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Toward a typology of sustainability for cities

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Abstract: Sustainability responses must accelerate to avoid major risks to cities. Climate change impact on cities, likely to be significant if global sustainability initiatives are not quickened, is a paramount example of the risk. World wide meetings of city planning practitioners and researchers agree that an urgent agenda is to work together to empower cities and their governments with funds, tools and mentoring to make the responses needed. In the spirit of this urgent agenda, this paper introduces some practical methods for assessing sustainability associated with transport and urban form in our cities. A concept of strategic scans of future scenarios, which underpins the backcasting approach, has been introduced at the 12th World Conference on Transport Research(WCTR) in 2010 and has broken urban and transport planning trend. These strategic scans are based on a sustainability framework, the elements of which provide evidence based drivers of sustainability. The framework culminates in metric visualisations for each of the three pillars of sustainability. The paper details some of the operational aspects of these metrics in the form of environmental sustainability-accessibility space, putting into practice measures of environmental stewardship, social equity, economic efficiency, and the relationship among them. The paper concludes with a call of developing a typology of sustainability performance using the strategic scan methodology to extend the principles of the methodology into a useful tool for city governments and contribute to assembling a database of city forms, transport structures, and their sustainability performances.

Key words: transport; sustainability; cities; backcasting; climate change; metrics

1 Introduction

Sustainability has become a fundamental expectation in our societies today. With the experience of growing cities under stress through loss in environmental quality, liveability and numerous inequities, community and governments alike have an imperative to do things better and strive for values and a future vision that has collectively become known as sustainability. The reality of climate change is im-

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posing an overarching new timeframe for sustainability action.

A new imperative for sustainability responses and the clock is ticking. The need to respond is setting an urgent timeframe for cities to act. In 2009 Marseille Symposium by World Bank set an urgent agenda for cities to respond to climate change. Sustainability responses for mitigation and adaptation must accelerate to avoid major risks. The symposium set the challenge for practitioners and researchers to work together to empower cities and their governments with funds, tools and mentoring to make the responses needed.

The objective of this paper is to introduce some practical methods for enabling sustainability assessment in our cities to move from visions to operate infrastructure that delivers the sustainability outcomes needed. Specifically this paper connects to a research discussion at the 12th WCTR in 2010 which introduced the concept of strategic scans of future scenarios to underpin the backcasting approach for trend breaking urban and transport planning.

The paper concludes with a call of developing a typology of sustainability performance using the strategic scan methodology to extend the principles of the methodology into a useful tool for city governments and contribute to assembling a database of city forms, transport structures, and their sustainability performance.

2 Concept of strategic scan

It has been common in many cities for planning continuation of past trends. Transport planning, for example, often involves a process of estimating future demand based on recent past trends. The results in continuation of the status quo to transport supply, urban form, and other policy instruments. Issues such as climate change, rapidly increasing population and urbanization, and resource limitations are requiring future scenarios to be envisaged that are trend breaking. Over the past years one approach to developing trend breaking futures is to use vision and backcasting as a form of scenario building (Hickman and Bannister 2009). However a weakness in this method by itself, and indeed all methods for selecting a different future, is how to underpin the choice of scenarios and policy steps to get there with evidence based methods to reduce the risk of making the wrong choices.

As presented at the 12th World Conference on Transport Research in Lisbon (Black et al. 2010), the concept of providing sustainability strategic scan was introduced, with the aim of providing quick evidence based assessment to underpin the optioneering of different urban structures and transport networks coming from back casting techniques. The concept of the strategic scan process, also known as the land use and transport scenario assessment model, is shown in Fig. 1.

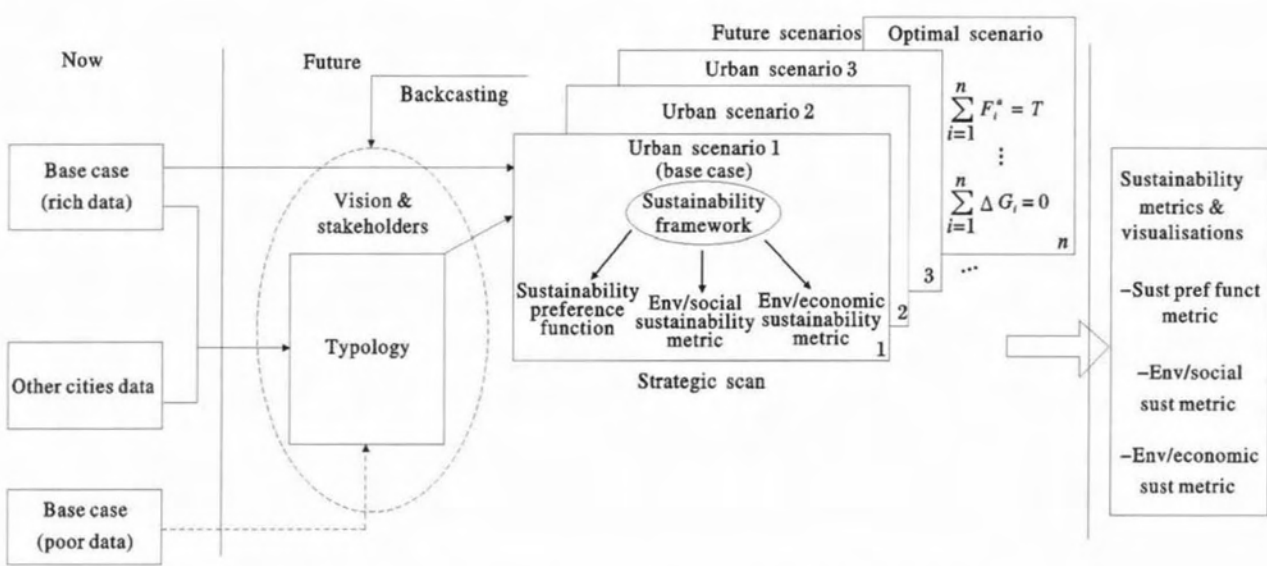

Fig. 1 Land use and transport scenario assessment model (Black et al. 2010)