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Private opportunities, public benefits? The scope for private finance to deliver low-carbon transport systems in Kigali, Rwanda

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ABSTRACT

A significant portion of finance for a low-carbon transition is expected to come from private sources. This may be particularly the case in the transport sector, where there is a large private sector presence and substantial investment needs, and in low-income countries, where climate action is unlikely to be the first priority for public finances. However, it is unclear whether private finance can deliver the full range of actions that are needed for a low carbon transition, or what role the public sector can and should play to mobilise these resources. Kigali, the capital of Rwanda, is one of many cities in lower and middle income countries seeking to break away from business-as-usual trajectories and pursue more sustainable forms of urban development. In this paper, the economic case for a large set of low carbon transport investments in Kigali, Rwanda, is analysed from the perspective of a private investor and from the perspective of the city as an economic unit drawing on a data and methods used in a city-wide review of low carbon study of Kigali conducted in 2015 by the Climate Smart Cities team at the University of Leeds. Comparing the public and private perspectives provides the opportunity to explore the financing mechanisms and policy frameworks appropriate for different kinds of low-carbon investment, and to consider how governments in developing countries can lay the foundations for compact, connected low-carbon cities.

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1. Introduction

The transport sector accounted for 23% of global energy-related GHG emissions in 2010 and some projections indicate that emissions from this sector could rise by >70% by 2050 (Sims et al., 2014). Transport therefore needs to be central to global climate change mitigation efforts, and the question of how best to transition to lower carbon transport networks has received substantial attention (IEA, 2013; UN-HABITAT, 2009; Creutzig and He, 2009; Voukas and Palmer, 2012). At the same time, the sector's importance extends far beyond carbon emissions. Transport networks link people with employment opportunities, healthcare and education, shape communities and provide means of bringing goods and services to market. Efficient and accessible transport is therefore not just important for economic growth, but more fundamentally for human wellbeing.

In the urban centres of East Africa, and in many low and middle income countries more generally, low per capita incomes and historical underinvestment in public transport infrastructure have led to a dependence on walking, bicycle and motorbike (Oyesiku, 2001; Abuhamoud et al., 2011; Voukas and Palmer, 2012). However, with rising incomes urban residents are increasingly turning to private vehicles, fuelling investment in car-based transport networks (UN-HABITAT, 2009, 2010a; Sietchiping et al., 2012). This trend is evident across the Global South. Marcotullio et al. (2005), for example, find that transport emissions and energy use in developing countries are rising to meet U.S. (per capita) levels at much lower levels of income.

This trend has a number of negative consequences. Car-centred transport networks require more land, promote urban sprawl, raise congestion, increase expenditure on energy and generate air pollution that causes respiratory illness, particularly among vulnerable groups such as infants, the elderly and physical labourers (UN-HABITAT, 2009, 2010a; Goodwin, 2004; Litman, 2009). Dependence on private vehicles can also contribute to the development of two-tiered transport systems, where those without access to vehicles are forced to depend on non-motorised and informal public transport networks, often leading to greater exposure to air pollution and risk of traffic accidents. This compounds social and environmental inequalities (UN-HABITAT, 2009, 2010b). Critically, transport networks are costly and complex to change in the future as physical infrastructure—as well as social and political institutions—become 'locked-in' (IEA, 2013; Whitelegg, 2015; Driscoll, 2014; Rode et al., 2014).

By comparison, multi-modal transport networks that include well-connected mass transit infrastructure (buses, trams and trains) and non-motorised options (pedestrian walkways and cycling lanes) are less energy and emission-intensive, promote more compact forms of urban growth and are more socially inclusive (Kenworthy, 2006; Rode et al., 2014). However, these transport networks require substantial upfront capital investment, strategic urban planning and sophisticated technical and management capabilities, which can often be beyond the capacity of governments in low- and lower-middle income countries.

Recent research finds that substantial opportunity for private investment in low carbon transport exists in many cities. Gouldson et al. (2015a), for example, identify large-scale opportunities to invest in low-carbon transport in exemplar cities across a range of middle-income countries; the World Resource Institute finds that a low carbon pathway for urban transport could save $300 billion in annual infrastructure investment (Lefevre et al., 2016); and the New Climate Economy programme reports that investments in low-carbon urban transport across the world could have a net present value of >10 trillion USD (Sudmant et al., 2016).

What has not been sufficiently explored are the consequences of low carbon transport investments being led by private, rather than public, investors. This question is particularly significant in low-income countries where the state faces severe resource constraints. Yet private sector investors are likely to have narrower objectives than the state, focusing on investment returns over shorter timeframes and ignoring wider social and environmental benefits (EU, 2003; Grimsey and Lewis, 2002). The source of investment funding, in addition to its scale, is therefore likely to influence which investments are made, and by extension, the pathway to decarbonisation. However, discussions on this subject rarely evaluate, let alone disentangle, the economic opportunities for private and public actors, nor does the literature sufficiently engage with what for climate change is the most important question: the extent that private finance can bring about a shift to a low-carbon climate resilient society.

In this paper we explore the economic case for low-carbon investment in urban transport from the perspective of private and public investors. For private investors, we assess a traditional business case for investment in specific measures and develop a 'private scenario' that includes all those measure that would generate net economic returns to the investor at market interest rates. We compare this to the 'public case' for investments, where the cost of low carbon investments is compared against the city-wide economic savings from