Mission in India found that a national reform programme linked to a national policy can orient state/city urban transport policies and programmes towards HVT goals (Swamy and Baindur 2014). However, Hidalgo et al. found that although the national government's effort to fund cities to combat poverty via improved urban transportation under the Jawaharlal Nehru National Urban Renewal Mission (JnNURM) was a major advance, this programme had not made a significant impact on funding sustainable transportation over auto infrastructure, e.g., road widening (Hidalgo et al. 2013). Further, our personal experience has shown that states still wield much budgetary control over cities and are responsible for appointing the municipal commissioners often hold most of the power within the city government.

Another striking difference is the role of international stakeholders: while some participants mentioned these in India, participants from SSA made it clear that these were very important players. However, the participants from SSA also had sharp criticism for some of these players and suggested that local contexts needed to be taken into account. This was consistent with Marsh and Sharman's (2009) finding that aid agencies may also act as coercive actors, pushing governments to adopt agendas that are considered best practises policies and programs. Participants from India and Africa also frequently mentioned the need to adapt policies to local realities, and together this topic raises the question of how this can be achieved. While there is undoubtedly a role for policy transfer and international players in the promotion of HVT, any initiatives should be careful to consider local context. This is consistent with Marsden and Stead's (2011) finding that different contexts call for different policy solutions.

4.1 Policy Implications

The participants' responses to the broad range of topics covered in the interviews suggest specific policy responses. While some of these topics and policy implications apply to both India and SSA, others are specific to a particular region.

Given the near consensus regarding the lack of coordination among government agencies in India, this appears to be an important area for improvement. Perhaps central coordinating bodies for HVT at the state and municipal levels would be helpful.

Participants across countries in Africa called for greater local control for issues related to HVT. African countries could look to India as an example of this; there, a multi-decade project to devolve control to local governments appears to have achieved some advances.

Capacity for HVT appears to be an important area for improvement. According to participants, this could be achieved by regular training courses on HVT. Related to capacity, participants from both India and SSA pointed to the need to increase the continuity of government staff working on urban transportation. Increasing staff continuity is likely a significant challenge with no easy fixes. However, government institutions could try to create mechanisms to protect core technical staff from large personnel changes.

In India, traffic police appeared to be particularly important to the functioning of HVT measures. Capacity training tailored to these "street-level bureaucrats" could have a positive and consequential impact on creating HVT systems (Lipsky 2010).

Another way to improve capacity for HVT popular in both places was to use study visits to observe functioning HVT systems. This is particularly relevant to international development agencies and NGOs—which sometimes collaborate with governments to organise and fund international study trips. However, participants from India said that study trips should be used more strategically. Consultation with local partners when organising the trips and subsequent follow-up could help improve their effectiveness in achieving HVT goals.

Strengthening the capacity of universities and research institutes to support HVT was also mentioned in both India and Africa; involving such organisations in public sector projects for HVT could be a way forward to achieve this.

Reducing auto-centric planning was an important aspect of promoting HVT in both regions. Ways to do this are linked to capacity building and include ongoing courses, which was also mentioned as an important activity by participants in both places. Another tool to achieve this could be creating local street design manuals, which was an emerging theme mentioned in both India and SSA.

Participants from both India and SSA called for increased funding for HVT. Perhaps one way to achieve this could be via TDM measures (including parking and congestion charges), which participants in both places mentioned as having important potential. Participants from both places also mentioned the need to improve funding beyond implementation to include operation and maintenance. This should be of interest to governments and international agencies working on HVT; project assistance by such actors could go beyond the implementation stage.

Improved oversight of funding to reduce corruption was particularly important for Africa; perhaps strengthening internal government auditing could help achieve this. Further, funding for smaller projects was deemed problematic in Indian cities. This may be an area of interest for the Indian national governments efforts to fund HVT in cities under the Jawaharlal Nehru National Urban Renewal Mission (JnNURM) and for international lending institutions. One way to achieve funding for smaller budget projects, e.g., for walking and cycling, could be to include these in larger infrastructure projects, such as metros or BRTs.

The need to adapt policies to local realities was also highlighted in both places. This should be of particular relevance to international development organisations working on HVT; instead of insisting that cities directly copy policies and tools for HVT from other places, such organisations could

encourage local partners to adapt policies and tools to their own context. This could also help improve relations with international stakeholders, which was particularly important for participants from Africa.

Involving vulnerable groups in HVT projects was mentioned as an important activity in both India and SSA. Commissions could be created to involve such actors, including women, economically disadvantaged groups, and groups with special needs, such as wheelchair users and the blind. Another important area for stakeholder involvement was the private sector's involvement in HVT provision in India. Programmes could be created to improve the public sector's capacity to engage the private sector for HVT-related activities.

Participants mentioned improving data and indicators in both India and SSA. Further research is needed to understand what kind of data and indicators would be most useful. However, using indicators for goals such as access and social equity, and incorporating these indicators into Multi-Criteria Analyses could also help attenuate auto-centric transportation planning (Dimitriou et al. 2016).

Supporting efforts for walking and cycling, BRT and TDM, and improving informal transportation appears to have potential in both places. In keeping with the other findings and policy implications, improving capacity to implement policies to implement, operate and maintain these modes would be important. This would also help reduce auto-centric planning practises.

ITDP

References

Awumbila, M. Drivers of migration and urbanization in Africa: Key trends and issues. *Int. Migr.* **2017**, *7*(8).

Banister, D. The sustainable mobility paradigm. *Transp. Policy* **2008**, *15*, 73–80.

Banister, D.; Pucher, J.; Lee-Gosselin, M.; Lee, M. Making sustainable transport politically and publicly acceptable: Lessons from the EU, USA and Canada. *Institutions and Sustainable Transport: Regulatory Reform in Advanced Economies* **2007**, 17–50.

Baumann, C.; White, S. Collaborative stakeholder dialogue: a catalyst for better transport policy choices. *Int. J. Sustain. Transp.* **2013**, *9*, 30–38.

Barter, P. Parking policies in Asian cities: Conventional but instructive. In *Parking and the City*; Shoup, D. Ed.; Routledge, **2018**; pp. 161-170.

Behrens, R.; Bruun, E. Paratransit in Sub-Saharan African cities: Improving and integrating informal services. In *Paratransit: Shaping the Flexible Transport Future; Transport and Sustainability*; Emerald Group Publishing Limited, **2016**; pp. 219–244.

Beirão, G.; Sarsfield Cabral, J.A. Understanding attitudes towards public transport and private car: A qualitative study. *Transp. Policy* **2007**, *14*, 478–489.

Booysen, M.J.; Andersen, S.J.; Zeeman, A.S. *Informal public transport in Sub-Saharan Africa as a vessel for Novel Intelligent Transport Systems*; The Hague, Netherlands, **2013**; pp. 767–772.

Brenner, N. *New State Spaces: Urban Governance and the Rescaling of Statehood*; Oxford University Press: New York, **2004**; ISBN 978-0-19-927005-7.

Carter, J.G.; Cavan, G.; Connelly, A.; Guy, S.; Handley, J.; Kazmierczak, A. Climate change and the city: Building capacity for urban adaptation. *Prog. Plann.* **2015**, *95*, 1–66.

Cervero, R.B. Linking urban transport and land use in developing countries. *J. Transp. Land Use* **2013**, *6*(1), 7-24.

Chen, G. Road traffic safety in African countries–status, trend, contributing factors, countermeasures and challenges. *Int. J. Inj. Control Sa.* **2010**, *17*, 247–255.

Creswell, J.W. *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*; SAGE Publications, **2013**.

de Oliveira Maranhão, I.G.; Orrico Filho, R.D.; dos Santos, E.M. The governmental perspective in the urban mobility plan-making: The case of peripheral municipalities of the Rio De Janeiro metropolitan area. *Revista Produção e Desenvolvimento* **2017**, *3*, 117–135.

Deka, D. Social and environmental justice issues in urban transportation. In *The Geography of Urban Transportation*; Hanson, S., Giuliano, G., Eds.; Guilford Press, **2004**, 332–355.

Deng, T.; Nelson, J.D. Bus Rapid Transit implementation in Beijing: An evaluation of performance and impacts. *Res. Transp. Econ.* **2013**, *39*, 108–113.

Denzin, N.K.; Lincoln, Y.S. *The SAGE handbook of qualitative research*; SAGE, **2011**.

Diaz, R.; Bongardt, D. *Financing Sustainable Urban Transport: International Review of National Urban Transport Policies and Programmes*; GIZ and Embarq: Bonn and Eschborn, Germany, **2013**.

Diaz Olvera, L.; Plat, D.; Pochet, P. Household transport expenditure in Sub-Saharan African cities: measurement and analysis. *J. Transp. Geogr.* **2008**, *16*, 1–13.

Diaz Olvera, L.; Plat, D.; Pochet, P.; Maïdadi, S. Motorbike taxis in the" transport crisis" of West and Central African cities. *EchoGéo* **2012**.

Diaz Olvera, L.; Plat, D.; Pochet, P. The puzzle of mobility and access to the city in Sub-Saharan Africa. *J. Transp. Geogr.* **2013**, *32*, 56–64.

Dimitriou, H.T.; Gakenheimer, R. *Urban Transport in the Developing World: A Handbook of Policy and Practice*; Edward Elgar Publishing, **2011**; ISBN 978-1-84980-839-2.

Ellis, P.; Roberts, M. *Leveraging Urbanization in South Asia: Managing Spatial Transformation for Prosperity and Livability*. The World Bank: Washington, DC, **2015**.

Dimitriou, H.T.; Ward, E.J.; Dean, M. Presenting the case for the application of multi-criteria analysis to mega transport infrastructure project appraisal. *Res. Transp. Econ*. **2016**, *58*, 7–20.

Filipe, L.N.; Macário, R. A first glimpse on policy packaging for implementation of BRT projects. *Res. Transp. Econ.* **2013**, *39*, 150–157.

Flick, U. *The SAGE Handbook of Qualitative Data Analysis*; SAGE Publications Ltd: London, United Kingdom, **2014**; ISBN 978-1-4462-0898-4.

Flores Dewey, O.A. Expanding Transportation Planning Capacity in Cities of the Global South: Public-private Collaboration and Conflict in Chile and Mexico. PhD diss., Massachusetts Institute of Technology, Boston, **2013**.

Goldman, T.; Gorham, R. Sustainable urban transport: Four innovative directions. *Technol. Soc.* **2006**, *28*, 261–273.

Godard, X. Sustainable urban mobility in 'francophone' Sub-Saharan Africa; *Thematic study prepared for Global Report on Human Settlements 2013 UN Habitat* **2013**, p.74.

Gudmundsson, H., Hall, R.P., Marsden, G., Zietsman, J. *Sustainable Transportation: Indicators, Frameworks, and Performance Management*; Springer: Heidelberg, **2016**; ISBN 978-3-662-46923-1.

Hagen, J.X.; Pardo, C.; Valente, J.B. Motivations for motorcycle use for urban travel in Latin America: A qualitative study. *Transp. Policy* **2016**, *49*, 93–104.

Handy, S. *Regional Versus Local Accessibility: Implications for Nonwork Travel*, University of California Transportation Center; **1993**.

Harding, J. Stratified Sampling. In *The SAGE Dictionary of Social Research Methods*; Jupp, V., Ed.; SAGE Publications, London, United Kingdom, **2006**; ISBN 978-0-7619-6298-4.

Hickman, R.; Hall, P.; Banister, D. Planning more for sustainable mobility. *J. Transp. Geogr*. **2013**, *33*, 210–219.

Hidalgo, D.; Pai, M.; Carrigan, A.; Bhatt, A. Toward People's Cities through Land use and Transport Integration: A Review of India's National Urban Investment Program. *Transp. Res. Record* **2013**, *2394*, 10–18.

Iseki, H.; Rivasplata, C.; Houtman, R. *Examination of Regional Transit Service Under Contracting: A Case Study in the Greater New Orleans Region*; UNOTI Publications, **2011**; p. 181.

Institute for Transportation and Development Policy (ITDP). BRT Planning Guide: 1.2 Political Commitment. Available online: https://brtguide.itdp.org/branch/master/guide/project-initiation/political-commitment (accessed on Nov 1, 2018).

Institute for Transportation and Development Policy (ITDP). UK Foreign, Commonweath & Development Office, **2019**. Available online: http://transport-links.com/download/final-report-high-volume-transport-urban-transport-theme-2/

Jain, A. Sustainable urban mobility in southern Asia; *Unpublished regional study prepared for the Global Report on Human Settlements 2013 UN Habitat*, **2013**.

Kaufmann, D.; Kraay, A.; Zoido, P. Governance matters. *World Bank Policy Research Working Paper*, **1999**.

Kovachev, A.; Slaev, A.D.; Nozharova, B.; Nikolov, P.; Petrov, P. Can public participation contribute to sustainable mobility? –the experience of Bulgarian cities. In *Support to Urban Development Process, Lausanne: EPFL, IAUS*; **2018**; pp. 59–79.

Kumar, A.; Barrett, F. *Coinces dans les embouteillages: le transport urbain en Afrique*; **2008**.

Lall, S.V.; Henderson, J.V.; Venables, A.J. *Africa's cities: Opening doors to the world*; The World Bank, **2017**.

Le Galès, P.; Vezinat, N. *L'État recomposé*; Presses universitaires de France, **2014**; ISBN 978-2-13-062964-1.

Leichenko, R. Climate change and urban resilience. *Curr. Opin. Sust.* **2011**, *3*, 164–168.

Lindau, L.A.; Hidalgo, D.; de Almeida Lobo, A. Barriers to planning and implementing Bus Rapid Transit systems. *Res. Transp. Econ.* **2014**, *48*, 9–15.

Litman, T. *Parking Management Best Practices*; Routledge, **2018**; ISBN 978-1-351-17782-5.

Lipsky, M. *Street-level Bureaucracy: Dilemmas of the Individual in Public Service*, 30th Anniversary Edition; Russell Sage Foundation, **2010**; ISBN 978-1-61044-663-1.

Lowe, K.; Grengs, J. Private donations for public transit: The equity implications of Detroit's public–private streetcar. *Journal of Planning Education and Research* **2018**, *40*, 289-303.

LSE Cities. Steering Urban Growth: Governance, Policy and Finance, **2014**. Available online: http://eprints.lse.ac.uk/60776/1/NCE%20Cities%20Paper02.pdf.

Mallqui, Y.Y.C.; Pojani, D. Barriers to successful Bus Rapid Transit expansion: Developed cities versus developing megacities. *Case Studies on Transport Policy* **2017**, *5*, 254–266.

Marsden, G.; Stead, D. Policy transfer and learning in the field of transport: A review of concepts and evidence. *Transp. Policy* **2011**, *18*, 492–500.

Marsh, D.; Sharman, J.C. Policy diffusion and policy transfer. *Policy Stud-UK.* **2009**, *30*, 269–288.

Medina, S. *Investing for Mobility Diagnosis of Investments in Mobility in Metropolitan Areas, 2011-2015*; Institute for Transportation and Development Policy Mexico City: Mexico City, **2016**.

Metz, D. The myth of travel time saving. *Transport Rev.* **2008**, *28*, 321–336.

Mobereola, D. Lagos Bus Rapid Transit Africa's First BRT Scheme; *Sub Saharan Africa Transport Policy Programme*, **2009**, *9*.

Naci, H.; Chisholm, D.; Baker, T.D. Distribution of road traffic deaths by road user group: a global comparison. *Inj. Prev.* **2009**, *15*, 55–59.

Noland, R.B. From theory to practice in road safety policy: Understanding risk versus mobility. *Res. Transp. Econ.* **2013**, *43*, 71–84.

Pai, M. Connecting Sustainable Transport to Urban Development in India. Available online: https://www.wri.org/blog/2013/04/connecting-sustainable-transport-urban-development-india (accessed on Mar 13, 2019).

Penalosa, E. 1a The Role of Transport in Urban Development Policy; GIZ: Eschborn, Germany, **2005**; p. 22.

Pirie, G. Sustainable urban mobility in 'anglophone' Sub-Saharan Africa; *Global Report on Human Settlements. UN Habitat* **2013**, p.53.

Pojani, D.; Stead, D. Going Dutch? The export of sustainable land-use and transport planning concepts from the Netherlands. *Urban Stud.* **2015**, *52*, 1558–1576.

Reddy, B.S.; Balachandra, P. Urban Mobility: A Comparative analysis of megacities of India; *Transp. Policy* **2010**, *21*, 152-164.

Rizvi, A.; Sclar, E. Implementing bus rapid transit: A tale of two Indian cities. *Res. Transp. Econ.* **2014**, *48*, 194–204.

Rondinelli, D.A. *Secondary Cities in Developing Countries: Policies for Diffusing Urbanization*; SAGE Publications, **1983**.

Santos, G.; Behrendt, H.; Teytelboym, A. Part II: Policy instruments for sustainable road transport. *Res. Transp. Econ.* **2010**, *28*, 46–91.

Santos, G.; Maoh, H.; Potoglou, D.; von Brunn, T. Factors influencing modal split of commuting journeys in medium-size European cities. *J. Transp. Geogr.* **2013**, *30*, 127–137.

Sclar, E.; Schaeffer, K. *Access for All: Transportation and Urban Growth*; Columbia University Press, New York, **1980**.

Sietchiping, R.; Permezel, M.J.; Ngomsi, C. Transport and mobility in sub-Saharan African cities: An overview of practices, lessons and options for improvements. *Cities* **2012**, *29*, 183–189.

Sustainable Mobility for All (Sum4all). Global Mobility Report 2017: Tracking Sector Performance. Available online: http://sum4all.org/publications/global-mobility-report-2017 (accessed on 31 Oct 2018).

Suzuki, H.; Cervero, R.; Iuchi, K. *Transforming Cities with Transit: Transit and Land-use Integration for Sustainable Urban Development*; The World Bank, **2013**; pp. 1–233.

Swamy, S.; Baindur, D. Managing urban freight transport in an expanding city — Case study of Ahmedabad. *Research in Transportation Business & Management* **2014**, *11*, 5–14.

TUMI. What we do: Capacity Development | Transformative Urban Mobility. Transformative Urban Mobility Initiative 2018.

UITP. Mobility in Cities Database Synthesis Report. Available online: https://www.uitp.org/publications/mobilty-in-cities-database/

UN Habitat. *Planning and Design for Sustainable Urban Mobility: Global Report on Human Settlements 2013*; Routledge, **2013**; ISBN 978-1-317-93287-1.

UN Habitat. *Planning Sustainable Cities: UN-Habitat Practices and Perspectives*; Nairobi, **2010**.

United Nations Secretary-General's High-Level Advisory Group on Sustainable Transport. Mobilizing Sustainable Transport for Development **2016**. Available online: https://sustainabledevelopment.un.org/content/documents/2375Mobilizing%20Sustainable%20Transport.pdf

United Nations Statistical Division. Methodology. Available online: https://unstats.un.org/unsd/methodology/m49/ (accessed on 10 Apr 2019).

Vasconcellos, E.A. *Urban Transport Environment and Equity: The Case for Developing Countries*; Routledge, **2014**.

Weber, E.; Arpi, E.; Carrigan, A. *From Here to There: A Creative Guide to Making Public Transport the Way to Go*; World Resources Institute Ross Center: Washington DC, **2011**.

Willoughby, C. How much can public private partnership really do for urban transport in developing countries? *Res. Transp. Econ.* **2013**, *40*, 34–55.

Xenias, D.; Whitmarsh, L. Dimensions and determinants of expert and public attitudes to sustainable transport policies and technologies. *Transport Res. A-Pol.* **2013**, *48*, 75–85.