



# TRANSPORT, POVERTY ALLEVIATION AND THE PRINCIPLES OF SOCIAL JUSTICE

(I-STEP): LITERATURE REVIEW

AUTHOR: GAIL JENNINGS

# **TRANSPORT, POVERTY ALLEVIATION AND THE PRINCIPLES OF SOCIAL JUSTICE**

**A literature review for the Inclusive Sustainable Transport in  
support of action Equity and Poverty (i-STEP) programme**

**Partnership on Sustainable Low Carbon Transport (SLoCaT)**

**Author: Gail Jennings**

# Inclusive Sustainable Transport in support of action on Equity and Poverty (i-STEP)

Sustainable transport is an important enabler of poverty alleviation and reducing inequity if done right. The Partnership on Sustainable, Low Carbon Transport (SLoCaT) has initiated the i-STEP program to safeguard that growing support for sustainable transport in global processes. Sustainable development fully acknowledges the importance of, and support for, the role of both urban and rural transport in the alleviation of poverty, as well as the promotion of inclusive development and equality. The first phase of the i-STEP program includes: (a) a literature review on transport and poverty focusing on urban poverty; (b) a consultation process among SLoCaT members on level of interest in, and dedicated capacity for, transport and equity as an area of activity, and (c) a White Paper to present options for future work on transport, poverty and equity, including the potential role of the SLoCaT Partnership for such accelerated work on transport, poverty and equity.

The i-STEP program is supported by:



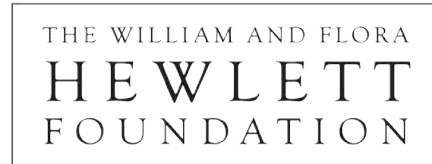
[www.caf.com](http://www.caf.com)

CAF - Development Bank of Latin America promotes a sustainable development model through credit operations, non-reimbursable resources, and support in the technical and financial structuring of projects in the public and private sectors of Latin America.



[www.fordfoundation.org](http://www.fordfoundation.org)

Ford Foundation's mission is to reduce poverty and injustice, strengthen democratic values, promote international cooperation, and advance human achievement.



[www.hewlett.org](http://www.hewlett.org)

The William and Flora Hewlett Foundation is committed to helping to reduce global poverty, limiting the risk of climate change, improving education for students in California and elsewhere, improving reproductive health and rights worldwide, supporting vibrant performing arts in our community, advancing the field of philanthropy, and supporting disadvantaged communities in the San Francisco Bay Area.

The i-STEP program is implemented by:



[www.slocat.net](http://www.slocat.net)

The Partnership on Sustainable, Low Carbon Transport (SLoCaT) works to promote the integration of sustainable transport in global policies on sustainable development and climate change.



# Contents

1. Definitions.....	1
2. Introduction .....	3
2.1 Scope of this document.....	3
2.2 Method.....	4
2.3 Summary and structure of this document.....	4
3. The interaction between urban poverty and transportation .....	5
3.1 Background and overview .....	5
3.2 Social impacts of transport disadvantage .....	6
Travel times and mobility rates.....	6
Travel costs .....	6
Health and financial impacts .....	7
Most vulnerable groups.....	7
4. Reversing inequity: understanding access as the key transport good .....	8
5. Measuring accessibility .....	10
5. 1 Examples of accessibility measures .....	11
Transmilenio (Bogota) – identifying mobility needs and zonal inequity .....	11
High-speed rail, China – reachable cities and regional inequity .....	11
Cali, Colombia – measuring extent of transport disadvantage .....	11
Melbourne, Australia – linking transport disadvantage, social exclusion and wellbeing .....	11
Kigali, Rwanda – Urban Poor Accessibility Assessment Tool.....	12
Accra, Ghana – local sustainable transport criteria .....	12
Nairobi, Kenya – asking people what they need.....	12
6. Delivering access to the poor .....	13
6.1 Bus Rapid Transit (BRT) .....	14
6.2 Paratransit services.....	16
6.3 Cycling out of poverty? .....	16
7. Concluding thoughts and research needs .....	19
8. Acknowledgements.....	21
9. Bibliography and works cited .....	22
Appendix One: Recommendations.....	29
Substantive research.....	29
Capacity and knowledge building .....	30
Outreach and distribution of research.....	30
Development of tools and materials.....	30
Appendix Two: Method.....	31
Key words .....	31



## 1. Definitions

Accessibility measures the ease of reaching a valued destination; a performance measure aimed at analyzing how well combined transport networks and land use patterns serve users (Envall 2007, citing Cervero 1996, Levine & Garb 2002).

Universal Access, on the other hand, usually refers to inclusive planning for people with mobility constraints. It can broadly be defined as ‘the ease of reaching desired destinations from a particular location, given a number of available opportunities and the difficulty or impedance) of reaching them. Usually, opportunities are measured in terms of employment positions, and impedance in units of distance or time. Accessibility is thus determined by three main elements: land use, transport, and the individual characteristics of the person (Venter and Cross 2012).

Accessibility is a product of mobility and proximity, enhanced by either increasing the speed of getting between point A and point B (mobility), or by bringing points A and B closer together (proximity), or some combination thereof. In this sense, an accessibility-based approach gives legitimacy to land-use initiatives and urban management tools (Cervero 2005).

Accessibility refers to people’s ability to get to ‘key services at reasonable cost, in reasonable time and with reasonable ease’ (Social Exclusion Unit 2003).

Mobility refers to a group of users’ abilities, tendencies and/or needs to move, resulting in a transport demand. Mobility therefore primarily refers to the demand side of a transport system. (SSATP 2015)

Social sustainability describes the extent to which a project will benefit the poor, vulnerable and marginalized; contribute to creating safe and socially inclusive communities; and, minimize adverse impacts, such as resettlement (Multilateral Development Bank Working Group 2015).

Equity (also called vertical equity, social justice, or environmental justice) is concerned with the distribution of impacts among individuals and groups that differ in abilities and needs, in this case, by income or social class. By this definition, transport policies are equitable if they favour economically and socially disadvantaged groups [such as women, immigrants, children, the disabled, the elderly, the poor], therefore compensating for overall inequities (adapted from Litman 2012).

Equality (also called horizontal equity, fairness and egalitarianism) is concerned with the distribution of impacts among individuals and groups considered equal in ability and need. According to this definition, equal individuals and groups should receive equal shares of resources, bear equal costs, and in other ways be treated the same (Litman 2012).

Social exclusion: For some, social exclusion is synonymous with poverty. Others emphasise inadequate social participation, lack of social integration and lack of power. While related to poverty, social exclusion is a distinct concept that is linked to the important notion of social capital. (Hayes et al 2008). Thus it can include the lack or denial of resources, rights, goods and services, and the inability to participate in the normal relationships and activities available to the majority of people in a society, whether in economic, social, cultural or political arenas. It affects both the quality of life of individuals and the

equity and cohesion of society as a whole' (United Kingdom Department of Communities and Local Government (DCLG); Levitas et al (2007) [note – in the developing world, this is more likely to be the majority]

One of the more influential definitions is that of the United Kingdom Social Exclusion Unit (1997): 'a shorthand label for what can happen when individuals or areas suffer from a combination of linked problems such as unemployment, poor skills, low incomes, poor housing, high crime environments, bad health and family breakdown.

Social inclusion is seldom defined in the literature, with the focus being on the definition and redress of social exclusion. Essentially, to be socially included means having access to opportunities for earning a living, accessing services, connecting with others, and having the resources with which to deal with life shocks such as ill-health, bereavement, or unemployment, and the opportunity to participate in governance and civil-society decision-making (adapted from Hayes, et al 2008).

Transport-related social exclusion: 'The process by which people are prevented from participating in the economic, political and social life of a community because of reduced accessibility to opportunities, services and social networks, due in whole or part to insufficient mobility in a society and environment built around the assumption of high mobility' (Lucas 2012).

Poverty can be defined in either relative or absolute terms. The World Bank defines 'poverty' as the situation in which a person lives on or less than \$1.90 per day. However, poverty can also be defined as whether households or individuals lack resources or abilities to meet basic needs such as food, clothing, and shelter; are subject to inequality in the distribution of income, consumption or other attributes across the population (relative poverty); and face vulnerability, defined here as the probability or risk today of

being in poverty or falling deeper into poverty in the future. People can be disadvantaged in a variety of socio-economic terms if they fall below prevailing standards of living in a given societal context. This can be in relation to income, time and level of accessibility. This report incorporates a broad definition of poverty, and includes social exclusion as an indicator of poverty (note: social exclusion may exist among people who are not poor) and the term 'poor' is used interchangeably with 'poverty'.

Transport disadvantage or transport poverty: There are no universally accepted definitions of transport disadvantage or transport poverty, but these terms generally refer to people or households unable to make the journeys necessary to meet their needs (whether for employment or income-generation, health-care or other needs, or to participate in society). This may be due to financial limitations, mobility-impairment, age or other reasons. A consequence is likely to be transport-related social exclusion, and a reinforcement of poverty.

Time-poverty: A computation based on the time in which a person spends on activities such as travel, working, domestic and other duties (Lawson 2007) that an individual spends on productive activities such as working, farming, domestic and other duties (collecting firewood etc.), from which an individual can then be defined as 'time poor' (Bardasi and Wodon 2006, Lawson 2007).

Paratransit: Paratransit describes a flexible mode of public passenger transportation that does not necessarily follow fixed schedules, typically in the form of small to medium buses. Paratransit in the developing world is sometimes also referred to as 'informal' transport (Behrens 2016). Paratransit in this document does not refer at all to transportation for people who are disabled.





## 2. Introduction

This Literature Review is one component of a greater SLoCaT project: Sustainable Transport in Support of Action on Equity and Poverty (i-STEP), supported by the Ford Foundation, the Hewlett Foundation, and CAF - Development Bank of Latin America. The objectives of the project are to explore to what extent poverty alleviation and equitable access to transport has moved forward in the past 30 years, and whether this needs to be accelerated.

The intended impact of this i-STEP project is that:

- There is greater visibility for equity issues in transport in global, regional and national policy discussions on sustainable development and climate change;
- Equity issues play a greater role in driving/influencing investment decisions in transport;
- SLoCaT members give greater emphasis to equity issues in their transport related activities, and to improving the ways in which they measure transport impacts in terms of alleviating poverty.

Further information can be found at <http://www.slocat.net/poverty-and-transport>

A complementary report documents a series of interviews with practitioners within the SLoCaT community and proposes further recommendations for how to take this issue forward in the short and mid-term future.

## 2.1 Scope of this document

A substantial body of literature already makes the case that transport and its associated benefits and costs (monetary costs to the user as well as external costs to society) are inequitably distributed within urban communities, and that the urban poor suffer the negative consequences of this inequity. This literature review does not intend to repeat this work. Nor does this document propose new pro-poor transport programmes or interventions; there are multiple reports that make such recommendations, and these are synthesized as part of this review (see for example Gannon & Zhi Liu 1997; Howe 2000; Gwilliam 2002 & 2003; Hook & Howe 2005; Godard 2011; Tiwari 2012; Litman 2012 & 2014; Starkey & Hine 2014; SSATP 2015).

Instead, this review, Sustainable Urban Transport in Support of Action on Equity and Poverty, builds on an earlier work prepared by SLoCaT, Poverty and Sustainable Transport (Starkey & Hine 2014)<sup>1</sup>, which included urban poverty but was concerned largely with how transport affects the rural poor. The purpose of this review is to further understand the interest in and arguments advanced regarding transport equity within urban contexts and where possible, in the developing and emerging economies, as to date, much of the conceptual work has been conducted in the US and the UK. This review further notes the gaps in research and practice, and recommends actions to move transport equity higher up the global sustainability agenda.

<sup>1</sup> How transport affects poor people, with policy implications for poverty reduction A literature review (Paul Starkey & John Hine, 2014)

## 2.2 Method

This document is based on a review of scholarly literature since 2010, making exceptions for key documents published earlier. Key words used in the literature search included: transport; mobility; poverty alleviation; access/accessibility; in/equity; justice; social inclusion/exclusion; and social impacts. For further details, refer to Appendix Two.

## 2.3 Summary and structure of this document

In the following section (Section 3), we acknowledge the body of literature that makes the connection between poverty and inequitable access to transport advantages and societal costs, and provide an overview of the consequences of this inequity.

Section 4 considers the conceptual frameworks within which transport disadvantage is discussed in the literature. Broadly, these arguments centre either on the consequences of poor access or transport disadvantage (social exclusion); the underlying ideology that leads

to inequitable provision of services or access (social or transport justice); and the spatial or mobility barriers to transport or other services (accessibility). We note that as consensus has been reached that the focus should be on the provision of access, there is a clear need to measure the outcomes of improved access, and to determine a minimum level of access that is to be regarded as equitable.

Section 5 considers the way in which accessibility and mobility is audited, measured or evaluated, through the lens of global case studies. Section 6 broadly looks at policy, system or modal interventions recommended to overcome transport disadvantage, and reduce poverty and inequity, and specifically at the renewed interest in bicycle mobility, and the relatively new pro-poor transport opportunity, Bus Rapid Transit (BRT). We acknowledge the universal challenge of provision for pedestrians in developing countries, and the emerging interest in walkability, public space, and pedestrian safety. A literature review attending to this vast subject alone will follow.

Finally, Section 7 summarizes the findings of the review, and makes recommendations for further research and opportunities to share this work.





### 3. The interaction between urban poverty and transportation

*'The inability [of the poor] to access jobs and services is an important element of the social exclusion that defines urban poverty.'*

(Gwilliam, World Bank 2002: 25)

Poverty reduction has for at least the last three decades been a key objective of the World Bank's urban transport work across the globe (see for example World Bank 1986; Gwilliam 1994; Hook & Howe 2005). However, SLoCaT is concerned that poverty and transportation issues continue to receive insufficient attention in efforts to promote and provide for sustainable mobility. Goal 1 of the 2030 Agenda on Sustainable Development calls to 'end poverty in all its forms everywhere' (SDG1). Without the provision of robust and equitable mobility and access, this goal is unattainable.

The international transport community has a history of 'lagging behind' other sectors, such as housing, in making the connection between poverty and transport (Godard 2011); for example, transport was not explicitly on the agenda of the 2000 Millennium Development Goals (MDGs), which aimed to reduce poverty and direct attention to urban services such as education, water supply, sanitation, housing, energy and electricity (Hook & Howe 2005; Godard 2011). Although not achieving standalone status as one of the Sustainable Development Goals (SDGs), transport and poverty has been distributed across several SDGs, suggesting that progress has made by the global

sustainable transport community in this direction. In addition, the group of eight multi-lateral development banks (MDBs) has committed to assess projects based on their social as well as environmental and economic sustainability. However, indicators and tools to measure social sustainability, or equitable mobility and access, remain weak and ill defined.

#### 3.1 Background and overview

In 1997, the World Bank Transport division published a key discussion paper on urban poverty, Poverty and Transport (Gannon & Liu, 1997) – motivated by a recognition that:

*'an articulation of the role of transport sector operations in contributing to poverty reduction did not exist. By and large, transport projects are assessed in terms of reducing transport costs, improving efficiency, and promoting economic growth. The contribution of transport operations to poverty alleviation [has been] seen, in general, as indirect and stemming from broadly based economic development...'*

The World Bank and the UK Department for International Development (DFID) commissioned a further study in 2000 (Poverty and Transport, Booth et al 2000), described as 'an initial "take" on transport-and-poverty issues', which engaged a sustainable livelihoods approach and drew together a number of implications and recommendations for pro-poor transport policies.

Two years later, the World Bank published a review of its 1994 work, Cities on the Move (Gwilliam, et al 2002 & 2003), which has become a foundation document within the transport and poverty literature. The objective was

to examine the 'critical differences between the urban transport challenges facing cities in the developing and industrialized worlds'. A key concern, the study reported, is declining transport options or provision for the poor, who typically live in or have been displaced to the marginal or peripheral urban areas (Gwilliam 2002 & 2003) and have limited access to the only modes of transport affordable to them (walking<sup>2</sup>, cycling and public transport). The World Bank exhorted governments and service providers to implement policies and programmes that 'protect the poor', who typically have poor mobility rates – making only one-third to one-half as many motorized trips per capita as the non-poor (Gwilliam 2003) – and who endure long travel times and incur a disproportionate percentage of travel costs.

This inequitable distribution of the costs and benefits of transport and mobility, particularly within developing countries and low-income populations, is well established in the literature (see for example, among others, Hook & Howe 2005; Vasconcellos 2001 & 2011; Dimitriou & Gakenheim 2011; Markovich & Lucas 2011; Starkey & Hine 2014). This inequity is acknowledged by global agencies such as the World Bank (Booth et al 2000; Howe et al 2000; Gwilliam 2002 & 2003), the World Health Organization (WHO 2016), the Sub-Saharan African Transport Policy Programme (SSATP 2014) and the International Transport Forum (Cervero 2011; Lewis 2011).

Further, there is a wide body of literature that broadly describes the social and economic impacts of this inequitable distribution of transport infrastructure and services. The early literature notes that without access to transport and mobility, access to employment is constrained and the poor suffer social and economic isolation (Gannon & Liu, 1997; Gwilliam 2002 & 2003). This reduces the possibility of what Gannon & Liu refer to as human capital formation, especially education and health, and improving access to economic and social opportunities, including labour and product markets, schools, and access to social services.

## 3.2 Social impacts of transport disadvantage

Today, the life of the low-income urban resident, living on the periphery, largely remains one of long wait and travel times, multiple transfers, long travel distances, and a significant percentage of income spent on declining and

poor-quality transport options (Venter et al 2013; Godard 2011; Hitge 2015; Salazar Ferro 2015).

More recent literature describes these daily travails in terms of social impacts or social inclusion rather than human capital. Jones and Lucas (2012) in their introduction to a special issue on Social Impacts and Equity Issues in Transport<sup>3</sup> describe the main social impacts of transport as access to the goods and services necessary to live one's daily life, road casualties and injuries, air quality, noise, physical activity, and intrinsic value. In addition are community-related impacts (eg social interactions) and concerns for personal safety and fear of crime.

These social impacts are not necessarily beneficial: the urban poor are more likely to experience too many of the transport costs and too few of the transport benefits.

## Travel times and mobility rates

Mobility in outlying urban areas in developing cities, where the poor are most likely to live, is hampered by increasing traffic volumes, debilitating traffic congestion, and slow travel speeds, in addition to high noise and air pollution (SSATP 2015; Bruun 2016). As a consequence, inhabitants of these cities – especially the poorest – suffer from a dramatic increase of daily time and expenses dedicated to travel (SSATP 2015). Congestion has widespread impacts on urban quality of life, consumption of non-renewable fuels, air pollution, and economic growth and prosperity. Cervero (2013) estimates that time losses from traffic congestion comprise two percent of GDP in Europe and two to five percent in Asia and Africa. In a good example of longitudinal inequity, such costs not only 'exact a burden on the present generation but also commit future generations to long-term debt' (Cervero 2013).

## Travel costs

Vasconcellos (2005), writing of Sao Paulo (Brazil), shows that people at the lowest income level spend a high share of their income on transport, yet have very low overall mobility and contribute almost nothing to transport externalities (i.e. air quality and congestion issues). The poorest in Bogota (Colombia) make fewer than 1.5 trips per day (Bocarejo 2012), and spend more than 20% of their income on transport. Commuting can cost 20% to 25% of daily wages in Delhi (India), Buenos Aires (Argentina), and Manila (Philippines), and is estimated to be as high as

<sup>2</sup> While the poor might have 'access' to walking, as such, there is sparse provision of sidewalks or other pedestrian facilities.

<sup>3</sup> Journal of Transport Geography (vol 21, 2012)

30% in the suburbs of Dar es Salaam (Tanzania) (Cervero 2013). The concern that in developing countries, household expenditure on [bus] travel should not exceed 10% of household income (a policy first mooted by Armstrong-Wright in 1987 and known as the Armstrong-Wright maxim) is still used in a number of countries, such as the South African national transport policy, although this is increasingly questioned as a measure. As Venter and Behrens (2005) put it, affordability still means different things to different users, a blanket 10% policy is 'blunt, ambiguous, and difficult to measure'. There remains a need for a more robust understanding of affordability and particularly how transport costs affect personal welfare and equity (Venter & Behrens 2005).

## Health and financial impacts

Transport poverty in financial terms intersects with transport disadvantage (associated with inadequate provision of services) by limiting access to opportunities and resources, poor education, unemployment or low wages, a reduced ability to make a living, and restricted upward mobility. Transport disadvantage is also implicated in lifelong poor health and nutrition, risk of early childhood and maternal mortality (reduced access to medical care and healthy food sources), and increased exposure to personal safety risks (Howe 2000; Martens & Golub 2011; Lucas 2011; Cervero 2011; Vasconcellos 2011; Lucas & Jones 2012; Litman 2014; Jennings 2015).

Income poverty is a key determinant of the risk of road injuries (WHO 2016), where the urban poor bear a disproportionate burden of road fatalities and injuries (Vasconcellos 2011; Starkey & Hine 2014). Walking and cycling, the transport modes most used by the poor, constitute between 40%-80% of all road users killed in Sub-Saharan African cities<sup>4</sup> (WHO 2013; Onywera et al 2014; SSATP 2015). The inequity of the road fatality burden is well documented in the literature: around 90% of road injury deaths occur in middle- and low-income countries, and breadwinners are most at risk (GRSF 2014; WHO 2016). These are countries least able to meet the health service, economic and societal challenges this poses (Ameratung et al 2006).

Cervero (2011) cites a number of studies that give numbers to these poverty and fatality inequities noted above. In an example of people being relocated to make way for infrastructure projects, when 700 000 informal residents were resettled on periphery of Delhi, female employment fell 27%; and travel times increased three-fold (Badami et al 2004). Other costs associated with low levels of access among the urban poor in Delhi include high rates of traffic fatalities (Thakuriah 2009), high exposure to air pollution (Badami et al 2004), and slum residences near temporary or seasonal employment opportunities (Thakuriah 2009).

## Most vulnerable groups

Within both low- and middle-income populations, those who are considered as more vulnerable members of the population, such as women, girls and people with disabilities, suffer the impacts of transport poverty and disadvantage to a greater extent (see for example Wachs 2011; Cervero 2011; Mackett 2014). Not only do women tend to have fewer financial resources, different trip patterns and concerns regarding personal safety (Porter 2011; Mackett 2014; Turner & Adzigbey 2012), but they also tend to suffer more from time-poverty, and where households have limited access to resources for transport, these are more frequently allocated to male household members (Porter 2011; Mackett 2014; van der Kloof et al 2014). At the same time, a consequence of the reduced mobility among women is that males suffer more of the negative impacts of mobility: in developing countries, because men are more likely to travel, and travel longer distances, they are more likely to be killed on the road, and suffer more from the ill effects of pollution (Vasconcellos, personal conversation, 6 June 2016). Citing Diaz Olvera et al (1997), Vasconcellos supports the view that reducing gender inequities requires 'more than better transport, [but] reorganizing the distribution of urban services in space, especially around the living space'.

4 This data is national, and not disaggregated to indicate whether urban or rural road users.





## 4. Reversing inequity: understanding access as the key transport good

*'Higher mobility does not necessarily represent better living conditions. What matters is the accessibility to desired destinations, which can be obtained with less movement'.*

(Vasconcellos 2011)

Poverty, and access to transport options, are inextricably linked in a dynamic process that reinforces poverty: for example, the poor are more likely to live in areas that have poor transport services, and therefore have insufficient access to the advantages and opportunities to reduce poverty that these services may bring (e.g. health-care, employment and education). Thus transport disadvantage is not only associated with poverty; it at the same time gives rise to, and further entrenches poverty (Tiwari 2008; Cervero 2011; Wachs 2011).

The 1997 discussion paper *Poverty and Transport* (Gannon & Liu 1997) is unequivocal in stating that in order to strengthen the direct role of transport interventions in poverty alleviation, a better knowledge of the transport needs of the poor is required, as well as an understanding of how these needs are best met.

The complexity of poverty requires both quantitative and qualitative indicators especially in relation to basic needs (Howe & Bryceson 2000). Simple mobility criteria are not enough, as it is the *accessibility* that a transport system provides that is of importance (Howe, 2000). Noting, in 2000, 'there is no single universally accepted definition of basic needs, or of what a development effort aimed at meeting basic needs would comprise,' Howe & Bryceson (2000) introduced the concept of 'core basic needs'

for poverty-focused transport planning: 'the need for employment (as a proxy for income), and access to health, education, water and energy supplies.'

These still remain the broad descriptors for 'basic needs' – although the question still remains: what constitutes access to or provision for these needs of the poor, and how can these needs be met? This section considers the conceptual frameworks within which these basic transport needs are discussed in the literature.

Broadly, arguments around reducing inequity and delivering on transport needs centre either on the consequences of poor access or transport disadvantage (and hence social exclusion); the underlying ideology that leads to inequitable provision of services or access (and thus social or transport justice); or the spatial or mobility barriers to transport or other services (and thus reduced accessibility).

Social exclusion developed as framework within which to analyze transport poverty and disadvantage, largely since the creation of the Social Exclusion Unit in the United Kingdom in 2003 (Preston & Raje 2007; Stanley 2009; Lucas 2012). Social exclusion expands on an understanding of poverty to include 'an inability to participate in the normal relationships and activities available to the majority of people in a society, whether in economic, social, cultural or political areas' (Levitas 2007, cited in Lucas 2012). Transport disadvantage or poverty does not necessarily result in transport-related social exclusion or an inability to access essential goods or services, but social exclusion is certainly a risk factor and a highly likely consequence (Lucas 2012).

This work on social inclusion or exclusion has centred on identifying transport-disadvantaged communities or individuals in the United Kingdom, and Australian

researchers have begun to conduct similar assessments (see for example Stanley 2008 & 2009). Lucas applies a social exclusion approach to transport disadvantage in South Africa in 2011 research, investigates the concept of social exclusion in the development context, where most people experience These hardships, instead of relatively small and fragmented sub-groups. In reporting on focus groups with the urban and peri-urban poor, we hear directly from the community about their experiences of transport disadvantage.

So although there is not yet the 'universally accepted definition of basic needs' desired by Howe, above, there is a largely consensual view that access is the key beneficial impact of transport. It is *access* that must be equitably distributed (see for example Godard 2011; Turner 2012; Martens & Golub 2011 & 2012; Martens 2012; Welch 2013; Bocarejo et al 2012; Manaugh et al 2015). Access to precisely what, however, and 'how much' access is enough, is an unresolved and ongoing debate: the term is 'a misunderstood, poorly defined and poorly measured construct', wrote Geurs et al in 2004, and the literature reveals similar concerns today. Like social exclusion, 'access' can be described and understood in monetary, cognitive and spatial terms (Godard 2011) as well as in terms of welfare, potential access, infrastructure, activity or distance (Bocarejo 2012; Martens, Golub & Robinson 2012). In searching for clarity, Battellino (2009) questions whether vertical equity is always appropriate, asking whether there should be some basic minimum access irrespective of location, or whether remote regional areas should be treated differently to regional cities and to the outer urban fringes, whether it is possible to determine what a basic level of mobility ought to be for different groups, and whether this differs according to the circumstances of the person (such as age, life stage, disability, income, or some other factor).

Litman (2012) proposes that the 'amount' of basic access (also called essential or lifeline access) could be based on the quality of service people would consider adequate if they were ever mobility disadvantaged; thus, basic access includes only trips that are considered necessities rather than luxuries (e.g. adequate access to medical services, schools, employment opportunities). This hypothesis has operational value largely where the minority of the population is at risk of mobility disadvantage. In the developing world, the majority of people live with daily disadvantage already. In the United States and France, the

policy focus has been on defining or facilitating access to work; in the United Kingdom, Germany, Japan and Italy, greater attention has turned to the access concerns of disabled, older people, the mobility impaired and isolated populations (Lucas 2004).

Martens, Golub and Robinson (2012) observe that without a clear definition of what constitutes a fair distribution of the benefits from transportation investments [chiefly, access], distributional goals within projects or programmes are either not stated, or are implied but unclear. Few standards, goals or performance measures exist, against which agencies can measure progress or success in the distribution of transportation benefits. They underline a situation whereby even when there are obvious accessibility benefits that accrue from investments in the transport system, it is necessary to ask explicitly: who reaps these benefits, and what does 'accessibility' enable one to 'access'? This argument is supported by Godard (2011), who asks: who are the poor who will benefit from the transport action or intervention? And who are the poor who will not benefit from the action? How will the non-poor benefit from the action? If their share of the outcomes of the action is also high, there may be a reverse redistributive effect.

Drawing from moral philosophy to develop a theory following Walzer's *Spheres of Justice* and Rawls' *A Theory of Justice*, Martens and Golub (2012) therefore propose a working definition of access, which requires that the maximum gap in access level between the best-off and worst-off group in society be limited. This just approach is more likely to be realized, they argue, if access as the core transport 'good', is distributed in a separate sphere, independent of free market regulation and more in line with the way in which government intervenes to distribute health care or education.

In sum, the key word is 'access': the link between transport poverty and social exclusion is the inaccessibility of social capital, inability to access decision-making, services, and a multiple other social 'goods' (Lucas 2012). This may be, among others, because of the distance to transport and key facilities, the cost of travel, long travel times, or fear for personal safety (Lucas 2012). Since consensus has been reached that the focus should be on the provision of access, there is a clear need to measure the outcomes of improved access, and to determine a minimum level of access that is to be regarded as equitable.





## 5. Measuring accessibility

*Equity audits will go a long way toward curbing the more common, limited pseudo-scientific technical approach to urban transport appraisal.*

*(Eduardo Vasconcellos 2011)*

Accessibility planning or auditing is perhaps the most common recent measure<sup>5</sup> used by transport planners or researchers to assess in some way the equitable provision of services and the intersection between land-use and mobility. Accessibility planning usually uses two measures – a *gravity-based index* (jobs, network travel times, residential zone and employment zone), or an *isochronic- or threshold-based index* (time threshold and jobs, often 30 minutes) (Cervero 2005). In their 2006 work, El-Geneidy & Levinson introduce a new accessibility measure, *Place Rank*, which they describe as a ‘novel and data-intensive measure of accessibility that better accounts for the opportunities people have and choose’. This measure, which ‘benefits from the vast amount of information that is newly available for land use and transportation planners’, is perhaps less attractive to developing world planners, who grapple with data poverty in addition to multiple other challenges.

Yet whether it is journey times or walking distance to transit stops; trip rates; customer satisfaction indices; costs of travel impact measures (e.g. fatalities); or proportion of people who can access key locations or opportunities within a certain time frame, there is a large number of accessibility measures or indicators, variously described as activity or land use-based indicators, people-based indicators (i.e. the impediments or restrictions to accessing activities); utility-based indicators; distance-based (i.e.

connectivity) measures or potential access (or gravity based) measures (Geurs & van Eck 2001; Social Exclusion Unit 2003; Bocarejo & Oviedo 2012; Cox 2012; Venter et al 2013; Manaugh et al 2015). There is a large body of published work on accessibility-based measures, and this review does not seek to reproduce this. Nevertheless, it is clear that there is a gap in understanding the intersection between transport and land use, and how these need to be planned together to improve accessibility, and thus equity, outcomes.

A key SDG target involving urban transportation (11.2) states by ‘by 2030, [there must be the provision of access] to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.’ This is essentially a connectivity-based accessibility measure, where success is indicated by the percentage of people within 0.5km of public transit running at least every 20 minutes.

Such measures are not necessarily explicitly pro-poor or equity-based, however, although they perhaps have greater potential to measure the equitable distribution of access than cost-benefit analysis, which prioritizes efficiency over equity and usually relates it to Gross Domestic Product (GDP) increase, an index that is particularly flawed when it comes to understanding added value. Nevertheless, assessments of the successful delivery of accessibility differ, depending on whether access is viewed through a spatial/ distance or time lens (van Wee and Geurs 2012), or a social exclusion or justice lens (Lucas et al 2012 [, Martens et al 2012). A key question remains: what is it that an individual or community desires, or needs to, access?

<sup>5</sup> Envall (2007) notes that the first mention of accessibility planning was by Cervero in 1996. El-Geneidy & Levinson (2006) on the other hand, write that ‘the word “accessibility” has been around in the transportation planning field for more than 40 years, yet one often sees the term misused, so clarity in definition is important. Accessibility [simply] measures the ease of reaching valued destinations.’



Mobility or efficiency-based measures, such as reduced travel times and cost-benefit analysis (CBA), do remain widely in use (Geurs & van Wee 2004; Thomopoulos et al 2009). A variety of other mostly quantitative models, such as the Social Accounting Matrix, Spatial Impact Analysis (Mondon et al 2013) and the Index of Multiple Deprivation (Social Disadvantage Research Centre 2007), have been put forward as access measures<sup>6</sup>. Although none are without their flaws, they measure reduced congestion and GHG emissions, improved air quality and safety, travel time savings, increased coverage and use of public transportation, and increased cycling and walking (Thomopoulos 2009; Manaugh 2015). Scholars who work within a political economy approach, such as Hitge (2015) or David (2013), may take the view that the relatively tangible index output is 'media-friendly' and may do more to serve a transport official's political career than to provide quantitative measures to improve access.

## 5.1 Examples of accessibility measures

### Bogota, Colombia – identifying mobility needs and zonal inequity on Transmilenio BRT

Bocarejo and Oviedo (2012), concerned by what they describe as the 'ubiquity' of social equity in most mobility plans of major Latin American cities, but the lack of specific or solid indicators by which to measure their contribution to promoting better access to opportunities, designed a quantitative index to assess Bogotá's TransMilenio, which incorporated both travel time and percentage of income spent on transportation, rather than what they described as a relatively straightforward time-saving vs location of opportunities. Their method calculated accessibility levels to employment opportunities within different zones in the city, thus identifying areas that were impeded by transport disadvantage and enabling the prioritizing of investment and projects.

### China – high-speed rail: reachable cities and regional inequity

Jing Cao et al (2013) applied accessibility measures to assess the large-scale implementation of high-speed rail

network in China, using weighted average travel times and travel costs, contour measures<sup>7</sup>, and potential accessibility as indicators. Unlike the above study, which looked at smaller scale access, this work aimed to map regional-scale access, in terms of 'reachable cities' and 'daily accessible cities' for convenient daily commuting, and compared these to the reach of conventional rail or air travel. This work considered the possible inequity of opportunity for economic development, noting that some regions or cities might become sidelined from growth.

### Cali, Colombia – measuring extent of transport disadvantage

In work that begins to measure what transport needs might be, and what users might 'do' with increased accessibility, Jaramillo et al (2012) linked location, demographic, income and access to public transport services, to measure specifically the extent of transport disadvantage within a community. They based their work on a method devised by Currie and Delbosc (2010) for Australian cities (see following paragraph), and used the BRT system in Cali (Colombia) as a case study. Indicators of 'transport disadvantage' included age, disability, income strata, level of unemployment, levels of illiteracy, student population, and location of academic institutes, recreational units, libraries and health centres; the output was an index showing the disparity between transport need and provision.

### Melbourne, Australia – linking transport disadvantage, social exclusion and well-being

Currie & Delbosc's (2010) work aimed to measure links between transport disadvantage, social exclusion, and well-being. Drawing from an interview questionnaire measuring transport disadvantage through self-reported difficulties with transport, this work is one of the few studies to delve into the nuances of transport disadvantage and poverty, and attempt to understand the subtleties of providing 'access'. The study models income, unemployment, political engagement, participation, social support, satisfaction with life scales, and positive and negative affect schedules. Our concern is that while the work of Currie (2010) and Jaramillo (2012) shows the potential to measure the value of increased accessibility, these methods might find limited application because of the complexity involved; at the very least, a matrix that identifies potential beneficiaries,

<sup>6</sup> Disadvantages include income, employment, health deprivation and disability, education skills and training, barriers to housing and services, crime, and living environment.

<sup>7</sup> Contour measures are those based on the concept of a fixed constraint for travel counting the number of opportunities that can be reached from a location within a given travel time, distance, or cost; it also measures the (average or total) time or cost required to access a fixed number of opportunities or amount of population (Geurs and van Wee, 2004).

their key demographic and travel characteristics and needs is required, which shows how their access to key destinations can be improved by different combinations of infrastructure, services and policies.

## **Kigali, Rwanda – Urban Poor Accessibility Assessment Tool**

Turner and Adzigbey (2012) address similar concerns of accessibility, planning and urban poverty, but focus on developing cities. While the intention of equitable transport planning is to deliver accessibility that is affordable, available and acceptable, the needs specific to the urban poor, particularly in Africa, Asia and Latin America, if known are rarely incorporated in transport planning (Turner & Adzigbey 2012). Furthermore traditional methods rely on expensive data gathering methodologies that are rarely repeated, if undertaken at all.

This work, which develops an Urban Poor Accessibility Assessment Tool, is one of the few that involves the stakeholder engagement noted as a crucial way forward in the early literature (see page 13). Piloted in Kigali (Rwanda), it also identifies the specific accessibility needs of the urban poor that could improve equity of planning outcomes and facilitate poverty reduction. The tool enables a nuanced understanding of transport needs of householders and communities beyond simple time or distance measures – considering, for example, whether reliability and the ability to minimize the knock-on effects of travel disruption upon other household tasks may be more important for women's travel than for men. The researchers gather qualitative information on the acceptability of different means of transport, including an understanding of the likelihood of harassment.

## **Accra, Ghana – local sustainable transport criteria**

In another example of a qualitative and quantitative stakeholder-led index, Jones et al (2012) – working in Accra, Ghana – developed a scorecard that reflected local qualitative sustainable transport criteria. Individual transport system users were asked to rate the importance of 16 urban transport-related criteria, such as job access, market access, education access, reliability, affordability, health care access, activity access. Inputs were evaluated through a Multi-Criteria Decision Making method to produce a Localized Sustainability Score (LSS). The framework can in particular be used to document how urban transport projects address the needs and issues of system users of different demographic groups (age, gender, income, etc).

## **Nairobi, Kenya – asking people what they need**

Nairobi is an example of a city where increased car use (associated with economic growth) has created a significant demand for new road infrastructure.

In one of the few scholarly papers to consider the equitable distribution of public engagement opportunities in transportation decision-making, Becker (2012) asked stakeholders in Nairobi (Kenya) about the construction of the Thika Highway, and their satisfaction with not only levels of community and stakeholder participation, but with solutions proposed. He found that essentially, the large majority of people interviewed were unlikely to benefit even from the indirect benefits of transportation improvements, as they are unable to afford motorized transport at all, and thus their need is for improved non-motorized transport facilities.



## 6. Delivering access to the poor

*'Transport is a great enabler of economic and social opportunity. But if the range of transport services available to people of different incomes, ages, and/or ethnic groups fails to keep pace with the growth in the level of such services available to the average member of society, the sustainability of that society's mobility is suspect.'*

(Cervero 2013)

This section broadly looks at policy, system or modal interventions recommended to overcome transport disadvantage, and reduce poverty and inequity, and specifically at the renewed interest in bicycle mobility, and the relatively new (and potentially pro-poor) transport proposition, Bus Rapid Transit (BRT). We acknowledge the universal challenge of provision for pedestrians in developing countries, and the emerging interest in walkability, public space and pedestrian safety, and a literature review attending to this vast subject alone will follow.

The travel modes used by the poor – walking, cycling and public transport – are almost without exception inadequately provided for in developing cities. Bocarejo (2012) describes the lack of accessibility to transport and opportunities as an 'obvious problem'. Bruun (2016) describes the situation as one that offers an 'incontrovertible case for major reform in the quality, reliability and coverage of public transport systems', and dramatic improvements in walking and cycling facilities (SSATP 2014; Bruun 2016).

In the literature, there is consensus that an overhaul of the 'sustainable' or low-carbon modes – (walking, cycling and public transport) and a reduction in the cost of mobility and in personal motorization, is key to the redistribution of transport costs and benefits (see for example Cervero 2011, Litman 2012; as well as the Enable/Avoid/Shift/Improve (EASI) framework, SSATP 2015). There is a wide range of literature that sets out strategies to reduce the need to travel, promote Transit-Oriented Development (Ahmed et al 2008; Litman 2012), improve road safety (Onywera et al 2014), and reduce motorization (Ahmed et al 2008; Hidalgo & Huizenga 2013; Cervero 2013; SSATP 2015) – this review does not aim to duplicate this work.

At the same time, there is a caution by researchers that the supply of pro-poor, equitable transport goes beyond the provision of 'modes' and the reduction of travel costs, but requires increased attention on improved governance and regulatory regimes, on relevant and appropriate policies, on stakeholder engagement, and a nuanced understanding of context-specific user needs (Gannon & Zhi Liu 1997; Gwilliam 2002 & 2003; Howe 2000; Godard 2011; Starkey & Hine 2014; SSATP 2015; Tiwari 2012; Salazar Ferro 2013; 2015).

Gwilliam et al (2002 and 2003) had catalogued a number of additional matters that led to the inequitable distribution of transport benefits and costs. Among these were a concern with poorly developed municipal fiscal and regulatory institutions, inadequate quantity and structure of road infrastructure, a lack of road-safety guidelines, and insufficient functional coordination between the land use and transport planning sectors. Almost 15 years later, Starkey & Hine (2014) in setting out the policy implications of their review for poverty reduction,





make similar suggestions, that the solutions to providing a better urban transport environment for the poor include stakeholder participation, a focus on compact cities with affordable public transport and safe cycling and walking, pollution control, law and traffic management and safety enforcement and parking restrictions, and more ethical relocation or resettlement of people during the course of infrastructure development. The authors proposed extended transit routes, road pricing, integrated services and ticketing, and the introduction of consolidated city transport authorities. These are similar proposals and concerns to those noted by the World Bank research in the early 2000s (Gwilliam, 2002 and 2003) and echoed by SSATP in its 2015 publication *Policies for sustainable accessibility and mobility in urban areas of Africa*.

This latter work is a substantial document that ventures into the political economy arena – an area insufficiently featuring in the transport literature. Their findings – based on a collaborate process including 40 Sub-Saharan African (SSA) countries and eight regional economic communities – place a strong emphasis on governance issues and the need for an integrated vision, strong and sustained political leadership, project management skills, and an understanding of the complexities of the overall urban transport system. The researchers flag an inability to establish clear authority and the required coordination mechanisms to ensure the best use of available resources to serve the long-term public interest – ‘all of which have not yet firmly established themselves in most urban areas of Africa as well as in many emerging countries’. Corruption in transport projects, a consequence of poor governance, can account for as much as five to 20% of transaction costs. ‘As well as improvements in resource allocation, enhanced governance can reduce mortality and injury through safer, cleaner and more accountable delivery of transport infrastructure and services (Chakwizira & Mashiri 2008).

Providing equitable, pro-poor mobility is clearly far from simple, and extends ‘far beyond a transport policy remit to include social welfare, private enterprise, the legislature, trading standards, local government and the municipalities, the police and criminal justice system, housing and planning, writes Lucas (2011) – ‘this is a cross-governmental agenda requiring a multi-stakeholder approach and it is most likely this reason why it has met with such little past success in its development and delivery.’

## 6.1 Bus Rapid Transit (BRT)

*While Bus Rapid Transit, as a concept, offers significant opportunities for enhancing social justice and poverty alleviation, these outcomes should not be taken for granted: they only occur under specific, well-thought through conditions.*

*(Venter, Hidalgo & Pineda 2013)*

This literature review focuses on Bus Rapid Transit, which, to quote the South African National Department of Transport, influenced by the Latin American experience, is regarded as ‘the mobility wave of the future and ... the only viable option that can ensure sustainable, equitable and uncongested mobility in liveable cities...’ (NDoT, 2007). There is merit in a further study that considers particularly the equity impacts of incremental approaches to upgrades or service improvements of existing public transportation services or systems, including conventional rail and enhanced bus services.

Bus Rapid Transit (BRT) has in the last few decades emerged as an explicitly pro-poor intervention within the developing world (Latin America and Sub-Saharan Africa in particular) (see for example Venter et al 2012 & 2013; Del Mistro 2012; Jennings 2015). Because BRT has the potential to provide increased spatial access, affordable fares, and

improved integration with pedestrian and cycling facilities, it has attracted a number of studies assessing its impact on poverty and equity.

Lucas, hosting a workshop on public transport and social exclusion in South Africa in 2011 raised a concern that South Africa, for one, over-emphasizes major transport infrastructure projects, 'which are not necessarily appropriate or effective in lifting low-income populations out of poverty'. These mega-projects will only serve a minority of the travel needs of urban populations, and are unlikely to significantly reduce the transport disadvantages experienced by the poor. She recalled the research of Mahapa & Mishiri (2001)<sup>8</sup>, where they noted the preoccupation of transport policymakers with higher technology fixes and efficiency savings rather than the travel needs of local communities, and believed that less expensive and more context-specific solutions were available. These concerns are in line with the findings of Salazar Ferro (2015) in his work on BRT networks and other infrastructure projects in Latin America.

Venter, Hidalgo & Pineda (2013), presenting a comprehensive review of the evidence of equity impact of BRT at the 2013 World Conference on Transport Research (WCTR 2013), ask whether BRT does indeed deliver pro-poor outcomes, and if not, why not. Reviewing work conducted in India and Colombia, Venter et al suggest that while BRT has the potential to improve travel times for the poor, travel times may in fact increase in situations where moving from direct services to trunk-and-feeder systems requires multiple transfers. This is a similar finding to that of Salazar Ferro & Behrens (2013 & 2015), who reveal that a move from the direct services offered by paratransit to the formal trunk-and-feeder systems of BRT can substantially increase the number of transfers required.

Because the poor usually live on the periphery of urban areas, and thus have further to travel to central business areas, public transport systems that offer flat rather than distance-based fares are more likely to offer travel cost savings and pro-poor outcomes, and enable the cross-subsidization by the wealthier traveller to the poorer traveller (Godard 2011; Venter 2013). Lagos (Nigeria) and Jakarta (Indonesia) appear to have reduced travel costs in this way (Venter et al 2013) – although the formal nature of BRT and 'quality' services more often than not cost more than the paratransit services these systems replace (see also Venter & Vaz 2012 and Del Mistro 2012). Discounted

fares are less straightforward with the automated systems of BRT (Venter et al 2013), and in many cases reduced public transport fares benefit the middle classes rather than the poor, because the poor still cannot afford the fares even when they are reduced (Godard 2011; Del Mistro 2012; Becker 2012).

Whether BRT networks have provided increased access is the subject of a number of reviews (refer to Section 4) – Jaramillo et al (2012) measured access by the poor to the BRT in Cali (Colombia), while Delmelle & Casas (2012) measured the access BRT provided for the poor to destinations in the same city. Both studies showed a link between poverty and transport disadvantage, suggesting that BRT certainly does have a role in increasing public transport coverage.

Godard (2011), though not necessarily referring to BRT networks, cautioned that in pro-poor planning:

*'one is faced again with the possibility of implementing measures which will benefit the transport system as a whole but are not necessarily relevant to the fight against poverty. We need to ensure that gains in productivity feed back into a lowering of the cost paid by the poorest users. Such productivity gains are more often than not captured by the owners of vehicles rather than by travellers by non-motorized modes.'*

This has, in some sense, been the outcome of BRT networks in Bogota (Colombia) and Johannesburg and Cape Town (South Africa), where because of a combination of route coverage and pricing, benefits have bypassed the poorest and benefit middle-income users to a greater extent (Gilbert 2008; Chakwizira et al 2011; Venter et al 2012 & 2013; Del Mistro 2012; Carrigan 2013). It is likely that this can also be observed in other BRT or rail mass transit projects, though the distribution of wealth from the benefits of such projects is not well documented.

An argument has been made that where routes preference the middle-classes and facilitate mode shift, as an alternative to single-occupancy vehicle use, these have an important climate impact. However, these trade-offs need to be more carefully considered, and the equity implications of these and other policies to reduce the climate change impacts of the transport system are most times insufficiently considered (Lucas & Pangbourne 2012).

## 6.2 Paratransit services

Paratransit describes a flexible mode of public passenger transportation that does not necessarily follow fixed schedules, typically in the form of small to medium buses. Paratransit in the developing world is sometimes also referred to as 'informal' transport (Behrens 2016).

These services are a standard feature of cities in the global South (i.e. developing countries), and with few exceptions are the main motorised mode in these cities (Salazar Ferro 2015). Their presence is likely to be an enduring one, having emerged from the degeneration and collapse of formal bus services (Behrens 2012 & 2016). In recent years, transport authorities and other stakeholders have become increasingly concerned about road congestion in developing cities, as well as the structural incentives within the paratransit sector for poor driver behaviour and aggressive competition for passengers, unsafe operations, poor security, a low level of service (including long waits and lack of vehicle comfort), unfair labour practices, and poor relationships with both customers and public authorities (Jennings 2016b). Further, the aged and at times poorly maintained paratransit fleets have a significant impact on local air quality and global carbon emissions. Although fares are usually affordable, operating practices seldom meet the desires of customers, other road users, and the city authorities representing the community as a whole (Jennings 2016b).

Scholarly publications on paratransit operations and regulation are limited (Behrens 2016). While some research was undertaken on paratransit in developing world cities in the 2000s, publications declined as attention turned toward BRT systems as a replacement (Behrens 2016).

SSATP, like Godard (2011) and Bruun (2016), places multi-modality ahead of a single 'sustainable' mode and are concerned with the dearth of reliable urban and transport data. In a relatively new shift in direction, influenced by the work of Behrens et al (2012; 2016) as well as Cooperation for urban mobility in the developing world (CODATU), SSATP is beginning to explore the role of the paratransit sector in poverty alleviation and pro-poor, inclusive urban planning (see also Lucas 2011). There is an urgent need to develop this work, as paratransit remains the dominant public transport mode in almost all developing cities globally, but the majority of plans to implement BRT services intend to replace or divert this mode without sufficient attention given to the possibilities of service improvement (Jennings 2016b) and complexities of its role in urban mobility (SSATP 2014, Salazar Ferro 2015).

Yet transformation (or eradication) of the paratransit sector to make way for 'formal transport' is a complex challenge – 'in most cases a political process and might require extended negotiation. In all cases, it is socially problematic; paratransit operations provide access to the city for (and are often provided by) the poorest sectors of society. In addition, the paratransit industry is not limited to simply vehicle operations as it includes indirect service providers that base their livelihood on the existence of these transport services' (Salazar Ferro 2015).

Paratransit modes by their nature are flexible, adaptable and demand-responsive, and already provide a high level of accessibility to the outlying urban areas to which BRT networks are unlikely to extend. Salazar Ferro, citing Cervero 2013 and Godard 2013, notes that this is the case not only in Latin America and Sub-Saharan Africa, but also in West Africa and South-East Asia.

Replacing the paratransit sector may not only have a negative impact on the poor in terms of access, travel cost and travel time, but on the employment that is associated with this mode. Surprisingly little research has been conducted on the formal job creation impacts of BRT projects (Venter et al 2013; Jennings 2016), although recently (2015) Khayesi, Nafukho and Kemuma published on paratransit entrepreneurship and microbusiness practices in Kenya. Yet, while BRTs may indeed be a good solution in some cases; there are concerns related to the strict neoliberal view of financial sustainability, which may harm the needs of the very poor (Vasconcellos 2016).

One answer is that each city intending to transform public transport needs to adapt their approach to their own context rather than attempt to replicate that of other cities (in other words, a context-conscious approach), and to consider the way in which formal BRT and informal paratransit networks are able to complement one another (Salazar Ferro 2013 & 2015). But there are likely to be intermediate positions between the extremes of formal and informal transport that deserve further consideration.

## 6.3 Cycling out of poverty?

*If lobbying for bike infrastructure continues to be justified through the 'world-class' discourse, people biking out of economic necessity will continue to be marginal within the bike movement while low-income families will be driven farther and farther from eco-chic districts. Bike advocates should be aware of the unjust implications of selling cycling potential for profit.*

(Hoffman & Lugo 2014)



From the earliest to the most current literature cited in this review, the case has been made that that transport policy and implementation, particularly when poverty alleviation is an issue, should pay greater attention to developing cycling. Bicycle transport is the quintessential pro-poor mode, with the potential to provide low-cost mobility that is faster and more extensive than walking (see, for example Servaas 2000; Rwebangira 2001; Pendakur 2005; Tiwari 2008; Khayesi 2010; Nkurunziza 2012ab; Jennings 2015 & 2016).

Bicycle transport is potentially cheap and flexible, facilitating cheaper daily trips, providing better access to activities and facilities, creating more employment opportunities, and enhancing the maintenance of social networks and reducing social exclusion (Nkurunziza 2012a; Joshi 2015). However, bicycles are also often costly to purchase (Gannon & Liu 1997, Rwebangira 2001; Jennings 2014). Gannon cites a study of travel characteristics of the urban poor in Delhi, where many people with low incomes spent more money in a year on bus fares for their journey to work than the cost of a bicycle, but were unable to purchase a bicycle because they worked in the informal sector and thus did not have regular incomes.

Yet cyclists in developing cities have largely been 'intimidated off the road system' (Howe 2000) and thus have lost access to this mode. Not only have facilities been poorly provided for (Tiwari 2008; Mashiri et al 2013; Joshi 2015), but cycling often remains unrecognized as a viable transport mode, limited by low status, poor political support, cultural restrictions and an almost unrelenting focus on motorized transport (Tiwari 2008; Nkurunziza 2012ab; Mashiri et al 2013; Joshi 2015; Jennings 2016). Thus, despite its potential, cycling plays a minor role in African cities, particularly when compared to Asian and Latin American cities (Sambali et al 1999; Tiwari 2008; Nkurunziza 2012ab). Cycling in Indian cities is declining too, however, and Joshi (2015) notes that the rhetoric of sustainability and equity in India's National Urban Transport Policy 2006 (and pro-cycling initiatives in 'best practice' transit projects) are subverted by not building adequate enabling infrastructure for cycling.

Until relatively recently, there has been a paucity of published work that investigates the equity or poverty outcome or impact of improving the walking or cycling environment. Even where the beneficiaries of mega-projects such as BRT have been non-motorised transport users on feeder infrastructure, there has been a surprising lack of literature evaluating the impact of these facilities. Tiwari & Jain (2012) do show that in Delhi, at least, the

improved walking and cycling facilities associated with BRT construction dramatically improved access to both BRT stations and other key destinations; the same study shows a significant reduction in road fatality risk for cyclists and bus users, as a result of the BRT infrastructure.

In South Africa, non-motorized transport policy does explicitly aim to relieve poverty through cycling (Jennings 2016), but the majority of published literature deals with planning and infrastructure development rather than bicycle promotion or its poverty impact (see, for example Gordge & Laing 2015; Gwala 2007; Randall 2015). Although civil society or non-governmental organizations and the media globally make poverty-alleviation claims for cycling as part of their outreach work, there is, as with BRT planning, a gap in the evidence to make this case.

Where work has been published regarding bicycle transportation, poverty and equity, it has focused on the inequitable provision of bicycle lanes (spatial inequity) (Jennings 2014 & 2016) or the challenges of extending public bicycle schemes to the urban poor, who have limited access to credit-based payment mechanisms or sureties, and who seldom access the central city areas that are most profitable to advertising-revenue bicycle-share models (Jennings 2014). Bicycle share schemes in India have floundered because 'despite good intentions' they cater only to people who can afford relatively high rental fees (Joshi 2015).

Whether in the United Kingdom, United States or Australia, bike-share users are on average disproportionately of higher education and income, and more likely to be male and white (Fishman 2016). Sarah Kretman (2011), writing of the challenges in bringing public bicycle schemes to low-income areas in the US, notes that an essential strategy – as with all transport interventions – is to engage the target community on an ongoing basis before and after changes are made, to more clearly understand the needs of the urban poor. This approach is developed by Hannig (2016), whose research reveals that most attempts to deliver bike-share to poorer communities, in the US at least, focus on mitigating the assumed physical, financial and cultural barriers to bike share, without understanding the significance of those barriers, or building relationships with community partners and the community itself.

The cost of bicycles has been cited as a principal barrier to bicycle use by the poor (Nkurunziza 2012ab; Irlam 2016), in addition to road safety concerns and poorly integrated bicycle and public transport access (Irlam 2016). Thus there

is certainly a need to develop ways of extending this access and share lessons learned; but where bicycle distribution schemes are in place, there has been little published work that monitors and quantifies the poverty outcomes.

Attempts have been made by Tiwari et al (2008) to understand why women in Asia cycle less often than men, yet for whom bicycling seems an obvious mode choice because its flexibility corresponds to a trip-chaining travel behaviour more common to women. Their study found that when women do ride, this is largely because women use the less expensive and slower modes of transport available to them. Cultural constraints, whether in Asia, Europe or Africa, may prevent women from cycling or even traveling at all (Van der Kloof 2014). Joshi (2016) details several reasons why poor women do not commonly use bicycles for mobility: these include patriarchy, a perceived lack of dignity, lack of space on roads, gender-biased infrastructure design, uncomfortable cycle design, and harassment or abuse of cyclists.

Mashiri et al (2013) note that cycling loses out as a transport mode in African cities because 'no one wants to be associated with poverty'. Joshi (2015) identifies a strong inverse link between modernity and cycling among various social groups in India. 'The middle-income group, having witnessed its own lifestyle changes in one or two generations, has especially strong reasons to associate cycling with their low-income past.'

Yet the literature in the United States and the United Kingdom has the opposite concern: that bicycle transport as a pro-poor opportunity suffers because it is associated with elite, privileged 'sustainability practices' and gentrification (Lubitow & Miller 2013; Hoffman 2013; Golub et al 2016). Steinbach et al (2011), undertaking research in London, suggest that because cycling is largely identified with white professionals, this renders the mode less appealing to those with other class, gender and ethnic identities. Jennings (2016) asks whether, in both extremes, an answer lies in 'selling' bicycling as simply another choice and refraining from pitching it as either a 'green' or a 'pro-poor' mode.

A new publication, *Bicycle Justice and Urban Transformation: Biking for All?* (Golub, Hoffman, Lugo & Sandoval 2016), further develops the argument that the role of cycling as a mode to redress spatial or transport injustice needs to be interrogated beyond the provision of infrastructure

in under-served areas and an equitable distribution of investments. 'A commitment to transport justice, rather than bicycle justice, includes overcoming the barriers to broader social integration, and would support the creation of mass mobility through improved public transportation and access to private vehicles, jobs, and housing than a concern over the rights to the bicycle' (Golub et al 2016).

*'Bicycle advocates promote the bicycle as a form of freedom or emancipation from the doldrums and dilemmas of a car-dominated life—a choice made among various transportation alternatives often linked to larger displays of lifestyle or politics. But for many people in the US [and African cities, see Jennings 2016], the bicycle is not an emancipatory tool but an outcome of oppression, leaving the bicycle as the only reasonable travel option due to inadequate public transportation, complex travel needs, or low wages and high transportation costs.'*

(Golub et al 2016)

The opportunities for the bicycle's contribution to transport equity are also hindered to some extent by many of the current bicycle discourses, suggest Golub et al (2016). What the authors describe as 'design determinism' – an emulation of northern European public spaces and street design – is unlikely to 'correct the social exclusion existing in the urban US [and that of developing cities] today'.

Research that moves beyond the potential of cycling, to examine the actual outcomes of bicycle transport as a low-cost intervention, is limited, as is literature that quantifies the bicycle's role in extended mobility. Media and civil society reports suggest there is some evidence that bicycles do fulfill these roles, but this is a gap that requires further work. Darshini Mahadevia (in Tiwari 2008) writes that in India, where the poor live on the urban periphery and spend up to 25% of their incomes on travelling, the consequent distances of 30-40 km to and from the city centre are not conducive for cycling. Jennings (2016) makes a similar point – that bicycling is not necessarily an efficient or equitable mechanism by which to overcome spatial inequity in sprawling cities. This is not only the case in developing cities: in investigating the role of the bicycle in limiting transport poverty in the Netherlands, Martens (2013) found that the bicycle was of limited relevance to households with a social network that extended beyond urban borders, as only a few respondents used the bicycle for substantial distances.



## 7. Concluding thoughts and future research needs

*Access should be distributed equitably, irrespective of the differences between people, unless convincing arguments can be provided for another way of distribution.*

(Martens, Golub & Robinson 2012)

Early World Bank research recognized that poverty reduction required more than reducing transport costs, but an enhancement of human capital formation (Gannon & Liu 1997). The authors warned that ‘mechanisms for the poor to voice their transport needs are typically weak and should be improved, especially at the local level’, and concluded that:

- there are no guiding principles for, or systematic approaches to, poverty issues in transport sector operations;
- there is a need to establish best-practice methodologies for the evaluation of transport components targeted at the poor (such as non-motorised transport [NMT], safety, and basic access);
- poverty components of projects should be considered separately from efficiency components in project economic evaluation; and
- monitoring the impact of transport interventions on poverty reductions should be improved and expanded.

This review reaches similar conclusions – highlighting what must be either a not-yet-surmountable complexity in reaching consensus regarding measurement and evaluation, or a concerning lack of interest in doing so.

When there is a recognition that inequitable distribution of transport ‘goods’ reinforces poverty, and a shift towards accessibility planning, there is the attendant need to develop and apply adequate accessibility indicators to assess the performance of transport interventions (Martens & Golub 2011). As Martens (2016) summarizes the challenge, authors and advocates have argued over the past decades that the mobility-centered approach to transportation planning needs to be replaced with an accessibility-centered approach. ‘But while the interest in accessibility is on the rise, in practice transportation (and land use) systems still tend to be evaluated using traditional mobility-centered performance indicators, like the level-of-service criterion or travel time savings.’ In addition, there remains a division between academic work, the practice-oriented and policy-informing research commissioned by the transport industry and governmental departments to the exclusion of social science in particular (Miciukiewicz 2012).

Furthermore, accessibility measures still fail to capture the nuances of transport inequity or disadvantage, and are particularly weak in determining what should be measured. These less tangible outcomes relate to issues of social equity or exclusion, as well as concepts such as walkability or livability. Proximity to transit stops, for example, ‘says little’ about the scale and ease of access the stop offers passengers to participate in activities (Welch 2013). Accessibility audits or mapping processes rarely capture historic reduction in services or access; nor do they capture opening hours, or a spread of activities in one location. An accessibility audit is inadequate if it does not distinguish between a hospital where a whole set of activities can be undertaken, and one where only one activity can be undertaken (Grieco 2003). Likewise, distance-to-transit-stop measures capture neither the safety and comfort of a shelter, nor the frequency of the service, the number of



transfers ahead, the 'harassment' factor, nor its 'after-hours' or weekend schedules.

In addition, there is a dearth of literature assessing the outcome or impact of any increased access, and the contribution of new transport interventions – whether through qualitative or quantitative analysis (Lucas, Tyler & Christodoulou 2009). Where attempts at accessibility audits do exist, these suffer from what Venter (2013) describes as a failure to demonstrate the actual outcomes of enhanced accessibility for households: (i.e. 'Can the poor actually make use of this enhanced access; do they find better or higher-paying jobs, or access better health care, education opportunities, or social networks?'). Venter highlights a need for further research using 'purposely designed before-after studies, to better understand these impacts.' Although he refers specifically to BRT projects, there is a similar shortage of literature evaluating the micro-scale poverty-alleviation impact of bicycle or pedestrian interventions, conventional rail or bus services, or paratransit.

Vasconcellos raises a further concern that while planners may claim their measures are objective (because they rely on quantitative data such as travel surveys and level-of-service ratings), these can reflect biases related to who is surveyed, what is counted and how it is measured, which affects the range of options and impacts considered and how solutions are selected (2012). Equity audits need to be placed in the centre of any analysis of transport policies and proposals, he proposes, and 'such audits must escape from the shackles of the economic approach to equity.'

Yet not only equity audits but much of transport and urban planning flounders on a lack of data, a hindrance identified by Lucas & Jones (2012), Bruun (2016) and SSATP (2014). Thus, equity goals and objectives are in many cases not translated into clearly specified objectives, and appropriate measures for assessing their achievement in a meaningful, disaggregated manner are lacking. Even where indicators might be meaningful, there remains no clear standard by which to measure whether the distribution of access improvements is fair or equitable (Martens, Golub & Robinson 2012; Manaugh 2015).

Apart from a few isolated studies and attempts at defining basic access, there continues to be insufficient reflection on desired and imagined mobilities (Miciukiewicz 2012), a qualitative analysis of the relationships between transport networks and every-day life patterns, and the perspective

of the user (Lucas 2012). Thus, we remain largely ignorant of the micro-needs of poor users particularly in developing cities – much of the work in devising indicators or measures has been conducted among the transport disadvantaged in cities in the United Kingdom, Scandinavia, other parts of Europe and Australia. Not only do we need better methods for defining, conceptualizing and measuring equity and access in a consistent and transferable manner (for example, such as those adopted for the Clean Development Mechanism, suggests Venter, 2013), but we need a fine-grained understanding of what, for example, 'high-quality' or 'affordable' really means. What are the basic, minimum standards for public transport provision among the poor, and are these concepts determined by both public transport planners and users?

Documented impacts of sustainable transport on social equity and poverty are largely limited to the much-studied Transmilenio BRT in Bogota (Colombia), or bike-share systems in the United States and London (England); in contrast, research on the regional, national level or micro-scale is limited. We do acknowledge a limitation of this review in this regard – which draws almost exclusively from peer-reviewed scholarly works.

There are token efforts at equity and access in transport policies and projects, often as a response to donor requirements (Porter 2014), but this still mostly amounts to little more than 'ticking the gender box'. In-depth, qualitative studies are more likely to identify where and why information does not translate adequately into action, and find means to rectify this (Porter 2014). These political economy questions, relating to resource allocation, status and corruption, remain largely unanswered in the literature (Sietchiping 2012; Jennings 2016; Behrens 2016). An incremental rather than a 'leapfrog' approach might be able to provide systematic improvements to transport systems over a wider area, benefiting larger numbers of people, over a shorter period of time (Hitge & van Dijk 2012). But where there are ribbons to be cut and political success to be measured, large-scale improvements are likely to remain popular interventions, despite their costs, risks and slow penetration. In sum, planning and analysis are not as visible as implementation, yet can arguably have substantial positive effects on the outcome of implementation.

More specifically, relating to 'sustainable' transport, Jones & Lucas (2012) caution that the environmental and economic impacts of transport should be considered separately but in association with the social impacts. The potential exists

for unintended negative consequences to directly and/ or indirectly arise from policies to reduce the climate change impact of the transport sector (for example, electric car technology, eco-driving training, and cycling infrastructure skewed to elite populations) (Lucas & Pangbourne 2014); these interventions may have little role to play in more immediate pro-poor transport delivery.

Ultimately, accessibility measures largely determine how easy it is to access transport services, or to access destinations: in other words, these measure how easy it is to access increased mobility. Seldom are the outcomes

of this increased access evaluated. Even where access to useful destinations is measured, the actual importance or contribution of these destinations is rarely part of the analysis. Essentially, we remain not too much the wiser whether increased accessibility delivers what transport users need. Neither a measure of distance to public transport services, nor the frequency of these services, nor any number of other computed indices, sufficiently answer the question of what the poor 'do' with this access or mobility, and whether they are able to 'do' with it what they really need to do.

## 8. Acknowledgements

We would like to thank our team of external peer-reviewers, for the time they took to share additional references and prepare insightful comments on this document.

*Christo Venter* is an Associate Professor in the Department of Civil Engineering at the University of Pretoria, South Africa, where he teaches transport engineering and planning. His research and consulting interests include travel behaviour; land use/transport modeling; planning for public transport; and the social and economic impacts of access and mobility. [www.up.ac.za](http://www.up.ac.za)

*Pablo Salazar Ferro* is a consultant with CODATU, Cooperation for urban mobility in the developing world Senegal, whose research work is focused on the possibilities for constructive relationships between paratransit and formal urban public transport systems. [www.codatu.org](http://www.codatu.org)

*Todd Litman* is founder and executive director of the Victoria Transport Policy Institute, an independent research organization dedicated to developing innovative solutions to transport problems. His work helps expand the range of impacts and options considered in transportation decision-making, improve evaluation methods, and make specialized technical concepts accessible to a larger audience. His

research is used worldwide in transport planning and policy analysis. [www.vtpi.org](http://www.vtpi.org)

*Eduardo Alcântara de Vasconcellos* is an engineer and sociologist and has been working with urban transport in Brazil since 1975 and also at the international level since 1985. He has a master and a PHD degree in Political Science (Public Policies) and conducted his post-doctoral research and teaching on transport in developing countries at Cornell University, US (1993-1995). Until recently he was director of the Instituto Movimento in São Paulo, Brazil and main technical advisor for ANTP, the Brazilian Association of Public Transport. He has several papers published in international journals, and is the author of one of the key publications on this subject: *Urban transport, environment and equity –the case for developing countries* (Earthscan, 2001, UK).

*Dr Meleckidzedek Khayesi* works within the violence and injury prevention unit at the World Health Organisation. He holds a PhD in Transport Geography from Kenyatta University, Kenya. His twenty-seven years of work experience straddles global health policy development and programming, scientific research that incorporates designing programmes, implementing and evaluating projects, and university teaching. He currently serves as a member of the editorial board of the *Journal of Transport Geography*.

## 9. Bibliography and works cited

1. Bardasi, Elena & Wodon, Quentin (2006) 'Measuring Time Poverty and Analysing its Determinants: Concepts and Application to Guinea', Chapter 4, World Bank Working Paper No. 73. World Bank
2. Becker, Thilo (2012) 'Can the concept of environmental justice in transport be transferred to cities of the south? A case study of Nairobi'. Conference CODATU XV, The role of urban mobility in (re)shaping cities, Addis Ababa (Ethiopia)
3. Behrens, Roger (2016) 'An introduction to paratransit in Sub-Saharan African Cities', in *Paratransit in African Cities*, edited by Roger Behrens, et al, Earthscan, London
4. Behrens, Roger, McCormick, Dorothy & Mfinanga, David (2012) 'An evaluation of policy approaches to upgrading and integrating paratransit in African urban public transport systems: Results of the first round of a Delphi survey', Conference CODATU XV, The role of urban mobility in (re)shaping cities, Addis Ababa (Ethiopia)
5. Behrens, Roger, Muchaka, Patrick, Salazar Ferro, Pablo, Schalekamp, Herrie & Mark Zuidgeest (2016) 'Mobility and access in Sub-Saharan African cities: The state of knowledge and research environments.' VREF, Mobility and access in African Cities
6. Behrens, Roger (2016) 'An introduction to paratransit in Sub-Saharan African cities,' Chapter 1, in *Paratransit in African Cities*, edited by Roger Behrens, et al. Earthscan, London
7. Bocarejo S Juan Pablo & Daniel Ricardo Oviedo H (2012) 'Transport accessibility and social inequities: a tool for identification of mobility needs and evaluation of transport investments', *Journal of Transport Geography* 24, pp 142–154
8. Booth, David, Lucia Hanmer & Elizabeth Lovell (2000) 'Poverty and Transport', a report prepared for the World Bank in collaboration with DFID/ ODI
9. Bruun, Eric et al (2016) 'The state of public transport systems in three Sub-Saharan African cities', Chapter 2, in *Paratransit in African Cities*, edited by Roger Behrens, et al. Earthscan, London
10. Bryceson, Deborah Fahy (2009) 'Roadmapping Development and Poverty Alleviation, Chapter 1, in Grieco et al: *Africa, Transport and the Millennium Development Goals*: Cambridge Scholars Publishing
11. Bryceson, Deborah Fahy (2009) 'Road mapping development and poverty alleviation: transport and the MDGs in Africa', in *Africa, Transport and the Millennium Development Goals*, Grieco et al
12. Carrigan, Aileen, et al (2013) 'Social, Environmental and Economic Impacts of BRT systems: BRT case studies from around the world'. EMBARQ / World Resources Institute
13. Cervero, Robert (2005) 'Accessible Cities and Regions: A Framework for Sustainable Transport and Urbanism in the 21st Century,' Working Paper UCT-ITS-VWP-2005-3, University California Berkeley, Centre for Future Urban Transport
14. Cervero, Robert (2011) 'State roles in providing affordable mass transport services for low-income residents'. Document produced as background for the 2011 International Transport Forum, Leipzig, Germany, on Transport for Society
15. Cervero, Robert (2013) 'Transport Infrastructure and the Environment: 'Sustainable Mobility and Urbanism'. Paper prepared for the second Planocosmo International Conference Bandung Institute of Technology, University of California Berkeley, Institute of Urban and Regional Development
16. Cervero, Robert (2013) 'BRT: An Efficient and Competitive Mode of Public Transport. Institute of Urban and Regional Development', University of California Berkeley. IURD Working Paper Series
17. Chakwizira, James & Mashiri, Mac (2009) 'The contribution of transport governance to socio-economic development in South Africa,' Proceedings of the 28<sup>th</sup> Southern African Transport Conference, Pretoria, South Africa
18. Chakwizira, James & Bikam P (2011) 'Some Missing Dimensions of Urban Public Transport in Africa: Insights and Perspectives from South Africa', *The Built & Human Environment Review*, Vol 4, Special Issue 2
19. Cox, Wendall (2012) 'Developing Africa: Toward Self-Sufficient, Customer Oriented Urban Transport,' Conference CODATU XV, The role of urban mobility in (re)shaping cities, Addis Ababa, Ethiopia



20. Currie, Graham (2010) 'Quantifying spatial gaps in public transport supply based on social needs,' *Journal of Transport Geography* 18, pp 31–41
21. Currie, Graham & Delbosc, Alexa (2010) 'Modelling the social and psychological impacts of transport disadvantage,' *Transportation* 37: pp 953–966
22. Del Mistro, Romano & Maunganidze, Lorita (2012) 'The role of BRT in improving public transport levels of service, particularly for the urban poor users of public transport. A case of Cape Town,' Proceedings of the Southern Africa Transport Conference, Pretoria, South Africa
23. Delbosc, Alexa, Currie, Graham (2011) 'Transport problems that matter – social and psychological links to transport disadvantage,' *Journal of Transport Geography* 19 pp 170–178
24. Delmelle, EC, and Casas, I (2012) 'Evaluating the spatial equity of bus rapid transit-based accessibility patterns in a developing country: The case of Cali, Colombia,' *Transport Policy* 20 pp 36–46
25. Dimitriou, HT and Gakenheimer, R (eds) (2011) *Urban Transport in the Developing World: A Handbook of Policy and Practice*. Cheltenham: Edward Elgar
26. El-Geneidy, Ahmed M & Levinson, David M (2006) 'Access to Destinations: Development of Accessibility Measures'. Retrieved from the University of Minnesota Digital Conservancy
27. Elvy, Joanna (2014) 'Public participation in transport planning amongst the socially excluded: An analysis of 3rd generation local transport plans,' *Case Studies on Transport Policy* 2 pp 41–49
28. Envall, Pelle (2007) 'Accessibility planning: a chimera?' PHD thesis, University of Leeds, Institute of Transport Studies
29. Evans, Tim & Hilary Brown (2003) 'Road traffic crashes: operationalizing equity in the context of health sector reform,' *Injury Control and Safety Promotion* Vol. 10, No. 1–2, pp 11–12
30. Farrington, J (2007) 'The new narrative of accessibility: its potential contribution to discourses in (transport) geography,' *Journal of Transport Geography* 15 pp 319–330
31. Fishman, Elliot (2016) 'Bikeshare: A Review of Recent Literature,' *Transport Reviews*, 36:1, 92–113
32. Gannon, Colin A & Zhi Liu (1997) 'Poverty and Transport,' *Cities on the Move*, World Bank
33. Geurs, KT & JR Ritsema van Eck (2001) 'Accessibility measures: review and applications. Evaluation of accessibility impacts of land-use transport scenarios, and related social and economic impacts,' National Institute of Public Health and the Environment, Utrecht
34. Gilbert, A (2008) 'Bus Rapid Transit: Is Transmilenio a miracle cure?' *Transport Reviews* 28 pp 439–467
35. Global Report on Urban Health: equitable, healthier cities for sustainable development WHO, UNHABITAT 2016
36. Global road safety partnership (2004): Impact of road crashes on the poor, Research note
37. Godard, Xavier (2011) 'Poverty and urban mobility: diagnosis toward a new understanding,' in *Urban Transport in the Developing World: A Handbook of Policy and Practice* (2011) Edited by Harry T Dimitriou and Ralph Gakenheimer. Cheltenham: Edward Elgar
38. Goodman, Anna & James Cheshire (2014) 'Inequalities in the London bicycle sharing system revisited,' *Journal of Transport Geography* 41 pp 272–279
39. Golub, A, Hoffman, M, Lugo, A & Sandoval, G (2016) 'Introduction: creating an inclusionary bicycle justice movement,' in *Bicycle Justice and Urban Transformation: Biking for All?* Routledge Equity, Justice and the Sustainable City series
40. Green, James, Muir, H & Maher, M (2011) 'Child pedestrian casualties and deprivation,' *Accident Analysis and Prevention* 43 pp 714–723
41. Grieco, Margaret, Muna Ndulo, Deborah Bryceson, Porter, Gina & McCray, Talia: *Africa, Transport and the Millennium Development Goals*. Cambridge Scholars Publishing, 2009
42. Grieco, Margaret (2003) 'Transport and social exclusion: New policy grounds, new policy options,' paper presented at the 10<sup>th</sup> International Conference on Travel Behaviour Research, Lucerne
43. Gwilliam, Ken (2003) 'Urban transport in developing countries,' *Transport Reviews*, 23:2, 197–216,
44. Hannig, James (2016) 'Community disengagement: the greatest barrier to equitable bike share,' in *Bicycle Justice and Urban Transformation: Biking for All?* Routledge Equity,

Justice and the Sustainable City series (eds Aaron Golub, Melody L Hoffmann, Adonia E Lugo & Gerardo F Sandoval)

45. Hayes, Alan, Gray, Matthew & Edwards, Ben (2008) 'Social inclusion: origins, concepts and key themes. Australian Institute of Family Studies prepared for the Social Inclusion Unit, Department of the Prime Minister and Cabinet
46. Hidalgo, Dari, Pereira, L, Estupiñán, N, Jiménez, PL (2013) TransMilenio BRT system in Bogotá, high performance and positive impact: Main results of an ex-post evaluation,' *Research in Transportation Economics*, Volume 39, Issue 1 pp 133-138
47. Hidalgo, Dario & Huizenga, Cornie (2013) 'Implementation of sustainable urban transport in Latin America,' *Research in Transportation Economics* 40
48. Hidalgo, Dario & Yepes, T (2005) 'Are Bus Rapid Transit Systems Effective in Poverty Reduction? Experience of Bogotá's TransMilenio and Lessons for Other Cities,' Paper presented at Transportation Research Board's Annual Meeting, Washington, DC
49. Hitge, Gerhard & van Dijk, Erwin (2012) 'Incremental Approach to public transport system improvements,' *MOBILITY* edition 13
50. Hitge, Gerhard & Vanderschuren, Marianne (2015) 'Comparison of travel time between private car and public transport in Cape Town,' *Journal of the South African Institute of Civil Engineering*, 57(3), pp 35-43
51. Hoffmann, Melody (2013) *Our Bikes in the Middle of the Street: Community-building, Racism and Gentrification in Urban Bicycle Advocacy*. PhD dissertation, University of Minnesota, United States
52. Hoffmann, Melody & Lugo, Adonia (2014) 'Who is World Class? Transportation justice and bicycle policy,' *Urbanities* Volume 4 No 1
53. Hook, Walter & Howe, John (2005) 'Transport and the Millennium Development Goals: A background paper to the task force on slum dwellers of the Millennium Project'
54. Howe, John & Bryceson, Deborah (2000) 'Poverty and Urban Transport in East Africa,' World Bank
55. Irlam, James (2016) 'Barriers to cycling mobility in Masiphumelele, Cape Town: a best-worst scaling approach'. A dissertation submitted in fulfillment of the requirements for the degree of Master of Philosophy (Climate Change and Sustainable Development), University of Cape Town, South Africa
56. Jaramillo, C, Lizárraga, C & Grindlay, AL (2012) 'Spatial disparity in transport social needs and public transport provision in Santiago de Cali (Colombia),' *Journal of Transport Geography* 24 pp 340-357
57. Jennings, Gail (2015) Finding our balance: considering the opportunities for public bicycle systems in Cape Town, South Africa. *Research in Transportation Business & Management*, Volume 15, pp6-14: Managing the Business of Cycling
58. Jennings, Gail (2015) 'Public transport interventions and transport justice in South Africa: a literature and policy review,' Proceedings of the 34th Southern African Transport Conference, Pretoria, South Africa
59. Jennings, Gail (2016a) Freedom of movement: an enquiry into utility cycling and social justice in post-apartheid Cape Town, in *Bicycle Justice and Urban Transformation: Biking for all?* (Routledge Equity, Justice and the Sustainable City series) (eds Aaron Golub, Melody L Hoffmann, Adonia E Lugo & Gerardo F Sandoval)
60. Jennings, Gail, Bruun, Eric, Browning, Paul et al (2016b) 'Strategy options for paratransit business development and service improvement,' Chapter 12, in *Paratransit in African Cities*, edited by Roger Behrens, et al. Earthscan, London
61. Jing Cao, Xiaoyue Cathy (2013), Yinhai Wang, Qingquan Li Accessibility impacts of China's high-speed rail network *Journal of Transport Geography* 28 (12-21)
62. Jones, Paul & Lucas, Karen (2012) 'The social consequences of transport decision-making: clarifying concepts, synthesising knowledge and assessing implications,' *Journal of Transport Geography* 21 pp 4-16
63. Jones, Steven, Moses Tefe, & Appiah-Opoku, Seth (2012) 'Development of a Localized Sustainability Score for screening Urban Transport Projects in Developing Countries: A Case Study of Accra, Ghana,' Conference CODATU XV, Addis Ababa, Ethiopia
64. Joshi, Rutul and Joseph, Yogi (2015) 'Invisible Cyclists and Disappearing Cycles: the challenges of cycling policies in Indian cities,' *Transfers* 5(3) pp 23-40

65. Karner, Alex and Deb Niemeier (2013) 'Civil rights guidance and equity analysis methods for regional transportation plans: a critical review of literature and practice,' *Journal of Transport Geography* 33 pp 126–134
66. Karst T Geurs & van Wee, Bert (2004) 'Accessibility evaluation of land-use and transport strategies: review and research directions,' *Journal of Transport Geography* 12 pp 127–140
67. Khayesi, Meleckidzedek, Monheim, Heiner & Nebe, Johannes Michael (2010) 'Negotiating "Streets for All" in Urban Transport Planning: The Case for Pedestrians, Cyclists and Street Vendors in Nairobi, Kenya,' *Antipode Vol. 42* No. 1 42 no 1, pp 103–26
68. Khayesi, Meleckidzedek & Nafukho, Fredrick Muyai (2015) *Informal Public Transport in Practice: Matatu entrepreneurship*. Routledge
69. Kretman Stewart S, Johnson DC&Smith WP (2011) 'Bringing Bike Share to a Low-Income Community: Lessons Learned Through Community Engagement,' *Preventing Chronic Disease*: 10
70. Krishna Rao K, Chetan Kumar, Bhargav Venil (2012) 'Evaluation of Development Plans towards Sustainable Urban Transportation: A case study of Pune Metropolitan Region,' Conference CODATU XV, Addis Ababa, Ethiopia
71. Lawson, David (2007) 'A Gendered Analysis of Time Poverty. The Importance of Infrastructure.' Global Poverty Research Group, Economic and Social Research Council
72. Lewis, David (2011) 'Economic perspectives on transport and equality,' discussion paper produced as background for the 2011 International Transport Forum, Transport for Society, Leipzig, Germany
73. Litman, Todd & Brenman, M (2012) 'A New Social Equity Agenda For Sustainable Transportation,' paper presented at 2012 Transportation Research Board Annual Meeting, 12-3916
74. Litman, Todd (2014) 'Evaluating Transportation Equity,' *World Transport Policy & Practice*. Volume 8, No 2, Summer, pp 50- 65
75. Lubitow, Amy & Miller, Thaddeus (2013) 'Contesting sustainability: bikes, race and politics in Portlandia,' *Environmental Justice* Volume 6, Number 4
76. Lucas, Karen (2004) 'Transport & Social Exclusion: a survey of the Group of Seven nations,' Summary Report, FIA Foundation
77. Lucas, Karen, Sophie Tyler & Georgina Christodoulou (2009) 'Assessing the "value" of new transport initiatives in deprived neighbourhoods in the UK,' THREDBO Workshop 10
78. Lucas, Karen (2011) 'Applying a social exclusion approach to transport disadvantage in South Africa,' THREDBO 12 Workshop 6
79. Lucas, Karen (2012) 'Transport and social exclusion: Where are we now?' *Transport Policy* 20 pp 105–113
80. Lucas, Karen & Pangbourne, Kate (2012) 'Transport and Climate Change Policy in the United Kingdom: A Social Justice Perspective,' *Transport and Climate Change* (Transport and Sustainability, Volume 2). Emerald Group Publishing Limited, pp 287 – 312
81. Lucas, Karen & Jones, Peter (2012) 'The social consequences of transport decision-making: clarifying concepts, synthesising knowledge and assessing implications,' *Journal of Transport Geography* 21 pp 4–16
82. Lucas, Karen & Jones, Peter (2012) 'Social impacts and equity issues in transport: an introduction,' *Journal of Transport Geography* 21 pp 1–3
83. Lucas, Karen & Musso, Antonio (2014) 'Policies for social inclusion in transportation: An introduction to the special issue,' *Case Studies on Transport Policy* 2 pp 37–40, World Conference on Transport Research Society
84. Lucas, Karen & Pangbourne Kate (2014) 'Assessing the equity of carbon mitigation policies for transport in Scotland,' *Case Studies on Transport Policy* 2 pp 70–80
85. M Shafiq-Ur Rahman, Timms, Paul & Francis Montgomery (2012) 'Using Three-Dimensional Physical Models to Improve Public Participation in Transport Planning: Case Study on Integrating BRT Systems with Rickshaws in Dhaka City,' Conference CODATU XV. Addis Ababa, Ethiopia
86. Macário, Rosário & Ana Galelo (2012) 'Accessibility: User satisfaction, authority satisfaction, or society satisfaction?' THREDBO Workshop 6



87. Mackett, Roger L (2014) 'The health implications of inequalities in travel,' *Journal of Transport & Health* 1 pp 202–209
88. Manaugh, Kevin, Madhav G Badami & Ahmed M El-Geneidy (2015) 'Integrating social equity into urban transportation planning: A critical evaluation of equity objectives and measures in transportation plans in North America,' *Transport Policy* 37 pp 167–176
89. Markovich, Julia & Lucas, Karen (2011) 'The Social and Distributional Impacts of Transport: A Literature Review,' Working Paper N° 1055, Transport Studies Unit School of Geography and the Environment
90. Martens, Karel, Golub, Aaron & Robinson G (2012) 'A justice-theoretic approach to the distribution of transportation benefits: implications for transportation planning practice in the United States,' *Transportation Research Part A* 46 pp 684–695
91. Martens, Karel (2012) 'Justice in transport as justice in accessibility: applying Walzer's 'Spheres of Justice' to the transport sector,' *Transportation*. Springer
92. Martens, Karel (2013) 'The Role of the Bicycle in the Limitation of Transport Poverty in the Netherlands,' *Journal of the Transportation Research Board*, No 2387, Washington DC pp 20–25
93. Martens, Karel (2016) 'Why accessibility measurement is not merely an option, but an absolute necessity.' In: N Punto and A Hull (eds) *Accessibility tools and their applications*. Routledge
94. Martens, Karel & Golub, Aaron (2011) 'Accessibility measures from an equity perspective,' *Bijdrage aan het Colloquium Vervoersplanologisch Speluwerk* 24 & 25 November, Antwerpen
95. Mashiri, Mac, Maphakela, W, Chakwizira J & B Mpondo, B (2013) 'Building a sustainable platform for low-cost mobility in South Africa,' *Proceedings from the 32nd Southern African Transport Conference*, Pretoria, South Africa
96. MDB Working Group on Sustainable Transport (2015) *Progress Report (2014–2015)*
97. Md Aftabuzzama, Mazloumi, Ehsan (2011) 'Achieving sustainable urban transport mobility in post peak oil era,' *Transport Policy* 18 pp 695–702
98. Miciukiewicz, Konrad & Vigar, Geoff (2012) 'Mobility and Social Cohesion in the Splintered City: Challenging Technocentric Transport Research and Policy-making Practices,' *Urban Studies Journal* 49(9) pp 1941–1957
99. Monzón, Andres, Ortega, Emilio & López, Elena (2013) 'Efficiency and spatial equity impacts of high-speed rail extensions in urban areas,' *Cities* 30 pp 18–30
100. National Department of Transport of South Africa (2007) *Public Transport Strategy*
101. Nkurunziza, Alphonse, Zuidgeest, Mark, Brussel, Mark & Van Maarseveen, Martin (2012a) 'Examining the potential for modal change: Motivators and barriers for bicycle commuting in Dar-es-Salaam,' *Transport Policy* 24 pp 249–259
102. Nkurunziza, Alphonse, Zuidgeest, Mark, Brussel, Mark & Van Maarseveen, Martin (2012) (2012b) 'Key events and their effects on cycling behaviour in Dar-es-Salaam.' In 5<sup>th</sup> International Conference on Traffic and Transport Psychology, ICTTP, Groningen, Netherlands, pp 75–75
103. Nkurunziza, Alphonse, Zuidgeest, Mark & Van Maarseveen, Martin (2012c) 'Identifying potential cycling market segments in Dar-es-Salaam, Tanzania,' *Habitat International* 36
104. Olawole, MO (2012) 'Accessibility to Lagos Bus Rapid Transit (BRT LITE) Bus Stops: An Empirical Study,' Conference CODATU XV, Addis Ababa, Ethiopia
105. Olufemi Oduduwa B (2006) 'Enhancing mobility of the elderly in Sub-Saharan Africa cities through improved public transportation,' *IATSS research Volume* 30 Number 1
106. Onywera Vincent O & Blanchard, Claire (2014) 'Road accidents: a third burden of 'disease' in sub-Saharan Africa,' *Global Health Promotion* 1757–9759; Volume 20(4): 52–55
107. Pendakur, VS (2005) 'Non Motorised Transport in African Cities: Lessons from Experiences in Kenya and Tanzania,' *SSATP Working Paper No80*
108. Pirie, Gordon (2009) 'Virtuous mobility: moralizing vs measuring geographic mobility in Africa,' *Afrika Focus*, Volume 22
109. Porter, Gina (2014) *Transport Services and Their Impact on Poverty and Growth in Rural Sub-Saharan Africa: A Review of Recent Research and Future Research Needs Transport Reviews*, 2014 Vol. 34, No. 1, 25–45,

110. Porter, Gina (2011) "I think a woman who travels a lot is befriending other men and that's why she travels": mobility constraints and their implications for rural women and girl children in sub-Saharan Africa,' *Gender, Place and Culture* 18 (1) pp 65–81
111. Preston, John (2009) 'Epilogue: Transport policy and social exclusion—Some reflections,' *Transport Policy* 16 pp 140–142
112. Preston, John & Raje, Fiona (2007) 'Accessibility, mobility and transport-related social exclusion,' *Journal of Transport Geography* 15 pp 151–160
113. Qureshi Intikhab Ahmed, Huapu Lu, Shi Ye (2008) 'Urban transportation and equity: A case study of Beijing and Karachi,' *Transportation Research Part A* 42 pp 125–139
114. Rwebangira, Theo(2001)'Cycling in African Cities: Status & Prospects,' *World Transport Policy & Practice*, Volume 7, Number 2
115. Sagaris, Lake & de Dios Ortuzar, Juan (2015) 'Reflections on citizen-technical dialogue as part of cycling-inclusive planning in Santiago, Chile,' *Research in Transportation Economics* 53 pp 20-30
116. Salazar Ferro, Pablo & Behrens, Roger (2013) 'Paratransit and formal public transport operational complementarity: imperatives, alternatives and dilemmas,'13th World Conference on Transport Research, Rio de Janeiro, Brazil
117. Salazar Ferro, Pablo & Behrens, Roger (2015) 'From direct to trunk-and-feeder public transport services in the Urban South: Territorial implications,'*Journal of Transport and Land Use*, Volume 1 pp 123–136
118. Salon, Deborah & Sumila Gulyani (2010) 'Mobility, Poverty, and Gender: Travel "Choices" of Slum Residents in Nairobi, Kenya,' *Transport Reviews*, 30:5, pp 641-657
119. Sambali, G, Zuidgeest, Mark & De Langen, M (1999) 'Determinants of cycling in medium and large cities in Sub-Saharan Africa,' *World Transport Research: Selected Proceedings of the 8th World Conference of Transport Research* pp 419-430
120. Sanchez, Thomas W (2008) 'Poverty, policy, and public transportation,' *Transportation Research Part A* 42 pp 833–841
121. Servaas, Mauritz (2000), 'The Significance of NMT for Developing Countries', *Interface for Cycling Expertise*
122. Shailesh Chandra, Muhammad Ehsanul Bari, Prem Chand Devarasetty,&Sharada Vadali (2013) 'Accessibility evaluations of feeder transit services,' *Transportation Research Part A* 52 pp 47–63
123. Sietchiping, Remy, Permezel, Melissa Jane& Ngomsi, Claude (2012) 'Viewpoint: Transport and mobility in sub-Saharan African cities: An overview of practices, lessons and options for improvements,' *Cities* 29 pp 183–189
124. Sigal Kaplan, Dmitrijs Popoks, Carlo Giacomo Prato & Avishai (Avi) Ceder (2014)Using connectivity for measuring equity in transit provision,' *Journal of Transport Geography* 37 pp 82–92
125. Social Disadvantage Research Centre, United Kingdom Government (2007) Index of Multiple Deprivation
126. SSATP (2015) 'Policies for sustainable accessibility and mobility in urban areas of Africa,' TRANSITEC Consulting Engineers in collaboration with ODA, CODATU and Urbanplan
127. Stanley, Janet & Vella-Brodrick, Dianne (2009) 'The usefulness of social exclusion to inform social policy in transport,' *Transport Policy* 16 pp 90–96
128. Stanley, Janet & Lucas, Karen (2008) 'Social exclusion: What can public transport offer?' *Research in Transportation Economics* 22 pp 36–40
129. Starkey, Paul & Jon Hine (2014) 'How transport affects poor people with policy implications for poverty reduction: A literature review,'*Overseas Development Institute (ODI), UN-HABITAT, Department for International Development (DFID) and Partnership on Sustainable Low Carbon Transport (SLoCaT)*
130. Steinbach, Rebecca, Green, Judith, Datta, Jessica & Edwards, Phil (2011) 'Cycling and the city: A case study of how gendered, ethnic and class identities can shape healthy transport choices,' *Social Science & Medicine* 72 pp 1123-1130
131. The Sustainable Mobility Project Mobility 2030: Meeting the challenges to sustainability Full report 2004; World Business Council for Sustainable Development

132. Thomas, David P (2013) 'The Gautrain project in South Africa: a cautionary tale,' *Journal of Contemporary African Studies*, 31:1 pp 77-94
133. Thomopoulos, N et al (2009) 'Incorporating equity considerations in transport infrastructure evaluation: Current practice and a proposed methodology,' *Evaluation and Program Planning* 32 pp 351-359
134. Titheridge, Helena, Christie, Nicola, Mackett, Roger, Oviedo Hernandez, Daniel & Runing Ye (2014) 'Transport and Poverty: a review of the evidence.' University College London
135. Tiwari, Geetam & Jain, D (2012) Accessibility and safety indicators for all road users: case study Delhi BRT, *Journal of Transport Geography* 22 pp 87-95
136. Tiwari, Geetam & Anvita Arora, Himani Jain (2008) 'Bicycling in Asia,' TRIPP, ICE, iTrans report
137. Turner, Jeff and Mensah Adzigbey (2012) 'Accessibility, planning and urban poverty: tools for equitable transport planning in developing cities,' Conference CODATU XV, The role of urban mobility in (re)shaping cities, Addis Ababa, Ethiopia
138. *Urban Transport in the Developing World: A Handbook of Policy and Practice* (2011) Edited by Harry T Dimitriou & Ralph Gakenheimer. Cheltenham: Edward Elgar
139. Van der Kloof, Angela, Bastiaanssen, Jeroen & Martens, Karel (2014) 'Bicycle lessons, activity participation and empowerment,' *Case Studies on Transport Policy* 2 pp 89-95
140. Van der Merwe, Carel et al (2012) 'Gautrain: Successful Implementation of Socio- Economic Development, South Africa.' Proceedings of the 31<sup>st</sup> Southern Africa Transport Conference, Pretoria, South Africa
141. Van der Westhuizen, Janis (2007) 'Glitz, Glamour and the Gautrain: Mega- Projects as Political Symbols,' *Politikon: South African Journal of Political Studies*, 34:3, pp 333-351
142. Vasconcellos, Eduardo A (2005) 'Transport metabolism, social diversity and equity: The case of São Paulo, Brazil,' *Journal of Transport Geography* 13 pp 329-339
143. Vasconcellos, Eduardo A (2011) 'Equity evaluation of urban transport,' Chapter 12 in Dimitriou, HT & Gakenheimer, R (eds), (2011) *Urban Transport in the Developing World: A Handbook of Policy and Practice*. Cheltenham: Edward Elgar
144. Venter, Christo and Behrens, Roger (2005) 'Transport Expenditure: is the 10% policy benchmark appropriate.' Proceedings of the 24<sup>th</sup> Southern African Transport Conference, Pretoria, South Africa
145. Venter, Christo & Vaz, Eunice (2012) 'The Effectiveness of BRT as part of a poverty-reduction strategy: some early impacts in Johannesburg.' Proceedings of the 31<sup>st</sup> Southern Africa Transport Conference, Pretoria, South Africa
146. Venter, Christo, Hidalgo, Darío; & Pineda, Andrés (2013) 'Equity impacts of BRT: Emerging frameworks and evidence.' 13<sup>th</sup> WCTR, Rio de Janeiro, Brazil
147. Venter, Christo & Cross, Catherine (2014) 'Access envelopes: A new accessibility mapping technique for transport and settlement planning,' *African Journals online* 2 (64)
148. Wachs, Martin (2010) 'Transportation Policy, Poverty, and Sustainability: History and Future,' 2010 Thomas B Deen Distinguished Lecture, Transportation Research Board
149. Welch, Timothy (2013) 'Equity in transport: The distribution of transit access and connectivity among affordable housing units,' *Transport Policy* 30 pp 283-293
150. Welch, Timothy & Sabyasachee Mishra (2013) 'A measure of equity for public transit connectivity,' *Journal of Transport Geography* 33 pp 29-41
151. Wolch, Jennifer, Byrne, Jason & Newell, Joshua (2014) 'Urban green space, public health, and environmental justice: The challenge of making cities "just green enough",' *Landscape and Urban Planning* 125 pp 234-244
152. World Bank (1986) *Urban Transport: A World Bank Policy Study*
153. World Health Organization (2013) *Global Status Report on Road Safety 2013: Supporting a Decade of Action*. Geneva



# Appendix One:

## Recommendations

This review reiterates the findings of the available literature: that safe, affordable, available, frequent public transport services, and walking and cycling facilities, are essential to alleviating poverty and redressing transport inequity. These recommendations therefore do not set out repeat this work, but instead propose ways in which to act on the key questions and findings of the review:

- What actions are required to move transport inequity higher up the global sustainability agenda; and
  - How do we ensure that equity issues start to drive/influence investment decisions in transport?
- Although many of these recommendations are cross-cutting, they are divided into four sections:
- Substantive research
  - Capacity and knowledge building
  - Outreach and distribution of findings
  - Development of tools and materials

### Substantive research

1. Howe (2000) had noted that cycling and walking in particular 'have lost out in the competition for policy attention and funding'. This literature review revealed a paucity of studies attempting to understand this political economy question: why do pedestrian and cycling interventions remain low priority despite decades of high-level advice that these modes require urgent support. We therefore recommend an output specifically regarding this question (which would include primary research), with the intention to bolster the case for cycling and walking, based on an understanding of the political barriers or resistance.
2. Conduct a number of case studies (lessons learned) of 'micro-interventions' within developing and emerging economies, to strengthen the case for such

interventions and enable evidence-based decision-making. We would ask, for example, how has a particular intervention redressed transport inequity, and how can this intervention be replicated and upscaled? This work would assist in answering the questions raised in the literature review:

- Can the poor actually make use of this enhanced access; do they find better or higher-paying jobs, or access better health care, education opportunities, or social networks?'

Further, this work would contribute to capacity development by recruiting local researchers and assist with funding and training in monitoring and evaluation method.

3. The question of subsidies, payment mechanisms and integrated ticketing systems within developing and emerging economies is under-researched (or dismissed). It would be of value to prepare a review, and propose a number of viable mechanisms for consideration (for example, sustainable fare assistance to the urban poor, or payment mechanisms that do not require credit cards or bank accounts).
4. Outside the scope of this literature review was an investigation of the role for electric mobility, shared mobility options, and internet-based provision of services and travel information, in pro-poor, equitable transportation interventions. This is an important area in which to study in later phases of the iSTEP project.

## Capacity and knowledge building

1. Prepare a pro-poor, equity-based transport decision-making guideline and checklist for infrastructure/ project evaluation (with a focus on developing and emerging countries), supported by training, conference presentations and workshops). Such a tool would assist in understanding the key questions:
  - a. who reaps these benefits of the intervention?
  - b. who are the poor who will benefit from the transport action or intervention, and how can these benefits be more equitably distributed?
  - c. who are the poor who will not benefit from the action, and how can these benefits be more equitably distributed?
  - d. how will the non-poor benefit from the action?
2. Provide policy support and training to developing or emerging economies (at national, regional or local level) in drafting clear monitoring and evaluation programmes for use when planning and implementation work (see below).
3. This literature review focused particularly on 'new' sustainable transport solutions, such as Bus Rapid Transit, and on the revival of interest in bicycle mobility. A similar review would be useful regarding pedestrian interventions, as well as regarding upgrades or service improvements of existing public transportation services or systems (incremental approaches to service improvement). These findings, complemented by an understanding of the barriers to the implementation of low-key projects, will serve as important content for capacity building and training: how to deliver pro-poor interventions within a resource-constrained environment.

## Outreach and distribution of research

1. Prepare a media campaign (social media) and roving photographic exhibition (for workshops etc) along the

lines "what I want to be able to do is..." , to introduce the fine-grained human needs planners and decision-makers might forget in their quest for 'world-class' but unaffordable and not always context-conscious transport. What are the basics that a poor transport user wants? How are governments able to provide this this?

2. Lobby political and other decision-makers to include an equity impact assessment alongside the more usual social, environment or heritage impact assessment. Draft the relevant guidance documentation and online tool.
3. Martens, Golub & Robinson (2012) as well as Manaugh (2015) have stated that social equity goals and objectives are in many cases not translated into clearly specified objectives – and there remains no clear standard by which to measure whether the distribution of access improvements is fair or equitable. There therefore exists a clear opportunity to engage with this concern and move the debate forward with working definitions and indicators for input.

## Development of tools and materials

1. Develop a guideline or online tool to assist in decision-making trade-offs regarding the equity impact of climate-interventions (biogas, electric vehicles), and the climate impact of equity interventions (increased public transport provision) - supported by training, conference presentations and workshops).
2. Prepare an information sheet or briefing document mapping the current tools and methods used to audit accessibility (categorized and assessed by, for example, the level of expertise required, the technology required and availability thereof (cost, skills), the shortcomings and the most appropriate use for each).

## Appendix Two: Method

The literature search was conducted in English, searching English language scholarly journals using Science Direct (<http://www.sciencedirect.com/>) and Google Scholar (<http://scholar.google.co.za>).

Key words were used to search the following databases, starting from the year 2010, and the words 'city/cities' were added as filters. In addition, important publications not found in the first phase were recommended for inclusion by SLoCaT members and the project team. This included key peer-reviewed papers and reports published earlier than 2010.

Key words

transport +  
mobility +

- Access
- Development indicators
- Environmental justice
- Equity
- Fairness
- Human rights
- Inequality
- Poverty alleviation
- Social justice
- Social exclusion
- Social impact assessment
- Social inclusion
- Sustainable livelihoods
- Disadvantage
- Inclusivity
- Poverty
- Subsidies

Cross-cutting issues included integrated land-use and transport planning, system design, reliability, safety and security, public health concerns, governance and financing, air quality and carbon emissions, travel time, travel cost, travel distance, social inclusion, stakeholder engagement (access to planning and decision-making), and universal access. Universal design/universal access/disability were regarded as beyond the scope of this literature review (as a subject in its own right), and will be included only where sourced using the above key words.



# Transport, poverty alleviation and the principles of social justice

A literature review for the Inclusive Sustainable Transport in support of action Equity and Poverty (i-STEP) programme

*Partnership on Sustainable Low Carbon Transport (SLoCaT)*  
August, 2016