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Incorporating stakeholder input into transport project selection – A step towards urban prosperity in developing countries?

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ABSTRACT

In 2013, UN-Habitat released the *State of The World's Cities 2012/2013* report introducing the *City Prosperity Index* (CPI) as a measure to guide urban decision makers. The report asserts that urban prosperity is one of the key human development issues facing the world. Transport is a basic component of urban infrastructure and is essential to urban prosperity. Urban transport system users in a given area comprise people with diverse background and socioeconomic characteristics including different ages, genders, income ranges, employment status, and experiential knowledge. Effective involvement of diverse urban populations is a necessary prerequisite to sustainable urban transport planning. This paper describes the development of a proposed framework, the Localized Sustainability Score (LSS), for screening urban transport projects based. Specifically, the framework assesses the relative importance of various locally applicable sustainability criteria and maps the ability of candidate urban transport projects to positively impact them. The development of the LSS is described via a case study in Accra, Ghana. Ultimately, the proposed LSS is seen as a useful means of relating transport infrastructure to various sustainability/urban prosperity measures. More specifically, the LSS framework can used to rank and priorities urban transport projects as part of a stakeholder-driven decision-making process. Development and application of the LSS framework does not require extensive collection of quantitative data; it is particularly suited to relating qualitative information (such as that contained in urban prosperity measurements) to the capabilities of urban transport projects to impact them. Continued development and application of the LSS can be used to develop richer understandings of various indices and how they reflect the lives of different demographic groups that make up an urban population. It is hoped that exploratory efforts like the development of the LSS and large-scale programs such as the CPI development by UN-Habitat will continue to draw attention to the need (and indeed capacity) to comprehensively approach urban development issues with a view to increasing urban prosperity.

Introduction

It is estimated that by 2030, more than 50% of the world population will be living in urbanized areas. The most rapid growth in these new urban dwellers is projected to be in cities and towns in the developing world (United Nations Secretariat, 2010). Many of these new urban dwellers will be poor, leading to deteriorating social and environmental conditions (Montgomery & Balk, 2012; Satterthwaite, 2007; UNFPA, 2007). In 2013, UN-Habitat released the *State of The World's Cities 2012/2013* report. In recognition of the trend towards increasing urbanization, especially in the developing world, the report asserts that urban prosperity is one of the key human development issues facing the world. As such, the report sets out a framework whereby the relationship between urban prosperity and the factors influencing and, ultimately, influenced by it can be viewed. In developing the new *City Prosperity Index* (CPI) to "identify opportunities and potential areas of action along the path of prosperity" UN-Habitat (2013) proposed the *Wheel of Urban Prosperity* to symbolize the relationship among five key components of urban prosperity.

Infrastructure (along with Equity and Social Inclusion, Environmental sustainability, Quality of Life, Productivity) is one of the five

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spokes on the wheel and the UN report refers to it as "the bedrock of prosperity" (UN-Habitat, 2013). Transport is a basic component of urban, indeed all manmade, infrastructure along with sanitation systems, power generation and delivery, telecommunications and the built environment as a whole. The literature is replete with examples of transport affects on *Productivity* and *Environmental sustainability* (e.g., Banister, 2002; Cooley, 1894; Gakenheimer, 1999; Gwilliam, 2003; Gwilliam & Shalizi, 1996; Leinbach, 1994; Njoh, 2012). Furthermore, a considerable amount has been written on how the mobility and accessibility provided through transport enhances social inclusion and can lead to greater levels of social equity (Ahmed, Lu, & Ye, 2008; Delbosc & Currie, 2011; Lucas, 2012). Ultimately, enhanced economic opportunities through increased productivity, protection from environmental degradation, and increased social cohesion can improve the *Quality of life* for millions of people around the world. So clearly, transport is essential to supporting and improving *Urban Prosperity*.

The converse of the above point is that failure to provide adequate transport can be a major barrier to urban prosperity (Chisano & Minnery, 2014; Dimitriou, 2010). Indeed, the UN report indicated that local experts from around the world ranked congested roads as the most important among nine common infrastructure deficiencies (congested roads, poor pedestrian facilities, power outages, flooding, slow/unaffordable internet facilities, leaking sewers, lack of potable water, lack of cooking energy and unreliable telephone service). The surveyed experts (from African, Asian and the Latin American countries) also ranked poor pedestrian facilities as the second most important deficiency (UN-Habitat, 2013).

This paper describes the development of a framework to screen urban transport projects in a developing country with respect to stakeholder input regarding needs and issues identified as locally relevant to sustainability and, thus, to urban prosperity. While the framework is not exclusively applicable to developing countries, it is presented in that context here as an exploratory project developed from a case study of Accra, Ghana (Jones, Tefe, & Appiah-Opoku, 2013). It is based on the premise that indigenous knowledge of local system users can be integrated with elements of scientific knowledge from transport professionals, to achieve more sustainable transport planning (and thus support prosperity) in rapidly urbanizing areas in developing countries.

Background

Transport characteristics of developing urban areas are quite different from those in industrialized nations. Yet many developing countries still rely on conventional transport planning approaches developed and used in an automobile-dependent, western context (Dimitriou, 2010; Feng, Zhang, Fujiwara, Hayashi, & Kato, 2010). Such systems are typically designed to maximize throughput for automobile traffic at the highest achievable levels of service. Such conventional approaches can be rigid and mode-specific, and in many cases do not adequately integrate analyses of the various modes prevalent in developing countries, such as high pedestrian volumes, bicycles, motorized two-wheelers, rickshaws, and reliance on informal public transport (Feng et al., 2010; Johnston, 2004; Khisty & Arslan, 2005; Samberg, Bassok, & Holman, 2011; Zheng, Atkinson-Palombo, McCahill, O'Hara, & Garrick, 2011). Expectedly, the transport sector expenditures of many developing countries are often narrowly focused on roadway construction (Freeman, 2009; Gwilliam & Shalizi, 1996;). Furthermore, the western methods, when applied in developing countries, can also be quite weak in public involvement and stakeholder participation. As such, they may not be able to sufficiently identify local needs and issues that may impact the sustainability of transport projects, plans and policies. In South Africa for instance, the guidelines are mostly based on American standards and do not make any provision for local sustainability requirements (Jennings & Covary, 2008).

So questions exist as to how well conventional transport planning approaches can promote sustainable transport provision in developing countries. Questions also exist about how limited resources can be used by developing countries to best meet specific, local urban transport needs especially those of the vulnerable. Thus, new methods are needed to address these complex issues of sustainable transport delivery (Awasthi & Omrani, 2009; Fouracre, Sohail, & Cavill, 2006; Jennings & Covary, 2008; Khisty & Arslan, 2005; Leinbach, 1994; Szyliowicz, 2003).

There is also a growing consensus regarding the need to explore indigenous knowledge in planning and land management for sustainable development (Agrawal, 1995; Briggs, 2005; Rist & Dahdouh-Guebas, 2006; World Bank, 1998). The application of indigenous knowledge to sustainable practices in developing countries is well documented. Appiah-Opoku (2005) sets out the potential role of indigenous knowledge in supporting environmental stewardship. The link is developed via a case study, using indigenous knowledge for environmental impact assessment in rural Ghana (Appiah-Opoku, 2007).

Indigenous knowledge exists mainly as tacit knowledge, which is personal and experiential. Polyani (1969) introduced the concepts of tacit and explicit knowledge, with the argument that tacit knowledge is informal and difficult to communicate formally. With regard to transport, it resides in both system users and providers. It forms the basis for problem-solving strategies for local communities and represents an important component of global knowledge on development issues (Briggs, 2005; World Bank, 1998). The potential contribution of tacit knowledge and its role in formal decision-making processes has been asserted by numerous researchers (Brömmelstroet & Bertolini, 2011; Innes, 1998; Khakee, Barbanente, & Borri, 2000; Scharmer & Kaufer, 2000). Explicit knowledge, on the other hand, connotes formal, scientific knowledge gained through data-driven experimentation, empirical analysis, development of theoretical understanding, etc. (Brömmelstroet & Bertolini, 2011) and is largely maintained by system providers (planners, engineers, administrators, policy makers, etc.).

Dekens (2007) and Mercer, Kelman, Suchet-Pearson, and Lioyd (2009) both describe the integration of indigenous and scientific knowledge for disaster preparedness. Rist and Dahdouh-Guebas (2006) document a series of studies to demonstrate the growing importance for the integration of scientific and indigenous knowledge for sustainable management of natural resources. The studies explored experiences from mangrove systems in Kenya, India and Sri Lanka. They also covered case studies in other ecosystems worldwide including Australia, Burkina Faso, Ecuador, Ethiopia, Guatemala, Indonesia, Nepal, Niger, Philippines, Senegal, South Africa and Tanzania. Stuart and Thompson-Fawcett (2010) present the observations of how traditional Maori people of New Zealand interact with their built environment and what lessons could be learnt from these indigenous experiences for sustainable urban design. Finally, Sillitoe, Dixon, Barr, (2005) developed a handbook for incorporating indigenous knowledge into project design and also for the design and implementation of indigenous knowledge research.

Drawing on the experiences of previous researchers, a model (Fig. 1) for integrating indigenous and scientific knowledge as it relates to urban transport was developed as a basis for the proposed Localized Sustainability Scores (LSS) framework. The development of the LSS framework is described via a case study of Accra, Ghana. The results of the case study are a set of relative rankings