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Sustainable passenger transport: Back to Brundtland ☆

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ABSTRACT

We argue that there is no clear definition of the concept sustainable passenger transport to help guide politicians in solving challenges at the global or regional level. Rather, the use of the concept has to an increasing extent reflected socially desirable attributes of local- and project-level problems, but these ignore the global challenges the concept was meant to solve. Going back to the Brundtland Report, we redefine the concept of 'sustainable passenger transport' and suggest an assessment method based on four equally important, main dimensions: safeguarding long-term ecological sustainability, satisfying basic transport needs, and promoting intra- and intergenerational equity. We also define indicators and threshold values that have to be met for each of these dimensions and then illustrate how to achieve sustainable passenger transport.

1. Introduction

There is as of yet no political or scientific agreement on the definition of sustainable passenger transport (Black, 2010; Schiller et al., 2010; Castillo and Pitfield, 2010; Litman and Burwell, 2006; Banister, 2005).[1] Rather, the use of the concept has to an increasing extent reflected socially desirable attributes of local and project level problems, while ignoring the global challenges the concept was supposed to solve. The diversity of definitions and interpretations of the concept has raised the risk that the concept will end up as mere rhetoric that offers little guidance for policy makers and scientists.

A review of sustainable passenger transport literature shows that the focus of mainstream literature on sustainable transport indeed has changed during the last two decades (Holden, 2007). Sustainable passenger transport problems are being addressed in new ways by researchers representing an increasing number of scientific disciplines applying different methodological approaches. The definition of the concept has changed to include a broader set of passenger transport types like work-related travel, everyday travel (e.g., Shiftan et al., 2003; Castillo and Pitfield, 2010; Amekudzi et al., 2009; Banister, 2011) and leisure-time travel (e.g. Black and Nijkamp, 2002; Mokhtarian, 2005; Banister, 2008; Holden and Linnerud, 2011). This has added to our understanding of the challenges posed by sustainable passenger transport but also to the complexity of how the concept is defined, measured, assessed and evaluated.

More importantly, the definition of the concept has changed to include a broader set of transport's impacts on society. Gudmundsson and Höjer (1996) focus on impacts on the environment and social equity. Black (2010) adds impacts on health

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[1] Applying the imperative of sustainable development to the transport sector has, however, led to several concepts denoted by terms such as sustainable transport, sustainable mobility, sustainable transportation, sustainable transport systems, and sustainability issues in transport (Holden, 2007). In the literature on transport and sustainable development, these terms are essentially synonymous. Variants of 'sustainable transport' seem to be the preferred term in North America, whereas 'sustainable mobility' variants are preferred in Europe (Black, 2003). We use the term 'sustainable transport' in this article.

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and security. Lautso and Toivanen (1999) include all of these impacts and add quality of life considerations. More recently, several studies have widened the list of impacts to include economic growth (e.g. Shiftan et al., 2003; Castillo and Pitfield, 2010; Amekudzi et al., 2009; UNCSD, 2007). Examples of issues dealt with by these and other studies include protecting wildlife and natural habitats, reducing levels of noise, promoting economic growth, facilitating education and public participation, reducing congestion levels, minimizing accidents and fatalities, ensuring stakeholder satisfaction, enhancing aesthetic dimensions of neighbourhoods, supporting cultural activities, increasing tourism's contribution to GDP, promoting liveable streets and neighbourhoods, and minimising transport-related crime.

Thus, sustainable transport is about to include every aspect of transport, which is socially desirable, but it also therefore risks becoming meaningless. To avoid a dilution of the concept, it may be helpful to first clarify the main dimensions of sustainable development by going back to its origin, the Brundtland Report (WCED, 1987), which set the standard and became the point of reference for every debate on sustainable development (Lafferty and Langhelle, 1999). We adapt these dimensions to the concept of sustainable transport, and by doing so, we redefine sustainable transport and suggest an assessment method based on four equally important main dimensions. We then proceed by defining suitable indicators and assign minimum/maximum thresholds for each dimension.

To construct a more precise definition of sustainable transport, we make some delimitations. First, we argue that *main* dimensions should be given priority over less important dimensions, and unless all threshold values related to these main dimensions are met, transport cannot be deemed sustainable.

Second, we argue that the main dimensions and their threshold values represent *equally important* targets where each needs to be fulfilled. This excludes the possibility of trading off an underperformance on one indicator against an over performance on another. Consequently, we argue against reducing sustainability to *one* single composite index (e.g. the Inclusive Wealth Index[2]). On the other hand, we have not chosen the other extreme, namely specifying a very long list of indicators (e.g. the 96 indicators suggested by the UN Commission on Sustainable Development (UNCSD, 2007).

Third, sustainability should ultimately be addressed at a global level. We are all part of a single human and natural system with complex interactions among all its parts. Although national territories, economies and societies are only one level of system organisations, it is perhaps the most *significant* level because governance is presently strongest at the national level (Dahl, 2012). Thus, dimensions, indicators and thresholds refer to the national level, although they are, as will be explained later, derived from global challenges.

Fourth, we focus on achieving sustainable transport in passenger mobility (including air transport), partly because of the need to limit the article's scope and partly because of our professional background. Nevertheless, many conclusions may eventually be relevant for the equally important challenge of achieving sustainable transport of goods.

The remainder of the article is organised as follows. In Section 2, we examine the Brundtland Report to derive four main dimensions of the concept of sustainable development. In Section 3, we adapt these four main dimensions of sustainability to the passenger transport sector. In Section 4, we discuss the challenges faced by different countries in achieving sustainable transport. We offer concluding remarks in Section 5.

2. The main dimensions of sustainable development

The large number of definitions and interpretations of sustainable development has made some scientists avoid using the term because it is too vague or even dismiss the concept altogether. Yet the persistence of the concept itself is remarkable. Despite all the problems in agreeing on a definition, sustainable development as an ideal is as persistent a political concept as are democracy, justice and liberty (O'Riordan, 1993; Lafferty, 2004).

2.1. Main and secondary dimensions

Four *main* dimensions of sustainable development can be derived from the Brundtland Report: safeguarding long-term ecological sustainability, satisfying basic human needs, and promoting intra- and intergenerational equity (WCED, 1987; Lafferty and Langhelle, 1999; Høyer, 2000; Holden and Linnerud, 2007).

In addition to these main dimensions, Høyer (2000) presents a number of *secondary* dimensions, which include preserving nature's intrinsic value, promoting protection of the environment, promoting public participation, and satisfying aspirations for an improved standard of living (or quality of life). Because these secondary dimensions are subordinated to the main dimensions, preserving nature's intrinsic value (a secondary dimension), for example, must give way whenever basic human needs (a main dimension) are threatened. Correspondingly, satisfying aspirations for a better life (secondary dimension) should be subordinated to safeguarding long-term ecological sustainability (main dimension).

Following this logic, we argue that economic growth is not one of the main dimensions of sustainable development. This runs contrary to the popular tripartite model focusing on the balance between environmental, social and economic issues. The desire for economic growth may be equivalent to aspiring for an improved standard of living far beyond what is regarded

[2] The International Human Dimensions Programme on Global Environmental Change (IHDP) launched of the Inclusive Wealth Report 2012 (UNU-IHDP and UNEP, 2012) at the Rio + 20 Conference in Brazil. The 2012 report features an index, the Inclusive Wealth Index (IWI), that measures the wealth of nations by addressing a country's capital assets, including manufactured, human and natural capital, and their corresponding values.