

**Incorporating Social Justice into Transport Futures:  
Development of a New Futures Method for Strategic Transport  
Planning in Sub Saharan Africa**

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**Mr Attah Kojo Aikins.**

## **Abstract**

In the face of rising emissions from transport, urbanization, global warming, security concerns, digitalization, ageing population, peak oil uncertainty and a long-standing concern for accessibility, transport practitioners and academics understand that transport planning and policies must be seen to be taking account of, and addressing all these challenges in tandem. Encouragingly, a number of interdisciplinary and integrated tools have been developed to help address each or combinations of these issues. These approaches have, for example, stressed the need for policymakers to overcome organizational boundaries, accommodate some degree of uncertainty, and to engage with all relevant stakeholders in the decision-making environment in a process of systematic thinking that is holistic rather than linear. However, a review of these tools in the area of strategic transport planning shows that they are mostly used to imagine environmentally sustainable transport futures. There is very little in the literature in terms of their use to think about socially-just transport futures. This is against the backdrop of some understanding that the goal of environmentally sustainable transport futures is intricately linked to, and contingent on socially sustainable goals such as equity, fairness and justice.

To address this deficiency, this research develops a methodology for imagining socially-just transport futures by drawing upon three main futures approaches (scenario planning, backcasting and visioning) on one hand, and the principles of social justice on the other. The method was developed using desk-based research involving a review of the state-of-the-art in futures methods and conceptualisations of social justice principles. To critically evaluate its usefulness, the method was implemented in a workshop in Ghana with policymakers and other relevant stakeholders in the field of transport.

The findings show that the method developed in this thesis is a useful planning tool for imagining socially-just transport futures. This it does by helping transport planners and policymakers to more openly deal with uncertainty in long-term futures, opens up debates on the various pathways to achieve socially-just transport futures, and highlights the commitments and investments needed to actualise a vision of social justice in transport. The results also show that while transport planners and practitioners in Ghana are not oblivious to the concept of social justice, the term is generally narrowly-construed.

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## Chapter 1 – INTRODUCTION

### 1.1 Introduction

Relatively recently, there has been a burgeoning body of theoretical and empirical work on the principles of social justice as they relate to transport planning (Martens and Hurvitz, 2006; Martens, 2008; Beyazit, 2011; Martens et al., 2012; Lucas et al., 2015; Martens et al., 2015; Martens, 2017). One of the earliest contributions in this area is the work of Harvey (1973) on *Social Justice and the City* in which he identified transport facilities as a need in terms of reaching other services such as the job market. Beyazit (2011) argues that in the United Kingdom, the establishment of the Social Exclusion Unit in 1997 and its published report in 2003 is one of the reasons that account for the renewed interest in the concept of social justice. As discussed in detail in Section 1.2.1, there are other reasons that could explain the renewed interest in the subject. Nevertheless, in the field of transport, in particular, it appears that the interest in social justice is predicated on the understanding that a socially-just approach to transport planning places 'accessibility' at the heart of transport decision-making (Tyler, 2006). This is because limited accesses to places where opportunities of life are located contribute to a lack of participation of certain population groups in social and economic activities (Social Exclusion Unit, 2003). Social justice, therefore, offers the means by which the case for fairness and inclusivity in the provision of access can be made.

Following on from the above premise, a fundamental argument in this thesis is that if social justice is such an important precept, then it ought to be incorporated into transport decisions at the strategic decision-making level. Following Preston (2014), a distinction is made in this thesis between strategic, operational and tactical levels of decision-making. While the strategic decision-making level involves outlining the overall vision of a transport plan, the tactical level focuses on the medium-term and deals with the policy instruments required to deliver the plan. At the operational level, the focus is on marshalling the resources to deliver the plan. In the field of transport planning, the term 'strategic' therefore conveys a number of associations: a long-term plan as opposed to a project-based, short-term plan, a systemic view of the transportation system where all transport modes are considered in the development plan as complementary links, and the systems of institutions that work together to deliver the overall plan. Decisions about the overall direction of transport planning organizations are taken at this strategic level. It involves outlining the overall vision and mission of the transport planning organization

while asking broad questions such as: *what type of transportation system do we want to have 20 years from now?*

Encouragingly, a number of tools and approaches have been developed for thinking about transport at the strategic level that can be adapted to imagine socially-just transport futures. These approaches have, for example, stressed the need for policymakers to overcome organizational boundaries, accommodate some degree of uncertainty, and to engage with all relevant stakeholders in the decision-making environment in a process of systematic thinking that is holistic rather than linear (see for example, Givoni et al., 2014). Proponents of these approaches argue that in the face of rising emissions from transport, urbanization, global warming, security concerns, digitalization, an ageing population, peak oil uncertainty and a long-standing concern for accessibility, it is germane for transport planning to be seen to be taking account of, and addressing all these challenges. The approaches include, but not limited to, scenario planning (Yoe, 1983; Schwartz, 1991; Schoemaker, 1995; Harries, 2003; Stead and Banister, 2003), visioning (see Helling, 1998, Shipley and Newkirk, 1999; Shipley, 2000; Rauws and van Dijk, 2011), and backcasting (Robinson, 1990; Banister and Hickman, 2012). Even though these approaches are not mutually exclusive, they each focus on particular issues. For example, the main focus of the scenario planning methodology as used in strategic planning is to capture or 'bound' the inherent uncertainties of the future (Yoe, 1983; Schoemaker, 1995). Similarly, the main preoccupation of the backcasting methodology is to help develop desired futures or *visions* and the concomitant pathways to these futures (Robinson, 1990; Banister and Hickman, 2012). These tools are, however, not without their limitations. For example, while the scenario planning methodology is acknowledged as a powerful tool for 'bounding' the inherent uncertainties of the future by presenting policymakers with alternative narratives of how the future may unfold, it does not attempt to directly influence these alternative narratives or futures. The backcasting methodology, however, is more proactive in that regard in that it purposefully tries to shape a desired future by designing the 'procedural vehicles' in terms of the policies and pathways needed to actualize the desired end state. That is, it places some importance on the role of the government and other stakeholders in developing a desired future. A review of the existing tools shows, however, that they are mostly used to imagine environmentally sustainable transport futures. There is very little (if any) of their use to imagine socially sustainable transport futures. This is against the backdrop of some understanding that the goal of environmentally sustainable transport futures is intricately linked to, and contingent on socially sustainable goals such as equity, fairness and social justice (Timms et al.,



2012). While the reasons for the dearth of use of these approaches to imagine socially-just transport futures are not immediately clear from the literature, a possible reason is a lack of rigorous methods, tools and techniques. There is therefore some significant scope within this area for additional contributions.

Accepting the premise that social justice is an important precept that ought to be incorporated into strategic transport planning, an obvious follow-up question then is, 'how might the principles of social justice be incorporated into strategic transport planning?' It is argued in this thesis that by amalgamating various futures approaches into a single approach, the limitations of the individual approaches can be overcome. For clarity, three main futures approaches are adopted for the purposes of this thesis: scenario planning, backcasting and visioning. The reasons for adopting these methodologies in this thesis are discussed in Sections 1.2.1 to 1.2.3 below. A goal of this research, therefore, is to explore how the instrumentality of these existing futures approaches could be recast to develop a method for imagining socially-just transport futures.

This chapter sets out to provide a brief background to this research agenda. Section 1.2 provides an overview of the justifications for this research. This is followed by a statement of the main objectives guiding this research in Section 1.3. The chapter concludes in Section 1.5 with a brief explanation of the structure of the thesis.

## **1.2 Importance of and Motivations for the Study**

This section builds on the main themes highlighted in Section 1.1 and outlines the intellectual significance and the main motivations behind the research objectives to be outlined in Section 1.3.

### **1.2.1 Why incorporate the principles of social justice into strategic transport planning?**

This section outlines the reasons for focusing on the principles of social justice instead of the other constructs that fall under the rubric of social sustainability such as quality of life. There are a number of reasons that explain the focus in this research on the principles of social justice. First, principles of social justice by themselves have some intrinsic worth in that concepts such as equality and liberty are valuable in their own right. They emanate from fundamental religious, and philosophical beliefs that guide human action in many areas of life. Second, principles of social justice hold important places in terms of complementing what defines 'development' and 'positive' progress

(Jones et al., 2009). Third, concepts of social justice such as equality and liberty are complementary to freedom-oriented concepts such as rights or political liberty in defining a great deal of what people see as 'valuable' in society. Fourth, with specific reference to developing contexts such as Sub Saharan African (SSA) countries, social justice plays a constituent role alongside growth in reducing absolute poverty. Hence, both growth and distributional policies are extremely important in helping to reduce poverty. Fifth, some evidence suggests that justice or fairness has many strong causal effects on efficiency and economic growth, poverty reduction, social cohesion and voice (Jones et al., 2009). This is a strong instrumental justification for promoting social justice as a way of helping to achieve these other goals.

Sixth, and with specific reference to the field of transport, a fundamental concern of transportation planning is the distribution of access (Martens, 2011). Defined as "the spatial distribution of activities about a point, adjusted for the ability and desire of people...to overcome spatial separation" (Hansen, 1959 as cited in Martens, 2017 p.11), accessibility is central to the discourse on social justice in transport. This is because a lack of access contributes to the processes of 'social exclusion'. This is a multidimensional construct that seeks to express how the lack or denial of resources, rights, goods, and services, leads to the inability of certain population groups to participate in the normal relationships and activities available to most people in a society, whether in economic, social, cultural or political arenas (Levitas et al., 2007). The point here is that limited access to places where opportunities of life are located contribute to a lack of participation of certain population groups in social and economic activities (Social Exclusion Unit, 2003). Following on from the discussion so far, an important reason for the incorporation of social justice into strategic transport planning is that it offers the means by which the case for fairness and inclusivity in the provision of access can be made. A socially-just approach to transport planning places accessibility at the heart of transport decision-making. This is because transport decision-making based on the principles of social justice will aim to make decisions based on assuring the level of accessibility necessary for the transport disadvantaged to participate in the normal activities of life (for example, access to jobs, health facilities and markets).

A fundamental argument in this thesis is that if social justice is such an important precept in transport, then a good starting point for ensuring that its goals are achieved is at the strategic decision-making level where overall visions for transport plans and their high level objectives are specified. For the purposes of the present research, the distinction between strategic, tactical and operational levels of decision-making referred to in

Section 1.1 is important. This is because while there is some evidence at the tactical or operational levels to suggest that concepts of social justice are incorporated into transport planning practices in SSA, it is not clear whether this is merely serendipitous. For example, a review of the current state of the practice in strategic transport planning in SSA suggests that even where justice or some constructs related to it are discussed, the discussions are generally not expressed in explicit social justice terms. A possible result is that transport planners and practitioners in these contexts remain largely oblivious to the underpinning moral and philosophical principles upon which their policy choices and evaluation frameworks may be based and so may overlook the inherent value biases within them.

### **1.2.2 Why use the scenario planning methodology?**

Transport more than ever before faces new and emerging challenges that may significantly reshape transportation priorities and needs. These challenges may derive from the effects of major global events, such as changes in the cost of fuels, climate change, and new technology, and from local or domestic trends such as changes in land use patterns, limitations in current transportation finance methods and changing demographics and lifestyle expectations. These challenges are often couched and expressed in terms of 'uncertainty', understood here as the absence of perfect information about a situation or something (Yoe, 1983). Even though uncertainty is not unknown in the field of transport, there is a general lack of attention to the term both in the academic literature and in practice (Rasouli and Timmerman, 2012). Rasouli and Timmerman (2012) argue that this may be because the policy development process finds it more efficient and effective to ignore the issue of uncertainty altogether. This is against the backdrop of the importance of the concept in general and in transportation planning in particular. For example, Ranger and Garbett-Shiels (2011) argue that developing countries are more vulnerable (socially and economically) to the risks of uncertainty because of their lower adaptation capacity, weaker governance institutions, and fewer resources to invest in adaptation (Ranger and Garbett-Shiels, 2011). In addition, developing contexts, in particular, may come up against greater barriers to adaptation to uncertainty such as a lack of information, capacity and relevant skills, resource constraints, more pressing near-term needs, a lack of political will and weaker institutions (Ranger and Garbett-Shiels, 2011). This suggests that there is an even greater need to consider the different levels of uncertainty that may shape the environments within which transport decisions may play out.

Proponents of the scenario planning methodology in transport (see Muñoz-Loustaunau et al., 1999; Shiftan et al., 2003; Stead and Banister, 2003) argue that while other approaches such as forecast-based approaches may be indispensable in the transport planner's toolbox, they remain less powerful when planning decisions are considered over longer timeframes such as 20-30 years. In addition, some authors argue that the use of forecast-based approaches in strategic decision-making underestimates the importance of uncertainty in shaping the future. Some of these authors argue that underestimating the primacy of uncertainty can result in strategies that neither defend the decision-context against the threats of the future nor enable it to take advantage of the opportunities that future uncertainties may present. With specific reference to the concept of social justice and for the purposes of this thesis, the issue of uncertainty is particularly important because transport planners and policymakers face the difficult challenge of planning socially equitable transport futures for their citizens and to do so in uncertain global economic environments. By using the scenario planning methodology with its focus on multiple futures, the argument underpinning its use in this thesis is that it will allow policymakers and transport planners to manage the uncertainties inherent in the increasingly neoliberal environment in which their decisions play out.

### **1.2.3 Why use the visioning methodology?**

For the purposes of this thesis, visioning is understood as a method for devising desired futures. It is distinct from the scenario planning methodology because its main goal is to 'hone in' on particular futures as opposed to considering multiple, plausible futures. A fundamental reason for using the visioning methodology in this thesis, therefore, is the ability of the method to allow policymakers to hone in on the particular future they desire. This is important because methodologies such as the scenario planning approach may shed light on the potential changes that are outside the control of policymakers but do not specify which of a range of futures a transport planning organization may want to try to make happen. Visioning fills this 'gap' by helping policymakers to identify a particular desired future from a range of plausible, multiple futures.

### **1.2.4 Why use the backcasting methodology?**

Used in the context of the present research, backcasting is understood as a method for designing the pathways to desirable futures. In other words, the backcasting methodology takes a normative view of desirable futures and has as one of its focuses, the development of "the pathway from where we might want to be back to the present" (Banister and Hickman, 2012, p.283-293). Several reasons inform the choice of the

backcasting methodology in this thesis. First, transport practitioners recognize that transportation problems are far-reaching and difficult to address through incremental policies (Givoni et al., 2012; Barrella and Amekudzi, 2011). Also, ensuring that transport policies deliver their intended outcomes is an equally cumbersome process that requires the design of not just incremental policies but a package of policies (Givoni et al., 2012). Some scholars in the field of transport, therefore, argue that the inherent complexities of transport problems warrant a departure from the status quo that is forecasting. Methods such as backcasting, particularly through their participatory processes, potentiate the possibility of taking an active rather than a passive approach to developing desirable future images and the concomitant packages of policies for actualizing the desired futures. In addition, backcasting by focusing on developing pathways (in terms of packages of policies and timelines) offers a useful heuristic framework for dealing with the "wicked problems" (Rittel and Webber, 1973) that characterize transport planning. For social justice, the use of participatory approaches in backcasting is particularly useful in that it offers the platform for the different stakeholders (representing the different voices of what might be considered socially-just) to articulate their views in a social learning environment. Furthermore, unlike other methodologies such as forecasting, backcasting seeks innovative approaches to achieve a desirable future, allowing room for discovery and creativity (Barrella and Amekudzi, 2011). Finally, an important reason for the use of the backcasting approach in this thesis is that it can provide a realistic view of what needs to be done (or sacrificed) in order to achieve a socially-just transport future and cultivate stakeholders to provide the required support for implementation.

### **1.3 Objectives of the Research**

The overriding aim of the present research is to develop a method for imagining socially-just transport futures. The specific objectives are:

- (1) To develop a futures method to help transport practitioners in Sub Saharan Africa to imagine socially-just transport futures;
- (2) To implement and critically evaluate the usefulness of the futures method developed in (1) using Ghana as a case study.

### **1.4 Scope of the Research**

In developing the methodology proposed in this thesis, this research brings together two seemingly disparate fields: futures studies and the principles of social justice. Each of

these themes has a rich body of literature and tempting side issues that are of importance to the field of transport planning in Sub Saharan Africa. However, to maintain focus and clarity, some of these 'tempting side issues' need to be excluded from the scope of the present research. To be clear, the focus of this thesis is on developing a methodology for imagining socially-just transport futures at the national, regional and local levels of transport decision-making in Sub Saharan Africa. As a result, other peripheral issues receive attention only to the extent of their relevance to the development of the method proposed in this research. While the method may find application in other transport planning jurisdictions, its focus is on strategic transport planning in Sub Saharan Africa.

Given that the term "social justice" is polysemic, it is instructive to note that the focus here is on distributive justice as opposed to procedural and interactional justice. Under distributive justice however, the remit is on the principles upon which transport related benefits (accessibility) are to be distributed. These 'principles' are, however, conceptualised in this thesis as the 'values' that underpin strategic decisions. This is because the futures method proposed in this research is conceptualised at the strategic decision-making level and at this level, it is this researcher's contention that 'values' are important considerations. Consequently, other components of distributive justice such as the 'object of distribution' and the nature and categories of the recipients of the said object of distribution are taken as givens. Similarly, other constructs of social justice such as procedural justice, even though relevant and interesting to the Sub Saharan African context, are treated on the periphery. For example, while policy choices are an important focus area for the methodology proposed in this research, it is recognised that the underlying processes for making policy choices are complex and depend on the interplay of the political and decision-making realities of particular jurisdictions. These issues are beyond the scope of the present research and there will not be any detailed treatment of the administrative and political arrangements for transport and urban decision-making in Sub Saharan Africa.

In the preceding paragraph, emphasis is placed on the word, 'strategic', to underscore the point that the proposed futures method is not intended to be used at the 'tactical' and/or 'operational' levels where relatively short term or day-to-day issues are considered. For example, even though the concern in this thesis is on distributive justice, it is not within the scope of this research to investigate the overall progressivity or regressivity (or distributional impacts) of transport policies such as congestion

charging or public transport subsidies. These tempting side issues may be taken up by future research.

Finally, it is not intended in this research to specify which values or distributive principles ought to take precedence in a strategic decision-making process. Instead, this research recognises the importance of value pluralisms and the role such values may play in (strategic) decision-making in the increasingly liberalising democracies in Sub Saharan Africa.

## **1.5 Structure of the Thesis**

The thesis is organized into eight chapters as shown in Figure 1.1. This introductory chapter has presented some background context, motivations, research objectives, the scope of the research and an outline of the thesis. **Chapter 2** provides a review of the literature relevant to the objectives of this research. The chapter has two main parts: the first part reviews the literature on the principles of social justice. The second part reviews the literature on the methods for imagining transport futures. In **Chapter 3**, the overall methodology and the specific methods used to address each of the objectives of the present research is provided. It covers issues of data collection and analysis, the strengths and limitations of particular approaches, and why some approaches were chosen over other meaningful alternatives. **Chapter 4** then develops the method proposed in the present research. **Chapter 5** presents and justifies the use of Ghana as the case study country to implement and assess the usefulness of the method developed in this thesis. In **Chapter 6**, the implementation of the proposed method in the Ghanaian case study is described. **Chapter 7** then presents the results of the case study application in Ghana by analysing and interpreting the data collected. **Chapter 8** concludes by drawing together some of the main findings of the present research, addresses the main limitations of the research, suggests future research and reflects on the main issues addressed in the present research.

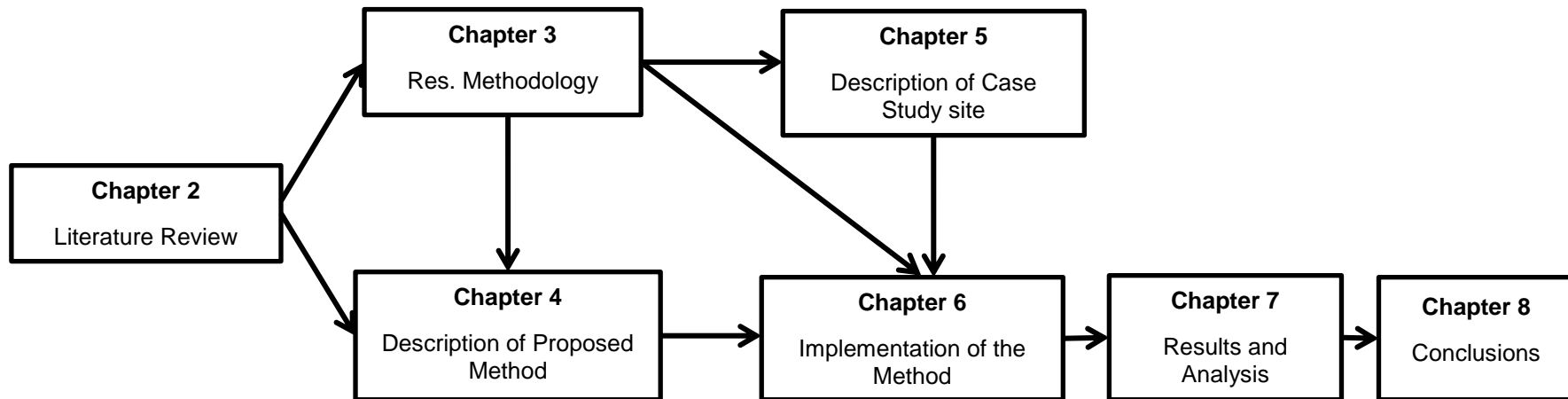


Figure 1.1: A representation of how the chapters in this thesis are linked together.



## Chapter 2 – LITERATURE REVIEW

### 2.1 Introduction

This chapter critically reviews the literature relevant to the main themes outlined in Section 1.2. The overall aim is to inform, integrate and evaluate the literature on the methods for imagining transport futures on one hand, and the concepts of social justice as they relate to transport planning and practice on the other. To guide the review, the following literature review questions were formulated:

- (1) What is the current state of knowledge in the conceptualisations of social justice principles in general, and as they relate to transport planning?
- (2) What is the current state of knowledge in the conceptualisations of social justice in transport planning in Sub Saharan Africa (SSA)?
- (3) What is the current state of knowledge in the approaches to imagining transport futures?
- (4) How is the concept of social justice now addressed (if at all) in the approaches to imagining transport futures?

Importantly, this chapter identifies gaps in the literature to which this research seeks to contribute new methods, results, and understanding. This chapter is structured as follows: Section 2.2 focuses on the principles of social justice and their application in transport planning in general and in SSA in particular. Section 2.3 reviews the approaches used to imagine transport futures, and their application to transport planning practices in Sub Saharan Africa. In Section 2.4, the focus is on the ethical matrix tool used for facilitating ethical deliberations. The chapter concludes in Section 2.5 with a summary of the main themes addressed in the chapter.

### 2.2 Principles of Social Justice

The term ‘social justice’ is a construct of ‘ethics’ (see Figure 2.1) - a field of moral philosophy that involves systematizing, defending, and recommending concepts of right and wrong behaviour<sup>1</sup>. Moral philosophers distinguish between three types of ethical theories (ibid):

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<sup>1</sup> Internet Encyclopaedia of Philosophy (<http://www.iep.utm.edu/ethics/>) - accessed June 2015.

- i. Metaethics: which investigates where our original ethical principles come from and what they mean (i.e. are they mere social inventions or are they expressions of individual emotions);
- ii. Normative ethics: a practical approach to ethics which seeks to arrive at moral standards that ought to regulate right and wrong conduct;
- iii. Applied ethics: This involves examining specific issues such as abortion, animal rights, and environmental concerns.

It is beyond the scope of this thesis to discuss each of the above concepts. All the constructs have however been mentioned here for completeness. For the purposes of this thesis, the focus is on the concept of social justice because of its relevance to the field of transport (see Martens, 2006; Martens, et al., 2015). As already highlighted, Figure 2.1 shows that the term social justice is a construct of normative ethics that deals with the moral standards that ought to regulate right and wrong conduct.

Some of the earliest writings on the term social justice can be found in the works of Plato (423-380 BC) and Aristotle (384-322 BC). Plato argues that justice is achieved when each individual in a social order receives goods and services based on their prescribed standing in the social order. Similarly, Aristotle argues that justice is nothing but a principle that ensures social order by controlling the distribution of benefits. The above definitions suggest that for both Plato and Aristotle, 'unequals' in the 'social order' are to be treated unequally and there is no challenge to the existing structures of the social system. In addition, these definitions appear to suggest that the term social justice emphasizes the *unequal* distribution of benefits based on what people deserve in accordance with their social status or standing (National Pro Bono Resource Centre, 2011)<sup>2</sup>.

In the 17<sup>th</sup> and 18<sup>th</sup> centuries, however, social justice was used to rationalise the consolidation of state power under the authority of absolute monarchs. Here, the state was perceived as an indispensable appendage to a just society (ibid). This suggests that in the 17<sup>th</sup> and 18<sup>th</sup> centuries, understandings of social justice were consistent with the emergence of capitalism (Reisch, 2002 as cited in National Pro Bono Resource Centre, 2011).

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<sup>2</sup> [www.nationalprobono.org.au](http://www.nationalprobono.org.au) accessed 15/06/2014

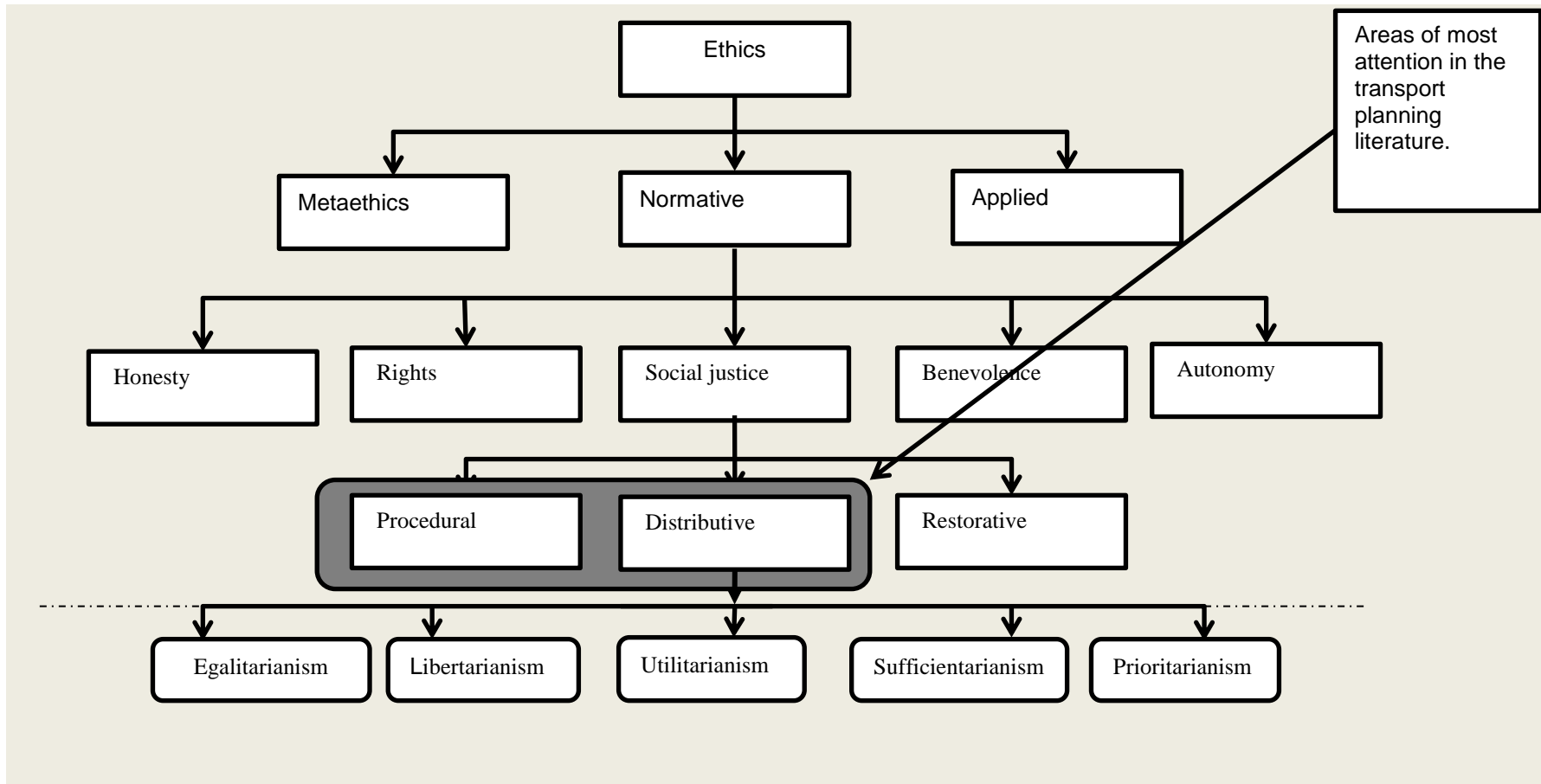


Figure 2.1: The author's conceptualisation of how social justice relates to ethical principles.

For scholars of the 18th Century (for example, Rousseau, 1712-1778 and his contemporaries), "the pursuit and realization of social justice were linked to the preservation of individual liberty or freedom, achievement of equality (of rights, opportunities, and outcomes) and the establishment of common bonds of all humanity." These scholars, therefore, emphasized individual liberty as the cornerstone of justice, the basis of the formation of most institutions in the West (National Pro Bono Resource Centre, 2011).

Relatively recently, social justice has been defined as the process of "promoting a just society by challenging injustice and valuing diversity" (Toowoomba Catholic Education, 2006)<sup>3</sup>. In other words, a system is said to be socially-just when "all people share a common humanity and therefore have a right to equitable treatment, support for their human rights, and a fair allocation of community resources" (ibid). In a socially-just society therefore, members of the society are "not [to] be discriminated against, nor their welfare and well-being constrained or prejudiced based on gender, sexuality, religion, political affiliations, age, race, belief, disability, location, social class, socioeconomic circumstances, or other characteristics of background or group membership" (ibid).

The review above suggests that the term "social justice" is a polysemic construct that means different things to different people. For example, it is often expressed as an ideal and or as a mobilizing idea (Bonnycastle, 2011). As an ideal, social justice focuses on abstract or idyllic terms on how the good and bad things in life are to be distributed among the members of human societies (Miller, 1991). As a mobilizing idea, on the other hand, social justice is understood as an idea that can mobilize people, making injustice visible, contestable, and changeable (Newman and Yeates 2008 as cited in Bonnycastle, 2011). The contested and pluralistic conceptualizations of the term social justice has therefore led to a mishmash of concepts, theories, and approaches (Bonnycastle, 2011).

For the purposes of clarity, the definition of social justice adopted in this thesis is that given by Jost et al., (2010 p.1122) that social justice is "a state of affairs (either actual or ideal) in which,

- i. Benefits and burdens in society are dispersed in accordance with some allocation principle (or set of principles);

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<sup>3</sup> <http://www.tsjc.org/> accessed June 2015

- ii. Procedures, norms and rules that govern political and other forms of decision-making, preserve the basic rights, liberties and entitlements of individuals and groups; and
- iii. Human beings (and perhaps other species) are treated with dignity and respect not only by authorities but also by other relevant social actors, including fellow citizens”.

This means that social justice corresponds to distributive, procedural and interactional justice (see Figure 2.1). This definition is adopted in the present research because it captures the two main themes often encountered in discussions about social justice in the field of transport planning – procedural justice and distributive justice (see (Martens and Hurvitz, 2006; Martens, 2008; Beyazit, 2011; Martens et al., 2012; Lucas et al., 2015; Martens et al., 2015; Martens, 2017)). For example, Beyazit (2011 p.117) defines social justice as the “fairness in the physical distribution of goods, accessibility for people, affordability of all types of services and distribution of other gains (such as increases in land and property prices)”. This conceptualisation appears to correspond to notions of distributive justice. Similarly, Tyler (2004) framed his discussions of public transport (or accessibility) in terms of transport justice. Furthermore, in discussing “environmental justice”, the US Department of Transport (USDOT) commits to three basic principles including;

- i. Ensuring that minority and low-income groups *participate* fully and fairly in the transport decision-making process;
- ii. Avoiding, mitigating or minimising disproportionately high environmental, social and economic impacts of transport decision-making on low income and minorities in the population;
- iii. Preventing the denial, reduction and delay in the receipt of benefits by minorities in the population.

These three elements generally correspond to distributive and procedural justice and together with the examples cited earlier, give credence to the contention that these constructs are more relevant to the field of transport. For example, the element of “participation” in the definition above speaks directly to the issue of procedural justice (see Sections 2.2.1 below). However, and as discussed further in Section 2.2.2, the focus of this thesis is on how accessibility might be equitably distributed at the strategic decision-making level. In other words, the focus of this thesis is not on how transport-

related disbenefits such as environmental externalities might be distributed. To be clear, the discussion of procedural justice in Section 2.2.1 is for completeness only.

### 2.2.1 Procedural Justice

Procedural justice relates to the methods, processes, and procedures by which decisions about the allocation of resources are made (Jost et al., 2010). A central argument underpinning this conception of justice is that the perceived fairness or otherwise of a system is determined to a greater extent by the fairness or otherwise of the decision-making processes. In other words, in evaluating the fairness of the outcome of a decision, procedural justice focuses on the processes and tools used by third-party decision-makers to reach an outcome (Thibaut and Walker, 1975; Leventhal, 1980).

A critical question however is, *do just processes result in just outcomes?* A number of scholars including, relatively recently, Susan Fainstein (2010), have raised this question. Susan Fainstein noted that the ideal that everyone's opinion ought to be fairly represented in the decision-making process is an important normative argument but not a sufficient one. This is because it does not adequately deal with the "classic conundrums of democracy" (i.e. ensuring adequate representation of all interest groups, socially excluded groups, avoiding tokenism in public participation and preventing institutionally and economically powerful interests from defining the policy agenda (see Fainstein, 2010 p.24). Similarly, Leventhal (1980) argues that while 'voice' is important in ensuring procedural justice, it is by no means the only consideration. The author argues that to be considered fair, the process must meet six main criteria including that decisions must be made:

1. Consistently across instances and time periods;
2. Neutrally (i.e. without bias, preconceptions or self-interest);
3. On the basis of accurate information;
4. With an opportunity to make corrections where the need arises;
5. Taking into consideration the interests of all relevant stakeholders and
6. Ethically.

Essentially, what this means is that when people are afforded these types of 'perceived controls' during the decision-making process, they can trust that the procedures will be fair and that their short- and long-term outcomes will be favourable as well.

In the field of transport, it appears that discussions about procedural justice are often not expressed in explicit 'procedural justice' terms. Instead, issues of procedural justice are discussed in terms of 'environmental justice' (see Sen, 2008) or 'public participation'

(see e.g. Bickerstaff et al., 2002; Gil et al., 2011) terms. For example, in his review of the literature on environmental justice, Sen (2008) noted among other things that the idea behind the passage of the Intermodal Transportation Equity Act (ISTEA) of 1991 is to increase public involvement in the transportation planning process. This requires the public to

- review and comment on key transportation decisions,
- ensure that the public involvement process is inclusive,
- involve those who were traditionally underserved by transportation systems, and
- requiring the demonstration of explicit consideration and response to public input.

In the field of transport, the 'participation' literature highlights themes similarly used in the environmental justice literature - participation, inclusivity, public involvement. For example, Bickerstaff et al. (2002) identify six guiding principles for 'effective participation': inclusive, open, interactive, continuous, begin early in the process, and with effective feedback of participants. It is instructive to note that for the purposes of this thesis, procedural justice has been reviewed here for completeness only. Following Walker et al., (1979), it is taken as a given in this research that by allowing stakeholders in the transport decision-making process to present evidence on their own behalf and by allowing them to have an input in the rendering of the decision, the short- and long-term outcomes of the decisions will be favourable to them.

### **2.2.2 Distributive Justice**

Distributive justice refers to the social frameworks (i.e. values, laws, institutions, policies, etc.) in each society that result in different distributions of burdens and benefits across members of each society. These social frameworks are the result of the interplay of social, economic, political and human processes which processes change over time. Distributive justice therefore focuses on specifying what constitutes a just distribution of goods among members of society (Jost et al., 2010). Generally, the literature<sup>4</sup> suggests that the scope of distributive justice covers three main questions:

- i. What is considered important in the distribution process (i.e. the object of distribution): could it be wealth, job opportunities, welfare, utility, etc.?

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<sup>4</sup> See <http://plato.stanford.edu/entries/justice-distributive/> accessed 07/11/16

- ii. The nature and categories of the recipients of the said object of distribution: (for example, individuals, groups of persons based on income, social class etc.)
- iii. The principle/s upon which the object of distribution is/are to be distributed (e.g. equality, maximisation, according to free transactions and according to individual characteristics, among others).

While there appears to be little debate about the understandings of the first and second components of distributive justice outlined above, the same cannot be said of the third component (that is, distributive principles). This is because the moral philosophy literature highlights a number of principles that can be used to distribute benefits and burdens in society, with each set of principles having its advocates. Some of these principles relevant to the field of transport are discussed in Sections 2.2.2.1 to 2.2.2.5. Before that, however, it is significant to note that this research is set at the strategic level. At this level, there is some understanding that values are important in that the values of an organisation serve as the 'glue' that keep the organisation's vision and mission together. Following on from that premise, the distributive principles discussed below must be understood as the 'values' that guide the distribution of the transport good. It is also significant to note that while all three components of distributive justice are important, the focus in this thesis is on 'distributive principles' and not on the object of distribution or the recipients of the said distribution. These other components are taken as givens. Furthermore, while distributive principles vary along different dimensions, it is important to keep in mind that the broad categories outlined below necessarily involve some over-simplifications. This is especially true in terms of the criticisms of the principles. This is because some of these criticisms apply equally to every principle. In Sections 2.2.2.1 to 2.2.2.5 that follow, and to give scope to the review, each subsection will seek to explore:

- (1) What each distributive principle means from the standpoint of moral philosophy;
- (2) What transport strategies may be justified on grounds of a particular distributive principle? For example, what transport strategies may be justified on sufficientarian grounds?
- (3) What are the arguments for and against each distributive principle?

### **2.2.2.1 Rawlsianism**

One of the most vociferous critics of utilitarianism (see Section 2.2.2.2) was John Rawls in his book: *A Theory of Justice* (1971 as revised). Indeed, in the preface to the revised version of this book, Rawls (1999 p.xi) stated that the main goal of his book was to “work



out a conception of justice that provides a reasonably systematic alternative to utilitarianism". He contended that until such a reasonably systematic alternative to utilitarianism is found, utilitarianism would continue to dominate the Anglo-Saxon tradition of political thought.

Rawls maintained that social institutions generally distort people's views by sometimes generating a sense of resentment, false consciousness and alienation by habituating and indoctrinating those who grow under these social institutions. For people to obtain critical leverage against the extant social institutions, therefore, Rawls proposed and used a thought experiment that used what he called the Original Position (OP). The OP asks the question: "what principles of social justice would be chosen by parties thoroughly knowledgeable about human affairs in general but wholly deprived—by the "veil of ignorance" (Vol)—of information about the particular person or persons they represent?" (ibid). The OP and the Vol are therefore central to Rawls' theory of justice.

The OP aims to set the stage for the moral obligations considered necessary for any resulting choice to be fair and to insulate the results of any resulting choices from the influence of the existing social order. The Veil of Ignorance (Vol) on the other hand provides the assurance that each party to the choice is equally situated such that none has greater power or "threat of advantage" over the other. The Vol also seeks to insulate the parties' choice from contingencies such as luck that underlie variations in people's natural capabilities, talents, social backgrounds, and their society's historical circumstances. Rawls assumed that society is characterized by "circumstances of justice" including that:

- Material goods are scarce, but moderately so;
- There exists a plurality of worldviews or "conceptions of good" including moral, religious and secular.

Rawls argued that under the hypothetical conditions he specified, only fair or just principles will be chosen. This is so because of the hypothetical conditions he imposes on the situation of the people making the choice. Under those conditions therefore, Rawls argues that people would choose the following conjunction of principles:

1. The equal liberty principle (i.e. each person is to have the maximum civil liberties compatible with the same liberties for all);

2. Social and economic inequalities are to be arranged so that they are both (a) reasonably expected to be to everyone's advantage and (b) attached to positions and offices open to all.

These principles are referred to respectively as the Liberty Principle and the Equality Principle. The Liberty Principle seeks to establish basic liberties (for e.g. freedom of association, speech, expression and all the freedoms asserted in the liberal tradition) for all citizens. The second principle is further broken down into two: *Fair Equality of Opportunity* and the *Difference Principle*. While the principle of Fair Equality of Opportunities argues that positions and offices must be open to any individual irrespective of his/her social background, ethnicity or sex, the Difference Principle on the other hand regulates inequalities – it permits inequalities if they work to the advantage of the least advantaged in society. Rawls maintains that these principles are to have lexical priority, such that basic liberty is ordered above Fair Equality and Fair Equality above the Difference Principle.

*What do all these theoretical discussions on Rawlsianism mean in (strategic transport planning) practice?* In other words, what does this 'armchair theorizing' mean in practical terms? In what appears to be an operationalisation of Rawls' justice theory, Frohlich and Oppenheimer (1992) argued that the key to understanding issues of justice is to choose under conditions of impartiality. To meet the conditions of impartiality, experiments were set up such that the subjects did not know what was in their immediate self-interest, yet they must choose the principle/s by which they will run their affairs as a group. The subjects were given four principles:

- maximising the floor income: that is, the most just distribution of income is that which maximises the floor or lowest income in society;
- Maximising the average income: that is to say, the most just distribution of income is that which maximises the average income in society;
- Maximising the average with a floor constraint: that is, the most just distribution of income is that which maximises the average income only after a certain specified minimum income is guaranteed to everyone;
- Maximising the average with a range constraint: that is, the most just distribution of income is that which attempts to maximise the average income only after guaranteeing that the difference between the poorest and the richest individuals (i.e. the range of income) in the society is not greater than a specified amount.

There were several stages of the experiments including for example that the subjects had to deliberate and decide which principle they supported as a group. Significantly, the subjects agreed on a single principle in all cases of the experiment. Interestingly, in all stages of the experiment, Rawls' difference principle (maximising the floor income) was not supported. The most popular distributive principle in all the countries where the experiments were carried out was the principle with the guaranteed floor constraint. In other words, the subjects wanted a minimum income to be guaranteed to the worst-off individuals to act as the safety net for all individuals.

In the field of transport, Martens (2008) explored the possibility of transposing the above four principles to the field of transport by replacing the word 'income' with accessibility or mobility. He noted that transposing the first two principles (maximizing the average income and maximizing the average income with a floor constraint for the minimum) could be problematic in the sense that the first principle, for example, "hardly guides the actual distribution of the transport good over population groups". Similarly, the difference principle, he argues, also has some limitations when applied to the transport good. This is because Rawls "developed this criterion for income, based on the understanding that differences in income might result in a better working economy, which would then, in turn, generate a higher level of income for the worst-off" (Martens, 2008 p.12). Following on from there, Martens (2008) argued that even though the differences remain limited, two potential principles remain relevant for the field of transport: (1) maximizing the average accessibility/mobility with a floor constraint for the minimum; and (2) maximizing the average accessibility/mobility with a range constraint.

Other scholars in the field of transport have also made references to Rawlsianism in their discussions of social justice in transport (see, for example, Farrington and Farrington, 2005; Hall, 2006; Tyler, 2006; Martens and Hurvitz, 2006; Martens, 2006; and recently Martens,2017). The vast outpouring of scholarly work in this area notwithstanding, there appears to be a very limited discussion about what Rawlsianism implies in strategic transport planning terms. For example, a question that may be of interest from a strategic transport planning standpoint is - what broad transport strategies may be 'justicized' on Rawlsian grounds? Litman (2015) appears to have addressed this question on the side-lines of his discussion of transport equity (see Table 2.1). Equity is understood as the fairness with which impacts (benefits and costs) are distributed (Litman, 2015). Litman distinguished between three types of equity: horizontal equity, vertical equity (progressive with respect to income) and vertical equity (benefiting transportation disadvantaged people). Horizontal equity is concerned with

the fairness of cost and benefit allocation between individuals and groups who are considered comparable in wealth and ability. Horizontal equity, therefore, implies that consumers should “get what they pay for and pay for what they get,” unless there is a specific reason to do otherwise. Vertical equity with regard to income and social class focuses on the allocation of costs between income and social classes.

**Table 2.1: Strategies to Promote Equity [Source: Litman, 2015]**

Equity Type	Example Transport Strategies to Achieve Equity Objective
<i>Horizontal Equity</i>	<ol style="list-style-type: none"> <li>(1) Improved transport data to better understand the travel demands disadvantaged people, and the quality of walking, cycling and public transport.</li> <li>(2) Improved information on indirect, external and non-market costs of transport.</li> <li>(3) Least-cost planning, so resources (funding and road space) can be allocated to alternative modes and demand management strategies whenever they are cost effective, considering all costs and benefits.</li> <li>(4) <i>Fuller cost recovery</i> – that is, increases in user fees such as fuel taxes and tolls to reflect costs imposed. For example, fuel taxes could be increased to fund a greater portion of roadway costs, and more parking facilities should be priced.</li> <li>(5) <i>Weight-distance fees</i> – charging fees that reflect the roadway costs imposed by a vehicle class.</li> <li>(6) <i>Road Pricing</i> – Charging directly for road use, with rates vary to reflect how roadway and congestion costs vary by location, time, and vehicle type.</li> <li>(7) <i>Parking cash out</i> – Allow commuters to choose cash instead of subsidized parking.</li> <li>(8) <i>Parking pricing</i> – Varying rates to reflect how costs vary by location, time and vehicle type.</li> <li>(9) <i>Distance-based vehicle insurance and registration fees</i>, which converts fixed costs into variable costs with respect to annual vehicle travel.</li> <li>(10) <i>Environmental taxes and emission fees.</i> Some economists recommend special fees based on the environment imposed by an activity, such as vehicle air pollution emissions.</li> </ol>
<i>Vertical Equity – Progressive with Respect to Income</i>	<ol style="list-style-type: none"> <li>(1) Transport policy and planning decisions must favour affordable modes (including cycling, walking, public transport, ridesharing, car sharing and home delivery services). This can be achieved through improved sidewalks and crosswalks, traffic calming measures and traffic</li> </ol>

Equity Type	Example Transport Strategies to Achieve Equity Objective
	<p>speed control, High Occupancy Vehicles and bus lanes, and other transit service improvements.</p> <ol style="list-style-type: none"> <li>(2) Ensure public transport affordability to lower-income users</li> <li>(3) Support transport demand management strategies that increase affordability including improvements to lower-priced modes, reduced and more flexible parking requirements.</li> <li>(4) Parking cash out (commuters offered subsidized parking but those who do not drive can choose instead to receive the cash equivalent),</li> <li>(5) Parking unbundling (i.e. parking is rented separately from housing, so residents are not forced to pay for parking they do not need).</li> <li>(6) Support policies that make automobile ownership more affordable, including targeted grants, loans and distance-based vehicle insurance.</li> <li>(7) Support car sharing (vehicle rental services designed to provide an affordable alternative to private vehicle ownership), pay-as-you-drive insurance (insurance and registration fees based directly on how much a vehicle is driven), and other programs and pricing options that make occasional automobile use more affordable.</li> <li>(8) Price transportation to favour economically, socially and physically disadvantaged people. For example, transit services, road tolls and other services can have discounts for people who qualify for low-income benefits. Each household can receive a limited number of free road toll or parking vouchers.</li> <li>(9) Support development of affordable-accessible housing (affordable housing in accessible, multi-modal communities).</li> </ol>
<p><i>Vertical Equity – Benefiting Transportation Disadvantaged People</i></p>	<ol style="list-style-type: none"> <li>(1) Smart Growth Development Policies</li> <li>(2) Public transport for the elderly</li> <li>(3) Walking, and ridesharing</li> <li>(4) Taxi, special mobility services, car sharing, public Internet services, and delivery services</li> </ol>

Rawls' justice theory and especially the Difference Principle (DP) is, however, not without its critics. For example, some authors argue that the inequalities permitted by the DP are unacceptable even if they benefit the least advantaged in society. The argument here is that *why is the relative position of the least advantaged more important than their absolute position?* Also, some libertarians (see below) argue that the DP unduly infringes on liberties. This is because policy interventions such as taxation that

are defended on Rawlsian grounds involve immoral taking of just holdings. Furthermore, advocates of “desert-based principles”<sup>5</sup> maintain that some people may deserve higher levels of material goods because of their hard work even if their unequal rewards do not function to better the positions of the least advantaged. The DP also ignores fundamental explanations about how people came to be in an advantaged position (even though such explanations are fundamental to the analysis of the fairness of such positions). Other critics of Rawlsianism argue that the concept is difficult (if not impossible) to operationalize in practice. For example, it is argued that it is almost impossible for people to place themselves behind the hypothetical Veil of Ignorance in an Original Position to contrive what conduct would be required of them in the maximin principle. With respect to this last point however, the success of the Frohlich and Oppenheimer (1992) experiment suggests that with careful planning, it is possible to operationalise the theory.

#### **2.2.2.2 Utilitarianism**

Also referred to as welfare-based principles<sup>6</sup>, proponents of utilitarianism as a distributive principle (Aristotle, John Stuart Mill, Jeremy Bentham, Henry Sidgwick), argue that the most just outcome in society (and indeed the measure of right and wrong) is whatever results in the “greatest happiness of the greatest number”<sup>7</sup>. Essentially, therefore, utilitarians argue that a just society must be organized in its institutions (governance, laws and economy) such that as many people as possible have the means and/or opportunity to achieve their chosen conception of a desirable life. This definition suggests that, utilitarianism is ‘consequentialist’ in the sense that it emphasizes the moral consequences of various decisions about how to allocate benefits and burdens in society. However, questions then arise from critics of this principle about what constitutes aggregate happiness of society and other related constructs such as well-being, general good and public interest (see Bowie and Simon, 2007). This is because,

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<sup>5</sup> Desert-based principles aim to ensure that distributions are sensitive to the efforts or contributions people make to the social surplus. In other words, the idea behind this principle is that some people deserve certain shares or outcomes because of their previous actions. Hence, distributions should be proportionate to contributions.

<sup>6</sup> See <http://plato.stanford.edu/entries/justice-distributive/> accessed 30/03/2016

<sup>7</sup> A Comment on the Commentaries and A Fragment on Government, ed. J. H. Burns and H. L. A. Hart, in *The Collected Works of Jeremy Bentham* (London, 1977), p. 393

unlike (for example) directly measurable entities such as weight and body mass index, constructs such as 'public interest' are not directly measurable.

Utilitarians have approached the question of what constitutes aggregate happiness of society from two main perspectives (Jost et al., 2010): (1) A theory of the human good (that is, what is required for human beings to flourish) and (2) The conditions and social organizations essential for the achievement of the said good. That notwithstanding, it is argued that people are more likely to disagree on what is a happy and satisfying life than they would agree. What may be agreed upon, however (at least for the purposes of a general theory of justice) is the set of conditions necessary to human flourishing (ibid). One such condition is the 'basic needs' that must be satisfied in any desirable life (Sterba, 1995). Sterba defines these needs as those "that must be satisfied in order not to seriously endanger a person's mental or physical well-being". Such basic needs are the minimum wherewithal (such as food, shelter, medical care, companionship, and self-development) required for a person to meet his/her basic needs in life. As indicated above, the premise of utilitarians is that a just society must be organized in its institutions (governance, laws, and economy) such that as many people as possible have the means and/or opportunity to achieve their chosen conception of a desirable life. This means for example that the reformation of society's institutions in order to realize these goals is, therefore, a necessary step towards pursuing greater justice. These institutions may include but not limited to a competitive free market economic system, and a democratic system of government.

*Again, what do all these theoretical discussions about utilitarianism mean in (strategic) transport planning terms?* A review of the transport planning literature suggests that of all the concepts of social justice, utilitarianism is arguably the most popular in the field of transport. This can be inferred from the ubiquity of the cost-benefit-analysis (CBA) approach as a preferred evaluation method for transport project appraisals and large-scale infrastructure investments in the public sector. For clarity, it is important to note that while utilitarianism is an ethical theory of justice, CBA is a methodology derived from the theory. It operationalises the theory by weighing the pros and cons of a project or policy in a rational and systematic process to ensure that net aggregate benefits to society outweigh net aggregate costs. It does this by monetizing both inputs and outputs.

The ubiquity of CBA (and by extension, utilitarianism) in transport investment appraisals notwithstanding, there appears to be a dearth of literature on what the word means in strategic transport planning terms. For example, it is not clear which types of transport strategies or interventions might be justified on utilitarian grounds. Following the broad

definition of utilitarianism however, it follows that a utilitarian transport strategy is one that maximises the 'transport good'(conceptualised here as accessibility). But that still does not answer the question in the sense that following this definition means that any strategy could be 'justicized' on utilitarian grounds.

### **2.2.2.3 Libertarianism**

According to libertarians (for example, Robert Nozick,1974), humans are essentially rational end-choosers and that the kind of life appropriate to rational end-choosers is one that allows them to be free to choose and pursue their own ends without any form of interference. To libertarians therefore, a just society is one that grants and protects the liberties and freedoms of each individual to pursue his desired ends. In his book, "*Anarchy, State, and Utopia*", Nozick (1974) advanced arguments that seek to establish the basis for libertarianism. He argued for minimal state intervention noting that such interventions ought to be limited to the narrow functions of protection against force, theft, fraud, enforcement of contracts and such like. He argues that any intervention beyond this minimal level would lead to the violation of people's rights.

Compared with Rawlsian justice therefore, libertarianism (it would appear) imagines a limited role for the state in the distribution of natural resources to help individuals who were probably unlucky to be born without life's opportunities. Goods and services, according to Nozick are created or pre-owned by individuals and can therefore not be taken by the state and redistributed. Hence, the position that there are greater benefits to be had through social cooperation (a core ethos of Rawlsian justice) is a contention scholars like Nozick do not share. From this conception of justice therefore, it would appear that libertarians advocate for an 'anarchic' society. However, classic libertarians<sup>8</sup> argue against this notion, noting that the cornerstone of libertarianism is that each person shall have the same freedoms, and obligated to refrain from interfering with the freedoms of others in society. There is therefore a responsibility for the state except that that responsibility is limited to the protection of the right of the individual to pursue his chosen ends.

To the extent that the rights advocated by libertarians are the same rights (civil or personal liberties) advocated under Rawls' first principle, it could be argued that there is some commonality between Rawlsian justice and libertarianism. In addition, both Rawlsian justice and libertarianism<sup>9</sup> stress the importance of *equality* as a moral

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<sup>8</sup> i.e. those who believe in the importance of individual freedom and minimal government intervention.

<sup>9</sup> When defined in terms of social liberalism



precept. However, unlike libertarianism that stresses unrestricted right to acquire personal property, Rawlsianism does not. However, this, arguably, is one of the flaws of libertarianism. For example, it is argued by some scholars that if the libertarian creed is to be followed in its 'full glory', it means that individuals in pursuit of their liberties may choose to hoard water (for example) even in the face of severe drought. This is a moral argument and a flaw in libertarianism that has been highlighted by many scholars including Amartya Sen (2007)<sup>10</sup>.

*What do all these theoretical discussions on libertarianism mean in (strategic transport planning) practice?* In the field of transport, the definition of libertarianism given above would suggest that just transport policies and strategies (according to libertarians) may be understood as those where there is little or no government intervention in the distribution of access or the 'transport good'. Here, the 'market' plays a pivotal role by bringing together providers of transport services to compete (across various modes) to meet the travel needs and preferences of individuals. This seems to imply that a socially-just transport system from a libertarian point of view is one that allows markets to function to ensure continued service without excessive government subsidy or regulation<sup>11</sup>. This market philosophy therefore, ensures that transport services are provided at a level and price that is determined competitively, and that state intervention only takes place when the markets are seen to be failing (Banister, 2002). Following on from this, it suggests that transport interventions with a leaning on deregulation, privatization, the abolition of transport subsidies, reductions in taxes, and the principle of user-pays-user-benefits are sacrosanct under the libertarian creed.

While arguments about laissez-faire capitalism (the economic system that forms the groundwork for libertarianism) may sound plausible, critics of the approach argue that market failures provide reasonable justifications for government intervention in the economy. For example, while acknowledging the benefits of privatization during the Thatcher years, Banister (2002 p.85) notes that in retrospect, the privatization of the railways during the Thatcher years was a disappointment because the industry was too

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<sup>10</sup> For example in his article "*Unrestrained Smoking Is A Libertarian Half-Way House*", Amartya Sen argued among other things that ". . . But how should we see the demands of freedom when habit-forming behaviour today restricts the freedom of the same person in the future? Once acquired, the habit of smoking is hard to kick, and it can be asked, with some plausibility, whether youthful smokers have an unqualified right to place their future selves in such bondage." (published in the *Financial Times* of 11/02/2007 and accessed 9/2/2015)

<sup>11</sup> See Ben Goldman (2012) in "*What Libertarians Talk about when they Talk about Transportation Reforms*" (<http://usa.streetsblog.org/> accessed 11/10/2016)

large to operate successfully as a multitude of operators in a competitive market. In addition, critics of libertarianism argue that a non-intervention from the state leads to monopolistic tendencies, which then stifles innovation. Furthermore, libertarianism is often critiqued for not creating egalitarian distributions.

#### **2.2.2.4 Sufficiencyarianism**

The principle of sufficiency maintains that it is morally valuable for as many people as possible to enjoy conditions of life that place them above the 'threshold' that marks the minimum required for a decent quality of life (Shields, 2012). Casal (2007) distinguishes between two theses of sufficiencyarianism: a positive and a negative thesis. In the positive thesis, Casal emphasizes the "importance of living above a certain threshold, free from deprivation". The negative thesis underscores the irrelevance of additional benefits for people who are already above the minimum threshold. The argument posited by sufficiencyarians is that the problem of social justice is not that some members of society have more than others but that some members do not have 'enough'. From a sufficiencyarian standpoint, therefore, justice is seen to have been served if it can be reasonably argued that those without 'enough' have been given 'enough'.

Similar to the other conceptions of justice discussed above, a critical question relevant to this research is: *What do all these theoretical discussions about sufficiencyarianism mean in (strategic transport planning) practice?* In the field of transport, there appears to exist some understanding among transport scholars that sufficiencyarianism provides the moral justification for developing policies that provide a "minimum threshold level of accessibility" to key destinations. In other words, the outpouring of scholarly work on transport-related social exclusion appear to be premised on the sufficiencyarian moral position even though most of the literature does not make the case on explicit justice-theoretic terms (see, for example, Lucas, 2012). Significantly, while the value of sufficiencyarianism as a moral precept in transport policy may be appreciated, the issue for most transport scholars, however, appears to be one of specifying the 'minimum threshold level of accessibility'. Lucas et al., (2015 p.16) identifies this as a "methodological challenge" in the sense that "the condition of being socially excluded is relational (i.e. dependent on the accepted norms of the societies in which people are located) and will, therefore, be both context- and person-specific". It is also a challenge because it is not clear whether to base this threshold on the "opportunity to participate" in activities or on "revealed levels of participation" (ibid). In addition, what range of activities ought to be considered and how far of personal choice elements ought to be accommodated in this range? These questions relate directly to the problem of

specifying the appropriate metrics for sufficiency and as Lucas et al., (2015) argue, new empirical studies are needed in this area to establish the appropriate threshold values of accessibility for different population groups in different geographical contexts.

While having an intuitive appeal, sufficientarianism is not without its critics. For example, some scholars argue that the doctrine of sufficiency is implausible because it sometimes requires benefitting the 'better off' by small amounts rather than benefitting the worse off by large amounts. Liam Shields (2011 p.2) refers to this as the "excessive upward transfers objection". Sufficientarianism is also critiqued on grounds that the doctrine is indifferent to "objectionable inequalities". This is because, once everyone has secured 'enough', sufficientarians remain indifferent to any inequalities above this defined threshold. The most vociferous criticism of the sufficiency doctrine however, centres on the implausibility of specifying the minimum/threshold in a non-arbitrary and unambiguous manner.

#### **2.2.2.5 Prioritarianism**

The first use of the term prioritarianism is often attributed to Larry Temkin (2000) in his thesis "*Equality, Priority, and the Levelling Down Objection*". Prioritarianism in the current thesis is understood to hold the view that justice is served if societal benefits are distributed to the advantage of all individuals with some extra weight placed upon the needs of those who are worse off in absolute or non-comparative terms. In other words, the ideal of prioritarianism maintains that justice requires that priority is given to making people better off and that even greater priority must be given to helping a person the worse off in non-comparative terms they are up to the point at which the person attains a good enough quality of life (Stanford Encyclopaedia of Philosophy<sup>12</sup>). The idea of prioritarianism, therefore, is "priority for the worse off, up to sufficiency and straight utilitarian maximisation of aggregate well-being above that line" (ibid).

Prioritarianism defined in the above terms is therefore similar to utilitarianism in that both principles are a form of "aggregative consequentialism"<sup>13</sup>. Like utilitarians, advocates of the priority view (see, for example Parfit (1997)) believe in maximising goodness or moral value except that priority is more than just maximising aggregate well-being. Prioritarianism, differs from utilitarianism in the sense that it does not rank

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<sup>12</sup> <http://plato.stanford.edu/entries/egalitarianism/> accessed 10/12/2015

<sup>13</sup> Consequentialism holds that whether an act is morally right depends only on the consequences of that act or of something related to that act, such as the motive behind the act or a general rule requiring acts of the same kind (Stanford Encyclopaedia of Philosophy)

consequences exclusively based on aggregate well-being. Compared to Rawlsian justice, prioritarianism is arguably more consistent with widely-held intuitions about justice than radical forms of egalitarianism that place value over equality. Compared with sufficientarianism, a point of confluence is that neither principle accepts the principles of comparability (i.e. equality). Further, if policies and actions are to be chosen to maximize moral value, then priority is a rival to equality and sufficientarianism regarded as norms that tell us what we ought to do.

*What do all these theoretical discussions on prioritarianism mean in (strategic transport planning) practice?* For transport policy, prioritarianism does not imply a rejection of the relationship between levels of accessibility and activity participation, nor the existence of transport-related social exclusion (Martens et al., 2015). It however, underscores the difficulties already highlighted under sufficiency of determining minimum threshold levels of accessibility. Rather than focusing on that threshold value, prioritarianism proposes a weighing of benefits depending on the position of a person in the distributive sphere. This implies a ranking of population groups in terms of their accessibility levels such that the higher the current levels of accessibility of a group, the lower the value ascribed to the accessibility benefits reaped by that group.

### **2.2.3 Section Summary and Conclusions**

Section 2.2 reviewed the literature on the principles of social justice. Understandings of the term 'social justice' suggest that the term is a contested concept with a miscellany of theories, and approaches. It has been argued in this section that for the purposes of transport planning, two concepts are most relevant: procedural and distributive justice. Following on from that premise, and to give scope to the review, this section focused on procedural and distributive justice. For procedural justice, a key question relevant to this research is: how can we ensure that the elements of effective participation (inclusivity, interaction, etc.) could be incorporated into the futures method proposed in this research? But as indicated in Section 2.2.1, issues relating to procedural justice are beyond the scope of the current research. For distributive justice, three questions were considered relevant to this thesis: the definition of each distributive principle, the transport strategies that may be justified on grounds of a particular distributive principle and the strengths and/or limitations of each distributive principle when used as a moral precept or value in strategic transport decision-making. For clarity, a number of points need further elucidation. First, given that social justice may mean different things to different people, it is significant to note that for the purposes of this thesis (and to the extent that it focuses on strategic transport planning), the distributive principles

discussed in Sections 2.2.2.1 through to 2.2.2.5 are understood as the *values* that may be held by different stakeholder groups in the field of transport. While these principles or positions are generally different, they also have significant overlaps (see Table 2.2). For example, Sen's Capability Approach, which suggests that the evaluation of how well an individual's life is going (from the standpoint of whether they should be offered support or not) should measure their 'capability to function', was a direct response to Rawls' theory - especially the fact that it ignored the plight of disabled people or those with other special needs. Similarly, both priority and sufficiency were attempts by Harry Frankfurt (1987) and Derek Parfitt (1998) to address some of the criticisms against John Rawls as a "theorist of inequality" (see Daniels, 1975 as an example). The point in delineating the five principles outlined above therefore is based on this researcher's understanding that each approach requires a different treatment of the benefits reaped by different population groups in the assessment of transport policies. For instance, while utilitarianism will ascribe identical values to all transport benefits and costs, sufficientarianism will ascribe no values to benefits accruing to people positioned above the "accessibility poverty line" (Martens et al., 2015).

Second, it is significant to note that in reviewing the literature on the distributive principles, the aim was not to tease out what distributive principles ought to take precedence in a strategic decision-making situation but to present the plurality of views of what may be considered the morally-right position to take in a decision-making situation. This is because of this researcher's belief that practical wisdom ought to guide the choice of which moral or distributive principles to use in a particular decision situation. This position has been referred to as "ethical intuitionism" or "contextualism" (van Wee and Roeser, 2006 p.750) and it underscores the existence of a plurality of moral principles in a decision-making situation. Third, given that the focus of this thesis is on transport planning in Sub Saharan Africa, it is imperative to note that the review in Section 2.2 suggests a general dearth of research on the concept of social justice in SSA in general<sup>14</sup>, and in transport planning in particular. The review suggests that most of the theoretical discourses and thoughts especially in the field of transport on the concept of social justice currently focus on and are shaped by Euro-American perspectives. This opens up a number of questions including whether the body of knowledge on transport justice developed in contexts different from the Sub Saharan African one offers a framework for analysing issues of transport justice in Africa. In other

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<sup>14</sup> With notable exceptions - see e.g. De Coninck et al., (2013)

words, does context matter in discussions about transport justice? While potentially interesting, this question is beyond the scope of this thesis. The focus here is on social justice in strategic transport planning in Africa and proceeds on the assumption that general theory can serve as a useful input for the understanding and analysis of social justice in transport planning in Africa.

**Table 2.2: Comparison of the distributive principles**

Comparative	Rawlsianism	Utilitarianism	Libertarianism	Sufficientarianism	Prioritarianism
Overall concern	<ul style="list-style-type: none"> <li>• Concerned with the conditions of the least well-off.</li> <li>• Rejects utilitarian forms of justice</li> </ul>	Essentially concerned only with equality.	Essentially concerned only with freedom; whatever other values - may be realized at the same time are secondary.	<ul style="list-style-type: none"> <li>• Concerned with maximizing the number of people who secure enough.</li> <li>• Sufficientarians agree with prioritarrians – both reject comparative principles (e.g. equality).</li> </ul>	<ul style="list-style-type: none"> <li>• Prioritarrians hold that actions and policies should be set to maximize moral value - benefits have greater moral value, the more they accrue to the worse off.</li> <li>• Prioritarrians agree with sufficientarians – both reject comparative principles (e.g. equality)</li> <li>• The prioritarian ideal (if one interprets <i>benefit</i> or advantage as utility) is similar to utilitarianism.</li> </ul>

Comparative	Rawlsianism	Utilitarianism	Libertarianism	Sufficientarianism	Prioritarianism
Government and Free market	May advocate for social welfare	<ul style="list-style-type: none"> <li>• Utilitarians often advocate for social welfare;</li> <li>• Utilitarians often advocate free markets.</li> </ul>	Small government, and a free market	May advocate for social welfare	May advocate for social welfare
Redistribution of wealth		Utilitarians justify massive redistribution of wealth to the needy	Libertarians hold that the free market is inherently just.	It is important that people live above a certain threshold, free from deprivation	
Temporal perspective		Utilitarianism neglects the past -Justice is determined by what would have the best consequences for all concerned	Libertarians are mired in the past –Justice is a purely historical matter: whether a distribution is just depends on how it came about.		
Objections	<ul style="list-style-type: none"> <li>• The difference principle unjustly restrains freedom and power – For example,</li> </ul>	<ul style="list-style-type: none"> <li>• Too simple and ignores other moral principles - consequences (promoting goodness) may not be the only</li> </ul>	<ul style="list-style-type: none"> <li>• Humans have duties to each other and it is morally unacceptable to let orphans or people without health</li> </ul>	<ul style="list-style-type: none"> <li>• Implausible because, amongst those below the threshold, they require benefitting the better off</li> </ul>	<ul style="list-style-type: none"> <li>• Prioritarianism fails to express equal respect and concern for all citizens in that it involves the state in making wrongful</li> </ul>



Comparative	Rawlsianism	Utilitarianism	Libertarianism	Sufficientarianism	Prioritarianism
	<p>could restrain the ability of the rich to acquire more wealth even if they do so without 'hurting' anyone.</p>	<p>thing of moral relevance.</p> <ul style="list-style-type: none"> <li>Utilitarianism fails to take into account the need to be respectful - it is not morally right to kill someone and donate their organs to those who need them to survive, even if the person's death lead to a "greater good."</li> </ul>	<p>insurance (for example) die.</p> <ul style="list-style-type: none"> <li>Unregulated free markets can lead to some oppression and exploitation.</li> </ul>	<p>by tiny amounts at the expense of large benefits to the worse off.</p> <ul style="list-style-type: none"> <li>Indifferent to inequalities once everyone has secured enough</li> </ul>	<p>judgments about the comparative worth of individual citizens</p> <ul style="list-style-type: none"> <li>Attracts criticisms of utilitarianism – see above about the similarities between prioritarianism and utilitarianism</li> </ul>

## 2.3 Approaches to imagining Transport Futures

Sections 1.2.2 to 1.2.4 gave an overview of scenario planning, visioning and backcasting as the main methodological approaches that will be drawn from in the development of the futures method proposed in this thesis. This section provides a more detailed review of each of these methods. To be clear, the review in this section is guided by the following questions:

- (1) What is scenario planning, visioning and backcasting and what is involved in using these futures approaches?
- (2) To what extent are these futures approaches used to imagine socially-just transport futures?
- (3) To what extent are these futures approaches used in strategic transport planning in Sub Saharan Africa (SSA)?

Three issues need further clarification here. First, as explained in Section 1.2, the focus on scenario planning, visioning and backcasting is because the context of this research is transport planning and according to Banister and Hickman (2012), visioning, scenario planning, backcasting and forecasting are the methodological approaches most relevant when thinking about transport futures. Second, it is important to note that, the term ‘futures thinking’ is used interchangeably with ‘strategic planning’. This is because both terms are understood in this thesis to connote a process of imagining futures. Third, the term “futures approaches” is used as a shorthand version throughout the present research to refer to “approaches to imagining transport futures”.

Table 2.3 provides some examples of the applications of scenario planning, visioning, backcasting and forecasting in strategic transport planning in SSA. This table will be referred to throughout Sections 2.3.1 to 2.3.4 to explore the extent to which the main futures approaches to be reviewed are used or not used to imagine transport futures in SSA.

**Table 2.3: Strategic policy documents, futures methods used and the nature of consultation used to develop policy document.**

Country	Document Name	Futures Method Used				Nature of Consultation Used
		Scenario Planning	Backcasting	Forecasting	Visioning	
Namibia	National Transportation Master Plan Study. Volume 7	✓		✓		<ul style="list-style-type: none"> <li>• Stakeholder workshops</li> <li>• Public hearings</li> <li>• “Cycle to Work Day”</li> </ul>
Republic Of Mauritius	Integrated National Transport Strategy Study	✓		✓		The study reported on a weekly basis to the Ministry of Economic Development, Productivity and Regional Development (MEDPRD), and reported periodically a multi-ministerial steering committee. Some engagement with individuals and various stakeholders is also reported (see page 2 on ‘study approach’)
Tanzania	National Transport Policy 2003					Some public consultation at the preparatory stages in line with the statutory requirements on EIA.
	10 Year Transport Sector Investment					

Country	Document Name	Futures Method Used				Nature of Consultation Used
		Scenario Planning	Backcasting	Forecasting	Visioning	
	Programme 2007-2016					
Ghana	National Transport Policy					Consultation done using 3 projects : <ul style="list-style-type: none"> <li>•National Transport Policy Project</li> <li>•The Institutional Study of the Transport Sector</li> </ul> The Harmonization Project
	Sector Medium-Term Development Plan (SMTDP): 2012 – 2014			✓		See above for NTP
	Integrated Transport Plan for Ghana (2011 – 2015)			✓		See above for NTP
Kenya	Integrated National Transport Policy			✓		Not specified – Executive Summary mentions the use of ‘consultation’ processes

Country	Document Name	Futures Method Used				Nature of Consultation Used
		Scenario Planning	Backcasting	Forecasting	Visioning	
Uganda	National Transport Master Plan	✓		✓		Some collaboration between the Consultants (Tahal) and Ministry staff
	Rural Transport Policy and Strategy	✓		✓		
Nigeria	National Transport Policy					
South Africa	National Transport Master Plan (NATMAP 2050)			✓		Multi-stakeholder engagements, consultation and endorsement (page 3 of Gauteng)
	Rural Transport Strategy for South Africa					
Botswana	National Integrated Transport Policy 2011 -2036	✓		✓		A Government White Paper states “In finalizing these policies, all relevant government organizations have been consulted in accordance with procedures that are laid down by law. But for the first time an opportunity for members of the public to comment on the policies has also been provided. The final result is a set of

Country	Document Name	Futures Method Used				Nature of Consultation Used
		Scenario Planning	Backcasting	Forecasting	Visioning	
						Policies for Transport that is truly representative of all interests.”
Liberia	National Transport Master Plan			✓		Stakeholder and consultative and validation workshops were held.
Rwanda	Strategic Transport Master Plan for Rwanda	✓		✓		Not clear but the document indicates that some consultation was done
Swaziland	Swaziland Transport Master plan			✓		‘Extensive’ stakeholder consultations were carried out.

### 2.3.1 Visioning

Dictionary definitions of the word 'vision' centre on the ability to see. That is, the perceptual experience of seeing and the formation of a mental image of something that is not perceived as real and is not present to the senses. There are various definitions of the word in the planning literature (see Helling, 1998, Shipley and Newkirk, 1999; Shipley, 2000; Rauws and van Dijk, 2011) and in the field of transport (Tight et al., 2011; Timms et al., 2014). All the definitions, however, suggest that a vision is a simple aspiration for the future or a description of what a community should look like. These 'aspirations' may be highly-desirable futures or utopias or highly-undesirable futures or dystopias (Timms et al., 2014). Nanus (1992) argues that the best vision is one that is oriented to the future, fits in with the organization, sets standards of excellence to reflect the ideals of the organization, clarifies the purpose and direction of the organization, and galvanizes some sense of enthusiasm.

In the present research, a vision is understood as an image of a desirable future (Timms et al., 2014). In transport planning, this 'image' is usually expressed in strategic transport plans as a vision or mission (see Table 2.4 for some examples). Nevertheless, visions are also expressed not as vision or mission statements, but as script-like characterisations of possible futures presented in considerable detail, with some emphasis on causal connections, concreteness and internal consistency. For example, the visioning exercises (and the resultant transport visions) carried out by some scholars at the Institute for Transport Studies<sup>15</sup>, Leeds, appear to fit this definition (see e.g. Tight et al., 2011; Timms et al., 2014).

Preston (2014 p.4) maintains that outlining the vision of a strategic transport plan involves outlining very high-level objectives or goals of a plan. Here, visions are like goals in that they express desired ends. However, it is important to note that while goals are 'destinations' to be reached, visions provide clear, on-going directions. Preston (2014) distinguished between strategic goals, tactical goals, and operational goals. While strategic goals answer the question- "what do we want to do?", tactical goals concern themselves with "how do we do it?" (i.e. policy instruments that will deliver the plan). Operational goals focus on marshalling the needed resources to deliver the plan and can encourage a revisiting of the plan in light of resource constraints. Following Preston's (2014) definitions, the focus of this research is therefore not on operational or

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<sup>15</sup> <https://www.its.leeds.ac.uk/> accessed 10/06/2015.

tactical concerns but on strategic issues. As indicated above, this involves specifying very high-level objectives.

The statements in Table 2.4, whether expressed as visions or missions encapsulate the purpose, core values, and the aspirations of the respective decision-making context. These are then transformed into a set of manageable goals and action plans. For example, Ghana's transport vision as expressed in the National Transport Policy (2008) document is reduced to four main goals. One of these aims at creating a vibrant investment environment that maximizes benefits for public and private sector investors (see Table 2.4). Here, the 'core value' expressed is economic in character.

'Visioning' on the other hand is understood in the present research as the process, or methodology used to develop a vision. Hence, while visioning is the methodology, visions are the 'end-products'. Visioning can be carried out by an individual, but more frequently, it tends to be carried out in futures workshops (see e.g. Green et al., 2000; Timms et al., 2011). This normally involves a number of distinct phases including;

- a 'preliminary phase' during which the overall scope of the visioning exercise in terms of subject area and other practical arrangements are set out;
- a 'critique phase' during which all issues related to the topic area are brought to the fore;
- an 'aspirations phase' during which the participants generate ideas in response to the issues raised about the topic area, their desires and aspirations and alternative views about how the vision can be achieved.
- a 'selection phase' where alternative solutions are developed and selected and finally
- an 'implementation phase' during which the participants critically evaluate their chosen alternatives against the backdrop of their implementation probability.

*To what extent is visioning used to imagine socially-just transport futures?* As already highlighted above, visions encapsulate high-level objectives, which, in the field of transport are usually expressed in terms of one of three overarching goals: environmental sustainability, economic efficiency and social equity (Banister, 2008). While environmental goals focus on concerns such as climate change mitigation, economic goals focus on infrastructure, system efficiency and the role of transport in economic development. Social sustainability goals focus on issues such as equity and fairness in transport. A review of the literature suggests that while visioning has been used to imagine both economic and environmentally-sustainable transport futures (see



for example, Department for Transport, 2006 – VIBAT; Timms et al., 2012), there is a dearth of information on the use of the method to imagine socially-sustainable (and by extension, socially-just) transport futures. This is despite a recognition among some scholars that a lack of social sustainability (defined in terms of equity, social exclusion, and quality of life - Boschmann and Kwan, 2008) might undermine any attempts to attain environmental sustainability (Timms et al., 2012 p.79). As the review in Section 2.2 indicate, both equity and social exclusion are situated at the heart of social justice.

*To what extent is visioning used in strategic transport planning in Sub Saharan Africa (SSA)?* In transport planning practices in Sub Saharan Africa (SSA), evidence exists of transport visions whether expressed as mission/vision statements (see Table 2.4) or as characterisations of the future. A critical point however, is that it is generally not clear how these visions are developed and whether all relevant voices or stakeholders in the decision-making process are involved. The question of how these visions are developed and whose voice is captured in the process is of importance in view of the increasing relevance of this theme in transport planning practices (see Section 2.2.1 on procedural justice). While Table 2.3 above shows that some form of ‘consultations’ were carried out in the development of the plans, there is a sense that these engagements were carried out at the inter-departmental level. This will appear to be against the ethos of procedural justice, which requires that participation is not reduced to mere tokenism or placation. For example, the Liberian masterplan reports that stakeholder, consultative and validation workshops were held as part of the process of developing the plan. Similarly, Botswana’s masterplan shows that in finalizing the policy, all relevant “government organizations” were consulted in accordance with procedures that are laid down by law. In Kenya, the requirement for stakeholder participation is enshrined in the Kenyan constitution and other related legislations. However, and as highlighted above, an analysis of the context in which the ‘consultative processes’ were carried out in the plans suggests that were carried out at the inter-departmental or agency level with little involvement of citizens. The reason for this is that coordination of stakeholders to participate in the decisional processes in some African countries is difficult (Mitullah et al., 2017). This is because of a number of factors including a general lack of professionalism and regulatory framework, rampant corruption, poverty, inadequate political and fiscal decentralisation and the unwillingness of decision makers to change existing transport systems (Mitullah et al., 2017).

**Table 2.4: Vision and Mission statements of various strategic policy documents in Africa.**

<b>Country: Document Name</b>	<b>Vision and Mission Statements</b>
Tanzania: National Transport Policy 2003	<p>Vision:                      “To have efficient and cost-effective domestic and international transport services to all segments of the national population and sectors of the national economy with maximum safety and minimum environmental degradation”.</p> <p>Mission:                      “To develop safe, reliable, effective, efficient and fully integrated transport infrastructure and operations which will best meet the needs of travel and transport at improving levels of service at lower costs in a manner which supports government strategies for socio-economic development while being economically and socially sustainable”</p>
Ghana: National Transport Policy 2008	<p>Vision:                      “An integrated, efficient, cost-effective and sustainable transportation system responsive to the needs of society, supporting growth and poverty reduction and capable of establishing and maintaining Ghana as a transportation hub of West Africa”</p> <p>Mission:                      “Provide leadership and an enabling environment for the development and maintenance of Ghana’s transportation system through effective policy formulation, market regulation, asset management and service provision.”</p>
Kenya: Integrated National Transport Policy	<p>Vision:                      “A world-class integrated transport system responsive to the needs of people and industry”</p> <p>Mission:                      “To develop, operate and maintain an efficient, cost effective, safe, secure and integrated transport system that links the transport policy with other sectorial policies, in order to achieve national and international development objectives in a socially, economically and environmentally sustainable manner”.</p>
Botswana: National Integrated Transport Policy 2011 -2036	<p>Vision:</p>

Country: Document Name	Vision and Mission Statements
	<p>“The Policy is intended to get the most from the entire transport sector, to improve the quality of life of us all and that of our neighbours, by ensuring the management of the transport sector overall is completely integrated, taking into consideration the pressing issues of our time such as energy and environment and poverty alleviation; while laying the foundation for us to fully exploit the technologies of the future.”</p>
<p>Liberia: National Transport Master Plan</p>	<p>Vision:                      “The principal target of this Transport Master Plan is to present guidelines for rehabilitating and developing transportation infrastructure and services so that a networking of individual transport systems will lead to the generation of greater economic and social benefits.”</p>
<p>Rwanda: Strategic Transport Master Plan for Rwanda</p>	<p>Vision:</p> <ul style="list-style-type: none"> <li>•Economy: To support sustainable economic activity and get good value for money</li> <li>•Environment: To protect the built and natural environment</li> <li>•Safety: To improve safety by reducing accidents and improve security</li> <li>•Mobility: To improve generalized travel time</li> <li>•Accessibility: To improve access to transport facilities</li> <li>•Integration: To ensure that all decisions are taken in the context of Rwanda’s Integrated Transport Policy</li> <li>•Social Equity: Ensure affordable and reliable transport options and alternatives for all</li> </ul>

### 2.3.2 Forecasting

Forecasting is the estimation of the short-, medium-, or long-term future in a specific research area or according to the questions posed by means of scientific methodology (Cuhls et al., 2003). Armstrong (1985) defined it as the art of estimation in unknown situations. Martino (1983 p.2) defined it in technological terms as “a prediction of the future characteristics of useful machines, procedures, or techniques”. In the field of transport, forecasting or transport demand forecasting is understood as a method for estimating the number of people and or vehicles that will use a specific transport system (e.g. a road, bridge, railway line or an airport) in the future. This is normally done with the view to estimating the capacity of transport infrastructure, to estimate the social or financial viability of transport interventions and/or to estimate environmental impacts.

The main methodological tools that underpin strategic transport planning processes are mainly transport demand forecast models (Preston, 2014). These are quantitative models used to predict the impact of transport strategies and to evaluate the extent to which alternative strategies meet different policy objectives. They are developed at various spatial scales and varying degrees of sophistication ranging from complex models to sketch planning tools (Banister, 2002). The more sophisticated they are, the better they are at providing accurate forecasts. However, as they increase in sophistication, transport models become more costly resulting in trade-offs between their increased accuracy and costs. Examples of these transport demand models at the strategic transport planning level include (Preston, 2014): the Dutch National Transport Model; the United Kingdom’s National Transport Model, and the Infrastructure Transitions Research Consortium’s Transport Demand and Capacity Assessment model.

The use of forecasting in transport planning has a well-established tradition dating back the 1950s (see Chicago Area Transportation Study – CATS - Weiner 1997; Pas 1988; Meyer and Miller 1984)<sup>16</sup>. Traditionally, transport demand modelling follows a sequential four-stage process. This four-stage modelling process relates to several sub-models that correspond to a trip-maker’s decision-making process. The first stage is called trip generation and it estimates the number of trips at the level of transport activity zones. The second stage is trip distribution and defines a sub-model that identifies the number of trips that occur between each origin and destination zones. The third element relates

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<sup>16</sup> For a detailed historical account of the trajectories of developments of the use forecasts in [urban] transport planning, the reader is referred to these authors.

to the choice of mode and determines the mode of choice between each origin-destination pair. Traffic assignment is the final sub-model that assigns the trips onto mode-specific transport networks. The results of these sub-models lead to a forecast of future travel demand.

*To what extent is forecasting used to imagine socially-just transport futures?* The 'Transportation 2030 Equity Analysis Report' commissioned by the Metropolitan Transportation Commission (MTC, 2005) is an example of how the four-step model discussed above was used to think about equity or justice issues in transport. Unlike other equity analysis exercises that tend to generally focus on the short term, this report covers a longer horizon year. The report used transport models to measure both the benefits and burdens associated with various investment packages with the view to ensuring that minority and low-income communities share equitably in the benefits of the investment proposals without bearing a disproportionate share of the burdens. Here, two aspects of the report suggest a social justice leaning. First, its focus on "minority and low-income communities" is in consonance with the ethos of most of the theories of justice discussed in Sections 2.2.2.1 to 2.2.2.5. Second, the involvement of the 'Minority Citizen's Advisory Committee' (MCAC) in the development of the equity analysis methodology including the definition of communities of concern and essential destinations is in keeping with the idea of procedural justice.

*To what extent is forecasting used in strategic transport planning in Sub Saharan Africa?* With reference to SSA, Table 2.3 shows that in 12 cases, forecast-based approaches were used in developing the strategic transport policy documents reviewed. These include policy documents from Namibia, Mauritius, Ghana, Uganda, Botswana, Liberia, Rwanda, and Swaziland. Of the plans that report the use of forecast-based approaches, the EMME/2, VISUM and CUBE proprietary software were used. While some of these strategic plans show some justice or equity content (see, for example, Kenya and Rwanda), they cannot be said to have socially-just transport futures as their main focus. Nevertheless, this is understandable in that these are strategic policy documents with a much wider set of goals and scope than the goal of social justice. To be clear, and to the limits of this researcher's knowledge, there is no evidence of the use of forecasting to explore socially-just transport futures in Sub Saharan Africa. This is in spite of the fact that there exists some body of work in this context with fairly strong social justice content covering various themes - rural accessibility (see for example, Bryceson and Howe, 1993; Maiga, 1995; Connerley and Schroeder, 1996; Banjo, Gordon and Riverson, 2012; walking and cycling (see for example, Howe and Dennis, 1993; Grieco,

Turner and Kwakye, 1994; Rwebangira, 2001; Sietchiping, 2012); social exclusion (see Lucas, 2011), transport and gender (see Porter, 1995; Grieco et al., 1996; Porter, 2011). The dearth of research in the use of forecast-based approaches to think about socially-just transport futures in SSA may be explained by some of the criticisms levelled against the methodology by some scholars in this context. For example, Vasconcellos et al., (1997 p.6) in writing about transport equity in developing countries in general, made the following observations about forecasting:

*"...transport infrastructure and services in developing countries have been provided with the support of methodologies and assumptions originating in industrializing countries in the 1950s. These methodologies are used to propose transport solutions for hypothetical future conditions, based on forecast social and economic variables. In addition, they adopt market and efficiency paradigms and target mobility as a prime objective. The actual results of these modelling procedures and their assumptions in the developing world have been widely disappointing. Used as supposedly neutral techniques, they have served as instruments of power for technocrats working mostly within weakly democratized environments".*

For Vasconcellos et al., (1997) therefore, the result of forecasting with its 'blackbox ethics' where a few experts decide what data to use, and how to handle the data has served to propagate an unequal and unfair distribution of accessibility.

For the purposes of this thesis, and as already mentioned briefly in Section 2.3, forecasting has been reviewed here for completeness only. Looking ahead to the development of the method proposed in this thesis therefore, forecasting will not be used. This is because the focus of the present research is on long-term transport futures. Scholars such as Wack (1985) and Bradfield et al., (2005) argue that while forecasting is a powerful tool, its strengths are limited when the time horizon considered is relatively longer because it creates an illusion of certainties that are not really certain (Van der Heijden, 1997). In other words, when there is a high degree of uncertainty or some significant discontinuity, forecasting becomes less powerful.

### **2.3.3 Backcasting**

First introduced by John Robinson in 1982, 'backcasting' is used to imagine preferred futures over the longer-term and are designed to be 'trend-breaking' (Banister and Hickman, 2012). In backcasting, the starting point is to envision a desired future, and then work backwards to define what policy measures would be needed to achieve such a future. The process of backcasting takes a normative view of desirable futures and has as one of its focuses, the development of "the pathway from where we might want to be back to the present" (Banister and Hickman, 2012, p.283-293).

Compared with forecasting, the backcasting methodology is more effective (Robinson, 1982). This is because forecasting, compared with backcasting offers a limited range of options in that it relies on what is known today, which knowledge may change with the passage of time (ibid). In addition, unlike forecasting, backcasting does not intend to reveal what future is likely but to indicate the relative plausibility and implications of policy goals (Robinson, 1990). Furthermore, while the value of a forecast depends on its accuracy, the value of backcasting is to suggest the implications of different policy futures chosen not based on their probability of occurrence, but on other defined criteria external to the analysis (ibid).

Backcasting is like visioning in that both methods start by imagining desirable future end-states. However, unlike visioning, backcasting moves a step further to develop the pathways that lead to the actualization of the envisioned end-state. A distinctive feature of backcasting, therefore, is that it addresses the question: “if we want to go from point A to point B, what actions might we take now in order to get there?” Indeed, in describing the backcasting methodology, Robinson (1990 p.822), pointed out that “the major distinguishing characteristic of backcasting analyses is a concern, not with what futures are likely to happen, but with how desirable futures can be attained”. In other words, the focus of backcasting is on the ‘procedural vehicles’ required to go from the present state to an envisioned state. The original formulation of the backcasting process presented by Robinson (1990) has six main stages: determination of objectives, specification of goals, constraints and targets, description of the present system, specification of exogenous variables, analysis of scenarios and impact analysis. Even though Robinson argued that a central ethos of the backcasting process is how desirable futures can be attained, it is critical to note that none of his six steps explicitly addressed this component. Instead, a significant part of his methodology focused exclusively on ‘scenario analysis’ which, as will be seen in Section 2.3.4 below, has some important differences with the backcasting methodology as understood in this thesis.

For the purposes of this thesis, the ‘procedural vehicles’ referred to above are understood to be both the policies and timelines required to reach an envisioned state. The policies can be understood in two mutually complementary ways: as candidate policy measures or as packages of policies. They include conventional transport instruments such as traffic management and pricing policies, new infrastructure, land use measures, use of information technology and attitudinal changes (May et al., 2003 -Decision-makers Guidebook). There are many sources of these policy instruments and no one source provides an exhaustive list. For example, Leeds University's

Knowledgebase on Sustainable Urban Land use and Transport (KonSULT - <http://www.konsult.leeds.ac.uk/> ) is a useful source of policy measures that can be adapted to the needs of different decision situations. Similarly, Banister et al., (2000) have a list of 85 policy measures put together under various headings that can be adapted. In addition, the Victoria Transport Policy Institute (see <http://www.vtpi.org>) provides a list of measures categorised on the basis of the objectives they aim to achieve in a planning situation. The measures can be implemented throughout a city (for example a policy on fares), or at a particular time of the day (e.g. parking restrictions). They can also be implemented at different levels of intensity. Significantly, no one single policy instrument on its own is able to tackle a policy problem or meet all of the objectives of a planning jurisdiction (May et al., 2005). In addition, many measures have different objectives according to policy emphasis (Banister et al., 2000).

Similarly, as policy packages, they are understood as combinations of individual measures that are likely to work well together and potentially create synergies. In the field of transport, Givoni et al., (2013) directly addressed the theme of 'policy packaging' by developing a heuristic framework that seeks to engage with the major conceptual and procedural concerns involved in bona fide "policy packaging". Givoni et al., (2013) argue that the rationale for developing this framework is predicated on two "mutually sympathetic dimensions" that can be identified in the academic literature. First is a "systemic" dimension that relates to how effective a policy package is in achieving a stated objective or sets of objectives. Second is a "political" dimension that concentrates on the inordinate technical complications and intractable, value-laden disagreements that characterize agenda setting and decision-making in contemporary policy domains (Ney, 2012 as cited in Givoni et al., 2013).

Banister et al., (2000) also developed a framework that appears to provide a practical guide on how policy packages may be developed. Using this framework, policy packages are developed by combining sets of individual measures that are likely to work well together and those that might create synergies. The development of each policy package follows the same format - construction logic, description, and main policy measures. In each case, the presentation of the policy packages is similar in the sense that a short tabular summary of the rationale behind the package is given together with a comment on the role (i.e. which image of the future the package is targeted towards), whether the focus is primarily market based or socially based, and its key strategic elements. In some cases, there are two variants of the basic package with different elements to each, and in all cases the key measures, stakeholders and levels of



decision-making are identified (VIBAT<sup>17</sup>, 2006). In clustering policy measures into packages, a core package is the foundation on which the clustering takes place. This core package is then combined with other measures that support it or are mutually compatible with it and the underlying rationale behind the alternative images (VIBAT, 2006).

**Table 2.5: Policy Package for Liveable Cities [Source: VIBAT, Banister et al., (2000)]**

<p><b>Construction logic:</b> this package aims at making cities more attractive by using strategic and local urban design to reduce the dependence on car travel. Measures are targeted at commuting, leisure and shopping trips. Strategic measures include public transport orientated development; and decentralised concentration in urban form. Local land use planning favours mixed use areas; better conditions for walking, cycling and public transport; decreased space for cars and parking; and short, direct routes to everyday services and amenities. Intensified access to IT plays an important supporting role.</p>	
<p>Designed for Images 1 and 2</p> <p>Main policy orientation</p> <ul style="list-style-type: none"> <li>▪ Regulation</li> <li>▪ Public services</li> </ul>	<p>Key strategic elements</p> <ul style="list-style-type: none"> <li>▪ Passenger</li> <li>▪ Technology</li> </ul>

*To what extent is backcasting used to imagine socially-just transport futures?* Similar to forecasting and visioning discussed earlier, the review of the backcasting literature shows a dearth of information on the use of the method to imagine socially-just transport futures. Most of the literature on the application of backcasting in transport focus on environmentally sustainable transport futures (see OECD<sup>18</sup>, 1997; Geurs and van Wee, 2004; VIBAT, 2006; Hickman & Banister, 2007; Hickman, Ashiru, & Banister, 2009; Barrella and Amekudzi, 2011; Hojer, Gullberg, and Pettersson, 2011; Banister & Hickman, 2009, 2013; Barandier, 2015). For example, in the VIBAT project in the U.K. and India, issues of carbon-efficient transportation systems were explored using the backcasting methodology. In the UK project in particular, three scenarios for reducing U.K. transport emissions of CO<sub>2</sub> by 60% by 2030 were examined. Similarly, in the OECD report cited, experts from participating countries developed three backcasting scenarios

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<sup>17</sup> For Visioning and Backcasting for Transport Policy - a project that examined the possibilities of reducing transport emissions in London by 60 per cent to 2030 and 80 per cent to 2050 through a modified backcasting and scenario-building approach (see [http://www.vibat.org/vibat\\_ldn/index.shtml](http://www.vibat.org/vibat_ldn/index.shtml))

<sup>18</sup> Organization for Economic Co-operation and Development

based on the following criteria: a high technology scenario utilising mainly technological changes, a mobility management scenario with mobility changes, and a combination of scenarios using both technology and mobility changes. Each country was then asked to pursue strict goals like 80% to 90% emission reductions between 1990 and 2030 and a negligible level of noise nuisance in 2030.

*To what extent is backcasting used in strategic transport planning in Sub Saharan Africa?* To the limits of the present researcher's knowledge, there is no work either in the academic literature or in practice in SSA (see Table 2.3) where backcasting is used to think about socially-just transport futures. The method has however been used in other fields in SSA. For example, Seward and Turton (2015) used the method to explore ways to improve the national government's contribution to good groundwater governance in South Africa. The dearth of use of the backcasting approach in transport planning practices is interesting because the complexity of transport problems in contexts such as Africa requires a departure from the *status quo* that is forecasting with its focus on "incremental policies" (Barrella and Amekudzi, 2011 p.35). The argument here is that through its participatory processes, backcasting provides the 'conduit' for a departure from this *status quo* by providing an opportunity to take action-oriented rather than a passive approach to developing desirable images of the future to guide decision-makers in their selection of policy packages and pathways in a social learning environment. Dreborg (1996) also argued that because of its problem-solving character, the backcasting methodology is germane for dealing with problems that do not have definitive and objective solutions or "wicked problems" (Rittel and Webber, 1973).

#### 2.3.4 Scenario Planning

Scenarios have been given different definitions by different scholars. Coates (1985) defines it as the overall process of creating an understanding and appreciation of information generated by looking ahead. Van der Heijden (1996) defines it as a narrative that links historical and present events with hypothetical events taking place in the future. Mahmoud et al., (2009) on the other hand define scenario planning as the process of evaluating possible future events through the consideration of alternative plausible, though not equally likely, states of the world. Kuhn and Sniezek (1996) defines it simply as a story told about the future. A consideration of all these definitions, however, suggests that scenario planning is a *tool* that enables decision-makers to think about the future. Following the Stanford Research Institute (SRI)<sup>19</sup>, scenario planning is

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<sup>19</sup> One of the organizations within which the concept was originally conceptualized.

understood in this research as the *devices* for ordering one's perceptions about alternative future states or environments within which one's decisions might be brought to bear.

As a tool or device, scenario planning has several characteristics that distinguish it from other futures approaches. For example, scenario planning uses both qualitative and quantitative techniques for monitoring the parameters of evolving trends to prepare policymakers for the uncertainties of the future. Scenarios are not predictions or forecasts and their objective is not to predict the 'right' or 'wrong' future but to challenge existing paradigms of thinking with the view to exposing 'blind spots' in thinking (Schoemaker, 1995). Therefore, scenario planning is not prescribed to be a replacement for traditional forecasting techniques (Zegras et al., 2004). Compared to backcasting, scenario planning does not explicitly define the pathways or trajectories of developments necessary for achieving a desired end-state. Also, while backcasting approaches may define a "single normative vision" of the future (Tuominen et al., 2014 p.42), the output of scenario planning generally presents more than one view of the future.

The outputs of the scenario planning methodology are called 'scenarios' which are understood in the present research as script-like characterisations of possible futures presented in considerable detail, with special emphasis on causal connections, internal consistency, and concreteness (Schoemaker, 1991). As narratives, therefore, they are developed in a structured way using different assumptions about how political, economic, technological and social factors may unfold in the future. One thing scenario planning cannot do, however, is to define policy and its direction but the process can help condition policies to be more appropriate, flexible, and more robust as times and circumstances change (Coates et al., 1985). The art of scenario planning is also 'normative' in that it embodies perceptions and judgemental values either implicitly or otherwise.

In strategic decision making, scenario planning has a number of goals. Van der Heijden (1996) and Phelps et al., (2001) highlight a number of objectives of scenario planning including the development of robust strategies, better understanding of the future, better perception of patterns and change, and improved performance. Of all these objectives, however, the one that has been emphasized is the issue of adaptability or uncertainty (Schwartz, 1991; Schoemaker, 1995; Yoe, 1983; Stead and Banister, 2003). For example, van der Heijden (1996) argues that the ultimate purpose of the scenario planner is to create a more adaptive organization, which recognizes change and uncertainty and uses it to its advantage. In strategic planning, these uncertainties

include increasing levels of urbanization, security concerns, and climate change. Scenario planning manages these uncertainties by (following Yoe, 1983 p.17):

- Highlighting their sources;
- Developing a range of possible future scenarios for exploration, acknowledging that not all are equally likely and that the future may indeed have aspects from more than one scenario;
- Developing a range of strategies and future indicators of which strategies may be most critical;
- Acknowledging that future uncertainties may create discontinuities.

In other words, scenario planning 'bounds' uncertainty by providing a framework to allow decision-makers to more openly deal with acknowledged uncertainty, to arrive at a deeper understanding of what is important in shaping the future, and to identify what needs to be dealt with and what ought to be ignored because of its transience (Schoemaker, 1995).

Given that it is possible, in theory, to develop thousands of narratives about how the future may unfold a critical question then is - how many of these narratives or scenarios are sufficient to help reduce or manage future uncertainties? There is some understanding that the number of scenarios must range between two and five (van't Klooster and van Asselt, 2006; van der Heijden, 1997) even though in practice four scenarios are mostly used (see e.g. Nakicenovic and Swart, 2000; Chatterjee and Gordon, 2006).

Generally, scenario planning approaches are partitioned into three main 'schools' (Bradfield et al., 2005; Huss and Honton, 1987): an Intuitive Logics approach (IL), Probabilistic Modified Trends (PMT) approach and a La Prospective (LP). Looking forward to the development of the method proposed in this thesis, the interest in the present research is on the IL approach as described below. This is because, compared to the PMT for example, the latter relies on computer-generated algorithms that require detailed quantitative data. For developing contexts such as Africa, such data may not be available or they may generally be inaccurate. This suggests that using an approach such as the PMT with its dependence on detailed quantitative data may not be plausible in this context. In addition, because they rely heavily on computer-generated algorithms, they have the disadvantage of creating too many scenario sets and giving similar weight to probable, plausible and implausible scenarios.

Focusing on the IL approach for the reasons stated above, it is significant to note that even though much has been written about it, the approaches used remain more or less amorphous with different authors providing their own approaches (see Table 2.6). For example, Table 2.6 shows that there are different variations of the IL approach with steps ranging from four (see Wollenberg et al., 2000) to 18 (see Ralston and Wilson, 2006) or potentially even more. Significantly, several differences are noticeable between the steps presented in Table 2.6. First, the order in which they are presented is not the same. For example, for a cross-cutting issue such as the identification of the main driving forces, Stead and Banister (2003) have it as step 1, whereas Ringland (2003), Wollenberg et al., (2000) and SRI have it in step 2; Schoemaker (1995) has it as step 3, but for Schwartz (1991) has it as step 4. Ralston and Wilson (2006) incorporate this in their step 9. Secondly, some authors are more detailed in presenting the structure of their approach than others. For example, compare Ralston and Wilson (2006) who present an 18-step approach to Wollenberg et al., (2000) with their 4-step approach. A third major difference between the steps relates to how the scenario planning process ends. For instance, in Ralston and Wilson (2006) the final step is to “communicate the results to the organization”; in Shoemaker (1995) the final step is to “evaluate scenarios” while in Ringland (2003) the process concludes with “feed scenarios back to the team consulted”.

The approach comes with several advantages and limitations. In terms of its advantages, it is noted that because of its flexibility it is possible to use the approach to develop internally consistent scenarios from an intuitive, logical perspective (Huss and Honton, 1987). In addition, because the approach is not tied to any mathematical algorithms it is able to, with careful tailoring, adjust to particular needs and the political environment of the decision-making context (Schoemaker, 1995). However, the method also depends heavily on the expertise and communication skills of the scenario development team, which suggests that its success depends largely on the expertise, and communication skills of the team and how those skills are brought to bear on the process (Ralston and Wilson, 2006).

*To what extent is scenario planning used to imagine socially-just transport futures?* While there is a burgeoning body of literature on the use of scenario planning in transport planning (see Muñoz-Loustaunau & Sussman 1999; Shiftan et al., 2003; Stead and Banister 2003; Amer et al., 2013), there is no evidence of the use of the method to imagine socially-just transport futures (to the limits of this researcher's knowledge). One way of using scenario planning to imagine socially-just transport would involve using the

values or distributive principles reviewed in Section 2.2.2 as the main driving forces and/or critical uncertainties as the scenario axis and then developing the scenario narratives around these driving forces. For example, Rawlsianism and libertarianism could be placed at opposite ends of a continuum and combined with other drivers to construct two mutually perpendicular, orthogonal axes resulting in four quadrants with each representing alternative narratives of the world within which transport decision-making may play out.

*To what extent is scenario planning used in strategic transport planning in Sub Saharan Africa?* Table 2.3 shows the use of the term 'scenarios' in some of the strategic transport policy documents in Sub Saharan Africa reviewed for the purposes of this thesis. For example, Namibia, Mauritius, Uganda, Botswana, and Rwanda all show the use of 'scenario-based' approaches. With respect to Namibia for example, three 'growth scenarios' were developed to guide future developments in the transportation sub-sector: Low, Medium and High Growth Scenario. Similarly, the Ugandan document shows the use of scenario analysis where three scenarios for the future were developed: Business as Usual' (BAU), Planned Development (PD), and a Transit-Oriented Development (TOD) scenarios. In the case of Rwanda, six scenarios were developed: 1) Current network, 2) Current network with Rail included for passengers & freight, 3) Current network with new and improved road links, 4) Network with improved road links and quality bus services on Quality Bus Corridors, 5) Current network with proposed Inland Waterway Transport and 6) current network with Rail included for passengers & freight according to the Great Lakes Study. However, the context in which the word 'scenarios' is used in these documents suggests that the term is only used to set out possible investment options rather than to capture alternative futures. This connotation is different from the understanding of the term in this thesis.

**Table 2.6 : Some Variants of the Intuitive Logics approach to scenario planning as proposed by different authors**

Step	Author: Year						
	Schwartz (1991)	Schoemaker (1995)	Wollenberg et al., (2000)	Ringland (2003)	Stead and Banister (2003)	Ralston and Wilson (2006)	SRI
1	Identify main issues to be analyzed	Define issues in terms of time, scope and decision variables	Define objectives of scenario planning exercise	Define the scope and objectives of research	Identify key issues	Develop the case for scenarios	Analyze the decisions and strategic concerns
2	Identify issues that will determine success or failure	Identify major stakeholders or experts	Identify key drivers of change	Identify forces that will determine success or failure	Make projections of key issues	Gain executive understanding, support and participation	Identify key decision factors
3	Identify driving forces	Identify trends that will affect key decision variables	Design scenarios	Identify macro trends that drive micro trends	Generate policy targets	Define decision focus	Identify key environmental forces
4	Prioritize decision factors and driving forces	Identify key uncertainties	Identify implications of scenarios for stakeholders	Identify 2 or 3 factors that are most uncertain	Generate images of the future	Design the process	Analyze the environmental forces

Step	Author: Year						
	Schwartz (1991)	Schoemaker (1995)	Wollenberg et al., (2000)	Ringland (2003)	Stead and Banister (2003)	Ralston and Wilson (2006)	SRI
5	Choose most uncertain driving forces to build scenarios	Construct 2 forced scenarios		Select scenario logics	Identify policy options	Select the Facilitator	Define scenario logics
6	Integrate all driving forces and decision factors into scenarios	Check for internal consistency and plausibility		Flesh out scenarios	Generate policy packages	Form the scenario team	Elaborate the scenarios
7	Analyze implications on decision variables	Develop learning scenarios by eliminating incredible combinations		Identify implications of scenarios for strategy	Generate policy paths	Gather available data, views and projections.	Analyze the implication for key decision factors
8	Select signposts and signals that show a scenario is unfolding	Flesh out scenarios and research further into uncertainties		Select signposts	Carry out validation	Identify and assess key decision factors	Analyze implication for decisions and strategies
9		Develop models to check for internal consistency		Feed scenarios back to the team consulted		Identify the critical forces and their drivers	



Step	Author: Year						
	Schwartz (1991)	Schoemaker (1995)	Wollenberg et al., (2000)	Ringland (2003)	Stead and Banister (2003)	Ralston and Wilson (2006)	SRI
10		Discuss strategic options				Conduct focused research	
11		Decide on implementation plan				Assess the importance and predictability of forces and drivers	
		Evaluate scenarios				Identify key axes of uncertainty	
12						Select scenario logics to cover the envelope of uncertainty	
13						Write the storylines for the scenarios	
14						Rehearse the future with scenarios	

Step	Author: Year						
	Schwartz (1991)	Schoemaker (1995)	Wollenberg et al., (2000)	Ringland (2003)	Stead and Banister (2003)	Ralston and Wilson (2006)	SRI
15						Get to the decision recommendations	
16						Identify the signposts to monitor	
17						Communicate the results to the organization.	

### **2.3.5 Section Summary and Conclusions**

Sections 2.3.1 to 2.3.4 reviewed four main approaches to imagining transport futures: visioning, forecasting, backcasting and scenario planning. Table 2.7 provides a summary of the different approaches by comparing and contrasting them in terms of their strengths and limitations, outputs and areas of application. Significantly, the review shows that each of these approaches has important strengths and limitations. For example, the review shows that scenario planning is a useful approach that can be used to bound uncertainty by providing a framework to allow decision-makers to more openly deal with acknowledged uncertainty, and to arrive at a deeper understanding of what is important in shaping the future. Similarly, the review suggests that backcasting because of its participatory nature, offers several constituent features capable of dealing with the far-reaching and seemingly intractable “wicked problems” (Rittel and Webber, 1973) that transport planners and decision-makers face. Looked against the backdrop of Sub Saharan Africa, all these considerations are important. For example, and with direct reference to the issue of uncertainty, African countries are more vulnerable (socially and economically) to the risks of uncertainty because of a number of factors including for example, their lower adaptation capacity, weaker governance institutions, and fewer resources to invest in adaptation (Ranger and Garbett-Shiels, 2011). These factors reinforce the importance of taking uncertainty into account in strategic transport planning in Sub Saharan Africa. Furthermore, by explicitly acknowledging the importance of policy paths to the realisation of transport visions, the backcasting methodology provides a realistic view of what needs to be deployed in terms of transport policies to achieve a desirable, socially-just transport future and to galvanise the support of all stakeholders to provide the required support for implementation. Looking ahead to the development of the method proposed in this thesis, a key question then is, how might the instrumentality of each of these futures approaches be recast to deliver socially-just transport futures in SSA? This question is addressed in Chapter 4.

**Table 2.7: Comparison of the futures approaches [Source: various sources drawn from the literature review]**

	<b>Visioning</b>	<b>Forecasting</b>	<b>Backcasting</b>	<b>Scenario Planning</b>
Definition	The construction of an image of a desirable future.	Two principal types of forecast: <ul style="list-style-type: none"> <li>- Do-minimum forecast: an extrapolation of current trends to the future</li> <li>- Do something forecast: the prediction of the impact of implementing a specific transport policy (or set of transport policies), against a background in which current trends are extrapolated</li> </ul>	The construction of one or more pathways for attaining a vision.	The <i>devices</i> for ordering one's perceptions about alternative future states or environments within which one's decisions might play out.
'Starting point'	The future	The present	The future	The future
Outcome/s	Desired futures	Predictions	Images of the future in terms of policy measures and timelines	Internally consistent narrative descriptions of possible states of affairs or

	<b>Visioning</b>	<b>Forecasting</b>	<b>Backcasting</b>	<b>Scenario Planning</b>
				developments in the future.
Benefits	<ul style="list-style-type: none"> <li>- Good for generating ideas, encouraging interaction and agreeing a common vision, values, and goals.</li> </ul>	<ul style="list-style-type: none"> <li>- Facilitates strategy and policy-making</li> <li>- Can be taught, learned, and peer reviewed.</li> </ul>	<ul style="list-style-type: none"> <li>- Avoids extrapolating present conditions.</li> <li>- Quick and easy to use.</li> <li>- Creative.</li> <li>- Provides some response to questions of uncertainty in long-term futures</li> </ul>	<ul style="list-style-type: none"> <li>- Exploring uncertainties and test for limits</li> <li>- Provides some response to questions of uncertainty in long-term futures</li> <li>- Ordering of alternative futures</li> <li>- Identifying emerging risks and opportunities</li> <li>- Improving decision-making</li> <li>- Acting as a forum against conventional inside-out orthodoxy</li> <li>- Used to derive fresh visions and/or current or new strategy development</li> <li>- Used to rehearse the future</li> </ul>

	<b>Visioning</b>	<b>Forecasting</b>	<b>Backcasting</b>	<b>Scenario Planning</b>
Disadvantages	<ul style="list-style-type: none"> <li>- Requires solid communication and continued facilitation from the beginning.</li> <li>- Powerful groups/individuals may dominate the process – thereby stifling the process.</li> </ul>	<ul style="list-style-type: none"> <li>- Does provide adequate response to questions of uncertainty in long-term futures</li> <li>- Data may not be available to validate and calibrate forecast models.</li> <li>- Can be complex and require training or facilitation.</li> <li>- Forecast assumptions can be wrong</li> </ul>	<ul style="list-style-type: none"> <li>- May need constant updating.</li> <li>- Can be resource intensive and time-consuming.</li> <li>- No defined, conceptual framework.</li> </ul>	<ul style="list-style-type: none"> <li>- Can be misconstrued as the 'official future' by non-experts.</li> <li>- May lack credibility because of their subjectivity.</li> <li>- time consuming</li> <li>- May suffer major project creeps if not managed well.</li> </ul>
Areas of use	Government authorities, municipalities, organizations, private enterprises and an informed general public and technological areas to predict outcomes.	Generally applied in all political, economic, social and technological areas to predict outcomes.	<ul style="list-style-type: none"> <li>- Transport planning</li> <li>- Resource management</li> <li>- Government authorities, municipalities, organizations, private enterprises and an informed general public and technological areas to predict outcomes.</li> </ul>	<ul style="list-style-type: none"> <li>- Generally applied in all political, economic, social and technological areas to predict outcomes.</li> <li>- Government authorities, municipalities, organizations, private enterprises and an informed</li> </ul>

	<b>Visioning</b>	<b>Forecasting</b>	<b>Backcasting</b>	<b>Scenario Planning</b>
				general public and technological areas to predict outcomes.

## 2.4 Ethical Matrix

In reviewing the different distributive principles in Section 2.2.2, a key issue relevant to this thesis relates to how these different values might be incorporated into transport decision-making. To encourage stakeholder and public deliberation on the ethical issues involved in decision-making, novel participatory tools, procedures and frameworks have been developed by various authors (Cotton, 2014). Called ethical tools (Cotton, 2014), they were developed to help participants in a deliberative process to express the values and ideals that capture their perspectives (Beekman and Brom, 2007). While these tools were not developed to take any particular stance in different debates about the contents and definitions of justice, they are not agnostic about the contents of ethical considerations since they are needed to help participants to identify relevant ethical persuasions (Beekman and Brom, 2007).

Generally, ethical tools have emerged from the fields of bioethics and healthcare ethics (Cotton, 2014). Beekman and Brom (2007) partitioned ethical tools into three main categories: (1) public consultation and involvement tools; (2) decision-making frameworks; and (3) food chain value communication tools. Under the second category, three main tools are provided: Ethical Matrix (EM), Ethical Grid (EG), and Ethical Delphi (ED). For the purposes of this thesis and looking forward to the development of the proposed method however, only the EM tool is discussed further. This is because, the EM provides a simple heuristic framework for incorporating the different values or distributive principles discussed earlier into the decision-making process.

The EM was developed by Benjamin Mepham in 1994 “to facilitate ethical deliberation by those with particular knowledge and/or interest in novel biotechnologies, but who may have little or no formal training in academic ethical theory or have only limited experience in applying such theory to concrete issues” (Mepham et al., 2006 p.5). It is based on the ethical standards shared by most members of a society in the form of unreflective common sense and tradition (ibid). It aims to help users to identify ethical issues that are raised in a deliberative process in order to arrive at intellectually-defensible decisions. The use of the EM tool should therefore help to raise awareness of a wide range of ethical issues, encourage ethical reflection, and provide a basis for ethical decision-making, among other outcomes (Mepham et al., 2006). The standard EM (see Table 2.8) is based on a “prima facie” set of principles (Mepham et al., 2006 p.8): respect for well-being, autonomy, and fairness. These rules together form the columns of the



matrix. The rows of the matrix consist of relevant 'interest groups' or stakeholder groups pertinent to the issue in question.

What this matrix means is that the 'principles' along the x-axis (well-being, autonomy, fairness) are applied to the 'interests' of various stakeholders along the y-axis and the results are used as the basis of discussion. As indicated above, EM was intended to be simple. However, the tool is not without criticism. For example, inherent in the idea of simplicity is that while aiding simplification, the 3x4 structure of the matrix also limits opportunities for creative problem solving "outside of the matrix's pre-defined principles and stakeholder categories" (Cotton, 2014). In addition, the range of principles and stakeholders presented in the matrix are relatively small. This could lead to conflicts between stakeholders included and those excluded in the deliberative process. Furthermore, it is argued that the EM in its current form lacks deliberative mechanisms for closure on ethical decision-support processes. Admittedly, these practical constraints were acknowledged by Mepham and his colleagues and in the "Ethical Matrix Manual", Mepham et al., (2006), they suggested that users of the method may adapt the original matrix to suit the particularities of their use.

In discussing the ethical matrix tool, there are a number of considerations that need to be acknowledged (Cotton, 2014). In the first place, it is important to note that people express values in many different contexts and that these values refer to states of affairs that make them desirable and important (ibid). Second, values differ in society and that in a democracy these value differences need to be respected. If one accepts value pluralism as a given in liberal democracies, then the object of an ethical tool such as the EM will be to find ways in which one is enabled to deliberate on the basis of the recognition that these values differ and that they need to be respected and accounted for in order to reach ethically acceptable conclusions (Beekman and Brom, 2007). Third, in using ethical tools, the expectation is not that their use would lead to a unique and completely satisfactory answer, but that they are capable of simplifying and facilitating decision-making processes by capturing those considerations that are needed for an ethically well-considered judgement.

As highlighted in Section 2.2.1, an inclusive and pluralistic decision-making approach is crucial for a number of reasons. First, inclusive participation by stakeholders including the public is necessary as it expands the range of perspectives involved in the decision-making process and diversifies the pool of information available, increasing the likelihood that important social and ethical issues will be addressed (Cotton, 2014). Second, facilitated deliberation exposes decision makers to diverse ideas and

perspectives (including those that they are inclined to reject) serving an important moderating function by helping to build a culture of pluralism.

To the limits of this researcher's knowledge, despite its usefulness, the EM has never been applied in the field of transport. This is despite an increasing body of work on "transport ethics" (see Thomopoulos et al., 2009; van Wee, 2011; Van Wee and Geurs, 2011). Looking ahead to the development of the method proposed in this thesis, a corollary question then is: how might the EM be used in the proposed methodology? This question is revisited in Section 4.6.

**Table 2.8: An Example of the EM tool for Nuclear Power [Source: Cotton, 2014]**

	<b>Wellbeing</b>	<b>Autonomy</b>	<b>Fairness</b>
<b>Nuclear Industry</b>	Profit generation, growing employment	Freedom from regulation and planning constraints	Low cost electricity to consumers, alleviating fuel poverty
<b>Citizens</b>	Protection from risk of radiation, leaks and accidents	Decision-making input to site selection	Compensation in the face of elevated risks
<b>Future Generations</b>	An environment free of radiological contamination	Knowledge about past practices and impacts	Reciprocity across time frames, avoiding discounting of future lives
<b>The Biosphere</b>	Environmental remediation of contaminated sites	Maintenance of biodiversity and ecological health	Non-anthropocentric valuation of natural resources

## 2.5 Chapter Summary and Conclusions

This section summarises the main findings of this chapter under each of the four literature review questions that were posed in Section 2.1. The review in Section 2.2 suggests that the term "social justice" is a contested construct, with no comprehensive or even indisputable definition of the term. The lack of a universally applicable definition of the term is because it is used in many contexts (e.g., socio-political, economic, legal, philosophical, practical, and academic contexts). For the purposes of this thesis, however, the definition offered by Jost et al., (2010) is adopted. This defines social justice in terms of three overarching constructs: procedural justice, distributive justice, and interactional justice. While procedural justice relates to the methods, processes, and procedures by which decisions about the allocation of resources are made,

distributive justice focuses on what constitutes a just distribution of goods among members of society. Interactional justice, on the other hand, focuses on the interpersonal relationships between people when processes and procedures are implemented. Of the three concepts, the review shows that two are relevant to the field of transport: distributive and procedural justice. Of particular relevance for the purposes of this thesis however, is distributive justice. This is understood (for the purposes of this thesis) as the values that underpin transport decision-making – Rawlsianism, utilitarianism, libertarianism, sufficientarianism and prioritarianism. These values are however not mutually exclusive in that in terms of transport strategies, they all appear to converge in the short to medium terms on some sort of priority for the worse off in society.

With respect to the second review question, the review suggests that most of the theoretical discussions and thoughts on social justice especially in the field of transport currently focus on and are shaped by Euro-American perspectives. This opens up a number of questions including whether, and to what extent the body of knowledge on transport justice developed in contexts different from the Sub Saharan African one offer some framework for analysing issues of transport justice in Africa. In other words, does context matter in discussions about transport justice? While interesting, this question is beyond the scope of this thesis.

With respect to the third review question, the literature review shows that four main approaches to imagining transport futures are relevant to the field of transport: visioning, forecasting, backcasting and scenario planning. While each of these approaches is used in the field of transport, the review shows that scenario planning, visioning, and backcasting are mostly used to imagine environmentally sustainable transport futures with very little in terms of their use to imagine socially just transport futures. With particular reference to Sub Saharan Africa, the review also shows that the most dominant futures approach used is forecasting (mostly, proprietary software such as EMME/2, VISSUM etc.). There is no evidence (to the limits of this researcher's knowledge) of the use of backcasting and visioning in transportation planning in SSA. With respect to the use of the scenario planning approach, even though the review shows the use of the term 'scenarios' in some strategic policy documents, analysis of the context in which the word was used shows that it was used to set out investment options. This is contrary to the understanding of the term in this thesis – that is, to 'bound' the uncertainties of the future in the decision space.

To conclude, the review in this chapter shows that scenario planning, backcasting and visioning have all been used to imagine environmentally sustainable transport futures. However, there is very little in terms of their use to imagine socially-just transport futures. While the reason for this is not clear from the literature, a possible explanation is a lack of suitable futures methodologies. The challenge then is to explore ways by which the instrumentality of the existing futures approaches might be recast to deliver socially-just transport planning outcomes. This provides the justification for the present research - to develop a method for imagining transport futures that explicitly incorporates notions of social justice. Chapter 3 details the research methodology used to deliver this research agenda.

## Chapter 3 – RESEARCH METHODOLOGY

### 3.1 Introduction

Section 1.3 highlighted that the overriding aim of this research is to develop a method for imagining socially-just transport futures. It is argued in this thesis that simply developing such a method is not sufficient for the purposes of a Ph.D. because of the need to justify and instrument the process of developing the method itself. This chapter, therefore, outlines not only the research methods chosen but also, why they were chosen relative to some other meaningful alternatives.

Crotty (1998) distinguishes between “methodologies” and “methods” noting that the former relates to “the strategy, plan of action, process or design lying behind the choice and use of particular methods and linking the choice and use of methods to desired outcomes” (Crotty, 1998 p.3). Methods, on the other hand, refer to “the techniques or procedures used to gather and analyse data related to some research question”. Crotty identifies three overarching sets of questions relevant to any piece of research;

- (1) What epistemologies, ontologies or philosophical assumptions should be used to guide this research (i.e. research philosophy)?
- (2) What strategies of enquiry should be used (i.e. research strategy)?
- (3) What methods of data collection should be used (i.e. research methods)?

The above framework is used to structure Sections 3.2 to 3.4 below. This framework is adopted in the present research because of its clarity. This chapter is therefore, structured as follows: Section 3.2 outlines and discusses various research philosophies and the overall philosophy adopted in this research. Similarly, Section 3.3 outlines and discusses various research strategies and the strategies adopted for the current research. Section 3.4 then proceeds to specify the specific data collection and analysis methods adopted, and why they were adopted compared to other suitable alternatives. Sections 3.5 and 3.6 respectively deal with issues of credibility in research and ethical considerations. The chapter then concludes in Section 3.7 with a summary of the main issues addressed in the chapter.

## 3.2 Research Philosophy

Saunders et al., (2007 p.101) argue that the phrase research philosophy relates to “the development of knowledge and the nature of that knowledge”. The term has been referred to variously as philosophical assumptions or ontologies (see Crotty, 1998); world hypotheses (Pepper, 1957); and epistemological stances (Schwandt, 2000). Significantly, these terms represent a hierarchy of decision-making processes in the research design process. For example, philosophically a researcher will take a stance towards the nature of knowledge (i.e. objectivism or subjectivism). This initial decision informs and directs the overall research process including the theoretical perspective a researcher chooses (for e.g. positivism/postpositivism, interpretivism/social constructionism, or pragmatism). These theoretical perspectives define the research questions thereby dictating the particular methodologies (for e.g. phenomenology, grounded theory, case study and ethnography) the researcher chooses. The methodologies employed in turn inform the choice of which methods (survey, interviews, focus group discussions etc.) the researcher uses. It follows then that, an understanding of a researcher’s philosophy is a prerequisite to understanding the perspectives of the researcher about the nature of knowledge. Generally, three broad classes of research philosophies are identified in the literature: epistemology, ontology, and axiology.

Epistemology is about how we know what we know or the nature of the relationship between the knower or would-be knower and what can be known (Guba and Lincoln 2000). It has also been defined as an ethical-moral stance toward the world and the self of the researcher (Denzin and Lincoln, 2005 p.157) or even what constitutes acceptable knowledge in a particular field (Saunders et al., 2007 p.102). In simple terms, epistemology is what we accept as valid knowledge in a particular field. This ‘valid knowledge’ may align strongly to one of positivism, postpositivism, interpretivism/social constructionism and pragmatism. While positivism maintains that true knowledge is obtained objectively based on value-free approaches, postpositivism, on the other hand, recognizes that all observation is fallible and has some error and that all theory is revisable. Interpretivists argue that the world is a creation of the human mind and should be interpreted through the mind (Bryman, 2004). In other words, interpretivism argues that social phenomena are complex and indivisible and must be studied in their completeness. Interpretivists therefore argue that their aim is not to provide generalized and abstracted explanations of causal linkages but to provide contextually-sensitive and meaningful explanations of phenomena in what has often been referred to as ‘thick description’ (e.g. Geertz, 1994). Pragmatism places emphasis on the research problem

instead of methods *per se* and uses all available methods to understand the problem (Creswell, 2003). Essentially, therefore, pragmatism is not committed to any one system of philosophy and reality; truth is what works at the time and that research occurs in social, historical, political, and other contexts (ibid). This third epistemology is partly based a realization among scholars “that the struggle for primacy of one paradigm over others is irrelevant as each paradigm is an alternate offering with its own merits” (Guba, 1990 p.27).

Ontology, on the other hand, is concerned with what is real and the nature of that reality (Saunders et al., 2007). Two ontological positions are identified in the literature (Saunders et al., 2007): objectivism and subjectivism. Rooted in the works of the Russian-American philosopher Ayn Rand (1905-1982), objectivism is predicated on the belief that reality exists independent of consciousness, that humans’ contact with reality can be obtained through sense perception and that objective knowledge can be obtained through the process of concept formation and inductive logic. Subjectivism, on the other hand, is often attributed to the French philosopher Rene Descartes in what he referred to as the ‘methodic doubt’ (i.e. scepticisms about the truth of one’s belief). Adherents of this philosophical tenet, therefore, subject all claims to knowledge to critical scrutiny with the view to ‘sifting out’ truth from falsehood. One of the many interpretations of subjectivism is foundationalism, which believes that the object of the ‘methodic doubt’ is to eliminate all belief that is possible to doubt. By doing this, therefore, the only belief that is left is ‘basic belief’ or foundational beliefs (belief systems that need no justification). Scholars such as Remenyi (1998) therefore reiterate the importance of exploring the details of the situation to understand the reality or perhaps a reality working behind them. Subjectivism, therefore, seeks to explore the subjective meanings and motivations behind social actions (Saunders et al., 2007).

Axiology relates to judgements about values (Saunders et al., 2007). The importance of the researcher’s values in a piece of scholarly work is enunciated in Saunders et al., (2007 p.110). They note that the role that a researcher’s own values play in all stages of the research process is of great importance if results are to remain credible. The choice of research philosophy is therefore a reflection of the researcher’s own values

**Table 3.1: Taxonomy of research philosophies, strategies and methods (Source: author's literature review)**

Epistemology	Ontology	Axiology	Research Approach	Research Strategy	Research Methods
Positivism	Objectivism	Value-free	Deductive	Quantitative	<p>Typically deductive, highly structured, large samples, measurement, typically quantitative methods of analysis, but a range of data can be analyzed.</p> <ul style="list-style-type: none"> <li>• Experimental designs, non-experimental designs such as surveys</li> <li>• Statistical analysis and interpretation</li> <li>• Instrument-based questions.</li> </ul>
Interpretivism	Subjectivism	Biased	Inductive	Qualitative	<p>Typically inductive. Small samples, in-depth investigations, qualitative methods of analysis, but a range of data can be interpreted</p> <ul style="list-style-type: none"> <li>• Phenomenology</li> <li>• Ethnography</li> <li>• Grounded theory</li> <li>• Case studies</li> <li>• Open ended questions</li> <li>• Text and image analysis</li> <li>• Themes, patterns interpretation</li> </ul>



Epistemology	Ontology	Axiology	Research Approach	Research Strategy	Research Methods
Pragmatism	Objective or subjective	Value-free/biased	Deductive/Inductive	Quantitative and/or qualitative or mixed methods	<p>Generally, follows research problem and research question. Range of methods: mixed, multiple, qualitative, quantitative, action research. Emphasis on practical solutions and outcomes.</p> <ul style="list-style-type: none"><li>• Sequential</li><li>• Concurrent</li><li>• Transformative</li><li>• Statistical and text analysis</li></ul>

### **3.2.1 Research Philosophy Adopted Within this Study**

The epistemology adopted in the present research is interpretivist. This is because of the dearth of information on the two main themes covered in this research. In that regard, the literature review in Chapter 2 highlighted in several places the dearth of research on both the concept of social justice and futures methods as applied in transport planning practices in Sub Saharan Africa. For example, with particular reference to how social justice is operationalised and/or conceptualised in transport planning practices in SSA, Section 2.2.3 highlighted the general lack of research in this area noting that even beyond the field of transport, Euro-American perspectives shape most of the theories in this area. With reference to the use of backcasting, scenario planning and visioning to imagine transport futures, Section 2.3.5 similarly highlighted a dearth of research in this area. The dearth of research on issues of social justice on one hand, and futures methods on the other in the SSA warrants the use of an exploratory approach (as opposed to a descriptive one), which approach marries well with the interpretive philosophy. Another reason underpinning the choice of interpretivism relative to other meaningful alternatives such as pragmatism and positivism is that it marries well with the qualitative research strategy (see Sections 3.3 and 3.3.1 below) adopted in this thesis. Furthermore, the choice of interpretivism is informed by the research methods that align with this philosophy (see Table 3.1). Table 3.1 shows that interpretivism is typically inductive - using small samples, in-depth investigations, and methods such as phenomenology, ethnography, grounded theory and case studies. It is significant to note that while the overriding aim of this research is not to explore how social justice and its antecedent constructs are conceptualized in transport planning in SSA, the development of the method proposed in this thesis cannot be divorced from this aim. Given that such exploratory research endeavours tend to adopt the naturalistic methods listed above, it is considered germane to adopt the interpretivist tradition. The above justifications for the adoption of interpretivism notwithstanding, there is a discussion to be had about whether an alternative philosophy such as pragmatism in particular, could not have been adopted in this research. In other words, given that the defining characteristic of pragmatism is that it turns away from methodological and philosophical monism, it appears as a plausible philosophy to adopt in the circumstances of the present research. However, it is not adopted in this research in that it is time-consuming because of its use of both qualitative and quantitative methods. In keeping with the interpretivist epistemology adopted in this research, this research is subjectivist in its ontology. Concerning axiology, the discussions in Section 3.2 suggest

that the most important axiological question is: 'what do I value in this research?' For this research, the main output is a futures method that incorporates the concept of social justice in strategic decision-making in SSA. The aim is to inform policy by getting policymakers in SSA to conscientiously engage with the issues of social justice at a theoretical level in order to arrive at intellectually defensible decisions about various policy interventions. From the standpoint of axiology, the interest in this area is borne out of this researcher's understanding that the starting point for addressing issues of transport injustice in SSA is at the strategic level. While other transport policy issues are equally important, it is this researcher's belief that it is only by engaging with the issues of transport justice at the higher levels of decision making that relevant 'operational' challenges can be sufficiently addressed.

### **3.3 Research Strategy**

The second component of Crotty's (1998) framework research strategy understood here as the overall direction of the research including the process by which the research is conducted (Remenyi et al., 2003). Saunders et al., (2009) argue that the most suitable research strategy has to be deployed based on the research questions and objectives, the extent of existing knowledge on the subject area to be researched, the amount of time and resources available, and the philosophical underpinnings of the researcher.

Three broad research strategies are identified in the literature (Creswell, 2003): quantitative, qualitative and mixed methods strategies. Quantitative strategies have a positivist epistemology and they investigate phenomena that are observable and measurable in some way. In other words, quantitative strategies adopt the 'scientific method' – that is, the general of hypotheses, models and theories; the development of instruments and methods of measurements; and the collection and manipulation of empirical data (among others).

On the other hand, qualitative strategies contend that human behaviour cannot be reduced to a set of measurable and observable units. In other words, social phenomena are complex and indivisible and must be studied in their completeness. Researchers of the qualitative persuasion, therefore, argue that their aim is not to provide generalised and abstracted explanations of causal linkages, but to provide contextually-sensitive and meaningful explanations of phenomena in what has often been referred to as 'thick description' (e.g. Geertz, 1994). Glaser and Strauss (1967) as cited in Henwood (1996 p.27) argue that qualitative researchers advocate that the generation of theory must be grounded in the analysis of unstructured material, local contexts, and problem-specific

domains. Instead of drawing a sample from a population and forming generalizable conclusions from this sample, a more 'holistic' view of the phenomena must be taken by investigating 'why' the phenomena is the way it is. This, according to the qualitative approach, can only be achieved by investigating the subjective opinions, and experiences of individuals. This subjective data is therefore used to develop concepts and theories that help to understand the social world. By using such techniques as documentary reviews, focus-group discussions, content analysis, grounded theory, ethnography, and discourse analysis, qualitative strategies allow for adequate dialogue between the researcher and the researched (Angen, 2000). This, therefore, introduces some degree of flexibility in the process of analysis in that the researcher can adapt the analysis process based on changing patterns of his understanding of the phenomenon (Guba and Lincoln, 2000).

The third research strategy is a hybrid of the two: mixed methods (Tashakkori & Teddlie, 2003). Various called "quantitative and qualitative methods" (Fielding & Fielding, 1986), "methodological triangulation" (Morse, 1991), and "combined research" (Creswell, 2003), the mixed methods approach uses a combination of both qualitative and quantitative techniques of data collection and analysis in a single research. Proponents of the mixed methods strategy maintain that the use of this approach in a single study ensures that the weaknesses of one approach (e.g. the qualitative) are compensated for by the strengths of the other (for e.g. Tashakkori & Teddlie, 2003). This position is based on several contentions about the weaknesses of quantitative and qualitative strategies. For example, while quantitative research does not generally seek to understand the context and setting in which participants talk, qualitative research is deficient because of biases that may be introduced by the researcher in making interpretations of research phenomena. Hence, by combining the two approaches, the ability to reduce the pitfalls associated with the individual strategies is potentiated. However, the approach is often critiqued on several grounds: for attempting to blend two separate philosophical persuasions, for the time required to carry out a mixed methods research and for the training requirements needed to carry out a mixed methods research.

Table 3.1 suggests that particular research philosophies will point towards different research strategies. For example, a positivistic epistemology points to a quantitative strategy, an interpretivist epistemology points to a qualitative strategy while a pragmatist epistemology points to a mixed methods strategy. Similarly, with regards to ontology, the table shows that an objectivist ontology maps to a quantitative strategy, while a

subjectivist ontology maps unto a qualitative strategy. Section 3.3.1 below discusses and justifies the research strategy adopted in this research.

### **3.3.1 Research Strategy Adopted Within this Study**

For the purposes of this research, a qualitative strategy is adopted for similar reasons adduced for the choice of the research philosophies adopted in Section 3.2.1. These, for clarity, include that the present research involves some "poorly understood" (Lee, 1991 p.41) areas - social justice and its conceptualisation and/or operationalisation in strategic transport planning in Sub Saharan Africa. In addition to the justifications given in Section 3.2.1, the qualitative strategy is generally compatible with the interpretivist and subjectivist philosophies adopted in this research. Furthermore, this researcher believes that the research objectives outlined in Section 1.3 favour a qualitative tradition. For example, a defining characteristic of the futures approaches reviewed in Section 2.3 is their use of a comprehensive program of stakeholder engagements through workshops. The format of a workshop is in keeping with the qualitative strategy. Similarly, the second objective of this research favours the use of a case study approach in the sense that the case study approach (as will be seen in Section 3.4.2.1) fits with the qualitative strategy thereby making this strategy suitable for this research.

## **3.4 Research Methods**

The third major component in Crotty's (1998) framework relates to the specific research methods or methods used for data collection, analysis, and interpretation. This suggests that compared with Sections 3.2 and 3.3, this section is the most important in the sense that it addresses specific questions relating to what method(s) are appropriate for addressing the objectives outlined in Section 1.3 which, for clarity are:

- (1) To develop a futures method to help transport practitioners in Sub Saharan Africa to imagine socially-just transport futures;
- (2) To implement and critically evaluate the usefulness of the futures method developed in (1) using Ghana as a case study.

This section, therefore, covers both the data collection and analyses methods used in the present research. Table 3.2 provides a summary of the methods used in this research for each of the two objectives outlined in Section 1.3. In Sections 3.4.1 and 3.4.2 that follow, the methods adopted for addressing each of the two objectives of this research are fully discussed with a focus on the rationale for their choice over other meaningful alternatives.

**Table 3.2: A summary of the methods adopted within this research**

<b>Research Objective</b>	<b>Methods Used</b>	<b>Ethical and practical Considerations</b>
<p>(1) To develop a futures method to help transport practitioners in Sub Saharan Africa to imagine socially-just transport futures;</p>	<ul style="list-style-type: none"> <li>• Desk research/literature review.</li> </ul>	<ul style="list-style-type: none"> <li>• Access to literature</li> <li>• Time to synthesize literature.</li> <li>• Suitability of method to the African context.</li> </ul>
<p>(2) To implement and critically evaluate the usefulness of the futures method developed using Ghana as a case study.</p>	<ul style="list-style-type: none"> <li>• Case study</li> <li>• Focused Group workshop</li> <li>• Thematic Analysis</li> </ul>	<ul style="list-style-type: none"> <li>• Access to policymakers in case study country; time; logistics of organizing workshops, cost of travel to field; transcription and coding of data</li> <li>• Informed consent,</li> <li>• Risk assessment;</li> <li>• Participant information</li> </ul>

### **3.4.1 Methods Adopted for the Development of the Proposed Futures Method**

This section discusses the use of desk research for the development of the method proposed in this thesis. This section is therefore more relevant to the first research objective outlined in Section 1.3.

#### **3.4.1.1 Desk Research**

To develop the futures method proposed in this thesis, a desk research approach involving a state-of-the-art review of development methodologies was adopted. The aim was to identify a suitable development methodology to adopt in designing the futures method proposed in the present research. Used in the present research, desk research is understood as the collation, synthesis and summary of existing research. This is contrasted with primary research, which involves the collection of primary data from research subjects (for example).

A combination of reasons informed the choice of the desk research approach over other alternatives such as field research. First, it is a more cost-effective approach to adopt for a research project such as this with its modest resources and limitations of time. Second, the desk research approach is adopted because at the very early stages of the present research, this researcher noted that most of the information needed to develop the proposed methodology could be gleaned from secondary sources such as government reports, government statistics, white papers, and the internet. Authors such as Denzin and Lincoln (2005) argue that where data could be gleaned from secondary sources, it is an unproductive use of time and resources to conduct field research. Following Denzin and Lincoln (2005) therefore, the present research adopted a desk research approach.

The literature review conducted as part of the desk exercise identified three main development methodologies that could be adapted in the present research: a traditional systems analysis and design approach, an iterative, prototyping approach and an end-user development approach. A discussion of each of these approaches is beyond the scope of the present research. It is instructive, however, to note that the development methodology adopted in this thesis is similar to the traditional systems analysis and design approach, which involves a problem definition phase, a feasibility analysis phase, and an implementation phase. For example, the problem definition phase identified a number of issues relevant to strategic transport planning in Sub Saharan Africa including a weak consideration of uncertainty in transport futures, and issues of social justice. These issues for example, resulted in the incorporation of visioning, scenario planning,

backcasting and the principles of social justice into the proposed futures method (see Sections 4.2.1.1 to 4.2.1.4 for a more detailed discussion of the rationale for incorporating these elements into the proposed methodology).

### **3.4.2 Methods Adopted for the Implementation of the Proposed Futures Method**

This section discusses the methods adopted for the implementation of the proposed futures method. The section is therefore more relevant to the second objective of this research.

#### **3.4.2.1 The Case Study Approach**

The case study approach has been defined as “a systematic inquiry into an event or a set of related events which aims to describe and explain the phenomenon of interest” (Bromley, 1990 p.302). A case, therefore, is a unit of analysis (for example a state, an individual, a business unit, a family, a local authority or even the entire world (Gerring,2007). In this research, the decision to use a case study approach for the implementation of the proposed method was relatively straightforward because it allows a researcher to capture reality in detail with the analysis of more variables than is typically possible in a survey and or experimental research. In addition, even though the case study approach may be positivist or interpretivist in nature, its choice in the present research is predicated on the fact that it is in congruence with the interpretivist epistemology adopted in this thesis. For the present research, the question was not very much about whether to use a case study approach, but more about whether to use a single or multiple case.

While single cases adopt a single unit of analysis (for example, Ghana), multiple cases use multiple units of analysis (for example Ghana, Nigeria, South Africa etc.) with ‘replication logic’ as their main goal (Yin, 1994). In other words, multiple cases provide a ‘purposive sample’ and the potential to generalize findings (Miles & Huberman, 1994; Patton, 1990) by broadening the scope of the investigations. This would appear to suggest that the use of multiple cases is preferred. In this research, however, a single case is used because of the limitations of time and resources. Following Payne and Williams (2005), it is this researcher's contention that the ability to generalize does not necessarily depend on the number of cases used. It depends on (among other things): the number of settings to which the findings of the research study might apply, and limiting claims to basic patterns and tendencies to allow similar studies to find something similar, but not identical.



Following on from the preceding paragraph, Ghana was chosen (see Chapter 5) because Ghana's transportation system shares several characteristics with those of other countries in the SSA region. Here, some scholars agree that there are striking resemblances between African countries in terms of their transportation systems (see for example Porter et al., 2012; Sietchiping et al., 2012). For example, although the experience in the use of public transport systems in different African countries is not monolithic, the general understanding is that the public transportation sector is characterized by a largely inefficient private automobile transport (informal transport) in densely populated cities.

The similarities in the systems of transport in these countries suggest that with careful interpretation and analysis, it is possible to apply findings from one context to the other. Ghana was also chosen because of this researcher's familiarity with this country. Familiarity with Ghana meant that it is relatively easy for this researcher to gain access to various ministries, departments, and agencies for the purposes of this research. It also means that in almost all instances, the need to negotiate access through a "gatekeeper" (Mason, 2002 p.91) would be eliminated. While familiarity with the Ghanaian context may be critiqued on grounds of 'sampling bias', it was considered that the potential to generate the needed data to address the objectives of the present research, together with all other practical considerations superseded any questions of 'sampling bias'.

There are different protocols for carrying out a case study research, although they are similar in many respects. For clarity, a 'protocol' as used here is a frame of operation and includes all the necessary elements in the proper conduct of a piece of research (Zucker, 2009). Zucker (2009) maintains that most case study methods are guided by a similar protocol:

- (1) A statement about the rationale and purpose of the case study: this includes questions about the significance of the phenomenon of interest and the questions guiding the research;
- (2) The design of the case study based on the unit of analysis and research purposes;
- (3) A consideration of the data collection and management techniques (field methods, data transcription, and notes, mapping of major concepts, building typologies etc.);
- (4) A description of the full case;

- (5) A focus of the analysis of data collected built on themes linked to purpose and unit of analysis;
- (6) The analysis of the findings based on the purpose, rationale, and research questions (case perspective, disciplinary perspective, cross-case comparison, writing up of the case based on the 'emic' perspective etc.);
- (7) Establishing rigour (i.e. credibility, transferability, dependability, and confirmability).

The above protocol is adapted in this research because of its clarity. For example, Chapter 5 is devoted to the description of the case study site; Chapter 6 provides details on the design of the case study including the data collection and analysis methods used in the present research. Chapter 7 then presents the findings of the case study.

### **3.4.2.2 Focus Group Workshop**

For the purposes of the second objective of this research, the format of a focus group workshop is employed. Focus Group Workshop (FGW) "essentially involves engaging a small number of people in an informal group discussion (or discussions), 'focused' around a particular topic or set of issues" (Wilkinson, 2004, p. 177 as cited in Onwuegbuzie et al., 2009). In this research, the format of a focus group workshop was considered germane because a review of the literature shows that futures methods similar to the one proposed in this research are generally implemented in facilitated workshops. For example, Banister and Hickman (2013) combined workshops and extensive discussions with experts in the context of Delhi (India) to open up discussions on sustainable transport pathways. Tuominen et al. (2014) similarly used participatory workshops to design policy packages in Finland. Furthermore, Marchau and Van Der Heijden (2003) used workshops and conferences as the implementation framework in the backcasting method they developed. Timms et al., (2012) used workshops to explore how visions could be mapped to specific local circumstances and developed pathways for achieving these visions.

A focus group workshop format was therefore chosen over other methods (such as semi-structured interviews, and Delphi method etc.) because the method proposed here is similar in several respects to the studies cited above. Another important consideration in the choice of FGW in this research is cost and time. Unlike other methods such as the Delphi technique (that could have been used to implement the proposed method), a focused group workshop is relatively cheaper to conduct within a relatively shorter period.

In discussing FGWs, an important consideration relates to how many people ought to be used. While there is no consensus about the number of people to recruit for FGWs, authors such as Morgan (1996) maintain that the number must be significant enough to capture divergent views and perspectives but not too large as to stifle the group deliberations. Other authors maintain that participants in a focus group must come from heterogeneous backgrounds to reduce tendencies such as groupthink, social loafing and evaluation apprehension usually associated with such participatory processes. FGWs usually last between one and two hours (Morgan, 1996) and will usually involve six to twelve people (Baumgartner et al., 2005). Morgan suggests that because participants may not be available on the day of the discussion, it is important to over-recruit by about 20% even though Wilkinson (2004) suggests a 50% over-recruitment.

In FGWs, another important consideration relates to the management of group dynamics. Foulkes (1984) as cited in Fern (2001 p.15) provides several 'therapeutic factors' to guide group processes. The first factor, social integration, is the opportunity for all members of the group to fully participate in the discussion process. The second factor is termed 'mirror reaction' and refers to an individual participant's realization that other people in the group share the same feelings, anxieties, and impulses. This should serve to relieve them of their own anxieties. The third factor is called the 'condenser phenomenon' and refers to an activation of the collective consciousness or unconsciousness that makes it easier to talk about issues raised in the group discussion. 'Exchange' is the fourth factor and encapsulates the process of sharing information and explanations in the discussion process. Each of these factors represents stages in the focus group discussion process. Fern (2001 p.15) maintains that the time spent in each of the four stages depends on the purpose of the research and the type of the group. For 'idea generating' tasks, for example, less time is needed to deal with diversity and social integration than in groups concerned with uncovering subconscious motives.

A critical success factor in FGWs is "group cohesion" (Fern, 2001). Cohesion is in turn affected by group composition, respondent diversity, and individual characteristics. For example, the composition of the group (e.g. ethnicity, status, class etc.) affects group dynamics (e.g. their willingness and frequency of participation and their nature of contribution) and by extension, the outcomes of the discussions. Secondly, the homogeneity and/or heterogeneity of the group influences the range and diversity of issues discussed. However, while a heterogeneous group is likely to help improve diversity, it could also stifle group discussions through tendencies such as social loafing, evaluation apprehension and groupthink. The specific expertise, nature, and

characteristics of the moderator chosen by the researcher, therefore, has a role to play in determining the success or otherwise of the process as most of the processes in the group discussion are handled by the moderator.

### **3.4.2.3 Thematic Analysis**

In consonance with the qualitative approach adopted in the present research, data analyses in this research will be conducted using thematic analysis. This is because it allows the use of both inductive and deductive approaches, provides coherence and structure to the analysis of otherwise cumbersome qualitative data (e.g. transcripts from focus group workshops), and facilitates systematic analysis. This, it is argued by this researcher, allows the research process to be explicit and replicable. Braun and Clarke (2006 p. 6) define thematic analysis as a method for identifying, analyzing, and reporting patterns (or themes) within data. Following Braun and Clarke (2006), this involves familiarising oneself with the data, transcribing verbal data, searching for themes, reviewing themes, defining and naming themes, and producing a report.

For the purposes of this thesis, two elements are central to thematic analysis – transcription of the qualitative data and the coding of the data to identify themes. Transcription has been defined as a selective process of reflecting theoretical goals and definitions (Ochs, 1979 p.44). Because of its importance in data analysis, some commentators argue that it must be seen as “a key phase of data analysis within interpretative qualitative methodology” (Bird, 2005 p.227). It is an interpretative act in which meanings are created. In other words, it is not a mechanical process of putting spoken sounds on paper (Lapadat and Lindsay, 1999). This is because transcription proceeds in tandem with a repeated interrogation of recorded data (Silverman, 2011). Data can be transcribed using different protocols (Lapadat, 2000) and this highlights the importance of reflecting on the purpose of the analysis before beginning the transcription process. This way, it is possible to produce transcripts that would help answer the specific research questions the researcher seeks to address through the application of a transcription protocol appropriate to the needs of the specific study. For the present research, while the importance of transcription conventions such as the Jeffersonian system (see Jefferson, 1996) is acknowledged, the main guiding principle is the production of transcripts that retain the originality of verbal accounts.

The second component as indicated above is coding, understood here as the identification of a feature of the data (either semantic content or latent content) that appears interesting to the analyst (Braun and Clarke, 2006). In other words, it is the process of identifying the most basic segment or element of the raw data or information

that can be assessed in a meaningful way regarding a phenomenon of interest (Boyatzis, 1998 p.63). Coding depends to some extent on whether the themes are more 'data-driven' or 'theory-driven'. This bifurcation in the type of coding is in line with the inductive and deductive analysis already mentioned above. In the former, the themes will depend on the data, but in the latter, the analyst might approach the data with specific questions in mind that s/he may wish to code around. How the data in this research are coded is described in Section 6.9.3.

### **3.5 Trustworthiness and Credibility**

Trustworthiness is an umbrella term for validity, reliability and generalizability all of which seek to evaluate the rigour, quality and wider potential of a piece of research (Mason, 2002 p. 38). Reliability is a concept in measurement that means consistency. It is an evaluation of the degree of consistency between multiple measurements of a given variable to ensure that there is no measurement bias either across time or between variables (Hair et al., 2010 p.125). It, therefore, refers to the quality of a measurement procedure that allows accuracy and repeatability (Kumar and Phrommathed, 2005).

Validity assesses the extent to which an instrument actually measures what the researcher purports to measure. That is, the extent to which it is free from any systematic or non-random error (Punch, 2005). Validity aims to ensure correct procedures are applied in a piece of research to find answers to the research questions (Kumar and Phrommathed, 2005). Trustworthiness in qualitative research can be established using various conventions including a clear statement of research objectives and/or propositions, a careful selection of data collection and analysis methods, data triangulation, a process of peer reviews, reflection, the use of field notes, use of multiple independent researchers to code data, and double coding (Mason, 2002).

In the present research, there are several issues that border on reliability and validity. For example, it is this researcher's contention that to establish rigour, quality, and wider potential, it is important to be transparent about how the data is collected during the workshops in Ghana, transcribed and analysed. It is this researcher's belief that simply assigning codes to pieces of textual data without clearly specifying the rules that governed the coding process or without consistently applying the same set of rules across different 'chunks' of textual data is considered not sufficient for the purposes of validity and/or reliability. Consequently, the choice of data collection and analysis methods chosen and described in this chapter was largely informed by the present researcher's goal to ensure 'trustworthiness' in the present research.

For demonstrating rigour in qualitative research, Lacey and Luff (2007) suggest that the researcher needs to:

- Describe the approach to, and procedures for data analysis;
- Justify why these approaches and procedures are appropriate within the context of your study;
- Clearly document the process of generating themes, concepts or theories from the data audit trail; and
- Refer to external evidence, including previous qualitative and quantitative studies, to test the conclusions from the analysis as appropriate.

For demonstrating validity, Lacey and Luff recommend that the researcher must reflect on:

- The impact of the research design to the analysis of the results presented.
- The consistency of the findings, for example, has analysis been undertaken by more than one researcher (often referred to as inter-rater reliability).
- The extent to which all relevant views are represented, for example checking for 'negative' or deviant cases to test your interpretations.
- The adequate and systematic use of the original data (for example, using quotations, and not all from the same person) in the presentation of analysis so that readers are convinced that interpretations relate to the data gathered.

Other approaches for demonstrating rigour in qualitative research include triangulation (i.e. gathering and analysing data from more than one source to gain a fuller perspective on the situation being investigated), researcher perspective (where the researcher makes clear his preconceptions, assumptions and 'worldview' in the interpretative process) and respondent validation (where the researcher feeds back their findings to the research participants).

### **3.6 Research Ethical Considerations**

Following Mason (2002 p.41), research ethics, from the perspective of qualitative researchers is concerned with the production of a moral or ethical research design that is intellectually coherent and morally compelling. This means carrying out data generation and analysis morally, planning the research and framing research questions

in an ethical manner. It also means asking questions about the purpose of the research. That is, is it just about the advancement of knowledge and understanding, achievement of a higher degree, or some standing in your discipline (ibid). It is also about a careful consideration of the interests of various parties who may have a stake in the research. That is, what are the implications of the research questions framed by the researcher, the institution, commissioning body, the people or bodies being researched, people who relate to the data sources in some way, people not directly researched but about whom conclusions may be reached, or generalizations made.

For this research, while the interest of the Government of Ghana (sponsor) is important, the overarching ethical consideration was the ethical requirements of the University of Leeds. These ethical considerations, outlined on the University of Leeds (UoL) website<sup>20</sup>, guided the conduct of this research and covered several issues including informed consent, provision of information about the research to the research participants, and risk assessments. How each of these considerations is addressed in this research is explained in Section 6.10.

### **3.7 Chapter Conclusions**

This chapter presented a detailed account of the research philosophies, strategies and methods employed to address the objectives specified in Chapter 1. To structure this chapter and to give clarity, Crotty's (1998) framework was adopted. The framework involves specifying three main components – the research philosophy, the research strategy and the specific methods adopted and/or rejected in a piece of research. In the present research, while the first two items aim to situate the present research within extant philosophical discourses about the sources, nature and development of knowledge, the last item focuses specifically on the methods used to collect and analyse data in order to address the research objectives specified in Section 1.3.

In terms of overall philosophy, an interpretivist epistemology is adopted in this research. In keeping with this, a subjectivist ontology is adopted for the reasons discussed in Section 3.2.1. Overall, a qualitative research strategy is adopted because of the relative dearth of information on the themes addressed in this research including for example, issues such as transport justice in Sub Saharan Africa. In terms of research methods, four main approaches are implemented in this research: desk research, case study, focus group workshop and thematic analysis. The reasons for employing these methods

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<sup>20</sup> <http://ris.leeds.ac.uk/ris/info/70/ethics> accessed on 15/12/2016

relative to other suitable alternatives have been extensively discussed in Sections 3.4.1.1, 3.4.2.1, 3.4.2.2, and 3.4.2.3. In specifying the philosophies, strategies, and methods adopted in the present research however, it is significant to note that this researcher is cognizant of the fact that no single research methodology is intrinsically better than other methods. Consequently, even though the methods adopted in this research have been specified, the overarching aim throughout this research is to ensure rigour rather than what may be characterised as methodological monism. In Chapters 4, 5, 6 and 7 that follow, the methods specified in this chapter are implemented to address the objectives specified in Chapter 1.



## Chapter 4 – THE TRIANGULATED SCENARIO PLANNING APPROACH

### 4.1 Introduction

Using the desk research approach discussed in Section 3.4.1.1, this chapter develops the futures method proposed in this thesis. The chapter begins in Section 4.2, with an overview of the proposed futures method. This is followed by a discussion of each of the steps of the proposed method in Sections 4.3 to 4.8. The Chapter then concludes in Section 4.9 with a summary of the main items discussed in the chapter. For clarity, each of Sections 4.3 to 4.8 is structured to give:

- A general overview of the step, in terms of what activities are involved and who is involved;
- The justifications for the step: for example, why the use of scenario planning and not other meaningful alternatives;
- The relationship between the step and other steps in terms of feedback loops (if any);
- The expected outcomes of the step; and
- The actions to be taken where a particular step does not deliver the required outcome.

### 4.2 Overview of the Proposed Futures Approach

The futures method proposed and developed in this chapter is called the ‘Triangulated Scenario Planning Approach’ (hereafter, TriSA). An overriding argument of the TriSA methodology is that the starting point for the development of any strategic transport plan is the development of a compelling, inspiring and concisely-worded [and yet broad in its reach] vision that spells out desired future end-states, and leads to well-defined goals and objectives. This ‘vision’ must reflect the uncertainties of the future, encapsulate the multiplicity of values in pluralistic societies, while providing well-defined pathways about how the visions are to be actualized.

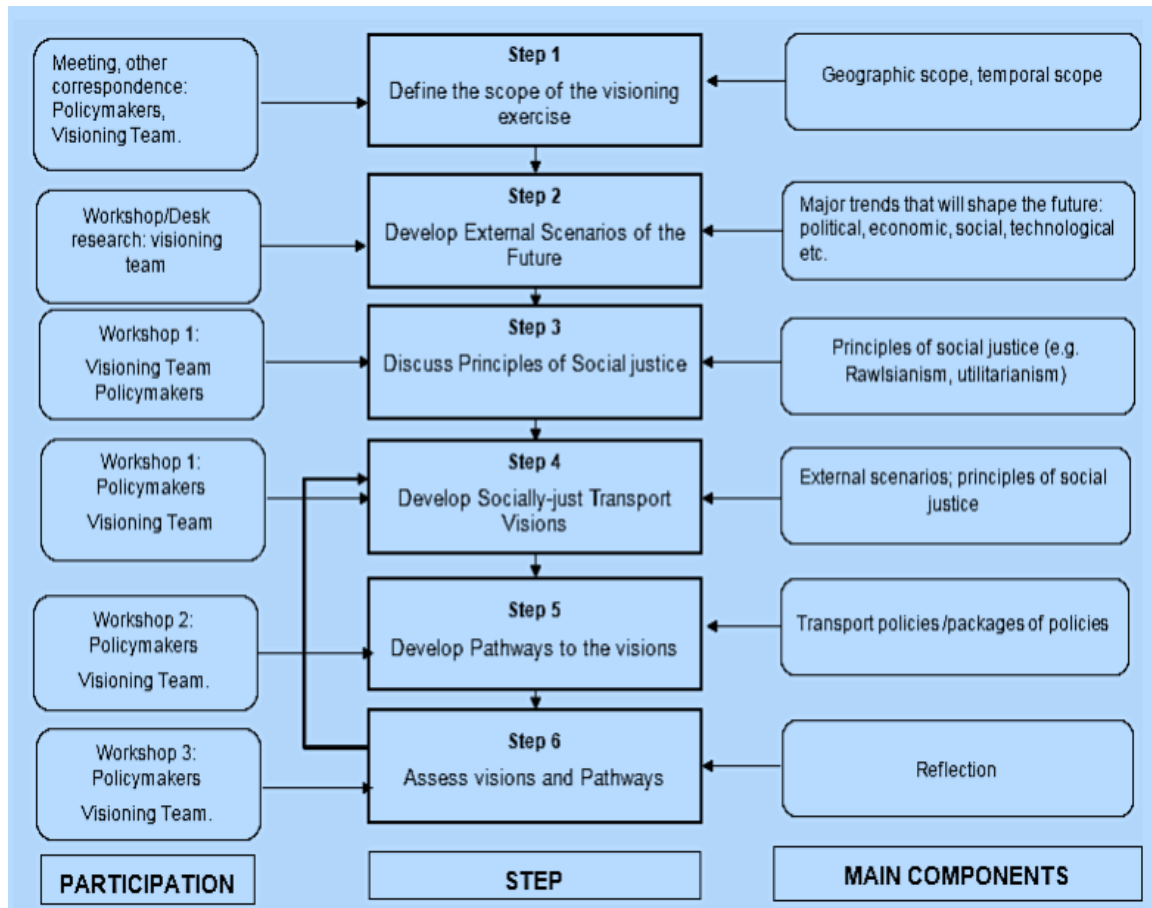
As indicated in Section 3.4.1.1, a desk research methodology is used to develop the proposed futures method. This involved a state-of-the-practice review of strategic transport planning in general and in Sub Saharan Africa (SSA) in particular (see Chapter 2). The review sought to explore the futures methods currently used in strategic transport

planning, their strengths, and limitations in order to identify best practices. The review identified scenario planning, forecasting, visioning and backcasting as the main futures approaches used in the field of transport (this has been highlighted in Section 2.3). In addition, the preliminary review found that compared to other contexts in the Global North, 'uncertainty' appears not to be prioritized in strategic transport planning in SSA. Based on this finding, a prototype futures method was first developed to address the above limitation. The prototype incorporated three different tools - scenario planning, the Delphi technique and causal loop diagramming. Indeed the name 'Triangulated Scenario planning' emanated from this prototype. It is not intended to discuss the full details of this prototype here. However, it is instructive to note that the Triangulated Scenario planning approach (TriSA) presented in this chapter is the outcome of a series of refinements made to this prototype following further reviews of the state-of-the-practice in strategic transport planning in SSA (both in terms of the methods used and the substantive issues addressed in this context).

In developing the TriSA methodology, some considerations were taken into account. For example, while acknowledging that participatory decision-making is important, an important consideration was whether, and to what extent hierarchies in African cultures could foster groupthink instead of contrarian thinking (as is expected when scenario planning is employed). Another consideration was data availability and/or accuracy. In other words, assuming that the Probabilistic Modified Trends approach (a variant of scenario planning – see Section 2.3.4) is adopted in the TriSA methodology, would data at the required level of accuracy be available to validate and verify the method? This was considered important given that the Probabilistic Modified Trends approach is relatively more data-hungry. The methodology presented in Figure 4.2 is, therefore, the outcome of a reflexive process of reviewing, analysing, developing and reflecting on which elements are likely to work well and which elements are not likely to work well in the African context. This desk exercise resulted in the identification of four main components as important elements to be incorporated into the proposed futures method – scenario planning, visioning, backcasting and the principles of social justice. This does not however imply that other elements are not relevant to the African context.

The Triangulated Scenario planning Approach (TriSA), therefore, has four main components: scenario planning, visioning, backcasting, and the principles of social justice (see Figure 4.1). Each of these components is discussed in detail in Sections 4.2.1.1 to 4.2.1.4 with respect to their relevance to strategic transport planning in SSA. Generally, the TriSA methodology has six main Steps. Steps 3 to 5 are intended to be

implemented in a series of workshops involving policymakers, transport planners and all relevant stakeholders in the decision context; Steps 1 and 2 are pre-workshop activities while Step 6 is a post-workshop activity. The 'Steps' represent sets of activities to be carried out by the Visioning Team (see Section 4.2.1.1 below for definition).



**Figure 4.1: The TriSA methodology.**

The steps are sets of decisions to be made at different stages of the strategic decision-making process. However, the order in which they have been presented ought not be understood as necessarily representing a sequential process. This is because some steps can be implemented concurrently. In addition, while there is some degree of mutual dependence between some of the steps, others can be carried out without recourse to preceding and/or proceeding steps. For example, the pathways step (i.e. Step 5 below) cannot be implemented until socially-just transport visions (i.e. Step 4) have been developed. Similarly, socially-just transport visions (i.e. Step 4) cannot be developed until the external scenarios (Step 2) have been defined.

Compared with other futures methods, there are both differences and similarities with the TriSA methodology. For example, compared with forecasting, the TriSA methodology does not intend to predict the future but to suggest the implications of different external scenarios, chosen not because of their probability of occurrence but based on other criteria defined externally to the transport planning jurisdiction. Compared with scenario planning, TriSA is similar in that both are exploratory modes of thinking about the future. That is to say, they both focus on exploring developments external to the decision context. As highlighted in Section 2.3.4, within this tradition, the aim is to involve stakeholders in idea generation and scenario building using workshop exercises through brainstorming and idea clustering. The idea is to ensure that the resultant scenarios are not only accepted as relevant, and plausible by decision-makers but also that by spanning and structuring an uncertainty space, the resulting scenarios can help improve strategies by making them more robust and adaptive to changing external conditions. Still, on scenario planning, TriSA is similar to the Intuitive Logics (IL) approach (see Section 2.3.4 for the different types of scenario planning methods). This is because TriSA, like IL seeks to understand causal processes, connections and logical sequences underlying events, thereby uncovering how a future might unfold. Similarly, TriSA, like IL seeks to challenge conventional thinking in order to reframe perceptions and change the mind-sets of decision-makers. TriSA however, differs from the Probabilistic Modified Trends (PMT) approach and the La Prospective (LP) in that it does not rely on computer-generated algorithms. With respect to backcasting, TriSA is also similar in that the method explicitly engages with, and specifies the trajectories of developments (or pathways) required to achieve an envisioned end-state. Compared with visioning, TriSA is similar in that it utilizes stakeholder participatory approaches such as workshops.

Overall, TriSA is different from other futures approaches used in the field of transport in a number of respects. First, TriSA explicitly incorporates the concept of social justice into the methodology. To the limits of this researcher's knowledge, this has not been done previously. Here, the TriSA methodology explicitly uses the ethical matrix tool (see Section 2.4) to map the different values or distributive principles reviewed in Section 2.2.2 to various stakeholders in transport. Again, this has never been attempted in the field of transport. Two, TriSA explicitly combines scenario planning, backcasting and visioning into a single futures methodology. While similar approaches exist in the literature (see for example Tuominen et al., (2014), Sorio-Lara and Banister (2017)), TriSA is different in some respects. For example, while visioning has been conceptualized in this thesis as the process of 'honing' in on a particular future, in other

projects, the term is synonymized with the backcasting methodology by other authors (see for example, Sorio-Lara and Banister (2017)). These are therefore the novelties of the TriSA methodology.

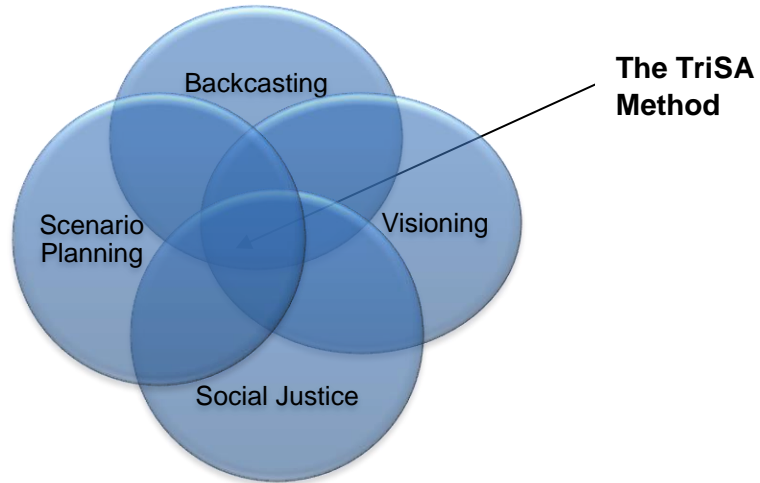
Compared with the overall transport planning process, the TriSA methodology must be understood as a component of this process<sup>21</sup>. In other words, it does not cover the entire transport planning process but limits itself to the first stage where visions or overall goals are articulated. That suggests that if one considers that the entire transport planning process starts with the articulation of broad goals and visions, then the TriSA method is situated within this first stage where broad visions and goals are stated.

The method is intended to be flexible and simple to apply at all levels of the strategic transport planning process– national, local and regional. The element of ‘flexibility’ means that it can be adapted to suit the particularities of any decision context. For example, while the method utilises stakeholder workshops in steps 3 to 5, it is not prescriptive about the specific format these workshops ought to employ. It may therefore, be decided for instance that, because of hierarchies that exist in African cultures, all ‘superiors’ sit together in a group, while all ‘subordinates’ sit in another group. Alternatively, the format could be such that participants are randomly allocated with no regard to hierarchies. The element of ‘simplicity’ means that the TriSA method is capable of being implemented by transport planners and policymakers with little or no training. Furthermore, TriSA does not use complex mathematical algorithms. The data for TriSA can generally be generated through secondary sources (such as extant futures literature) or primary sources such as interviews with subject matter experts or both. In addition, TriSA is participatory in character - it recognizes that it is only through such participatory processes that the multiplicity of views in pluralistic societies can be captured. TriSA is also essentially a bottom-up decision-making approach in that it uses inputs from stakeholders from the ‘bottom’.

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<sup>21</sup> Following the Federal Highway Administration, this involves spelling out regional visions and goals, consideration of alternative improvement strategies, evaluation and prioritization of strategies, the development of plans, development of transport improvement programmes, project development, implementation and the monitoring of system performance (see [https://www.planning.dot.gov/Documents/BriefingBook/bbook\\_07.pdf](https://www.planning.dot.gov/Documents/BriefingBook/bbook_07.pdf) ) accessed 13/10/2016.

The main output of the TriSA methodology is a set of socially-just transport visions. Sections 4.2.1.1 to 4.2.1.4 that follow discuss in detail the four main components of the TriSA methodology and why they have been incorporated into the methodology.



**Figure 4.2: The four components of the TriSA methodology.**

**Table 4.1: The Steps involved in implementing the TriSA method.**

<b>Step</b>	<b>What is involved?</b>	<b>Who are the Key References?</b>	<b>Who is involved?</b>	<b>How can it be accomplished?</b>	<b>What are the Expected Outputs?</b>
Step 1	Define the scope of the strategic transport planning exercise	Schwartz (1991); Schoemaker (1995); Wollenberg et al., (2000); Ringland, (2003); Ralston and Wilson (2006) May et al., (2003) Shell Explorer's Guide (2008)	Policymakers Visioning Team.	Meeting with Project sponsors. Emails	Time horizon Geographic scope

Step	What is involved?	Who are the Key References?	Who is involved?	How can it be accomplished?	What are the Expected Outputs?
Step 2	<p>Develop external scenarios</p> <p>Identify megatrends and their drivers</p> <p>Identify two most uncertain and important drivers</p> <p>Construct key axes of uncertainty, develop scenarios and flesh out</p>	<p>Schwartz (1991);</p> <p>Schoemaker (1995);</p> <p>Wollenberg et al., (2000);</p> <p>Ringland (2003b);</p> <p>Ralston and Wilson, (2006)</p>	<p>Subject Matter Experts</p> <p>Visioning Team.</p>	<p>Literature Reviews/ Desk Research</p> <p>Interviews with Subject Matter Experts</p>	<p>Main political, economic, demographic, and technological trends external to the decision-context</p> <p>Driving forces behind the main trends</p> <p>Scenario axes</p> <p>Scenario narratives</p>
Step 3	<p>Discuss the principles of social justice in transport</p>	<p>Martens (2006) ;</p> <p>Martens and Hurvitz (2007)</p> <p>Rawls (2009);</p> <p>Martens et al., (2015);</p> <p>Lucas et al., (2016);</p>	<p>Visioning Team.</p> <p>Policymakers</p>	<p>Workshop 1</p>	<p>An appreciation among workshop participants of the different viewpoints regarding social justice in general and as they relate to transport.</p>



Step	What is involved?	Who are the Key References?	Who is involved?	How can it be accomplished?	What are the Expected Outputs?
Step 4	Develop socially-just transport visions	Martens et al., (2015); Lucas et al., (2016);	Policymakers Visioning Team.	Workshop 1	Visions of transport based on principles of social justice
Step 5	Construct pathways to transport visions	Banister et al., (2000) ; Timms et al., (2011) ; Givoni et al., (2013) ;	Policymakers Visioning Team.	Workshop 2	Timelines to visions
Step 6	Assess Transport visions and Pathways.	The present author	Policymakers Visioning Team.	Workshop 3 Desk Exercise	Implementation Probability Barriers to implementation Ability to deliver just transport outcomes

#### **4.2.1.1 Scenario Planning**

Scenario planning has been defined in Section 2.3.4 and will not be repeated here. Of the scenario planning approaches highlighted in Section 2.3.4, only the Intuitive Logics (IL) approach is considered suitable for the purposes of the present research. It is therefore instructive to note that from this point onwards, unless explicitly stated, any reference in this thesis to the scenario planning methodology is made with respect to the IL approach. As indicated in Section 2.3.4, the IL approach is predicated on the understanding that decisions are based on the interplay of economic, political, technological, social, and environmental factors and that it is important for decision makers to clearly understand these factors and their interconnectedness in order for them to improve their decisions.

As highlighted in Section 4.2 above, one of the findings of the state-of-the-practice review conducted in Chapter 2 is that there is a weak consideration of uncertainty in strategic transport planning in SSA. A miscellany of quantitative and qualitative methods have been used across a number of fields when examining future uncertainty - sensitivity analysis (e.g. Briggs et al., 2012), stochastic modelling (e.g. Maqsood et al., 2005), Monte Carlo simulations (e.g. Spinney and Watkins, 1996), Delphi (e.g. Sourani and Sohail, 2014), backcasting (e.g. Akerman and Höjer, 2006 and Geurs and van Wee, 2004b) and scenario planning (e.g. Hickman et al., 2012 and Hickman et al., 2014). However, scenario planning is adopted in this thesis because of its capacity to bound uncertainty and to foster contrarian thinking or challenge conventional wisdom. For this thesis with its contextual focus on Sub Saharan Africa, the issue of uncertainty is important because of Africa's lower adaptation capacity to uncertainty, the relatively weaker governance institutions, and fewer resources to invest in adaptation (Ranger and Garbett-Shiels, 2011). In this regard, Ranger and Garbett-Shiels, (2011) note that this greater social and economic vulnerability to uncertainty in developing countries is manifested in annual disaster loss figures. Here, while the incidence of natural catastrophes is similar in many respects in developed and developing countries, 90 per cent of deaths from these events occur in the developing world. Also, weather-related catastrophes in low and lower middle-income countries have caused almost 850,000 fatalities and led to damages amounting to some US\$40 billion (ibid). Such disasters have long-term impacts on economic development and poverty reduction through drawing resources away from development and putting individuals, firms and governments under stress (World Bank, 2010 cited in Ranger and Garbett-Shiels, (2011)). Significantly, these data suggest that developing countries have a wide 'adaptation deficit' (ibid). Uncertainty with respect to economic drivers (such as prices,

incomes, productivity); technology (smart phones, the internet); and social trends (demographics, aging population) suggests that Sub Saharan Africa may be experiencing a fundamental change in the way its transportation systems operate. Interestingly, some commentators argue that the understanding of policymakers of the interplay of these factors remains limited, signifying some deep uncertainty. For example, Delbosc and Currie (2013) are convinced that policymakers need to look beyond economic drivers to address future mobility. The challenge, therefore, is for decision makers to be provided with adequate information about all the factors at play in the decision-making environment in order to help them make decisions that are adaptive to long-term socio-technical change. As highlighted in Section 2.3.4, scenario planning does this by highlighting critical sources of uncertainty and ambiguity and developing a range of possible future scenarios for exploration. This then provides a framework to allow decision-makers to more openly deal with acknowledged uncertainty and to arrive at a deeper understanding of what decision variables are important in shaping the future. This is the main rationale for the use of the scenario planning methodology in the present research.

The above notwithstanding, a critical question is whether there exist other methods that could be used in this thesis to deal with the issue of uncertainty. In the field of transport, forecasting (see Section 2.3.2) has traditionally been used. However, their reputation for being based on historical trends and relationships, and their reliance on quantification means that forecasts generally conceal some degree of uncertainty in the process thereby making them unsuitable especially when long-term futures are considered. The general limitations of forecasting highlighted in Section 2.3.2 are also relevant here and will not therefore be repeated. Significantly, these limitations provide the rationale for using scenario planning instead of forecasting in the present research.

#### **4.2.1.2 Visioning**

As explained in Section 2.3.1, the idea of visioning as conceptualized in this thesis is one of honing in on a particular future. The objective is for decision makers to choose from a range of plausible scenarios shaped by political, economic, social and technological forces that are outside the remit of local decision makers. This is in recognition of the fact that in theory, a multitude of futures can unfold. For the purposes of this chapter, the rationale behind incorporating visioning in the futures methodology proposed in this thesis, therefore, is in recognition of the importance of visionary images of the future as a way of strengthening, engaging and inspiring coordinated action

among citizens. This is in keeping with the ethos of procedural justice or participatory decision making (see Section 2.2.1). In other words, the incorporation of visioning in the TriSA methodology is underpinned by arguments for inclusive and pluralistic decision-making – important for establishing ethical and political legitimacy. For Sub Saharan Africa, this is important in the sense that the review in Chapter 2 shows among other things that while transport planners and policymakers in this context are not agnostic about the importance of visionary thinking, it is not clear how transport visions are developed. This is against the grain of procedural justice and the ethos of 'participation' in transport decision-making. Linked to the goal of delivering socially-just transport planning outcomes, it is argued here that by using visioning, citizens or their representatives could build some consensus on what they would like the transportation system to be like in the future and thus develop visions based on social justice principles.

The idea behind incorporating visionary thinking into the TriSA methodology is also borne out of this researcher's conviction that such thinking is important for SSA in that it galvanizes, mobilizes and engages people, and provides a clear focus for the future, guiding actions and decisions at all levels. Admittedly, while such thinking is important for the reasons stated, some commentators argue that visions run the risk of being over-prescriptive in terms of their detail thereby over-emphasizing a specific ideological perspective (Timms et al., 2014). Nonetheless, the idea of visions expounded in this thesis is predicated on the assumption that there will be a "succession of [transport] visions of the future in which each vision will at one moment in time be replaced by a more appropriate one... since any new apprehension of the present will provoke a new idealization of the future" (Van der Helm, 2009, p12 as cited in Timms et al., 2014). This, it is argued, could help circumvent the risk of transport visions becoming "authoritarian blueprints" (ibid).

#### **4.2.1.3 Backcasting**

The third component of the TriSA methodology is backcasting. In using backcasting as one of the components in the TriSA method, the argument here is that it is not sufficient to articulate a vision without specifying how this vision is to be actualized. The review in Section 2.3.3 shows that the backcasting methodology, by focusing on policies and timelines provides the 'procedural vehicle' required to actualize envisioned futures. While other approaches may exist to achieve the same outcome, the backcasting methodology is chosen in this thesis because its use of participatory processes provides a platform for stakeholders and policymakers to take an action-oriented (as opposed to a passive) approach to the development of effective transport policies. For this research,

it is argued that the process and outcomes of backcasting can help galvanize public awareness of social justice issues in transport and what truly needs to be done (or sacrificed) to achieve socially desirable transport futures in SSA.

#### **4.2.1.4 Social Justice**

The fourth component of the TriSA methodology is social justice. The rationale for incorporating social justice into the TriSA methodology is based on a number of mutually complementary reasons. In the first place, the review in Section 2.3.5 shows a weak consideration of social sustainability issues (including social justice) in transport futures. This is true for transport planning in general and in SSA practices in particular. The first reason for incorporating social justice into the TriSA methodology therefore, is to address this limitation. Concepts of social justice such as equality, sufficiency, and priority are valuable in their own right in that they emanate from fundamental religious and philosophical beliefs that guide human action in many areas of life. In other words, social justice holds important places in terms of complementing what defines 'development' and 'positive' progress (Jones et al., 2009). Furthermore, concepts of social justice such as equality and liberty are complementary to freedom-oriented concepts such as rights or political liberty in defining a great deal of what people see as 'valuable' in society. With specific reference to developing contexts such as SSA countries, concepts of social justice play a constituent role alongside growth in reducing absolute poverty. Hence, both growth and distributional policies are extremely important in helping to reduce poverty. Also, some evidence suggest that justice or fairness has a number of strong causal effects on efficiency and economic growth, poverty reduction, social cohesion and voice (Jones et al., 2009). These are strong instrumental justifications for promoting social justice as a way of helping to achieve these other goals - hence the incorporation of this moral precept in the TriSA methodology.

With specific reference to the field of transport, following scholars such as Martens(2011), it is argued here that a fundamental concern of transport planning is accessibility. Accessibility is understood in this thesis as the ease with which opportunities may be reached from a given location and by means of a particular transportation system. The estimation of changes in accessibility is often used in evaluating the performance of the transportation system and of its relationships with urban land use. However, accessibility is also central to the evaluation of the equity of the transportation system (i.e. the way in which the transportation system meets the needs of different population groups regardless of their socio-economic characteristics. A lack of access contributes to the processes of 'social exclusion'. This is a

multidimensional construct that seeks to express how the lack or denial of resources, rights, goods and services, results in the inability of certain population groups 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 (Levitas et al., 2007). Generally, limited access to places where opportunities of life are located contributes to a lack of participation of certain population groups in social and economic activities (Social Exclusion Unit, 2003). Generally, the case for a fair distribution of access is predicated upon the ethical principles of social justice even where this case is not made in explicit justice terms. In other words, concepts of social justice therefore offer the means by which the case for fairness and inclusivity in the provision of access can be made. A socially-just approach to transport planning places accessibility at the heart of transport decision-making. This is because transport decision-making based on the principles of social justice will aim to make decisions on the basis of assuring the level of accessibility necessary for the transport disadvantaged to participate in the normal activities of life (for example, accessing jobs, health facilities, and markets). By explicitly incorporating social justice into the TriSA methodology therefore, it is argued that policymakers in SSA will be able to conscientiously engage with the issues of fairness and justice in the distribution of access at a more theoretical level in order to arrive at intellectually defensible decisions about various policy interventions that aim to deliver socially-just transport planning outcomes.

In making the case for justice in transport planning in SSA, however, the aim of this thesis is not to discount the importance of other issues such as environmental and economic sustainability concerns. Indeed, these concerns are equally important except that it is beyond the scope of this thesis to address all three concerns in tandem. Besides, a review of the state-of-the-practice in SSA suggests a predilection of the current policy agenda on economic issues such as infrastructural investments across all modes. The same cannot, however, be said of the priority given to social justice concerns. This is despite the fact that issues of social justice are currently attracting growing interest in development discourse because of their widespread intuitive value (Jones et al., 2009). Consequently, where concepts of social justice are used in transport policy documents, their mention appears rather perfunctory. That is, they are often not prioritised compared with some other issues such as efficiency, and economic growth. While a detailed discussion of the reasons for the poor representation of justice issues in transport is beyond the scope of the present research, it is possible that poor understanding of the concept and its implications may be part of the reasons why justice,

fairness, and equity is underrepresented in transport policy and practice in SSA. In the Sections that follow, each of the steps of the TriSA methodology is discussed.

### **4.3 Step 1: Define the Scope of the Visioning Exercise**

The first step of the Triangulated Scenario planning Approach (or TriSA methodology) involves defining the scope of the visioning exercise. Following Schoemaker (1995) and Shell International (see Shell Explorer's Guide, 2008), the term 'scope' is defined in this step with respect to four components: spatial scope, timeframe, stakeholders and the Visioning Team. The idea behind incorporating a 'scope' in the TriSA methodology was adapted from Schoemaker and Shell International (see Table 2.6) even though these authors did not use these same terminologies. For example, instead of the term 'Visioning Team', Shell International used the word 'core team' to mean the same thing. The term Visioning Team has been used here to reflect what the main the output of the TriSA methodology is - (that is, visions).

This thesis defines 'spatial scope' as the geographic boundaries the visioning exercise must cover. This may be looked at various spatial resolutions including for example:

- National – covering an entire demographic region (e.g. the whole of Uganda);
- Regional – covering a specific demographic area within the 'national' (for example in Uganda - Central, Western, and Northern or Eastern regions);
- Local – covering a demographic area within the 'regional' (for example, Kampala, Kayunga, Buvuma etc. in Uganda);
- Rural/Urban – to distinguish rural and urban areas. For example, the strategic transport planning project may be carried out with the aim of constructing alternative visions of rural transport in Nigeria (for example). It is important to note that definitions of rural and/or urban are context-sensitive.
- Regional Group – to refer to regional groupings in Africa such as the Economic Community of West African States (ECOWAS), Southern African Development Community (SADC) or even the East African Community (EAC).

The rationale for defining the spatial scope is predicated on the understanding that socially-just visions of transport may be developed to cover various resolutions. Taking a national perspective for example, a vision of transport may be imagined for the whole of Uganda (for example). The vision articulated in that regard will therefore have a national focus that takes into account the peculiarities of the transportation system of the country. Similarly, a regional grouping such as the Economic Community of West

African States (ECOWAS) may develop socially-just visions of transport for the ECOWAS sub-region. Such a vision will have a regional focus covering the 16 countries in the ECOWAS sub-region. The point here is that, without a clearly-defined spatial scope, stakeholders in the visioning exercise would be left to infer the scope. This could confound the visioning exercise and potentially lead to a creep in scope.

Following May et al., (2003), the present research partitions time-frames into short-term (up to 5 years), medium-term (between 5-10 years) and long-term (between 10 and 20 years). For the purposes of this research, the timeframe must have a base year or reference year (for example, 2016) and the horizon year (say, 30 years from 2016). While the present research is not prescriptive about the timeframe to use, it is important that the timeframe chosen is long enough (that is, 10 years and above). Longer timeframes are important because (and as will be seen in more detail in Section 4.4) they allow the 'bounding' of the uncertainties inherent in the future. A second reason for having a longer timeframe relates directly to the theme of social justice. It is argued here that a transportation system is a function of a 'spatial component' (that enables travel from one origin to the next destination), a 'technological component' (that makes it possible for the movement of goods and services) and an 'institutional framework' that permits planning, construction and operation of the transportation system (Meyer and Miller, 1984). Each of these components takes time to develop and therefore requires longer timeframes. For example, developing the stock of infrastructure to allow some population groups to more equitably use the transportation system requires not just capital investments but also (political) decisions. These decisions may be met with several barriers such as resistance to new fiscal measures perceived to create disproportionate burdens upon other population groups. While espousing the importance of longer timeframes, it is instructive to ensure that the timeframe is not too long otherwise, the entire exercise could turn into an art of 'conjecture' (Schoemaker, 1995).

The third component of scope is the identification of relevant stakeholders. It is significant to point out that the identification of stakeholders is a joint exercise taken on with the transport planning jurisdiction (i.e. not determined *a priori*). Following the Department for International Development (DfID, 2001), a stakeholder is a person or group of persons with a stake in the success or otherwise of a project and the environment in which it operates. For the purposes of the TriSA methodology, the identification of stakeholders is important for a number of reasons. First, delineating all stakeholders in this step serves as a useful input into the ethical matrix tool presented



in Step 4 (i.e. Section 4.6). As discussed in Section 2.4, the premise of the ethical matrix tool is the recognition that decision-making must consider important ethical issues as perceived by all relevant 'voices' or stakeholders in the decision-making process. Hence, stakeholder identification will help reveal the capacities of the different stakeholders to benefit from the transport visions. Second, specifying the stakeholders will help reveal the relative political powers of the different stakeholder groups in the decision-making process thereby helping to ensure that their participation in the process is not reduced to "tokenism" or "placation" (Arnstein, 1969). Third, in Sub Saharan Africa there are many challenges that necessitate a well-defined stakeholder analysis exercise. For example, because of limitations of resources, stakeholders are generally necessitarian and tend to focus on immediate [transport] needs. Exacerbated by limited formal education, these cognitive biases may constrain the concerns of some stakeholders to only current challenges thereby resulting in only 'incremental' strategies. Here, a well-developed stakeholder engagement process will ensure that people with expertise in different fields are involved in collectively identifying long-term and systemic issues and any attendant transformative pathways necessary for addressing these issues. Admittedly, while there are benefits for engaging 'higher level' stakeholders, there are also risks in the form of hierarchies and power asymmetries associated with involving these higher-level stakeholders. However, the point here is that the stakeholder identification process has the benefit of ensuring that the pluralities of voices in liberal democracies such as are in Africa are fairly represented in the decision-making process.

The Triangulated Scenario planning Approach is not prescriptive about the specifics of how the stakeholders are to be composed and how many people are to be involved. That will depend on the scope of the visioning exercise and the resources available for the exercise. In terms of composition, it is however, important to ensure that the group is as heterogeneous as possible - reflecting the different perspectives in the transportation sector. In that regard, some of the general ideas about focus group workshops described in Section 3.4.2.2 can be adapted. For example, Foulkes' (1984) "therapeutic factors" such as social integration, mirror reaction, condenser phenomenon and exchange are factors that might be adapted in the stakeholder identification process. In addition, Fern's (2001) critical success factors – group cohesion, group composition, respondent diversity, and individual characteristics are important factors that might be considered in the choice of stakeholders. In terms of numbers, it is important to note that even where resource limitation is not a problem, too large a group may stifle productivity in such group exercises (Morgan, 1996). Stakeholder

identification is not a task that is concluded for the last time and at the beginning of the visioning exercise. It is a process that needs to be taken up repeatedly when decisions become more concrete, and their implications for the stakeholders can be assessed more accurately. The identification of the stakeholders may utilize various 'stakeholder analysis' frameworks that seek to classify stakeholders based on their power to influence the futures process. These stakeholders may include politicians, citizens, policy-makers, and Non-Governmental Organizations. The important consideration is that the stakeholders engaged in the process must reflect the multiplicity of views and perspectives in the decision-making context.

The 'Visioning Team' (VT) comprises of a Lead Facilitator (LF), a Facilitation Team (FT) and Subject Matter Experts (SMEs) as discussed below. This team is different from the stakeholders specified above (even though their responsibilities may overlap) as their overall remit is to take charge of the visioning exercise as discussed below:

- (1) **Lead Facilitator:** The Lead Facilitator (LF) is responsible for the overall success of the visioning exercise including ultimate responsibility for any resources to be used for the exercise. In addition to that, s/he is responsible for the delegation of duties including planning and analysis at various stages of the process and distills the frames of thinking that emerge during the scenario construction process (see Step 2 – Section 4.4). S/he orchestrates the development of the scenario narratives in close collaboration with the rest of the Visioning Team. S/he ensures the investigation and selection of ideas, their relevance, and creativity during the entire visioning process and oversees and directs the supply of expert knowledge where necessary. This means that much of the success or otherwise of the visioning exercise depends on the Lead Facilitator, who, under those circumstances, must demonstrate willingness and passion to exercise some judgment and intuition where necessary while having the courage to lead unconventional thinking.
- (2) **Facilitation Team:** This team must be made of two or more decision-makers from the department responsible for transport in the context for which the visioning exercise is to be conducted. This is an important team in that the inclusion of one or two decision-makers in the visioning exercise will guarantee the relevance of the exercise. This team may also be instrumental in identifying key issues that need to be addressed, and identify the internal and external issues shaping the transport department.

- (3) **Subject Matter Experts:** These are core specialists with expertise in particular fields relevant to the visioning exercise. These may (for example) be academics with expertise in politics, economics, demographics, and information communications technology. Their expertise is important for the development of the scenarios narratives (i.e. Step 2).

In reiterate, defining the scope of the visioning exercise is important because the exercise requires a remit. This remit could be a one-page document that sums up the goal of the visioning exercise. This will help ensure that the project is kept within predefined boundaries so that time and resources are not dissipated on processes that may not be beneficial to the exercise. A clearly defined scope will also help the Visioning Team to identify the driving forces (see Section 4.4) relevant to the decision context. Admittedly, while reaching a consensus on the scope is important, it can appear unproductive in the grand scheme of things - robbing the exercise of some precious time that could have been used to attend to relatively more important issues rather than what may be viewed as “smaller matters”. That notwithstanding, the importance of clearly delineating the scope of the exercise cannot be overemphasized

*What then are the expected outputs of this step?* Four main outputs are expected at the end of this step:

- A clearly defined geographic area that the visioning exercise is expected to cover (for example, Uganda);
- A timeframe for the visioning exercise spelling out the base and horizon years;
- The various stakeholders who may impact on, or may be impacted by the policies or transport interventions that may result from the visions; and
- A team that will take charge of the visioning exercise from inception to completion.

*What happens if this step does not yield the expected output/s described above?* There are many approaches that can be employed if or when the outputs described above are not yielded at the end of this step. Which approach to employ will depend on the nature and scale of the issue. For example, the issue might be that the VT together with the commissioning body cannot agree on a timeframe for the exercise. In that regard, each dissenting party must be afforded the opportunity to express why they disagree with a particular timeframe and to suggest alternatives. Here, it is imperative for the Facilitation Team to ensure that all concerns are exhaustively discussed and clarified and that all alternative timeframes are tabled and thoroughly brainstormed. It may be necessary

for the facilitators to record all decision points on a flip chart in order to avoid ambiguity and to ensure that everyone understands the different options tabled. This process must continue until a consensus is finally reached. While this consensus building process has the advantage that all voices will be captured, it is evidently time-consuming and tedious, especially where the group is large.

#### **4.4 Step 2: Develop/Adapt External Scenarios**

The second step in the TriSA methodology develops or adapts external scenarios. As discussed in Section 4.2.1.1, this step draws directly from the scenario planning method discussed in Section 2.3.4. The reasons for incorporating scenario planning into the TriSA methodology have been discussed in Section 4.2.1.1 above which for clarity include bounding uncertainty, helping improve decisions through the development of robust strategies, and better perception of patterns of change (i.e. learning). Again, the relevance of these elements to Sub Saharan Africa (the context of this research) has been explained in Section 4.2.1.1 and will not be repeated here.

Section 4.2.1.1 noted that of the three main approaches to scenario planning, the Intuitive Logics (IL) approach is adopted in this thesis. However, given that there are several versions of the IL approach (see Table 2.6), a corollary question is – which Intuitive Logic approach ought to be adapted for TriSA? A critical review of the different approaches presented in Table 2.6 suggests that for the purposes of constructing scenarios from first principles<sup>22</sup>, three main components are important: the identification of megatrends and their respective drivers, the identification of critical uncertainties and their drivers and the construction of scenario logics. To develop scenarios from first principles therefore, the Visioning Team must proceed as follows:

##### **i. Identify Megatrends and their Drivers**

The first step in developing scenarios from first principles, for the purposes of the present research is to identify megatrends and their respective drivers. Table 2.6 shows the different terminologies used to refer to ‘megatrends’ and ‘drivers’ including macro- and micro-trends (Ringland, 2003b), critical forces and drivers (Ralston and Wilson, 2006), and decision factors (Schwartz, 1995). In this thesis, however, the term ‘megatrends’ is used. Used in this research, megatrends are key externalities affecting the decision environment or events about the future “that we would like to know more about to

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<sup>22</sup> That is, without recourse to existing scenario planning frameworks.

improve the quality and relevance of our decisions” (Ralston and Wilson, 2006, p.82). They could be political, economic, social or technological factors. ‘Drivers’, on the other hand, are defined as quantitative or qualitative metrics that represent specific elements within a megatrend. For example, while economic growth is a megatrend, the price of oil is a driver.

There are different ways by which megatrends and their drivers may be identified in a scenario planning exercise. For the purposes of the TriSA methodology however, Ralston and Wilson’s (2006) framework is adopted because of its clarity. Ralston and Wilson (2006) recommend the use of structured workshops (lasting between 2-4 hours) engaging Subject Matter Experts (SMEs). These SMEs must be complemented by the diversity of backgrounds and professional competencies of the ‘scenario team’. The SMEs may have backgrounds in politics, economics, business, transport etc. Their role is to identify the megatrends that will shape the future together with projections (qualitative and quantitative) about their potential impacts. Following Ralston and Wilson, the workshop must proceed as follows:

- First, a facilitator manages the discussions by asking the SMEs and the scenario planning team to describe the megatrends and their drivers that will play out into the future;
- Second, the facilitator asks the group to answer a stimulant question such as “what forces and drivers will shape the future of Ghana’s transport infrastructure in the next 30 years?”
- Third, the facilitator gives the group about 10 to 15 minutes to ‘brainstorm’ the question above.
- Once each Subject Matter Expert has identified some megatrends and drivers, the facilitator finalizes the process by organising the identified trends into social, technological, environmental, economic and political (or STEEP).

To ensure that megatrends and drivers are accurately captured, the SMEs must record their responses on pieces of paper indicating:

- the name of the megatrend or driver,
- a brief sentence describing the megatrend or driver,
- possible outcomes in the future of the megatrend or driver,
- what the megatrend or driver will influence, and
- what the megatrend or driver will be influenced by.

The outcome of this process is a clear map of the megatrends and their drivers. Ralston and Wilson (2006) argue that an advantage of this structured workshop approach is that it offers the participants the opportunity to synthesize inputs creatively and rapidly on a myriad of trends and drivers, while affording the scenario planning team the opportunity to learn about the interactions among different trends and their drivers. This approach was used in a report produced by RAND Corporation where it explored the future of mobility in the United States of America in 2030 (see RAND Corporation's Institute for Mobility Research, 2013).

## **ii. Identify Critical and Uncertain Drivers**

The aim here is to identify the two most uncertain but important drivers from the inventory of drivers identified above. In other words, the objective here is to make the uncertainties that will shape the future explicit and to focus on those uncertainties that will form the frameworks of the scenarios to be developed. Following Ralston and Wilson (2006), this research recommends the use of the 'impact-uncertainty matrix' in a facilitated workshop (see Figure 4.3) to identify the two most uncertain drivers. This is because of its simplicity and intuitive appeal. To use this framework, a workshop similar to the one described above must be organized. At the start of the workshop, the scenario planning team must make the SMEs aware that the goal of the exercise is to identify the two most important and uncertain drivers. The SMEs must then consider together each driver in turn and agree on its degree of uncertainty and level of importance. Ralston and Wilson (2006) suggest that one way of doing this is for the SMEs in the workshop to each select no more than five high impact/high uncertainty forces, and five high impact/low uncertainty forces from the inventory of driving forces given.

Using a stimulus question such as "what factors will drive the future in the next 30 years?", each SME must then be given about 5-10 minutes to think about this question and to then write their responses on a "Post-It Note". The responses must be placed in the respective cells on the impact-uncertainty matrix. Once all nominated forces have been placed in the respective cells, the facilitator then leads a discussion about whether any participant disagrees with any of the nominations. Where the participants disagree about a force's level of importance, they must discuss the different points of view until some consensus is reached. This may require that the definition of the driving forces be modified to ensure that everyone understands the force the same way (Ralston and Wilson, 2006, p.107). Similarly, where there is some disagreement about the degree of uncertainty of a driving force, the team must first establish what the disagreement concerns. If it is about whether the outcomes of the force can or cannot be predicted,

then by virtue of the disagreement the ‘force’ is deemed either medium or high uncertainty (ibid). The process is completed when the team reaches a consensus on the two most uncertain and important drivers. Authors such as Kees van der Heijden (1997) emphasize the importance of consensus among the team in coming up with these two most uncertain (and yet important) drivers.

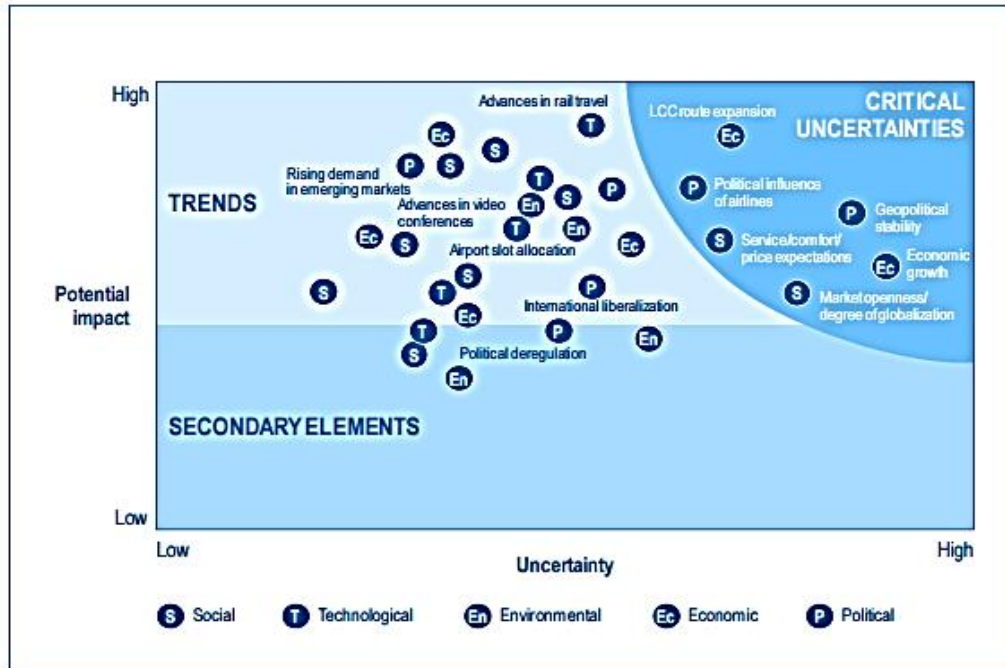
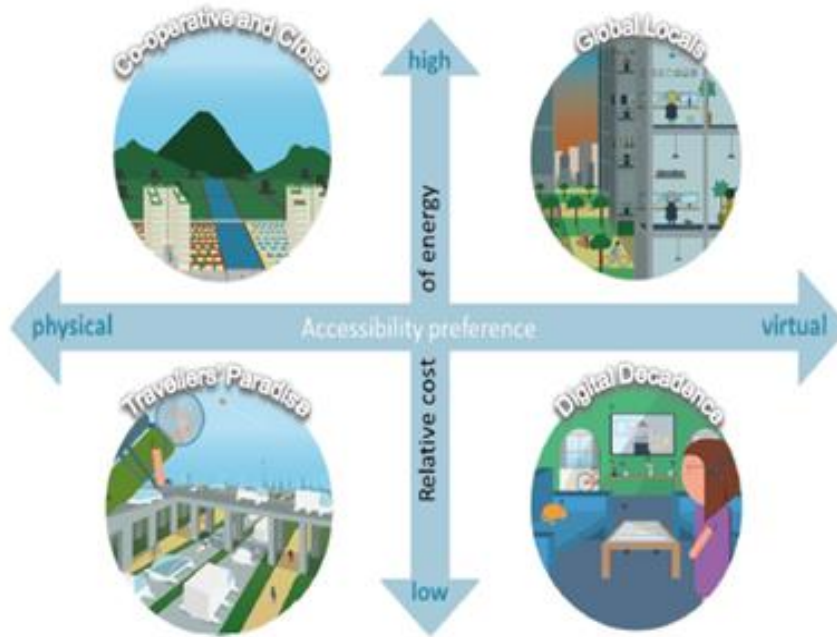


Figure 4.3: Impact-Uncertainty Matrix [Source: Wulf et al., 2011].

### iii. Scenario Logics and Fleshing out

The basic objective of this step is to use the two most uncertain and important drivers identified in the preceding section to construct two mutually perpendicular, and orthogonal axes. This should result in four quadrants each representing alternative futures of the world within which decisions may play out (see Figure 4.4). The aim here is for the team to identify two hypotheses for each axis that are plausible, and yet extreme. According to Ralston and Wilson (2006 p.115), this step involves some degree of “trial-and-error” which reflects significant differences in opinion about how major uncertainties could evolve. The idea, however, is to make sure that the scenario logics evolve from the mental models of change as perceived by the scenario planning team, those of decision-makers and other relevant stakeholders.



**Figure 4.4: Plausible future scenarios for New Zealand in 2042 - [Source- Lyons and Davidson, 2016].**

Once the scenario logics are defined, the scenario planning team must then proceed to provide detailed written narratives for each of the future worlds as represented by the four quadrants. In Figure 4.4, these future worlds are referred to as “Global Locals”, “Co-operative and Close”, “Travellers Paradise” and “Digital Decadence”. For each future world, the team must provide written narratives or “stories” about how each scenario could potentially unfold using different combinations of outcomes of all the driving forces. This process is essentially “storytelling” (Ralston and Wilson, 2006). As “storytelling” therefore, this step is an art that can be guided by discussing the implications of the scenario logics, tracing cause and effect relationships, highlighting critical events and incorporating conflicts. The outcome of this step is therefore a set of scenario narratives similar those in Table 4.2.

The above described the methodology to use to develop external scenarios from “first principles”. However, given the increased use of scenario planning across disciplinary divides, it is this researcher’s contention that it may not always be necessary to develop scenarios from first principles. Organisations such as the RAND Corporation, the World Energy Council, the Intergovernmental Panel on Climate Change, and the Frederick Pardee Centre for International Futures have all developed (and continue to develop) different scenarios covering different themes and disciplines. Following on from this, this



researcher proposes the adaptation of external scenarios as an alternative to developing them from first principles. This approach is especially useful where the constraints of time will not allow the development of scenarios from first principles.

**Table 4.2: Summaries of the scenario narratives for New Zealand 2042 [Source – Lyons and Davidson, 2016]**

<b>Global Locals</b>	<b>Co-operative and Close</b>
In response to rising energy costs, society invested in energy-efficient technologies and virtual interfaces. Society has moved from car dependence to virtual confidence and reliance. People value adaptability, efficiency and ingenuity.	While people value face-to-face contact, high energy costs have forced them to adapt and focus upon proximity. New Zealanders persevered through challenges by simplifying their lifestyles. They value strong communities, resourcefulness and simplicity.
<b>Travellers Paradise</b>	<b>Digital Decadence</b>
New Zealand is awash with cheap energy, which powers rapid growth. Citizens prefer to connect with one another face-to-face as digital life feels less authentic. People support network pricing to ensure they have the transport system they need. They value individual liberties, privacy and self-reliance.	People enjoy a vast array of experiences and services anywhere, anytime via their digital interfaces. Many people now feel more comfortable in digital worlds than in their own skins. They value openness, collaboration and innovation.

To use this alternative approach, the Visioning Team must carry out some desk research of existing scenario planning projects. This will involve the Visioning Team having to identify relevant scenario planning works based on its scope (and in particular, temporal scope- see Step 1 - Section 4.2.1.1). That means that the inclusion and exclusion criteria to use will depend on the temporal and spatial scope defined in Step 1 above. For example, if the timeframe specified for the visioning exercise is 30 years, it follows that a scenario planning exercise that has a 20-year timeframe cannot be used. Concerning spatial scope, if the visioning exercise has a national focus, then a scenario planning project with a local focus (e.g. future of transport in London) cannot be used.

To summarise, two alternative approaches to the development and/or adaptation of external scenarios have been provided in this step: one based on first principles and the second based on literature reviews. The approach adopted will depend on a number of factors including whether or not the decision context has the resources to deploy and whether there exist in the literature, scenario planning projects that can be adapted.

*What then are the expected outputs of this step?* Irrespective of the approach used, the main output of this step is a set of alternative scenario narratives each depicting how the future could unfold several years down the line (similar to what is presented in Table

4.2. above). The scenarios developed in this step serve as important inputs and a 'starting point' for the development of socially-just transport visions in Step 4 (Section 4.6).

*What happens if this step does not yield the output/s described above?* Where scenarios are developed from first principles, the Visioning Team could come across a number of challenges that might impede the successful development of the scenarios. For instance, it is relatively easy for the scenario planning team to focus on technological, economic, demographic, and cultural trends within their own industry or geography forgetting that this could lead to blind spots. Similarly, in evaluating and prioritizing emerging trends including their potential impacts and their degree of uncertainty (in order to build scenarios), there is a tendency for the scenario planning team to over-scrutinize the trends – a tendency that could lead to analysis paralysis. In both cases, it is instructive for the Visioning Team to avoid the temptation of becoming susceptible to these tendencies by not rushing to model trends and uncertainties and by ensuring that the evaluation of the trends embraces several realities.

#### **4.5 Step 3: Discuss the Principles of Social Justice**

The third step of the TriSA methodology involves a discussion of the principles of social justice with the stakeholders identified in Step 1. This researcher assumes that not all the stakeholders may be conversant with the concept of social justice in general and its operationalisation in the field of transport in particular. The aim of this step therefore is to provide a "learning environment" where the principles can be discussed in order for the participants to reach a common understanding of the term. This is also an important input into the next step (Step 4) of the TriSA methodology in that without reaching a common understanding of what social justice means, it is possible that the stakeholders might not be able to clearly articulate what they consider to be socially-just visions. This can significantly undermine the entire process in that the remainder of the steps in the TriSA methodology depend on Step 4. The importance of reaching a common understanding of the term is also predicated on the ambiguities surrounding the meaning of the term (see Section 2.2.3 for more on this).

To discuss the principles of social justice, the use of a workshop format with all the relevant stakeholders identified in Step 1 is proposed in this thesis. The workshop format is proposed because it has the benefit of being familiar to many stakeholders while being flexible enough to be integrated into a broader stakeholder-engagement programme. The format of a stakeholder-workshop also has the benefits associated with inclusive

participatory processes by, for example, expanding the range of perspectives involved in the visioning process. It also potentiates the likelihood that critical social justice issues will be addressed. Furthermore, the workshop format has the benefit of exposing decision makers to the diverse ideas and perspectives (including those they are inclined to reject) thus serving a critical moderating role by helping to build a culture of pluralism. While such group processes are not without their limitations, this research considers that such limitations are outweighed by their benefits.

For the purposes of this step, the first task in this step is for the Visioning Team to carry out some background research on the general principles of social justice. This must cover both the broader moral philosophy literature and the transport planning literature on social justice. It is this researcher's contention that knowledge and research are not static and that the concepts of social justice presented in Section 2.2 may assume different interpretations, understandings and nuances as research and knowledge about these concepts change over time. For example, the review in Section 2.2.2 categorized conceptions of social justice into five: Rawlsianism, libertarianism, utilitarianism, sufficientarianism and prioritarianism. However, as the 'contours of knowledge' expand, other concepts may either be included, or even discarded.

The second task is for the Visioning Team to present the concepts of social justice to the workshop participants. While the TriSA methodology is not prescriptive about how this may be done, one way to do this is for the Facilitation Team to prepare a PowerPoint of the principles of social justice. Hypothetical scenarios or vignettes with latent issues of transport justice embedded in them can complement the PowerPoint presentation. The participants can then be asked to explore and identify the latent justice issues at the end of the presentation. Such hypothetical scenarios were used by Trinder and Hay (1991) in their exploration of how concepts of equity, fairness and justice are expressed by transport policymakers in the United Kingdom. Another approach will be for the Lead Facilitator to pose a question such as: "must transport services be subsidized for vulnerable population groups?" The discussions that follow should (arguably) help the participants to not only understand the concepts presented to them, but also explore how the concepts might be operationalized in the field of transport. This is especially useful where policymakers and other workshop participants are not already familiar with these concepts.

*What then are the expected outputs of this step?* The expected output of this step is that all the stakeholders will understand the concepts of social justice and their application in the field of transport. The participants' understanding can then be evaluated using

different frameworks including Scriven's (1967) formative and summative evaluation approaches. A detailed discussion of these evaluation frameworks is beyond the scope of the present research. However, it is important to note that while summative evaluation answers the question: "To what extent was the hypothesis supported?", formative evaluation on the other hand answers the question "How can this situation be improved?" The use of the vignettes as described above is a formative way of assessing the participants' understandings of the concepts.

*What happens if this step does not yield the output/s described above?* If the participants do not have a common understanding of the concept of social justice, the VT may have to devise different learning processes<sup>23</sup> and evaluation frameworks to help achieve the objectives of this step. One approach that could be used is to ask the workshop participants to go beyond a simple recall of what social justice is by asking each other open-ended questions about these principles, answering these questions in as much detail as is possible and then checking their answers against the definitions of the different principles and their operationalisation in transport. While spending more time in this step to ensure that the expected outputs are realised could lengthen the time required for the visioning exercise, the benefits of such an endeavour far outweigh the disbenefits.

#### **4.6 Step 4: Develop Socially-Just Transport Visions**

This step is the heart of the TriSA methodology and aims to develop socially-just transport visions. The justifications for incorporating a social justice step in the TriSA methodology have been extensively discussed in Section 4.2.1.4 and will not be repeated here. Used in the context of the present research, a socially-just vision of transport is a vision of transport that is fair and beneficial to all population groups, reduces inequality, and where all population groups have a "voice" in "imagineering" this desired future end-state. Given that there are different conceptions of what is considered socially-just from a distributional justice standpoint (see Section 2.2.2), some emphasis is placed on the phrase 'all population groups' to underscore the importance of ensuring that the visions capture the multiplicity of voices in pluralistic, liberal societies.

This step therefore seeks to answer the question: – "Should any of the external scenarios unfold in future, what is your preferred socially-just transportation system?"

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<sup>23</sup> Different models of learning exist in the literature. A review of these models is beyond the scope of the present research.

The argument here is that the external worlds or scenarios created in Step 2 above are essentially outside the remit of the local context. This step therefore gives the participants the opportunity to 'hone in' on the particular future they desire while taking into account the goals of social justice. Given that there exist different views of what may be considered socially-just, the task in this step is to find a way of ensuring that the plurality of social justice values are all sufficiently captured in the visions articulated. While this task may be approached in different ways, the ethical matrix tool discussed in Section 2.4 was considered suitable by this researcher. This is because it provides a logical framework to allow policymakers and other stakeholders to engage conscientiously with the question of social justice at a theoretical level by mapping the stakeholders to the principles of social justice or values they hold sacrosanct. Furthermore, even though tools such as stakeholder analysis (see Goodpaster, 1991), and stakeholder mapping (see McElroy and Mills 2000) exist in the literature to draw out the interests of stakeholders, some commentators argue that the stakeholder categorizations used by these other tools are complex and comparatively time-consuming and therefore less suitable. Furthermore, the format of a workshop utilized by the ethical matrix tool is in keeping with the overall format of the TriSA methodology.

To the limits of this researcher's knowledge, there is no research either in the field of transport or in general on how to develop socially-just visions. The steps described below are therefore this researcher's inputs on how socially-just visions of transport could be developed. It is significant to acknowledge that while the framework proposed here may not provide a complete recipe for developing socially-just visions, it does, as a starting point provide a heuristic framework on how this task might be carried. To develop socially-just transport visions, the process must proceed as follows:

- (1) First, the workshop participants (as identified in Step 1) must be divided into groups based on the number of external scenarios developed in Step 2. For example, in a situation where four external scenarios are adapted or developed, the participants must be divided into four groups with each group representing a particular external scenario. It is not intended to be prescriptive about how each group is to be composed. The important thing, for the purposes of this step is for all voices to be fairly captured. In dividing the participants into groups, some of the considerations about group dynamics highlighted in Section 3.4.2 must be taken into account. For ease of intelligibility, these considerations include such tendencies as groupthink, social loafing and evaluation apprehension.

- (2) Second, each group must be assigned an Assistant Facilitator (AF) drawn from the Facilitation Team (see Section 4.3). Each AF is responsible for moderating the group. Among other things, the AF must be given a set of question guides to help steer the deliberations in the group s/he is assigned.
- (3) Third, each AF must give his/her group some background information about the external scenarios they are assigned. This is especially important where the workshop participants were not involved in their development or adaptation. The group must then discuss the scenario narratives to ensure that they fully comprehend them.
- (4) Fourth, the Visioning Team must develop an Ethical Matrix table similar to the one shown in Table 4.3 below. This is an adaptation of the EM in Table 2.8. However, unlike Table 2.8, the “*prima facie*” set of principles (i.e. respect for wellbeing, autonomy and fairness) are replaced with the distributive principles discussed in Section 2.2.2 - Rawlsianism, libertarianism, prioritarianism, utilitarianism and sufficientarianism. The stakeholders are maintained as in Table 2.8 except that they are more specific to the field of transport. It is significant to note that the stakeholders specified in Table 4.3 are for illustrative purposes only in that it is possible to disaggregate a particular stakeholder group into further distinct units such as the elderly, women, and people with/without access to a private car. This approach, while having its limitations, has the benefit of allowing these distinct stakeholder interests to be fairly represented in the process.

**Table 4.3: An adaptation of the Ethical Matrix Tool**

Stakeholders	Distributive Principles				
	Utilitarianism	Rawlsianism	Libertarianism	Sufficientarianism	Prioritarianism
Policymakers					
Citizens					
Business Community					

- (5) Using the background information to the scenarios and the ethical matrix tool in Table 4.3 above, each group must then answer the question: “Should this scenario unfold in the next 30 years (for example), what would be your preferred transportation system for Botswana (for example)?” The important point here is

that there must be an overarching question across all the groups to ensure consistency. This overall question may also be broken down into a number of specific questions such as:

- What are the consequences on transport of the scenario described in Step 2?
- What aspects of the current transportation arrangements, modes and facilities would you want to preserve?
- What current transportation arrangements, modes and facilities would you want to change, expand or improve?
- What kinds of transportation arrangements would create a fairer and equitable transportation system?

Again, these are only suggestions - the particularities of the decision-context would determine the specific questions to ask.

- (6) Next, each person in the group must be given a "Post-it note" or a piece of paper on which to respond to the questions in (5) above. For each cell in the matrix, the stakeholders must fill in as much detail as possible. For example in the cell that corresponds to 'citizens' under Rawlsian justice, some of the objectives that may be filled in include: to ensure that transport policies and regulations are applied equally across all users; To ensure that *per-capita* expenditures and cost burdens are equal for different user groups; to ensure that service quality is the same for different groups at different locations; or to ensure that least advantaged groups are afforded the opportunity to participate in the transport decision-making processes.

Overlapping and duplicate objectives for each stakeholder group and distributive principle must be identified and either removed or coalesced. This becomes the vision of transport as agreed by each group.

- (7) In a plenary session that must follow, each group's representative must then present their vision to the whole group – highlighting what aspects of transport they consider important for the external scenario and why. Ideally, an audio recording of the discussions must be made by the Assistant Facilitator. Alternatively, notes may be taken by an experienced note-taker for each group. The process is completed once each group presents their vision and the vision brainstormed by all the participants.

*What then are the expected outputs of this step?* At the end of this step, alternative visions of transport corresponding to the narratives of the external scenarios defined in

Step 2 should result. A typical outcome for this step will describe a socially-just transport thus: a transport system where public transport is substantially improved to cater for the travel needs of the elderly, children, and people on low incomes, and where infrastructure to support walking and cycling is universally provided. It is significant to note that the number of socially-just transport visions that result would depend on the number of external scenarios constructed or adapted in Step 2.

*What happens if this step does not yield the output/s described above?* It is still possible that stakeholders in the visioning exercise may disagree on some issues thereby making it impossible for this step to deliver the expected outcomes. For example, the workshop participants may agree to a high-speed rail link as a desirable future transport but may fundamentally on the timeframe within which this vision ought to be delivered. In such circumstances, it is instructive for the stakeholders to spend more time on this step to studiously consider the issues in a spirit of open, deliberative and inclusionary processes. Satisfactory engagements at this stage are necessary to foster support among the stakeholders thereby allowing legitimate and defensible socially-just transport visions to be agreed.

#### **4.7 Step 5: Construct Pathways to Transport Visions**

The fifth step in the TriSA methodology involves the construction of the pathways to the visions articulated in Step 4. Used in the context of this research, the term 'pathways' refers to both the policy measures and the timelines required to actualize a particular vision. This step draws directly from the backcasting methodology (see Section 2.3.3). The reasons for incorporating this component into the TriSA methodology have been discussed in Section 4.2.1.3 and will therefore not be repeated here.

Concerning policy measures, it is not intended to be prescriptive about what source to use. This is because no single source is completely exhaustive of the list of policy measures that can be adapted in a given situation. The decision on which policies to choose from will depend on the interplay of a number of factors. These include but not limited to the policy objectives and the types of policies that are likely to contribute more to these policy objectives, the evidence base in terms of the scale of the problem to be overcome, experience in the use of the policy measure, and potential barriers to the implementation of the policy measures. For example, in the TriSA methodology, the overriding goal is to deliver socially-just transport planning outcomes. In choosing the policies to adapt, therefore, the overarching concern of the Visioning Team ought to be whether and to what extent each of the policy measures considered is likely to contribute



to this objective. While it is not possible to provide general guidance on the types of policies to deploy in a particular decision context, it is possible to give some guidance on the policies that are likely to have the greatest impact on specific policy objectives (including social justice). This guidance covers four distinct area types: city centres, inner suburbs, outer suburbs and smaller urban areas (see May et al., (2003) -Decision-makers Guidebook). For example, in city centres, May et al., (2003) note that policy instruments such as better management of road networks and improved services are more likely help reduce inequalities than land use and infrastructural measures. This is because, in city centres, there will generally be less opportunity for rebuilding to reflect better land use patterns.

**Table 4.4: Format of the table of policy measures to present to workshop participants.**

Policy Packages/Measures	Timescale		
	Short-term	Medium-term	Long-term

Once the policy measures are generated, they must be put against timelines using the format shown in Table 4.4. Timelines are important because many innovative policies require long lead times in that primary legislation may be necessary from the government (Banister et al., 2000). The idea behind developing timelines is that actions cannot be left until the end, as this will increase the risks (and costs) of not actualizing the visions. The table must be given to the workshop participants and each group asked to indicate the policy measures together with the corresponding timescales required to actualize the vision developed in the preceding step. One way of doing this is for the Assistant Facilitators to encourage their respective groups to brainstorm the extent to which each of the policy measures listed may contribute to the achievement of the vision they described, and the timescale of the effect of the measure. That is, whether the impact is likely to be in the short, medium or long-term. The process is completed once each group completes the table.

*What then are the expected outputs of this step?* The main deliverable of Step 5 is a set of policy measures and timelines within which particular interventions are to be deployed to achieve the socially-just visions described in Step 4. These pathways reflect the timelines within which the chosen policies have to be implemented to mitigate and hedge

against socially-unjust transport planning outcomes within the horizon year. They would either be 'incremental' whereby they address proximate transport justice concerns or 'transformative' whereby they seek to address systemic concerns or even both. The pathways also reflect the strong commitments, large investments, cooperation needed, the priorities of the decision context and any potential barriers that could stand in the way of delivering a socially-just vision of transport in the decision context. For example, if a policy instrument such as land-use planning is consistently chosen across all the pathways, it suggests the priority placed upon this measure and its indispensability in the delivery of socially-just transport planning outcomes.

*What happens if this step does not yield the output/s described above?* It is possible that the workshop participants may not always reach a consensus on the pathways. For example, the stakeholders may select transport policies that favour affordable modes (including cycling, walking, public transport, ridesharing, car sharing and home delivery services) as a pathway to a particular vision. Nevertheless, they may significantly disagree on the timelines within which these strategies may be deployed in order to achieve the vision articulated in Step 4. This may be because stakeholders with different policy orientations may prefer one timeline to the other. To address this problem, it is critical that the stakeholders and the Visioning Team spend some time together in this step to work out and agree what the timelines ought to be. This may require the stakeholders having to collectively identify what the barriers to each timeline may be, and how these barriers may impact on each pathway. In addition to that, the participants may identify strategies to mitigate these impacts and then reach a consensus on the best course of action. Reaching this consensus should help reveal any common elements to the timelines. These common elements are likely to be the components in all the visions that might help achieve socially-just visions of transport for the decision context. The common elements must be prioritised and implemented early, as they are likely to have the greatest impact and may need to be carefully structured so that their expected impacts match their actual outcomes.

#### **4.8 Step 6: Assess Transport Visions and Pathways**

The final step in the TriSA methodology involves evaluating the visions and their pathways as presented in Steps 4 and 5 respectively. There are a number of benefits for carrying such an evaluation. First, evaluating the visions and pathways is important to ensure their long-term success as inputs into the strategic transport planning process. Two, the evaluation can also demonstrate accountability to the sponsors of the visioning

exercise. Three, evaluation of the visions and pathways is critical to ensuring that the information generated during the visioning exercise is used to inform strategic decision-making. Four, the assessment of the visions and pathways also helps both the Visioning Team and the stakeholders involved in the process to learn from the exercise in terms of what has worked well and the changes that ought to be made to both the visions and the pathways.

The evaluation may either be carried out with the workshop participants or by the Visioning Team. For example, the participants may be asked to respond to a list of pre-prepared statements about the 'process' and 'products' of the Steps 4 and 5. In terms of the process, the statements may explore the extent to which the participants feel they were able to express their views and listened to during the whole process. The approach adopted will depend upon practical requirements. However, irrespective of the approach adopted, the overriding aim must be to evaluate the 'contents' of the visions and pathways in terms of:

1. The social justice content in the visions – that is, the social justice values explicitly or implicitly expressed in each vision;
2. The social justice content in the pathways – that is, the social justice values explicitly or implicitly expressed in the pathways;
3. The accord between the visions and pathways in terms of the ability of the pathways to deliver the socially just visions articulated by the participants.

The main output of this step is therefore a detailed reflexive account of the visions and pathways with respect to the three items listed above. This will include whether the visions capture the perspectives of the various stakeholders (or the participants in the workshop) in terms of what they see to be socially-just. It requires studious attention to be paid to the visions and their concomitant pathways. This process is essentially an iterative, reflexive process that may in theory carry on for as long as is practically feasible to ensure that a set of plausible visions and pathways are developed.

*What happens if this step does not yield the output/s described above?* The key point in resolving any conflicts between the visions and their attendant pathways is for the VT to spend more time unpacking a number of issues. For example, the team must examine each of the policies or strategies chosen to ensure that it aligns with the vision. If there are 'outliers', it may be necessary for the team to consider deleting them. But it is instructive for all the stakeholders to understand and agree why a particular item is considered an 'outlier' and why it ought to be deleted.

## 4.9 Chapter Conclusions

This chapter developed the futures method proposed in Section 1.3. Called the Triangulated Scenario planning Approach (or TriSA, for short), the method is developed using desk research. This involved the review of the current state-of-the-practice in strategic transport planning in general, and in Sub Saharan Africa in particular. It incorporates four main components – scenario planning, visioning, backcasting and the principles of social justice. The rationales for incorporating each of these components into the methodology have been extensively discussed in Sections 4.2.1.1 to 4.2.1.4.

TriSA has six main steps with some steps having alternative methods for accomplishing them. For example, Step 1 can be accomplished through face to face meetings, emails or through telephone conversations. Step 2 on the other hand can be accomplished by either developing external scenarios from first principles or by adapting external scenarios from existing scenario planning works. Furthermore, the pathways step (Step 5) can be completed either by adapting policy packages from the transport planning literature or by developing policy packages from first principles. The choice of method, therefore, depends upon practical considerations of the decision context.

Overall, Steps 3 to 5 are intended to be implemented in a series of workshops involving policymakers, transport planners and all relevant stakeholders in transport; Steps 1 and 2 are pre-workshop activities while Step 6 is a post-workshop activity. TriSA has a number of innovative features. First, TriSA explicitly incorporates the concept of social justice into the strategic transport planning process. To the limits of this researcher's knowledge, this has not been done previously. Two, the TriSA methodology explicitly uses the ethical matrix tool to map different conceptions of social justice to various stakeholders. Again, this has never been attempted in the field of transport. Three, TriSA combines scenario planning, backcasting and visioning into a single strategic transport planning tool.

The output of the TriSA methodology is a set of plausible, and internally-consistent socially-just visions of transport and their respective pathways spelling out how the visions may be actualised. These visions and pathways are intended to serve as inputs into the strategic transport planning process by providing a blueprint for delivering socially-just transport planning outcomes. TriSA was therefore developed such that this blueprint will be understood by all, be broad enough to encapsulate a variety of local perspectives, and to inspire and motivate all who have a stake in the area of transport.

## Chapter 5 – DESCRIPTION OF CASE STUDY SITE

### 5.1 Introduction

This chapter describes the case study site, Ghana, selected for the implementation of the Triangulated Scenario planning Approach developed in Chapter 4. The chapter provides some important contextual information about Ghana. Section 5.2 covers the geography and economy of Ghana. Section 5.3 covers a brief history of planning. In Section 5.4 some of the main transport strategic policy documents in Ghana are reviewed with the view to exploring the state of the practice in strategic transport planning in Ghana. This is followed by Section 5.5, which then gives some contextual information about transport justice in Ghana. Section 5.6 concludes the chapter with a summary of the main issues addressed in the chapter.

### 5.2 The Geography and Economy of Ghana

A West African country, Ghana shares borders with Togo to the East, Cote D'ivoire to the West, Burkina Faso to the North and the Atlantic Ocean to the South. With a coastline of 539km, the former British colony covers a land area of about 227,533 square kilometres and a water area of 11,000 sq. km. The climate of Ghana is mainly tropical with comparatively warm climates in the southeast coast, a hot and humid climate in the southwest and a relatively hot and dry one in the North. With an arable or cultivable land of about 17.54%, farming is the mainstay of the Ghanaian economy and employs about 60% of the population. This accounts for 37% of Ghana's Gross Domestic Product. Cocoa is the main agricultural product even though there is a growing market in other cash crops like cashew nuts, shea-nuts and bananas. In addition to this, Ghana also has a number of natural resources including Gold, bauxite, manganese, timber, rubber, and quite recently, petroleum products. The services sector accounts for 40% of the Ghanaian Gross Domestic Product (GDP). Proceeds from cocoa and gold together with remittances from Ghanaians abroad account for a significant proportion of the foreign exchange in Ghana.

In June 2007, Tullow Oil announced the discovery of oil off the coast of Ghana, amounting to some 600 million barrels. According to World Bank estimates, "Jubilee

Phase I<sup>24</sup> was expected to extract some 120,000 barrels of oil per day at its peak (mid-2011 to mid-2016) (Dessus et al., 2009). With Ghana's domestic requirement of about 100,000 barrels per day, it was expected that Ghana will become a net exporter of oil<sup>25</sup>. In addition to the oil, gas is also expected to be produced at a rate of one thousand cubic feet of gas per barrel of oil. This means that at peak, Ghana could produce 120million cubic feet of gas per day. Gross revenues from the gas exploration were estimated at US\$260 million per year. However, in 2012, a decline in productivity from the Jubilee Fields led to a decline in revenues from an estimated US\$650million to US\$410 million.

According to the results of the 2010 Census, Ghana has a population of 24.7 million people<sup>26</sup>. The country is divided into 10 administrative regions (see Figure 5.1) with the Greater Accra Region as the capital. Of the 24.7 million people, the Ashanti Region is the most populated with about 5 million people. Greater Accra, the national capital has a population of 4,010,054 representing some 16.3% of the total population. The population of Ghana is ethnically diverse – there are about 49 different languages spoken across all the 10 regions of the country.

In terms of the transport, there are four main airports in Ghana with only one serving as an international airport (the Kotoka International Airport). Ghana's aviation sector is second only to that of Nigeria in the West African sub-region and continues to play a significant role in handling both passenger and freight traffic. The main mode of transport is by road. This accounts for about 95% of the transport network in Ghana (Sector Medium Term Development Plan -SMTDP, 2011)<sup>27</sup>. There are 62,221km of roads network of which only 52,226km is paved. Characterized by several years of neglect and underinvestment, the rail network is only about 947km long (SMTDP, 2011) and made up of three main lines: Western Line (Takoradi to Kumasi), the Eastern line (Accra to Kumasi) and the Central line (Huni Valley to Kotoku Junction). Ghana's waterways stand at 1,293km of which 168km are used for launches and lighters on the Volta, Ankobra and Tano Rivers; 1,125km of arterial and feeder waterways on the Lake Volta. The inland water transport sector is dominated by Ghana's Volta Lake – the largest man-made lake in the world. Even though the objective of building the dam was for hydro-

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<sup>24</sup> That is, the first field of the exploration project.

<sup>25</sup> It is important to note that, this has since not been the case. Bank of Ghana data shows that in December 2015 Ghana imported \$477.4 million worth of crude oil but earned \$429.4 million from exporting its crude, leaving a deficit of \$40 million.

<sup>26</sup> Source: <http://www.statsghana.gov.gh> accessed 08/04/2017

<sup>27</sup>[http://www.mrh.gov.gh/files/publications/Draft\\_Road\\_Sector\\_Medium\\_Term\\_Development\\_Plan\\_\\_SMTDP](http://www.mrh.gov.gh/files/publications/Draft_Road_Sector_Medium_Term_Development_Plan__SMTDP)

electric power generation “a range of cross-lake ferry services, long north-south services and cruise services” have developed on the lake over the years and are serving as important means of transport in the area around the Volta lake (SMTDP, 2011). There are two ports in Ghana, the Tema Harbour and the Takoradi Harbour. In 2006/2007, the then Government proposed the construction of a third dry port (the Boankra Inland Port) to serve the Northern part of Ghana (Ashanti, Brong Ahafo and the three Northern Regions).



Figure 5.1: Map of Ghana showing its administrative regions [Source: <http://www.geocurrents.info>].

### 5.3 Historical Background to Planning in Ghana – A Brief Overview

Perhaps one of the earliest arguments for the adoption of a comprehensive planning philosophy in Ghana was made by the Economics Professor, W. Arthur Lewis in 1952 following his visit to the then Gold Coast (now Ghana). He argued in a report that was published in the Manchester Statistical Society and cited in Padmore (1963) that the British colonies in Africa must have planning of the “highest order” otherwise the goal of rapid development in the colonies cannot be actualised (Manchester Statistical Society as cited in Padmore, 1963). Prior to this observation, the then British colonial

administration during the governorship of Sir Gordon Guggisberg had conceived of a Ten-Year Development plan for Ghana, which became the first of its kind in Ghana's history (Birmingham et al., 1966).

The Ten-Year Development Plan enabled Ghana to develop a relatively advanced physical and social infrastructure (ibid). It was meant to cover the period from 1920 to 1930 with a total planned expenditure of about £G24 million<sup>28</sup> Ghanaian Pounds (ibid). The plan gave priority to the development of the country's railway system with more than half of the planned expenditure dedicated to this venture alone. In addition, it earmarked about £G2million and £G1million respectively to the development of harbours and roads. While these strategic objectives may be viewed as remarkable, some authors such as Taaffe et al., (1963), have criticised the intentions behind the development of the railway system (in particular) on two main grounds: military/political control, and mineral exploitation. The authors argued that, the main driving force behind the development of the rail network by the then colonial administrators was to maintain their political and military control of the colony and to exploit minerals from within the hinterlands. Consequently, the rail infrastructure was not developed to the required standards. Despite these criticisms, some authors argue that the Ten-Year Development Plan remains the first audacious plan aimed at addressing the transport needs of Ghana.

The second attempt at comprehensive planning in Ghana was captured in the second "Ten Year Development plan for the Economic and Social Development of Gold Coast". The plan provided "an outline of what it is hoped will be achieved in all fields of development during the Ten-year period beginning the 1<sup>st</sup> of April, 1950 (The Colonial Development Act of 1929 as cited in Birmingham et al., 1966, p.441). Again, and perhaps in recognition of the importance of transport infrastructure to the economic development of the then Gold Coast, the government in this second plan allocated about 35% of its budgetary allocations to infrastructural development and transport was no exception. However, shortly after the launching of the plan by the colonial administration, the Convention People's Party (CPP) led by Dr Kwame Nkrumah won the national elections to then new legislative assembly. The new government decided to implement the 10-year plan in 5 years (Birmingham et al., 1966). Even though significant changes were made to the original plan, its fundamental structure was kept (Birmingham et al., 1966). However, unlike the original plan, which focused on developing the transport infrastructure, the new plan focused more on agriculture.

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<sup>28</sup> £G stands for Ghanaian Pounds



In March 1959, another 5-Year Development plan was announced. In a speech to launch the plan, the then Prime Minister, Kwame Nkrumah, asserted "... the implementation and fulfilment of the plan will give us a solid foundation to build the welfare state"<sup>29</sup>. The plan was portentous in its objectives with total estimated spending set at £G350 million even though it was not clear where the money would come from to finance the projects. Given the limitations in the availability of finance, the planners later modified the original plan, by breaking it down into what was called the "small coat" and the "large coat" (Robson et al.,2010). This development plan was to cover the period from 1959 to 1964. However, in 1961 the plan was abandoned and a new 7-Year Development Plan was prepared. Called "Work and Happiness", it was not very different from its predecessor in terms of its socialist ideological rhetoric (Birmingham et al.,1966). Vordzorgbe and Caiquo (2001 p.9) maintain - "the main objectives were to accelerate economic growth, start a socialist transformation of the economy and remove all vestiges of colonial structures of the economy". One of the distinctive features of the 7-Year Plan was that it recognised the need to take a 'long-view' of the future of the Ghanaian economy noting that "it is only in the longer view that it is rational to project any really radical transformation of an economic system" (cited in Birmingham et al., 1966, p.443).

This was a departure from the view expressed in the introduction to the first 10-year development plan, which noted that "in a world of uncertainties and constantly changing circumstances, it is impossible to lay down a plan for ten years which is to be followed to the letter" (Birmingham et al., 1966). In terms of planning approaches, these early plans followed what has been described in the literature as a 'shopping list' approach which consisted of assembling information from all the government departments concerning all projects that they would like to implement during the planning period. While this approach has its limitations, it was noted that in view of the poor state of the country's statistical data, even if the planners had wanted to use better planning methods, they would not have been able to carry out the exercise (Birmingham et al., 1966).

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<sup>29</sup> In "Second Development Plan 1959-1964" cited in Robson et al., 2010 p.95

**Table 5.1 : National Plans that have Guided Ghana's Development since 1950s**  
 [Source: Vordzorgbe and Caiquo, (2001)].

Period	Plan Name
1951-1956	First Ten-Year Development Plan
1957-1959	Consolidation Development Plan
1959-1964	Second Development Plan
1963/64-1969/70	Seven-Year Development Plan
1968-69-1969/70	Two-Year Development Plan
07/1970- 06/1971	One-Year Development Plan
1975/76-1979/80	Five Year Development Plan
1984-1986	Economic Recovery Program
1996 -	Vision 2020: National Development Policy Framework

#### **5.4 Strategic Policy Documents Developed to Guide Strategic Transport Planning in Ghana**

From 1966 to 1993, Ghana underwent a continuous period of political instability with a series of military coups. The period saw the overthrow of three constitutionally-elected governments and one military government. For strategic transport planning, this watershed in Ghana's political history is significant for two main reasons. First, it meant that not much was achieved in terms of comprehensive planning during this period because of the political instability. Second, this period helps to explain the project-led<sup>30</sup> approach (Ministry of Transport, Ghana, 2011) which had dominated transport planning practices in Ghana until relatively recently.

Anaman (2006) argued that during this period, Ghana's growth rate stood at 0.33%. It was not until 1984 when the effects of a series of programmes and policies embarked upon under the rubric of the Economic Recovery Programme<sup>31</sup> (ERP) started falling in

<sup>30</sup> As opposed to a 'policy-led' approach

<sup>31</sup> Essentially, these were austerity measures initiated by the government of Ghana and supported by the IMF and World Bank in 1983. The aim was to eliminate

that the economic fortunes of Ghana began to improve. One of the significant achievements of this period was the establishment of a Road Fund in 1985 which was later “reformed through legislation in September 1997 to render it autonomous and provide it with revenues designated to cover all basic road maintenance”<sup>32</sup>. In addition, a legislation governing the Ghana Highway Authority saw substantial revisions such that by 1998, both financing and implementation of road maintenance improved.

Implementation of the austerity measures under the ERP brought with it some structural imbalances in the Ghanaian economy (Anaman, 2006). In 1986 therefore, the government broadened the remit of the reforms under what was termed the Structural Adjustment Programme (SAP). Of all these reforms, perhaps the most significant in terms of strategic direction was Ghana’s Vision 2020. It had, as its objective, the transformation of Ghana into a middle-income country by year 2020 (see Ghana-Vision 2020 the First Step, 1996)<sup>33</sup>. Vision 2020 was one of the first achievements of Ghana’s National Development Planning Commission, which was set up in 1990 to consolidate the successes achieved under the ERP. It is the product of a multi-stakeholder participatory process involving academics, consultants, nongovernmental organizations (NGOs), and researchers from the public and the private sectors, to make the development effort as broad-based as possible (IMF, 2014)<sup>34</sup>. This has since become the blueprint for Ghana’s strategic planning efforts in all sectors including transport.

Ghana's overall (and by extension, transport) strategic direction is therefore informed by various strategies drawn from the Vision 2020 as developed by the National Development Planning Commission (NDPC)<sup>35</sup>. This commission, established by an Act of Parliament has the overall responsibility for advising the President of the Republic of Ghana on policy issues and strategy (NDPC, 2014). The current strategic policy objectives of the National Development Planning Commission are informed by the Ghana Shared Growth and Development Strategy (GSGDS) together with the

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market distortions preventing the efficient working of the price mechanism in the allocation of resources so as to reinvigorate the productive sectors of the Ghanaian economy through improved price incentives.

<sup>32</sup> A World Bank (1999) publication accessed 03/03/2014

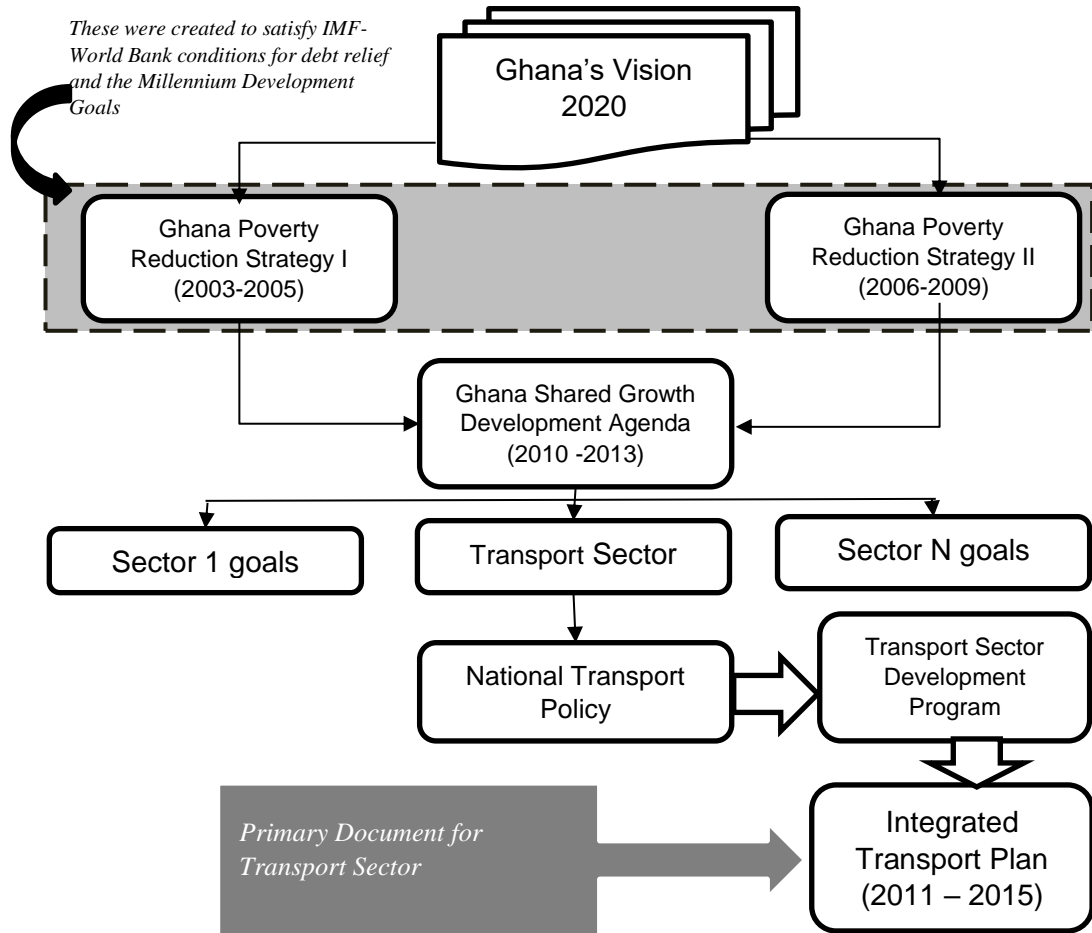
<sup>33</sup> <http://www.ircwash.org/resources/ghana-vision-2020-first-step-1996-2000-presidential-report-co%C3%B6rdinated-programme-economic> accessed 03/03/2014

<sup>34</sup> <http://www.imf.org/external/pubs/nft/op/199/> accessed 03/03/2014

<sup>35</sup> <http://www.ndpc.gov.gh/> accessed 03/03/2014

Millennium Development Goals (MDGs). Figure 5.2 shows the development trajectories of the overall policy environment in Ghana.

Following on from the above, the strategic objectives of Ghana's transport system are therefore informed by and encapsulated in the overall policy objectives of Ghana as contained in the National Transport Policy document and the Ghana Shared Growth and Development Agenda. Of these, perhaps the most important is the National Transport Policy document. The current National Transport Policy is an attempt aimed at departing from the 'incrementalist' approach that characterized past planning approaches in Ghana with their focus on transport modes and lacking in coordination with other government strategies (National Transport Policy, 2008). In terms of its strategic objectives, the NTP draws heavily from Ghana's Growth and Poverty Reduction Strategy (GPRS II) together with other regional and international agreements and conventions to which Ghana is a signatory. This transport blueprint aims to develop "...an integrated, efficient, cost-effective and sustainable transportation system responsive to the needs of society, supporting growth and poverty reduction and capable of establishing and maintaining Ghana as a transportation hub of West Africa" (NTP 2008 p. 38).



**Figure 5.2: Trajectories of Developments to Ghana's National Transport Plan [Source: Author's review of strategic policy documents].**

The development of the Integrated Transport Plan (2011-2015) involved several phases. First, there was the Sector Medium Term Development Plan (2011-2013) which was informed by the Transport Sector Development Program (TSDP). The TSDP itself was conceived of as a five-year rolling programme to guide investments in the transport sector between 2008 and 2012. This was to serve as an important step towards a transition from the hitherto project-led approach to transport planning in Ghana to more policy-led planning. Some of the projects which were carried out under the hitherto project-led approach include the Road Rehabilitation Project (TRP I), the Road Rehabilitation Project (TRP II), the National Feeder Roads Rehabilitation and Maintenance Project. Although most of these projects were successful in achieving their

intended objectives (World Bank's Operations Evaluation Department, 1999), Ghana's Ministry of Transport maintains that;

*“. . . the lack of quantified development plans in the productive sectors of the economy, from which the demand for transport is derived, and the lack of development master plans either on a national, regional and city level, make long-term forecasting of transport demand very difficult. Therefore, a challenge for the transport sector is to engage with the national, regional, local and sectorial planners to ensure they are aware of the benefits that can be derived from a more forward-looking and objectively informed transport plan.”* (Ministry of Transport, 2011 p.45).

It was perhaps this realisation that gave birth to the TSDP, which led to the current Integrated Transport Plan (2011-2015) which is now being adopted as the primary planning document for the transport sector that sets out a strategic framework in which transport sector activities will be planned and prioritised in the future (Ministry of Transport, 2011). Hence, in searching for Ghana's strategic transport objectives, the starting point is the National Transport Policy.

In the sections that follow, a brief description of some of the strategic transport planning documents/master plans is provided. While the documents discussed below are not the complete list of strategic transport plans in Ghana, they are the most important and relevant to this research.

#### **5.4.1 The National Transport Policy (2008)**

Produced in December 2008, the National Transport Policy document saw a process of consultation and review spanning a period of two years. It set a blueprint for the sustainable development of Ghana's transport system within the context of a coordinated strategy aimed at growth and poverty reduction and Ghana's goal of becoming a middle-income country by 2015. It was developed within the framework of Ghana's Growth and Poverty Reduction Strategy (GPRS II) which sets out the overall developmental agenda of Ghana. In addition, it set out areas of investment priority and improvements in order to create "an integrated, efficient, cost-effective and sustainable transportation system responsive to the needs of society, supporting growth and poverty reduction and capable of establishing growth and maintaining Ghana as a transportation hub of West Africa".

A compelling reason for the development of this policy document was that even though Ghana has seen many reforms in the public sector, the institutional framework for the transportation subsector failed to reflect the need for greater "horizontal" coordination

for improved inter-sectorial policy formulation. Among others, therefore, the NTP aimed to:

- Describe the need for transport infrastructure and services in the context of Ghana's sub-regional, national and local growth objectives (GPRS II, MDG, ECOWAS, NEPAD, etc.).
- Provide guidance on Government priorities and strategic objectives for transport to key stakeholders and institutions involved in planning, financing, developing, providing, maintaining and regulating transport infrastructure and services;
- Provide a platform for dialogue, and to provide guidance on, the roles and responsibilities of key Stakeholders.
- Provide guidance on priorities for investment and reform that enable and facilitate achievement of the strategic objectives for transport within the policy framework
- Provide a long-term decision-making platform for the effective management and development of Transport infrastructure and Services in Ghana.

The development of the plan utilized a series of consultations with "key stakeholder groups" throughout Ghana. This involved three main projects:

1. The National Transport Policy (NTP) project: This had as its remit, the carrying out of a detailed analysis of Ghana's current transport system, recommending policy options and testing out those policy options with policy makers, professionals and stakeholders throughout Ghana.
2. The Institutional Study of the Transport Sector (ISTS): This complemented the NTP project, by concentrating on the institutional and organizational arrangements of the Transport Sector, identifying ways to increase the overall effectiveness and efficiency of the whole Transport Sector in general and the management of road infrastructure and transport services in particular.
3. The Harmonisation Project: This brought together the outputs of the NTP and ISTS to provide a policy, which recognizes the need for an effective institutional framework in which policy objectives can be achieved.

#### **5.4.2 The Integrated Transport Plan (2011-2015)**

Produced in June 2010 by consultants Egis International, the Integrated Transport Plan utilized an integrated economic and transport planning methodology to identify investment priorities based on the future demand for transport. It has 13 volumes each of which addresses a specific theme including:

- An analysis of the economic performance of Ghana to forecast potential growth for the period up to 2035 – (Volume-2)
- Studies undertaken on Ghana's key commodities including forecasts of their future production up to 2035 and subsequent demand on transport -(Volume-3);
- Data on Ghana's socio-economic factors - (Volume-4);
- Report on transport costs including the development of a simple model for comparison - (Volume-5);
- Report on the calibration of the transport model used in the methodology- (Volume 6);
- The multi-criteria evaluation manual used to evaluate the selected projects and select the priority projects for investment 2011-2015 - (Volume 7)
- Report on project evaluations carried out to identify priority projects for the 2011-2015 period - (Volume 8)
- Current state of road transport services and how they can be improved - (Volume-9);
- current financing arrangements in Ghana - (Volume 10);
- Pre-feasibility study on Boankra Dry port - (Volume 11);
- Pre-feasibility study on the Eastern Railway - (Volume 12);
- Pre-feasibility study that has focused on a specific connectivity issue in the aviation sector - (Volume 12).

These volumes of reports suggest how comprehensive the ITP is in terms of its coverage of issues. It includes actions and strategies to be undertaken between 2011 and 2015 for all modes of transport including institutional and regulatory measures that aim to improve performance and better integration in the transport planning environment. The ITP is therefore the primary implementation plan for the transport sector in Ghana. To meet this overarching goal, the ITP has three main deliverables:

- Proposing a range of infrastructure developments, institutional and regulatory measures with the aim to improving the effectiveness of Ghana's transportation system. Here, infrastructural investments have been given priority for the plan period and targeted at locations in order to overcome capacity constraints and where economic viability has been proven.
- Developing decision-making tools and procedures to carry out the forecasting, modelling and evaluation necessary to implement a strategy-led approach to transport planning; identifying strategic investments and measures that inculcate a more integrated approach to policy formulation, planning and delivery;



- Developing the knowledge and understanding of how the transport planning framework needs to be changed and improved with recommendations.

In this policy document, investments in road and rail infrastructure have been identified as potential areas that could propel Ghana's development and have therefore been identified as priority areas. Hence, the plan provides a framework in which future modal master plans can be developed. These are to cover all modes including maritime, air, rail and non-motorized transport.

Chapter 3 of the report is dedicated to describing the planning process used to develop the ITP. It gives a detailed description and shows the adoption of an integrated, economic transport planning, which is an evidence-based methodology using various modelling techniques. The consultants recognised that such a methodology requires data being available and a collaborative arrangement between various sector agencies and departments for the sharing of data. As a result, in using this methodology, the consultants collaborated with the National Development Planning Commission (NDPC), and the Ghana Statistical Service.

Significantly, the ITP also shows the use of extensive consultations with a wide range of stakeholders. In that regard therefore, "special emphasis was placed on public consultation providing platforms for contributions from regional bodies, national interest groups and the multi-party parliamentary select-committee on transport." (ITP, p.15). All relevant stakeholders also used stakeholder consultations in subjecting the ITP to "Strategic Environmental Assessment" which aimed to test the plan for its sustainability (environmental, economic and social). The aim was to enhance the scope of the plan and its final acceptability. This SEA stakeholder evaluation process found that safety, risk of accelerating HIV/AIDS and the effects of transportation on climate change were the main social and environmental concerns in Ghana (ITP, p.16).

#### **5.4.3 The Railway Master Plan of Ghana (2013)**

The Railway Master Plan of Ghana aims to develop a fully integrated railway system in Ghana for both passenger and freight traffic. Developed by the TEAM Engineering Group, the master plan has six main phases each focusing on expansion, rehabilitation and maintenance of Ghana's rail system and its infrastructure. It was developed in response to issues with the existing rail network in Ghana. These issues include the fact that the existing rail infrastructure was developed during the Ghana's colonial period and built to a narrow gauge with single-track lines. It was used for both passenger and freight traffic, but has since deteriorated with reduction in rolling stock due to a lack of

maintenance. Currently, the rail system is made up of three lines: Western, Eastern and Central, which, together with some branch lines, extend for approximately 940km (GRMP, p.15). The master plan therefore suggests improvements to these lines (see below). Significantly, the study also recognises and concludes that such expansions and/or rehabilitations and improvements to the rail system can only be actualized when other factors are taken into consideration as essential presuppositions to trigger the process: In particular, these considerations include:

1. The development of an efficient structure having both the technical and organizational capacities and means that is necessary to follow and control the whole development of the plan;
2. The investment in planning and management;
3. The realization of a legal framework creating a favourable context conducive to private investors.

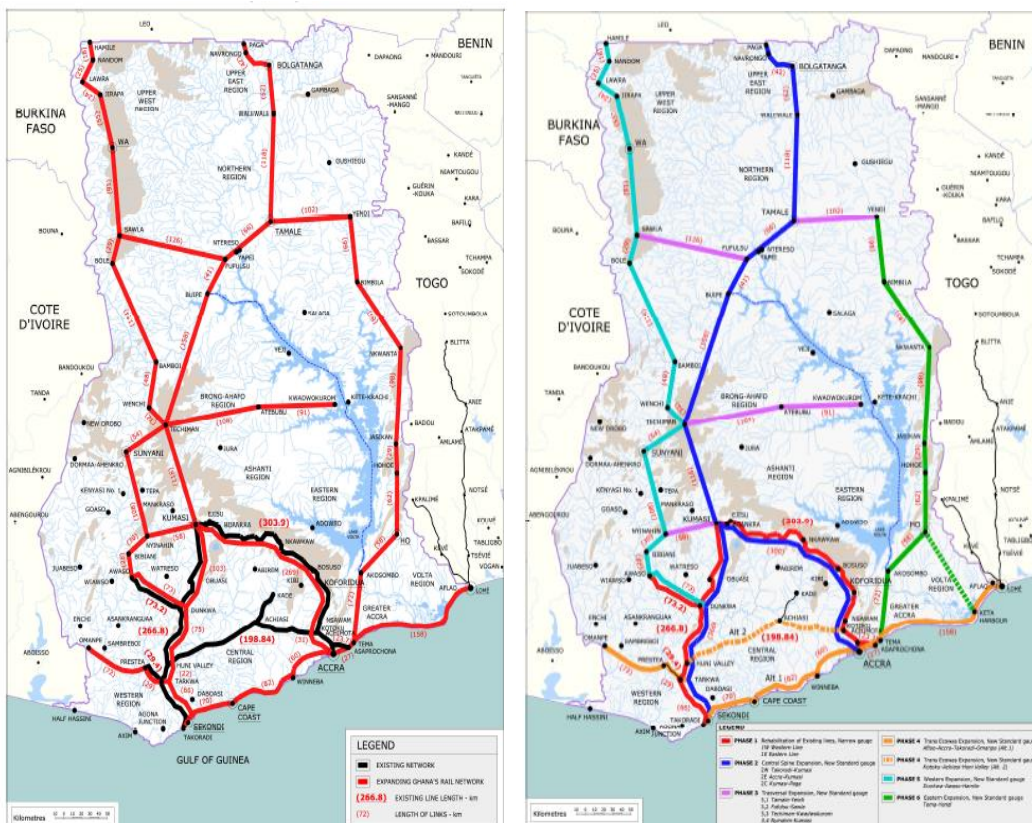


Figure 5.3: Proposed New Rail Network and Phases of Expansion of New Lines  
[Source: Railway Master Plan of Ghana].

#### **5.4.4 The National Airport System Plan (2014)**

This was developed as a direct result of a joint realisation by the Ministry of Transport and Ghana Airports Company Limited (GACL) that a strategic approach to planning and developing airports is needed in Ghana. The NASP has as its overall goal “to support the government policy for an integrated and strategic approach to planning and developing air transport infrastructure and services in Ghana”. Its specific objective therefore is to identify and outline the development of a public airport system in Ghana to facilitate the decision-making and financing process of the government in future infrastructure measures. The plan had three main phases:

- A “Data Collection” phase during which site visits of every existing airport in Ghana was conducted together with interviews with stakeholders and the collection of secondary statistical data. This helped in compiling the Inception Report.
- An “Interim Phase” during which an inventory of existing transport infrastructure, current air transport visions, goals, performance measures and existing policies and forecasts of needs and opportunities was carried out together.
- A “Final Phase” which covered issues such as airport roles, goals and performance measures for the airport network, current air transportation system performance, future air transportation system performance, and a prioritization framework.

The final report recommended among other things for Ghana to have twelve (12) commercial airports complying with the nationwide air transportation task as well as supporting pre-defined targets (e.g. poverty reduction via economic growth in rural areas). Of these 12 airports, however, only three (Kotoka, Sunyani and the Paga / Navrongo Airport / Upper East Region) will not need upgrades.

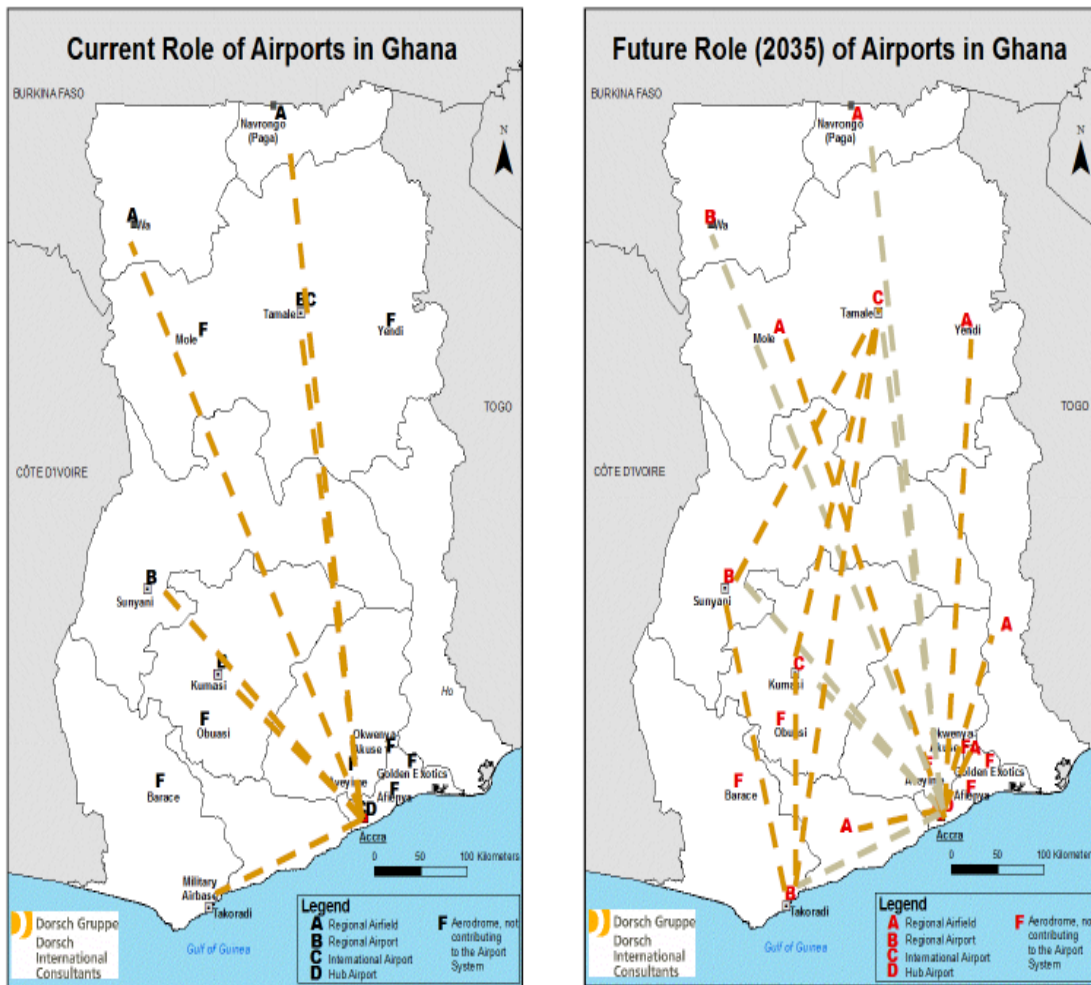


Figure 5.4: Current and future roles of airports in Ghana [Source: National Airport System Masterplan].

## 5.5 Transport and Issues of Social Justice in Ghana

The purpose of this section is to provide a broad overview of the current transport and traffic conditions in Ghana, drawing extensively from secondary research. Section 2.2.2 indicated that the focus of this research (with respect to the ‘object of distribution’ or transport) is accessibility. Following on from that then, the review in this section focuses mainly on current conditions in Ghana as they relate to accessibility (i.e. on infrastructure and mode availability). Where data is provided, the objective is to provide a better understanding of the issues as they pertain to Ghana. Attempts are therefore made to provide data on both the supply side (infrastructure) and the demand side (mode availability).

### 5.5.1 Transport Infrastructure Provision

Transport planning interventions in Ghana have traditionally focused on the provision of road infrastructure to accommodate any increases in transport demand. On the one hand, the focus on [road] infrastructure is understandable given that (arguably) physical infrastructure is a necessary precondition to a well-functioning transportation system. In terms of transport justice however, the issue is not very much about the development of transport infrastructure *per se*, but more about what type of infrastructure is being developed and to what extent it benefits everyone in the 'distributive sphere'. Table 5.2 and Table 5.3 show Government and Development Partners' spending on major road rehabilitation and maintenance in Ghana.

These tables show some sustained investments in road infrastructure in Ghana during the stated periods. In investing in road transport infrastructure, however, questions arise as to who the winners and losers are, whether such interventions are progressive or regressive, and what impacts such interventions may have on discrete population groups such as low-income communities in Ghana, the disabled and the elderly. For example, in the case of children of school going age, 80% walk to school, 1 to 13% use motorized modes such as the car, school bus and taxis and about 8% cycle to school (Second National Household Transport Survey, Ghana, 2013)<sup>36</sup>. A critical question then, from a social-justice perspective, relates to the type of transport infrastructure being built and whether these can address the transport needs of the transport disadvantaged in this country.

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<sup>36</sup><http://www.statsghana.gov.gh/docfiles/publications/Second%20National%20Household%20Transport%20Survey%20Report%202012.pdf>

**Table 5.2: Government and Development Partners spending on major road rehabilitation, and maintenance in Ghana [ Source: Author (with Data from the Ghana Open Data Initiative<sup>37</sup>)].**

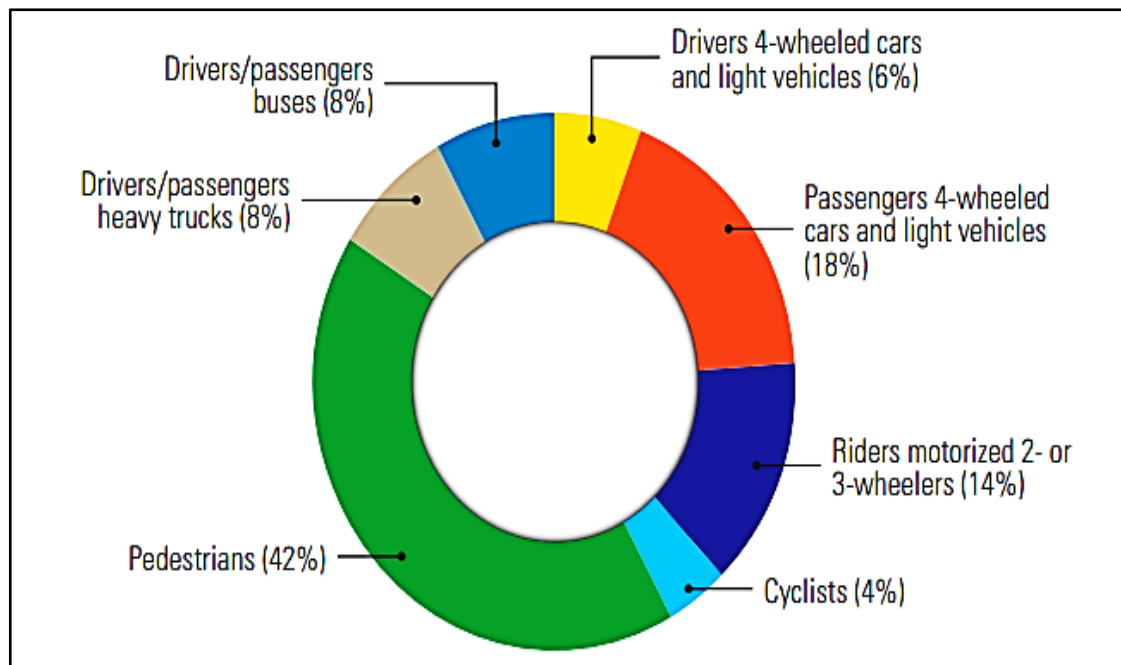
Indicator	Unit	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Government spending on major rehabilitation; construction and reconstruction	US\$m	17.91	7.33	25.53	23.02	19.09	41.55	61.07	62	162.06	159.28
Dev't Partners spending on major rehabilitation; construction and reconstruction	US\$m	37.68	30.08	12.95	14.9	64.11	72.98	45.07	48.72	68.3	47.92
Government spending on road maintenance	US\$m	48.4	42.61	44.44	64.74	103.76	97.92	127.85	178.04	317	164.81
<b>Totals</b>		<b>103.99</b>	<b>80.02</b>	<b>82.92</b>	<b>102.66</b>	<b>186.96</b>	<b>212.45</b>	<b>233.99</b>	<b>288.76</b>	<b>547.36</b>	<b>372.01</b>

**Table 5.3: Lengths of roads planned and approved [Source: Author (with Data from the Ghana Open Data Initiative)].**

Indicator	2000	2002	2003	2004	2005	2006	2007	2008	2009
Length of roads maintained/rehabilitated - Approved	26,878	32,779	38,892	41,855	45,559	46,551	49,583	48,087	40,666
Length of roads maintained/rehabilitated - Planned	30,928	31,446	34,360	33,449	41,101	45,310	49,653	50,709	49,471

<sup>37</sup> <http://data.gov.gh/> accessed 10/06/2015

As indicated above, road infrastructure plays an indispensable role in defining the levels of access afforded by a transportation system for both motorized and non-motorized transport modes. This highlights the bifurcation between pedestrian traffic (who use pedestrian walkways and pavements) and vehicular traffic (who use carriageways). From a social-justice perspective, the state, quality and capacity of pavements is particularly important in that these are the facilities likely to be used by population groups who are transport disadvantaged. Unfortunately, there is a lack of data on the provision (or otherwise) of pavements for pedestrians (especially in urban areas) in Ghana. The understanding however, is that pedestrian traffic is generally neglected within the car-dominated approach to the provision of road infrastructure in Ghana. Even where pedestrian walkways are provided, they are either poorly designed (e.g. suffer from premature pavement failures – Achampong et al., 2013), or are dangerous and uncomfortable. In both cases, because of the lack of, and inadequacy and/or deplorable states of pedestrian walkways, pedestrians resort to using access routes designed for motorized transport. This results in accidents and fatalities among this population group. In Ghana, the World Health Organization reports that the estimated road traffic deaths per 100,000 of the population is 26.2 of which pedestrian deaths are the highest - 42% (see Figure 5.5 for deaths among road users in Ghana).



**Figure 5.5: Deaths by Road User Category in Ghana [Source: World Health Organization, 2013].**

### 5.5.2 Public Transport Provision

Unlike in most developed countries where public transport services are relatively more available at the urban and rural levels, in Ghana the provision of public transport is severely constrained and dominated by an informal transport sector. The rise of the informal transport sector was a direct response to the largely unavailable and (where available), relatively inefficient public transport service in Ghana. In Ghana's urban areas, informal transport services (generally referred to as tro-tro) characterize 'public' transport provision especially for low-income groups. The Second National Household Survey (2013) report revealed that about ninety per cent (90.2%) of commuters made up to five trips per week on tro-tro. Figures obtained from Ghana's Driver and Vehicle Licensing Authority (see Table 5.4) also show a steady increase in the number of vehicles that are used in the informal transport sector for the period between 2000 and 2010.

While the informal transport sector comes with its benefits, there are challenges of a justice-nature associated with this type of public transport provision in Ghana. These include issues such as traffic congestion, disorderliness of operations, high rates of accidents, and unfair practices such as tro-tro drivers only wanting to operate in profitable locations<sup>38</sup>. Another justice issue associated with this type of public transport provision has to do with the physical state of the fleet of vehicles used. These vehicles are mostly worn out, over-worked and minimally maintained (if at all). The vehicles do not have wheel-chair access for disabled people, neither are there provisions for nursing mothers (see Figure 5.6). However, these issues border on justice and equitable delivery of transport in Ghana.

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<sup>38</sup> For example, because of competition in this 'market' (especially during peak hours), operators of the tro-tro only operate along certain routes perceived to be more lucrative. However, it is argued that if these services are to truly reflect their 'public' status, then they ought to ply both money-making and money-losing routes (in other words, cross-subsidize).



**Table 5.4: Number of Registered Vehicles in Ghana [Source: DVLA<sup>39</sup>, Ghana]**

YEAR	Commercial Vehicles up to 2000 cubic capacity	Buses and Coaches	Gross Total (All)
2000	5,104	5,469	52,881
2001	5,568	2,676	40,014
2002	6,015	2,601	43,257
2003	5,110	2,916	48,074
2004	7,642	4,882	59,548
2005	6,686	5,585	64,419
2006	7,249	7,399	74,247
2007	7,757	9,791	90,328
2008	7,040	11,737	101,498
2009	7,868	8,810	94,998
2010	8,321	9,506	102,330



**Figure 5.6: Some of the mini-buses used as tro-tro in Ghana: The Figure shows in-vehicle conditions of the mini-buses used as public transport.**

<sup>39</sup> [dvla.gov.gh/](http://dvla.gov.gh/)

### 5.5.3 Spatial Distribution of Land Uses

Accessibility is at the heart of any discussions about the spatial distribution of activities. In other words, accessibility is the most fundamental measure of the positive effects of the transportation system (Vasconcellos, 2001). It follows then, that where land-use such as hospitals, schools, and jobs, for example, are spatially distributed determines largely the levels of access people have to these facilities. In Ghana, the concentration of most these services and activities in towns and cities has meant that people in rural areas have to, as a matter of necessity, travel several miles to access certain facilities. For example, despite the significant investments in the health sector by successive governments, access to health facilities in rural areas remains a challenge because of poor transportation systems, and long travel distances (Sulemana and Dinye, 2014). The Second National Household Transport Survey (2013) reports that more than seventy percent (73.0%) of the Ghanaian population nationwide travelled more than six kilometres to access a health facility (see

Table 5.6 ). The situation is even worse in the Northern parts<sup>40</sup> of the country where at least 90% of the population travel more than six kilometres to access a health facility. Even in the Greater Accra region (the capital) where the situation is comparatively better, over 50% of the population travel more than six kilometres to access a health facility. Given that about 58% of the population visited a health facility on foot, the significance of the percentage of people who travel six kilometres to access a health facility becomes apparent. The survey also reports that nearly one-fifth (19.4%) of the respondents cited long distance as the main obstacle they encountered in visiting a health facility with bad roads being the main obstacle.

The location of job opportunities is another issue that has a direct bearing on the issue of social justice in transport. Are people able to access job opportunities and if no, what is transport's role in this situation? The Second National Transport Household Survey reports that when asked about the main challenges they faced, majority of the people who actively looked for work highlighted inaccessibility (31.0%) and long distance (29.1%) to the workplace. Again, the figures are higher in the other regions where about sixty percent of job seekers in Northern and Volta and almost fifty percent of job seekers in Upper East and Upper West complained about long distance of the workplace. The main challenge faced by more than sixty percent of job seekers in Western and Central

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<sup>40</sup> Northern Ghana includes three administrative regions of Northern Region, Upper West Region and Upper East Region.

and fifty percent (50.2%) of job seekers in Greater Accra was inaccessibility of the workplace. Even among those who are employed, transport-related difficulties were cited. For example, whereas heavy traffic on the road was cited as the next challenge faced by respondents in Greater Accra (27.3%) and Ashanti (13.9%) regions, Northern (34.7%), Eastern (33.6%) and Volta (29.6%) complained about not having access road to their work place.

With respect to access to markets, about 31.6% of farmers travelled up to one kilometre to the nearest market whilst 32.0% travelled between 3 and 6 kilometres to the nearest market to sell their farm produce. Even though about fifty-three percent of the respondents recognised the existence of roads in their areas, the farmers reported difficulties in access levels during the rainy seasons.

People also face a number of transport related challenges that affect their ability to access educational facilities (Table 5.5). While over thirty per cent of the population faced transport-related difficulties nationally, the regional variations are even more striking. For example, in the Upper East Region, over fifty-three per cent of students had some transport-related difficulties that affected their ability to go to school. The three main transport-related difficulties reported included bad roads during the rainy season (36.6%), followed by bad roads in all seasons (22.9%) and long distances to school (10.7%). Because of the combination of the factors discussed above, people in 'transport disadvantaged communities' are forced to travel several kilometres to access necessities of life.

**Table 5.5: Main difficulties faced in going to school.**

Type of difficulties	Percentages Reported
No access road	<b>6.5</b>
Bad roads (wet season)	<b>36.6</b>
Bad roads (dry season)	<b>1.2</b>
Bad roads (all seasons)	<b>22.9</b>
Difficulty getting vehicle	<b>7.4</b>
Long waiting time	<b>4.0</b>
Heavy traffic on road	<b>5.8</b>
Distance too long	<b>10.7</b>
Frequent breakdowns of vehicles	<b>0.4</b>
No money for transport	<b>3.8</b>
Other	<b>0.7</b>

**Table 5.6: Distance to a Health Facility [Source: Second National Household Transport Survey (2012)].**

Administrative Region	Distance (km)						
	Less than 1.00	1.01-2.00	2.01-3.00	3.01-4.00	4.01-5.00	5.01-6.00	> 6
<b>Western</b>	0.7	6.2	5.3	3.2	5.1	6.4	73.1
<b>Central</b>	1.5	4.0	5.1	7.0	2.2	6.2	74.0
<b>Gt. Accra</b>	1.1	15.8	10.8	10.0	5.9	8.7	47.8
<b>Volta</b>	2.1	2.4	0.6	2.4	0.6	2.7	89.1
<b>Eastern</b>	2.7	4.8	4.4	2.9	2.5	6.1	76.5
<b>Ashanti</b>	2.0	3.3	6.1	2.9	7.3	5.4	73.0
<b>Brong Ahafo</b>	0.7	3.5	4.2	3.0	5.4	4.4	78.7
<b>Northern</b>	1.5	1.9	1.5	2.3	0.3	2.7	89.8
<b>Upper East</b>	1.7	0.3	0.3	3.1	2.1	4.9	87.5
<b>Upper West</b>	3.3	0.8	0.0	1.7	0.0	1.7	92.5
<b>Ghana</b>	<b>1.6</b>	<b>6.0</b>	<b>5.2</b>	<b>4.6</b>	<b>4.0</b>	<b>5.6</b>	<b>73.0</b>

#### **5.5.4 Cost of Travel**

The cost of travel is a constraint for people on low incomes in Ghana. This determines not just the mode of travel they use but also, the extent of travel. In some cases, this means that people on low incomes are simply unable to participate in the normal activities of life, or where they can walk, will have to carry out some activities by walking very long distances under very stressful conditions. This inadvertently impacts on and invariably inhibits the ability of this population group to engage in a number of activities. In Ghana, while the data available does not directly answer the question on the proportion of household incomes spent on all transport modes, figures from the Second National Transport Survey give some indication of this. For example, with reference to the use of taxis, the survey shows that about two-fifths (41.5%) of households spent between one and two Ghana Cedis on taxi per month while thirty two percent (32.0%) spend less than one Ghana Cedi monthly on taxi. In the three Northern regions, these figures are even higher (Northern (70.1%), Upper East (88.9%) and Upper West (96.8%)).

### **5.6 Chapter Summary**

This chapter provided some background to transport planning in the case study country, Ghana. In particular, it highlighted the trajectories of developments to strategic transport planning in Ghana. It is noted that despite a commitment to, and a long-standing tradition of transport planning in this country, there are various problems with the transportation system in Ghana including:

- A focus on developing transport infrastructure for motorized transport modes even though a majority of Ghanaians rely on non-motorized transport modes such as walking and cycling.
- A highly-inefficient, disorderly, accident-prone 'public' transport system that is dominated by the informal sector and characterized by unfair practices.

Having set the background to the case study country, Chapter 6 describes how the Triangulated Scenario Planning method developed in Chapter 4 is implemented in Ghana. The outcomes of the implementation are then analysed in Chapter 7.

## Chapter 6 - IMPLEMENTATION OF THE TriSA METHODOLOGY

### 6.1 Introduction and Back-office work

This chapter addresses the second objective of the present research by implementing the Triangulated Scenario planning Approach (TriSA) developed in Chapter 4. As indicated in Chapter 5, Ghana is used as the case study site for the purposes of implementing and critically evaluating the TriSA. Prior to going to Ghana, a number<sup>41</sup> of back-office works were carried out by this researcher including drafting a workshop programme. The theme was - “Building our Future: Developing Visions and Pathways for Ghana’s Transport”. This theme was chosen to capture the essence of the workshop and was used in all materials and correspondences in relation to the visioning exercise. To obtain feedback on the feasibility or otherwise of the proposed activities, the draft workshop programme was discussed with this researcher’s contact person at the Ministry of Transport, Ghana. In the main, the draft programme aimed to hold a two-day workshop covering Steps 3 to 6 of the TriSA methodology. However, the original programme was revised upon the advice of the contact person – citing attendance and other logistical issues as potential challenges that could impede the successful organisation of a two-day workshop. In the main, all the planned activities were “collapsed” into a single day resulting in the programmed detailed in Table 6.1.

In addition to the workshop programme, other ancillary materials were prepared including a pilot (see Section 6.2 for more on this), a Question Guide (Appendix A), an Invitation Letter (Appendix B), Participant Information Sheet (Appendix C), and a Consent Form (Appendix D). See Section 6.10 for how these materials were used in the Ghanaian case study. In the main, the materials were used at various stages of the case study implementation. While some were used prior to this researcher’s trip to Ghana, others were used before and during the actual workshop in Ghana. For instance, in keeping with the ethical requirements of the University of Leeds, each participant was asked to fill a Consent Form on the day of the workshop. Similarly, each participant filled in an Information Sheet before the start of the workshop.

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<sup>41</sup> For ease of intelligibility, these activities are described under each of the relevant sections.

**Table 6.1: The Workshop Programme used in Ghana.**

<b>Time</b>	<b>Scheduled Activity</b>
9:00	Arrival of participants; Information Sheet and Consent Form
9:10	Objectives of the Workshop
9:15	Presentation 1: Principles of Social Justice
10:00	Break - Tea, Coffee
10:10	Presentation 2: Scenario Narratives for East Legon
10:30	Presentation 3: Scenario Narratives for Trasacco Valley
10:50	Presentation 4: Scenario Narratives for McCarthy Hill
11:10	Presentation 5: Scenario Narratives for Nima-Mamobi
11:30	Break – Cold Drinks
11:35	Activity 1: Visions
13:35	Lunch
14:05	Activity 2: Pathways
16:05	Activity 3: Assessment of Visions and Pathways (Plenary)
16:45	Closing Remarks and close

The rest of the chapter is structured as follows: Section 6.2 presents and discusses how a pilot for the Ghanaian case study was designed and implemented. Sections 6.3 through to 6.8 each focus on the implementation of the steps of the TriSA methodology. Section 6.9 then discusses how the data collected during the workshop in Ghana are analyzed. Section 6.10 discusses how ethical issues relevant to the fieldwork were addressed. In Section 6.11, issues about validity and trustworthiness relevant to this research are discussed. The chapter then concludes in Section 6.12 with a summary of the main points addressed.

## 6.2 Piloting the Workshop Programme

To evaluate the feasibility of delivering the proposed activities for the workshop in Ghana, and to a lesser extent, group dynamics, a pilot study was designed and implemented. The rationale for the pilot was to allow this researcher to gain an insight into how some aspects of the actual workshop were likely to unfold, to identify any practical constraints in the proposed activities, and to identify any warning signs about where the workshop could fail. Specifically, the aim of the pilot was to assess the feasibility of implementing Steps 4 and 5 of the TriSA methodology.

Seven individuals were recruited for the pilot. They were made up of two transport planners, an academic, a land economist, two political party activists and a citizen with an interest in transport related issues. They were all recommended by this researcher's contact at the Ministry of Transport in Ghana. They were recommended because they had previously participated in similar workshops organized by the Ministry of Transport and were chosen to mirror the characteristics of the participants used in the actual workshop.

The seven participants were divided into two groups- Group A and B as shown in Table 6.2. Each group was assigned an Assistant Facilitator (see Section 6.3) and two scenarios<sup>42</sup> each. Group A was assigned East Legon and McCarthy Hill while Group B was assigned Trasacco Valley and Nima-Mamobi. In addition, each AF was given a handout describing the scenarios assigned to his group, a question guide, and a phone with a voice recorder. For Activity 1 (see Table 6.1) each group was given an Ethical Matrix Table (see Table 6.3). Similarly, for Activity 2, each group was given a copy of the predesigned Ethical Matrix Table (see Table 6.3 below).

To start the process, this researcher (acting as the Lead Facilitator) made a brief presentation on the principles of social justice. This is in keeping with Step 3 of the TriSA methodology. Following on from the presentation, each group led by an AF was asked to describe their overall vision of transport for Ghana should either of the scenarios assigned to them unfold in 30 years' time. In that respect, they were required to fill in the Ethical Matrix table (Table 6.3) with as much information as possible. This exercise accomplished Activity 1 in Table 6.1 (that is, Step 4 of the TriSA methodology).

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<sup>42</sup> See Section 6.4 for a detailed discussion of these scenarios.



For Activity 2, the participants were asked to specify the pathways to their desired visions using the table given as a guide. This activity was repeated for each of the external scenarios assigned to each group.

**Table 6.2: How the participants were divided for the pilot test.**

Group A	Group B
Transport Planner 1 (TP1)	Transport Planner 2 (TP2)
Academic (AC)	Land Economist (LE)
Party Activist 1 (PA1)	Party Activist 2 (PA2)
Citizen (CT)	

**Table 6.3: Ethical Matrix Table given to Group A.**

	Rawlsianism	Libertarianism	Utilitarianism	Sufficiency	Prioritarianism
TP1					
AC					
PA					
CT					

For the Activity 3, the participants were asked to evaluate both the contents and processes used. For example, concerning the processes, the participants were asked to evaluate the degree of clarity of what was expected of them, the clarity of the questions, their understandings of the scenario narratives, and the pathways to the visions. This was done during the plenary discussions.

The outcome of the pilot was that while the participants highlighted no difficulties in understanding what was expected of them, they were unanimous in asserting that the activities were rather demanding if carried out in a single workshop. With respect to the other components of the workshop such as presentation and the Question Guide, only minor revisions were made bordering mainly on ambiguities in meaning in some words used in the questions. Consequently, the workshop programme detailed in Table 6.1 was retained and used for the actual workshop on the 29<sup>th</sup> of January 2016 at the

Ministry of Transport, Ghana. The sections that follow describe how each of Steps 1 to 6 of the TriSA method was implemented in Ghana.

### **6.3 Step 1: Defining the Scope of the Visioning Exercise**

To define the scope, this researcher held a telephone interview with two policymakers from the Transport Ministry in Ghana on the 16th of November 2015. The policymakers were senior staff at the Ministry directly responsible for transport policy. They were recommended by a contact person during a familiarisation visit to the Ministry of Transport in December 2014 by this researcher. Telephone interview was used because the limitations of time and other resources of a Ph.D. project such as this means that it was not practicable to make multiple trips to Ghana<sup>43</sup>. Following on from that, this researcher decided to use telephone interviews. While telephone interviews are not without some limitations, these limitations were not considered particularly relevant here. For example, a limitation such as the researcher not being able to read the body language and demeanour of the interviewee (Mason, 2002) is not relevant here. For the purposes of this step of the TriSA methodology, the important thing is for the policymakers to agree the scope of the visioning exercise.

Prior to making the telephone interview, both policymakers were sent e-mails in which the purpose of the meeting was clearly spelt out. On the day of the interview, and in line with the ethical requirements of the University of Leeds, a Consent Form (see Appendix D) was read to them. In particular, they were informed that they would be audio-recorded and that the interview data would be anonymised to ensure that neither they nor other people they refer to during the telephone conversation could be identified. Both policymakers gave their explicit consent to be interviewed and to be audio-recorded.

Concerning stakeholders, it is significant to reiterate that TriSA is not specific about the number to recruit for the visioning exercise. However, for the purposes of this case study, and following authors such as Morgan (1996), it was considered that the number must be significant enough to capture divergent views and perspectives, but not too large as to stifle the outcomes of any subsequent deliberative processes. Also, in the present research, no statistical calculations were used to determine a target sample size for the workshop. However, given the importance placed on capturing a plurality of 'voices' by the TriSA methodology, at least four people in each group was considered appropriate. Sixteen participants were therefore targeted. However, because of the

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<sup>43</sup> Note that this researcher had by this stage decided to hold a workshop in Ghana.

expectation that some of the participants may not be available on the day of the workshop, this researcher over-recruited by 25% making it 20 participants. The two interview participants mentioned above were therefore asked to suggest suitable candidates to recruit for the visioning exercise. The policymakers provided the contact details of some of the prospective participants.

In total, 20 invitation letters (see Appendix B) were either hand-delivered or emailed to the Directors/Heads of Departments at the various ministries, departments and agencies (MDAs), General Secretaries of the two main political parties<sup>44</sup> in Ghana, two private consultants with expertise in transport and logistics and two private individuals with backgrounds in land-use planning. Each of the invitation letters was accompanied by an Information Sheet (see Appendix C) that detailed among other things, the objectives of the workshop, some information about the external scenarios, what is expected of the participants, and the use to which the results would be put. The information sheet also explained that all personal information collected during the research project would be kept strictly confidential and that anonymity would be maintained in reports and publications that result from the study. The outcomes of this step are presented in 7.2.

#### **6.4 Step 2: Adapting External Scenarios of the Future**

For the purposes of the Ghanaian case study, external scenarios were adapted. This option was chosen because of budgetary and time constraints. Consequently, relevant literature was reviewed to identify relevant scenario planning exercises that could be adapted for the purposes of the Ghanaian case study. The Google search engine was mainly used. In addition, articles in international, refereed, and multidisciplinary journals mostly concerned with medium and long-term futures such as 'Futures', 'Journal of Planning', 'International Journal of Sustainable Development', 'Journal of Transport Geography', and 'Transportation Research' were consulted. The reference list of peer-reviewed articles such as Muñoz-Loustaunau and Sussman (1999), Shiftan et al., (2003), Stead and Banister, (2003), Amer et al., (2013) were also scoured carefully to identify relevant scenario planning works. While not a systematic review, the review aimed to be as systematic as possible. The initial search criterion used was: all futures studies with a time-frame between 2016 and beyond with a 'global outlook'. Given that the context of the present research is transport planning, the focus was more on transport-related futures studies. The aim of the 'global outlook' criterion was to

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<sup>44</sup> The National Democratic Congress and the New Patriotic Party

ensure that only scenario exercises that are comprehensive in scope across global divides were chosen.

In total, over 50 scenario planning projects were identified covering various themes such as environmental sustainability, and poverty alleviation, technology, transport infrastructure, and freight transport. Of these, 15 satisfied the 'global outlook' criterion (see Table 6.4 below). The relevance of each of these 15 projects to the Ghanaian case study was considered along several dimensions - the time horizon of the project, regional coverage, theme addressed, and the analytical rigour of the methodology used to develop the scenarios. For example, in terms of time horizon, the OECD scenarios, the Millennium Project scenarios, and the World Water Council scenarios (among others) were not considered suitable because they are shorter than the 2046 horizon year chosen for the Ghanaian case study (see Section 6.2.1). Similarly, in terms of the themes, all but the World Energy Council scenarios addressed the theme of transport. For example, the SRES and WBCSD scenarios address issues of climate change. The same is true of the OECD scenarios.

Of the 15 projects in Table 6.4, the WEC project was adapted for the purposes of the Ghanaian case study. This is because it satisfied all the criteria specified above. For instance, concerning the rigour of the methodology used, the WEC project is reported to have assembled a team on transport comprising 54 members from 29 countries. Regional inputs on transport policies, local issues, and major driving forces were gathered during a series of regional workshops held, in Johannesburg, Bangkok, London, Thessaloniki, Washington D.C., and Rio de Janeiro. Insights from these workshops formed the basis of several assumptions that were used to develop two transport scenarios through a "bottom-up approach" (WEC 2011 p.8). Similarly, in terms of regional focus, the WEC project covered the entire world and disaggregated along regional lines (including Africa). Furthermore, the horizon year of 2050 used for the WEC project is in consonance with the 2046 horizon year adopted for the Ghanaian case study.

To be clear, the main items adapted from the WEC report were the "critical uncertainties": government regulation and co-operation-integration. However, the terminologies were changed to make them more specific and clearer. The terminologies used in the Ghanaian case study are "consensus and/or dissension on CO<sub>2</sub> emissions" and "Globalisation' and/or Regionalisation". Used in the context of this research, "consensus and/or dissension on CO<sub>2</sub> emissions" refers to global regulations on climate change. "Globalisation" and/or "Regionalisation" refers to the degree of cooperation

and/or integration between market players, including individuals, the public, the corporations, and governments, on bilateral, regional, or international levels. Such cooperation and/or integration flows from a recognition of the existence of mutual benefits, along with the need to share resources, suffer consequences, realize gains, or even plan a sustainable future for all.

To develop the external scenarios, the above critical uncertainties were crossed resulting in four quadrants each depicting a potential future world - East Legon, Trasacco Valley, McCarthy Hill, Nima-Mamobi. It is instructive to note that in the WEC report, two scenarios were used. In the Ghanaian case study, however, four scenarios are used. This is because, while there is no consensus on the specific number of scenarios to use, there appears to be some understanding that anything between three and six scenarios is suitable. In addition, some commentators argue that using two scenarios (as in the WEC report) has the potential of concealing the dynamics of the situation thereby failing to communicate core issues effectively. Furthermore, four scenarios are used in the Ghanaian case study because the Global Business Network (GBN) and Sanford Research Institute (SRI) both recommend the use of four scenarios built around two hypotheses (or critical uncertainties). The literature suggests that these organisations are the 'bellwethers' in the use of scenario planning arguably, some of the best sources of best practices in this area (see Section 2.3.4 on the background to the scenario planning methodology). Section 7.3 presents the outcomes of the activities described in this section.

**Table 6.4: Relevant scenarios identified following literature review [Author’s literature Review]; see key at foot of table for the full names of sources].**

<b>Study: Source</b>	<b>Horizon Year</b>	<b>Regions Covered</b>	<b>Focus</b>	<b>Scenario Structure</b>
Organisation for Economic Co-operation and Development (OECD)	2020	10	Environmental issues in select OECD countries	
MP – Future of S&T Management Policy Issues  <a href="http://www.millennium-project.org/millennium/scenarios.html">http://www.millennium-project.org/millennium/scenarios.html</a>	2025			<ul style="list-style-type: none"> <li>• S&amp;T Develops a Mind of its Own</li> <li>• The world Wakes Up</li> <li>• Please Turn off the Spigot</li> <li>• Backlash</li> </ul>
WWV  <a href="http://www.worldwatercouncil.org/">http://www.worldwatercouncil.org/</a>	2025	18	Freshwater crisis	<ul style="list-style-type: none"> <li>• Business-as-usual: current water policies continue, high inequity</li> <li>• Technology, Economics, and the Private Sector: market-based mechanisms, better technology</li> <li>• Values and Lifestyles: less water-intensive activities, ecological preservation</li> </ul>

Study: Source	Horizon Year	Regions Covered	Focus	Scenario Structure
<p>GEO-3</p> <p><a href="http://web.unep.org/geo/">http://web.unep.org/geo/</a></p>	2032	6	Environmental issues in select countries	<ul style="list-style-type: none"> <li>• Markets First;</li> <li>• Policy First;</li> <li>• Security First;</li> <li>• Sustainability First</li> </ul> <p>(they correspond respectively to 1a, 1b, 2b, and 3b in the GSG scenarios below)</p>
GSG	2050	11	Poverty, human values and the environment	<ul style="list-style-type: none"> <li>• Conventional Worlds:               <ul style="list-style-type: none"> <li>a) Market Forces: market-driven globalization, trade liberalization, institutional modernization</li> <li>b) Policy Reform: strong policy focus on meeting social and environmental sustainability goals</li> </ul> </li> <li>• Barbarization:               <ul style="list-style-type: none"> <li>a) Breakdown: unbridled conflict, institutional disintegration, and economic collapse</li> <li>b) Fortress World: authoritarian rule with elites in “fortresses,” poverty and repression outside</li> </ul> </li> <li>• Great Transitions:               <ul style="list-style-type: none"> <li>a) Eco-Communalism: local focus and a bio-regional perspective</li> </ul> </li> </ul>

Study: Source	Horizon Year	Regions Covered	Focus	Scenario Structure
				b) New Sustainability Paradigm: new form of globalization that changes the character of industrial society
MP - Global Normative Scenario  <a href="http://www.millennium-project.org/millennium/scenarios.html">http://www.millennium-project.org/millennium/scenarios.html</a>	2050		Global ethics, norms	<ul style="list-style-type: none"> <li>• Technological Theme</li> <li>• Human Development Theme</li> <li>• Political Economic Policy</li> </ul>
WBCSD	2050		Sustainability issues	<ul style="list-style-type: none"> <li>• FROG! market-driven growth, economic globalization</li> <li>• GEOpolity: top-down approach to sustainability</li> <li>• Jazz: bottom-up approach to sustainability, ad hoc alliances, innovation</li> </ul>
WEC	2050	5	Relationship between energy and transport	<ul style="list-style-type: none"> <li>• Freeway scenario envisages a world where pure market forces prevail to create a climate for open global competition.</li> <li>• Tollway scenario describes a more regulated world where governments decide to intervene in markets to promote technology solutions and infrastructure development that put common interests at the forefront.</li> </ul>
SRES	2100	4	Climate change	<ul style="list-style-type: none"> <li>• A1: rapid market-driven growth with convergence in incomes and culture</li> <li>• A2: self-reliance and preservation of local identities, fragmented development</li> </ul>



Study: Source	Horizon Year	Regions Covered	Focus	Scenario Structure
				<ul style="list-style-type: none"> <li>• B1: similar to A1, but emphasizes global solutions to sustainability</li> <li>• B2: local solutions to economic, social, and environmental sustainability</li> </ul>
MP – Very Long-Range Scenarios  <a href="http://www.millennium-project.org/millennium/scenarios.html">http://www.millennium-project.org/millennium/scenarios.html</a>	3000		The future of humanity in the next 1000 years	<ul style="list-style-type: none"> <li>• Still Alive at 3000</li> <li>• End of Humanity and the Rise of Phoenix</li> <li>• It's About Time</li> <li>• The Great Divides</li> <li>• The Rise and Fall of the Robot Empire</li> <li>• ETI Disappoints after 9 Centuries</li> </ul>
Key: GSG-Global Scenario Group, GEO-3-Global Environment Outlook, MP-Millennium Project; SRES-Special Report on Emissions Scenarios, WEC – World Energy Council; WBCSD-World Business Council on Sustainable Development, WWV- World Water Vision, OECD-Organization for Economic Co-operation and Development				

## **6.5 Step 3: Discussing the Principles of Social Justice**

To implement Step 3 of the TriSA methodology in the Ghana, a PowerPoint presentation and vignettes were used. Sections 6.5.1 and 6.5.2 discuss in detail the rationale for this and how these mediums were used to accomplish the objectives of Step 3 of the TriSA methodology.

### **6.5.1 PowerPoint Presentation of the Principles of Social Justice**

Prior to going to Ghana, a PowerPoint of the principles of social justice was prepared. A PowerPoint presentation was chosen over other presentational formats to increase interactivity and spontaneity, improve focus and to increase visual impacts. In addition, a PowerPoint presentation was considered germane for the purposes of this step and used because it facilitates the structuring of presentations in a professional manner, appeals to different learning styles, and can, arguably, make learning more stimulating.

The main goal of the presentation was to help the participants to understand the principles of social justice and how these principles may be operationalized in the field of transport. The presentation, therefore, drew mainly from the literature in Section 2.3.2. Consequently, the presentation covered;

- The definition of social justice in general (and as it relates to transport planning in particular);
- The differences between procedural and distributive justice, the different distributive principles - Rawlsianism, utilitarianism, libertarianism, sufficientarianism and prioritarianism;
- The operationalisation of these distributive principles in the field of transport; and
- The justifications for incorporating notions of social justice in transport.

Given that the context of this research is strategic transport planning, more attention was devoted to how each of the distributive principles might be operationalized in the field of transport. This focused mainly on the types of transport interventions that might be justified under each of the distributive principles.

To evaluate the participants' understandings of the concepts, four vignettes were designed and used at the workshop in Ghana. They were designed to have latent social justice content (see Table 6.5 for the vignettes). It is important to note that only the items in the second column of Table 6.5 were presented to the participants. The full table was accessible to only this researcher and Assistant Facilitators and served to guide the discussions. The idea of using vignettes was adapted from Trinder and Hay (1991).

These authors used “hypothetical scenarios”<sup>45</sup> to explore how policymakers in the United Kingdom understood and expressed the concepts of equity and justice in transport planning and policymaking. While some of the vignettes used in the Ghanaian case study are hypothetical, others incorporated real occurrences in Ghana that had social justice implications for transport. For example, the third vignette is a real occurrence, which was widely reported in the Ghanaian media<sup>46</sup>. Vignettes were used to promote social learning, co-production of knowledge, and to increase interest among the workshop participants about the different distributive principles.

For each vignette, the participants were expected to identify the main transport justice issues expressed in them and which conception of social justice they think the issues are relevant to (see Table 6.5). It is this researcher’s understanding that several issues of transport justice could be teased out from each vignette depending on the ‘justice lens’ used to examine the issues. Hence, the understanding is that in analysing the vignettes, there were not to be “wrong answers”. The aim was for the participants to engage critically with the different distributive principles, appreciate their differences and commonalities, and the challenges (if any) of operationalising the constructs in the field of transport.

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<sup>45</sup> Note that this is the terminology used by Trinder and Hay (1991). The term ‘vignette’ is used here to avoid confusion with the use of “scenarios” throughout this thesis.

<sup>46</sup> See “Disabled stopped from boarding flight to Tamale” [ Starrfmonline.com June 07, 2015 news]

**Table 6.5: Vignettes used in the Ghanaian workshop, issues they aimed to explore and the distributive justice concepts implicit in them.**

Number	Vignette	Issues vignette aimed to explore	Main Distributive justice concepts implicit in the vignette
1	<p>A major redevelopment project within Accra's central business district necessitates a considerable rethink of the Accra Metropolitan Authority's transport policies. A variety of new traffic management schemes are being discussed including the alteration of junctions to speed up traffic flows, the introduction of new one-way systems and further pedestrianization. It is expected also that bus routes into the center will be altered and bus stops relocated. New bus/cycle lanes may be created. The authority is also considering restrictions on parking in designated central zones, resident parking permits will be issued.</p>	<p>This vignette was designed to explore a number of issues including what the implications of each of the proposed interventions are for different population groups.</p>	<p>Libertarianism, utilitarianism, Rawlsianism</p>

Number	Vignette	Issues vignette aimed to explore	Main Distributive justice concepts implicit in the vignette
2	<p>Several strongly-worded letters have been written to the media expressing outrage at the wide differences between fares charged for a similar 5-mile journey to Accra Central on three different routes services by three different operators. Journey A, a local authority subsidized service, currently costs 40 pesewas, while Journeys B and C, run by private operators, cost 50 pesewas and 70 pesewas respectively.</p>	<p>This vignette was designed based on the understanding that justice requires the fair treatment of persons. One way of operationalising this conception of justice in transport planning terms is that justice is seen to be served if an individual is able to participate in the normal activities (school, hospital, markets etc.) of life without hindrance. But the ability to participate in these 'normal activities of life' depends to a large extent on a multitude of factors including income. Differences in fares therefore has the potential of making it difficult for people who are income-poor to participate in activities they will normally participate in. This vignette therefore aimed to test the participants' understanding of these issues and to find out if they can 'tease out' the latent justice issues expressed in the vignette.</p>	Rawlsianism

Number	Vignette	Issues vignette aimed to explore	Main Distributive justice concepts implicit in the vignette
3	<p>A physically disabled man is not allowed to board a plane from Accra to Kumasi. When the disabled man complained, he was told that the airline does not fly with wheelchair-bound passengers, because they do not have in-flight facilities for the disabled.</p>	<p>This vignette was designed to highlight the role transport plays in excluding people with disabilities from activity participation. The argument here is that from a social justice perspective, transport must be available to all users in a form that will allow them to independently use the transportation system. The transportation system is therefore not considered to be “justicized” if some population groups (by their age, income, household characteristics, physical condition) are not able to use the system.</p>	<p>Rawlsian justice Utilitarian justice</p>
4	<p>Following heavy rains that caused a lot of destruction to property in a rural community, the Minister for Transport in a speech to the chief and elders of the community said among other things: “This government recognizes that we cannot provide asphalted roads to every community across the country. We simply haven’t got the money to do that. But we shall ensure that we provide you with the roads that will make it possible for you to carry out your daily activities without any hindrance”.</p>	<p>The vignette was designed to get the workshop participants to specifically reflect on the principles of sufficiency and prioritarianism. According to sufficientarians, it is morally valuable for as many people as possible to enjoy conditions of life that place them above the threshold that marks the minimum required for a decent quality of life (see Section 2.2.2.4). In other words, the sufficientarian ideal is that transport interventions must first seek to address the needs of people with extremely low levels of accessibility. Prioritarians on the other hand maintain that justice requires that priority is given to making people better off and that even greater priority must be given to helping a person the worse off in non-comparative terms they are.</p>	<p>Sufficientarianism, prioritarianism</p>

### **6.5.2 Discussing the Vignettes**

Using the PowerPoint slides, the Lead Facilitator made a 10-minute presentation on the principles of social justice. This was followed by a 35-minute discussion of each of the vignettes in Table 6.5. The participants were divided into four groups representing each of the four future external scenarios (refer to Table 6.6 for how the participants were divided into groups). Each group was then asked to thoroughly discuss the vignettes and to identify the most important social justice issues posed by each scenario. Section 7.4 presents and discusses the outcomes of this step.

## **6.6 Step 4: Developing the Socially-Just Transport Visions**

To develop the socially-just visions of transport in Ghana, a number of complementary activities were designed and implemented as discussed in the sections that follow.

### **6.6.1 Dividing the Stakeholders into Groups and Assigning Assistant Facilitators**

For this step, the 17 stakeholders (see Section 7.2.3 - Table 7.1) were divided into four groups corresponding to the four scenarios discussed in Section 7.3 – East Legon, Trasacco Valley, McCarthy Hill and Nima-Mamobi. Group cohesion was an important consideration in dividing the workshop participants into groups. This was considered important because of the power asymmetries that exist in African cultures.

The 17 stakeholders were divided into four groups as follows: Each participant was first assigned a number ranging between one and four. All participants with the number '1' were assigned to the East Legon scenario. Similarly, participants with the number '2' were assigned to the Trasacco Valley scenario in that order (see Table 6.6 for the resulting allocations). This was done prior to the workshop and was printed on A3 paper. A3-sized paper was chosen deliberately to give the participants enough space to write as much information as possible about their desired visions.

Once the participants were divided into groups and each assigned to a particular external scenario, an Assistant Facilitator (AF) was then randomly assigned to each group. To moderate the discussions, each AF was given a sheet of paper containing the description of the external scenario (see Section 7.3 - the external scenarios) they were assigned to and a Question Guide (see Table 6.7 below).

**Table 6.6: Distribution of workshop participants across the external scenarios.**

East Legon	Trasacco Valley	McCarthy Hill	Nima-Mamobi
EPA1	EPA2	MEST	TLE
TCP1	TCP2	MoT1	MoT2
MoT3	MoT4	MoT5	MoRH2
MoRH1	MoRH3	DVLA	C1
C2			

**Table 6.7: Questions used in the workshop discussions.**

Main Question	Sub-questions
Should the world look like '[SCENARIO NAME]', in 2046, what would your vision of a socially-just transport system in Ghana look like? Describe it. This must be looked at both at the urban and rural levels for passengers and freight."	<ul style="list-style-type: none"> <li>• Where will the main urban areas be located in 2046?</li> <li>• What would be the predominant mode of transport in urban areas?</li> <li>• What will be your desired transportation systems in 2046 should this scenario unfold – rail, road, water, air: public or private transport; motorized or non-motorized modes?</li> <li>• What type of transport and land-use patterns would you like to have in urban areas in 2046?</li> <li>• What type of transportation systems would you like to have for the movement of freight in 2046?</li> <li>• What will be the primary freight corridor in Ghana in 2046?</li> <li>• What are some initiatives that the Ministry of Transport should take to improve this freight corridor?</li> </ul>
What are the implications of your desired transportation system on the transport disadvantaged?	<ul style="list-style-type: none"> <li>• Would they be able to access shops, schools, go to work and access other necessities of life?</li> <li>• Think about who will benefit and who will lose in your desired transportation system.</li> </ul>



### **6.6.2 Presenting the External Scenarios**

The Lead Facilitator presented a PowerPoint containing a summary of each of the external scenarios developed in Section 6.4 to the participants. Wary of information overload, the scenario narratives described in Sections 7.3.1 to 7.3.4 were summarised to allow understanding among the workshop participants. More emphasis was placed on the implications of the scenarios on the future of transportation in Ghana. For example, for the East Legon scenario, some of the implications discussed with the participants included the potential for road traffic to increase; the role technological developments might play in transport especially through the rapid penetration of hybrid vehicles, rapid improvements in transport telematics to overcome congestion in both public and private transport systems. Similarly, for the Trassaco Valley scenario, some of the implications highlighted included potential increases in the cost of transport due to high energy prices, and increases in the number of cars based on alternative energy technologies. For the McCarthy Hill scenario, increases in car ownership, congestion and high rates of accidents, high levels of emissions, and a slow uptake of in-car telematics were highlighted as potential implications for transport. For the Nima-Mamobi scenario, potential increases in the number of motorized transport were discussed.

### **6.6.3 The Ethical Matrix Table**

The Ethical Matrix (EM) table was developed by placing the five social justice values (Rawlsianism, Libertarianism, Utilitarianism, Sufficientarianism, and Prioritarianism) along the horizontal axis, and the stakeholder groups along the vertical axis resulting in Table 6.8 below<sup>47</sup>. It is important to note that this table was designed prior to the workshop and after the stakeholders had been assigned to the various scenarios as highlighted in Section 6.6.1 above.

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<sup>47</sup> Note that this is for the East Legon scenario and is used as an example.

Table 6.8: The predesigned ethical matrix table used by the East Legon group.

<b>Stakeholders/Social justice values</b>	<b>Rawlsianism</b>	<b>Libertarianism</b>	<b>Utilitarianism</b>	<b>Sufficientarianism</b>	<b>Prioritarianism</b>
<b>EPA1</b>					
<b>TCP1</b>					
<b>MoT3</b>					
<b>MoRH1</b>					
<b>C2</b>					

#### **6.6.4 Developing the Socially-just Visions**

While the items described in Sections 6.6.1 to 6.6.3 are “ancillaries” to Step 4, the development of the socially-just visions was carried out here. To develop the visions, each group was asked to fill the Ethical Matrix table as described in the preceding section using the stimulus question was - “Should the world look like ‘[SCENARIO NAME], in 2046, what would your vision of a socially-just transport system in Ghana look like? ...” Each group was encouraged to think about their visions at the national scale in keeping with the scope agreed (see Section 6.3).

Each of the AFs moderated their respective sessions while taking notes and video-recording the discussions. Post-it notes together with mobile phones with audio-recording capabilities were given to each AF to record the discussions of each group. After about one and half hours, each group's nominee was asked to make a five-minute presentation of their vision to the workshop. These presentations were also video-recorded and later transcribed (see Appendix G). The process of developing the socially-just visions was completed once each group's nominee presented their vision. Section 7.5 presents the outcomes of this exercise.



Figure 6.1: Photos of the workshop participants taken during the 'visions' group activity.

## 6.7 Step 5: Constructing the Pathways to Transport Visions

The development of the pathways to the socially-just visions proceeded as follows.

### 6.7.1 Generating the Inventory of Policy Measures

To identify the policy measures to use, a number of sources were consulted by this researcher - KonSULT, the Victoria Transport Policy Institute and Banister et al., (2000). Following on from that, a draft table with 102 policy measures grouped under six headings was developed. Again, it is significant to note that this exercise was carried out prior to this researcher's trip to Ghana. The idea was to provide a comprehensive list of policies from which the workshop participants could select. The ability of a policy measure to deliver socially-just transport planning outcomes was the most important consideration in the choice of policies. Each policy measure was discussed thoroughly with this researcher's contact person to identify only measures that are relevant to the Ghanaian context. Consequently, only 33 out of the 102 were thought to be pertinent to the Ghanaian context (see Table 6.9). However, to allow the participants some degree of flexibility to take account of relevant policy measures that may have been omitted, a row labelled "Other Measures" was added to the table. The column for 'Timescale' was divided into three using intervals of 10 years - 2016-2026, 2026-2036 and 2036-2046. This mirrors the "short-term", "medium-term" and "long-term" timescales used in Table 6.9.

**Table 6.9: Policy Measures and Timescale of Implementation used in the workshop.**

Policy Measures	Timescale		
	2016 - 2026	2026 - 2036	2036-2046
<b>INFRASTRUCTURAL INVESTMENT MEASURES</b>			
Improvement of public transport - bus, guided bus and Light Rail Transit, ultra-light rail.			
Increased rail capacity and high-speed trains (HST)			
Public transport subsidy (investment)			
Limiting parking spaces in zones that are well served by public transport			

Policy Measures	Timescale		
	2016 - 2026	2026 - 2036	2036-2046
Fare integration and schedule co-ordination			
Operating public transport daily, 24 hours a day			
Walking and cycling facilities			
Cycle/public transport integration			
Extensive development of new roads			
Small wheeled public transport/paratransit			
Reducing the development of new roads,			
<b>SPATIAL AND LAND USE MEASURES</b>			
Defining car-restricted, pedestrian-friendly zones in city centers			
High density land uses along main public transport corridors			
high density development near major public transport stations (i.e. transit oriented development)			
Green belts, development restrictions			
Mixed land use development			
High density development around the CBD area			
Regeneration of decaying areas (city centre, inner city, waterfront, suburban)			
<b>ECONOMIC MEASURES</b>			
Heavy subsidization of public transport in order to decrease fares			
Road pricing – congestion or environmental basis			
Road tolls for freight			
High occupancy vehicle (HOV) pricing			
Vehicle purchase tax			

Policy Measures	Timescale		
	2016 - 2026	2026 - 2036	2036-2046
Pay-as-you-drive vehicle insurance			
<b>BEHAVIOURAL CHANGES</b>			
Alternative work schedules			
Changing lifestyles – e.g. not travelling at weekends			
Promotion of local destinations and local activity patterns			
Car sharing			
Flexitime			
<b>FREIGHT MANAGEMENT</b>			
Freight distribution – centralized/decentralized centers			
Home delivery of goods/services			
<b>TELECOMMUNICATION AND TECHNOLOGY</b>			
Teleworking/telecommuting/teleconferencing			
Teleshopping			
<b>OTHER MEASURES</b>			

### 6.7.2 Developing the Pathways

To develop the pathways to each of the visions articulated in Section 6.6, a copy of Table 6.9 was given to each group (see Section 6.6.1). Led by an Assistant Facilitator, each group was asked to use the table to outline the policy measures they were likely to deploy (between 2016-2026, 2026-2036 and 2036-2046) to actualise the vision of transport they described in the preceding section. Again, each AF was given a set of questions (see Table 6.10) that were used to guide this phase of the exercise. Towards the end of this exercise, a nominee from each group made a 5-minute presentation to the entire workshop. The outcomes of this step are presented in Section 7.6.

**Table 6.10: Questions used to guide the pathways discussions.**

Main Question	Sub Questions
<p>What strategies will be needed in order to be achieve the vision you have described in 2046? [Use the format below to guide the discussion here]</p>	<ul style="list-style-type: none"> <li>i. What systems of infrastructure must be in invested in between 2016-2026, 2026-2026 and 2036-2046?</li> <li>ii. What land-use strategies must be deployed between 2016-2026, 2026-2026 and 2036-2046?</li> <li>iii. What economic strategies must be deployed between 2016-2026, 2026-2026 and 2036-2046?</li> <li>iv. What behavioral strategies must be deployed between 2016-2026, 2026-2026 and 2036-2046?</li> <li>v. What freight management strategies must be deployed between 2016-2026, 2026-2026 and 2036-2046?</li> <li>vi. What other measures must be deployed between 2016-2026, 2026-2026 and 2036-2046?</li> </ul>

### 6.8 Step 6: Assessing the Visions and Pathways

As highlighted in Section 4.8, the main goal of this step in the TriSA methodology is to afford both the Visioning Team and all the stakeholders the opportunity to reflect on the visions and pathways with respect to:

- The social justice content in the visions;



- The social justice content in the pathways and
- The accord between the visions and pathways in terms of the ability of the pathways to deliver socially-just transport planning outcomes.

In the Ghanaian case study, despite this researcher's best efforts to have this phase of the TriSA methodology completed by the workshop participants, limitations of time made it impossible. Instead, this researcher (serving as the Visioning Team) carried out the evaluation as a back-office exercise. The outcomes presented in Section 7.7 must therefore be understood as this researcher's own critical assessment of the visions and pathways. However, these assessments were validated by some of the workshop participants through emails (see Section 6.11 for more on this and other issues related to validity in this research).

For clarity, each vision and pathway was evaluated for:

- The accord between the visions and scenario narratives;
- The differences and similarities between the visions;
- The accord between the visions and pathways and
- The differences and similarities between the pathways.

Overall, the aim was to evaluate the social justice content in the visions, the social justice content in the pathways and the accord between the visions and pathways in terms of the ability of the pathways to deliver socially-just transport planning outcomes. Section 7.7 presents the outcomes of this phase of the Ghanaian case study.

## **6.9 Analysing the Workshop Data**

This section explains how the data collected during the Ghanaian workshop was recorded, transcribed, coded and analysed using the approach of thematic analysis discussed in Section 3.4.2.3.

### **6.9.1 Recording the Workshop Data**

As already highlighted (albeit briefly) in some of the sections above, data from the Ghanaian workshop was recorded on each of four android-based mobile telephones with video- and audio-recording capabilities. Android-based mobile telephones were used because of the ease of transferring voice- and audio-data from these devices to a computer. In addition to this, each of the four Assistant Facilitators wrote down notes from the discussions. Immediately following the workshop, each video- and audio-recording was transferred from the mobile telephone devices onto a laptop and then

onto an external hard drive where all data relating to this research are backed up. Hard copies of the materials used in the workshop, together with backed-up copies of the video-recordings, were then stored in a locker that was accessible only to this researcher.

In total, about 19 hours of video recordings were captured for the three main items of work carried out in the Ghanaian workshop which, for clarity include:

- The discussions of the principles of social justice,
- The 'Visions' exercise,
- The 'Pathways' exercise.

### **6.9.2 Transcribing the Workshop Data**

The videos for each of the four groups for each of the three main activities were watched and transcribed by this researcher immediately following the workshop. The transcription was done manually using pen and paper. Manual transcription allowed this researcher to playback the string of audio- and video-recordings multiple times in order to discern what a participant is saying thereby helping to provide the desired level of accuracy in the transcription. The analysis of the workshop data therefore started at this transcription stage and involved a repeated examination of the recorded data. This resulted in over 50 pages of text ready for coding and analysis to begin.

It is significant to note that the full range of 'transcription notations' (Jefferson, 1985, 1996) were not used in this analysis. Transcription notations cover two types of concerns: the dynamics of turn-taking and the characteristics of speech delivery (Jefferson, 1985, 1996). The Jefferson notation includes symbols to represent different aspects of these two concerns. While aspects of these two concerns are important in any piece of qualitative research, these were not thought to be particularly relevant in the present research and were therefore not used. For example, in transcribing the recordings relating to the participants' understandings of the various conceptions of social justice, the focus was on how well the participants understood these principles rather than on the 'social structure' of the conversations between the participants. That said, some elements of nonverbal communication (following Onwuegbuzie et al., 2009) such as the pacing of speech and length of silence in conversations were used to help corroborate or affirm some of the main arguments and to view how other participants in the group might have influenced the discussions by interrupting (for example).

### 6.9.3 Coding the Workshop Data

To be clear, the term 'coding' is used here to connote the organizing, summary and synthesis of the textual data collected during the Ghanaian workshop. It also connotes a process of assigning labels to textual data even though this understanding is generally de-emphasized in this thesis. The coding of the data involved looking at both "semantic" and "latent" (Braun and Clarke, 2006 p.18) social justice content. The five distributive principles reviewed in Section 2.2.2 were used as the *a priori* 'codes' - utilitarianism, Rawlsianism, libertarianism, sufficientarianism and prioritarianism. For example, for the pathways exercise, transport policies with a predilection to deregulation, privatization, the abolition of transport subsidies, reductions in taxes, and the principle of user-pays-user-benefits were generally coded under libertarianism. Similarly, interventions that guarantee access to low-mobile population groups were generally coded under Rawlsianism. In using these codes, however, it is significant to note that the focus was more on the 'context' in which particular words were used and how particular policies were justified. This is because of the understanding that transport policies "can be assessed according to several different normative conceptions, including welfare economics, social justice and equity" (Marsden and Mullen, 2012 p.3).

Following Corbin and Strauss (2008), the coding process started with this researcher reading the transcripts and then preparing reflexive notes. These were mainly the transcripts from the activities in Step 3 and Step 5. Because of the use of the Ethical Matrix table in the 'visioning' step (i.e. Step 4), there was no need to 'label' the text in that each item in a cell fell under each of the five social justice 'codes'. The preparation of the reflexive notes helped to infer the specific theme a piece of textual data referred to, and whether the theme focused on social justice or some other objective. The aim was to ensure that 'codes' are sensitive to the data as much as possible and that the meanings intended are properly captured. As with all data analyses, the process involved several iterations of watching the videos, listening to the audio-recordings, re-reading the transcripts, and assigning "codes". The coding process was stopped once all the ethical matrix tables and transcripts for each of the groups for all the workshop activities had been coded and the codes properly scrutinised and reflected upon.

### 6.9.4 Writing up the Narratives

The next step in the analysis process involves developing the narratives. The aim is to provide a concise, coherent, non-repetitive, logical, and interesting account of the story the data collected during the workshop aimed to tell. This was done within and across

themes while considering Ghana's specific context. The writing-up and analyses involved two complementary activities:

- The analyses of the video- and audio recordings of the groups to find quotes in which social justice language and ideas were being used; and
- This researcher's own analysis of the summaries of the recordings to identify deviations from regular discussions in Ghana that could be suggestive of concerns for social justice in transportation.

It is significant to point out that the analysis was carried out manually. However, the Nvivo qualitative data analysis software was used at some point to visualise some of the data. Finally, while the writing up process may appear here as the final element of the data analysis process, it is important to note that the findings were written down concurrently with the coding process.

## **6.10 Ethical Considerations**

In line with the main principles of any social research, informed consent was sought from the workshop participants using the Consent Form (see Appendix D and Section 6.1 for a brief mention). The consent form was adapted from the University of Leeds's recommended consent form for focus groups discussions. In addition, the participants were provided with detailed information about the workshop before and during the workshop in the invitation letter (see Appendix B) and on the participant information sheet (see Appendix C). The information sheet provided brief and clear information on the essential elements of the workshop: what the research is about, the voluntary nature of involvement, anonymity and confidentiality, the participants' responsibilities, and possible benefits of the research in general. The aim was to allow the participants to decide whether they wish to participate in the research. Risk assessments (Appendix F) were also carried out before travelling to Ghana in line with the general ethical requirements of the University of Leeds. This was granted on the 27<sup>th</sup> of February, 2014.

## **6.11 Trustworthiness and Issues of Credibility in this Research**

Section 3.5 discusses the importance of rigour in any piece of qualitative research and identified several strategies that may be used to demonstrate rigour. All the strategies suggested by Lacey and Luff (2007) were used throughout this research to ensure rigour. For example, at every stage of this research, considerable thought was given to

the choice of methods to ensure that they are not only consistent but also reproducible. This has involved explicating clearly what the methods employed are, why they were chosen and the process of generating concepts, themes and theories. For instance, to ensure validity, not only were quotations from the workshop participants used to support various argumentations, every effort was made to ensure that quotations represented all relevant view points by checking for views that deviated from normal discourses among the workshop participants (see Chapter 7). Similarly, the outcomes of the Ghanaian case study were constantly checked against existing literature as a way of gaining different insights into the same phenomenon. Part of this 'triangulation' process has also involved checking that some of the outcomes from the Ghanaian case study are consistent with the results from other research. Finally, throughout the data analysis process, this researcher maintained contacts with some of the workshop participants. Transcripts from the group discussions together with this researcher's interpretations of the data were discussed with some of the participants to ensure that the meanings intended by the participants were accurately captured.

## **6.12 Chapter Summary**

This chapter described in detail how the TriSA methodology was implemented in Ghana. It shows that while Steps 1, 2 and 6 were carried out as back-office exercises; Steps 3, 4 and 5 were implemented in a workshop environment with transport policymakers and other stakeholders of transport in Ghana. In the main, this involved discussing the principles of social justice, developing socially-just visions of transport and constructing the pathways to these visions. The chapter also addressed how the data collected in the workshop was transcribed, coded and analysed. Furthermore, issues of trustworthiness and ethics relevant to this research were discussed in this chapter. The outcomes of this chapter are presented and analysed in Chapter 7.

## Chapter 7 – **OUTCOMES OF THE CASE STUDY IMPLEMENTATION**

### **7.1 Introduction**

This chapter presents the outcomes of implementing the TriSA methodology in Chapter 6. The chapter is structured as follows: Each of Sections 7.2, 7.3, 7.4, 7.5, 7.6, and 7.7 present the outcomes of implementing Steps 1 through to 6 in Ghana. Section 7.8 evaluates the entire TriSA methodology for the extent to which the method helps in imagining socially-just transport futures. Section 7.9 concludes the chapter with a synthesis of the main issues addressed.

### **7.2 Outcome of Step 1: Scope of the Visioning Exercise**

This section presents the outcomes of the Step 1 of the TriSA methodology as implemented in Ghana (see Section 6.3).

#### **7.2.1 Temporal Scope**

For the temporal scope, both policymakers (see Section 6.3) agreed on a timeframe of 30 years with 2016 as the base year. Hence, 2046 was chosen as the time horizon for the purposes of this case study. This timeframe was chosen in keeping with that of Ghana's overall national development plan (i.e. the 40-year Development Plan – 2018-2057)<sup>48</sup>.

#### **7.2.2 Spatial Scale**

In terms of spatial coverage, both policymakers chose a national scope. This is in keeping with the scope chosen for almost all transport master plans in Ghana (even where they are modally-specific). It was therefore agreed that it is only germane to keep the scope of the proposed visioning exercise within this national scope.

#### **7.2.3 Stakeholders**

For stakeholders, both participants (see Section 6.3) recommended the following stakeholder groups:

- Representatives from the National Development Planning Commission (NDPC),

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<sup>48</sup> See <http://www.ndpc.gov.gh/>

- the Town and Country Planning Department (TCPD),
- Ministry of Environment, Science and Technology (MEST),
- Ministry of Roads and Highways (MoRH),
- Driver and Vehicle Licensing Authority (DVLA) and
- Representatives from the two main political parties in Ghana (the National Democratic Congress and the New Patriotic Party).

In all, 17 individuals confirmed their participation (see Table 7.1). No representatives from the two main political parties attended. In addition, there was no representative from the National Development Planning Commission. In the case of the New Patriotic Party, while there was no official explanation as to why no one turned up, it was understood that some 'leadership issues'<sup>49</sup> within the party at the time of the workshop may have contributed to this. In the case of the National Democratic Congress, no reason was given. For the National Development Planning Commission, it was found that all the suitable candidates were (at the time of the workshop) deployed on other official assignments relating to the 40 Year Development Plan<sup>50</sup>.

The 17 individuals who confirmed their attendance had varied backgrounds ranging from transport economics, transport engineering, environmental science, and project management (among others). From the list in Table 7.1, six people held relatively senior positions made of: Environmental Protection Agency (1); Ministry of Environment, Science and Technology (1); Ministry of Transport (2); Ministry of Roads and Highways (1); Transport and Logistics Expert (1). The rest of the people from the MDAs were relatively 'junior' people in their respective departments. One of the 'citizens (Citizen 1) is an academic with expertise in development planning. It is significant to note that 'labels' were used in Table 7.1 to maintain the anonymity of the participants.

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<sup>49</sup> At the time, some executives of the party including the National Chairman and General were on suspension.

<sup>50</sup> At the time of this researcher's visit to Ghana, the NDPC was embarking on a national consultation exercise on this plan (see the link below for some aspects of the proposed plan that relate to transport planning - <http://www.ndpc.gov.gh/downloads/49/> accessed 29/11/2016)

**Table 7.1: Participants who confirmed their attendance of the workshop**

No	Department/Organization	Position/Role	Codes
1	Environmental Protection Agency 1	Senior Member of Staff	EPA1
2	Environmental Protection Agency 2	Senior Member of Staff	EPA2
3	Ministry of Environment, Science and Technology	Senior Member of Staff	MEST
4	Transport and Logistics Expert	Consultant	TLE
5	Town and Country Planning 1	Senior Member of Staff	TCP1
6	Town and Country Planning 2	Senior Member of Staff	TCP2
7	Ministry of Transport 1	Transport planner-policy	MoT1
8	Ministry of Transport 2	Transport planner-policy	MoT2
9	Ministry of Transport 3	Transport Planner- Monitoring and Evaluation	MoT3
10	Ministry of Transport 4	Transport planner/trainee	MoT4
11	Ministry of Transport 5	Transport planner	MoT5
12	Ministry of Roads and Highways 1	Transport planner	MoRH1
13	Ministry of Roads and Highways 2	Transport Economist	MoRH2
14	Ministry of Roads and Highways 3	Transport planner/Project Manager	MoRH3
15	Driver and Vehicle Licensing Agency	Transport planner-policy	DVLA
16	Citizens 1	Senior Member of Staff	C1
17	Citizens 2	Graduate Student	C2

#### 7.2.4 Visioning Team

For the purposes of the Ghanaian case study, this researcher served as the Lead Facilitator. No Subject Matter Experts (SMEs) were constituted in that the external scenarios were not developed from first principles (see Section 6.4). Four Assistant Facilitators (AFs) were recruited for the visioning exercise. This number corresponds



with the number of external scenarios used in this case study (see Section 6.4). The AFs were undergraduate students from the Department of Planning at the Kwame Nkrumah University of Science and Technology, Ghana. They were chosen because of their knowledge about transport planning issues, and their skills related to group working, listening, note taking, and group facilitation.

The Visioning Team was therefore made up of the present researcher and the four AFs. A one-hour training exercise was organized for the AFs on the 25<sup>th</sup> of January 2016 while this researcher was in Ghana. The aim was to give them some background information about the workshop, their roles and responsibilities and to clarify any issues they may have concerning facilitating the groups. Hence, the training covered mainly;

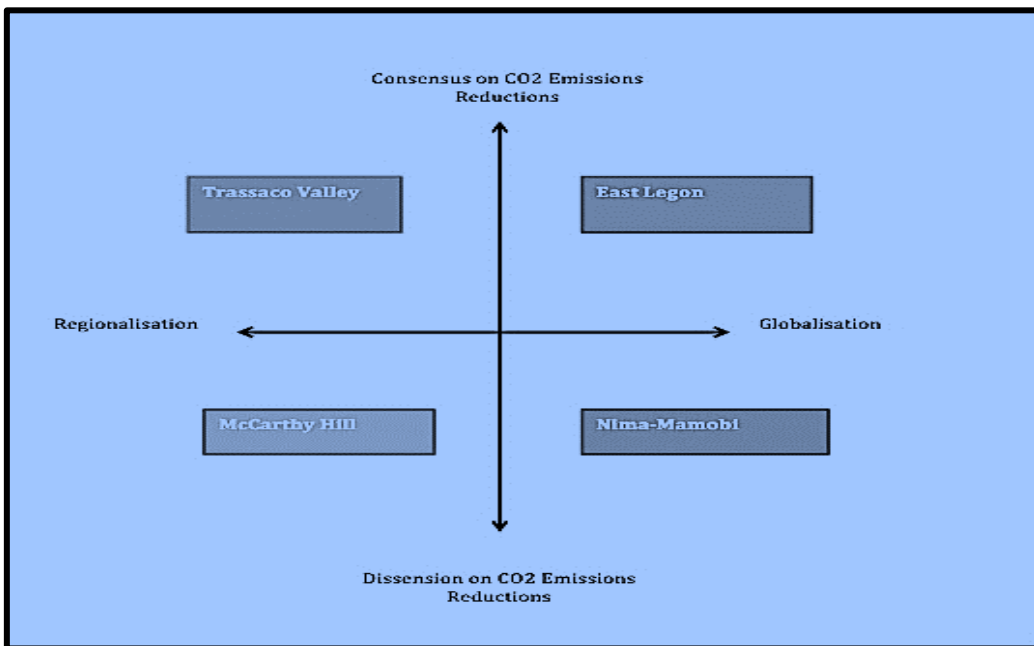
- the aims and objectives of the workshop,
- a brief description of the TriSA methodology,
- the workshop agenda,
- the various principles of social justice,
- the four external scenarios and their assumptions,
- the question guides for each of the planned activities,
- note-taking and video-recording and
- any general items of work that this researcher thought was necessary to help them successfully facilitate the group activities.

The idea was to rehearse with the AFs all the planned activities for the workshop and to bring their knowledge of the present research and its objectives to a position where they could effectively communicate these with the workshop participants. Given the importance of the principles of social justice and the external scenarios to the entire process, more time was spent explaining these items to the AFs. The AFs were also given hand-outs to help them familiarise themselves with key aspects of the exercise. They were also encouraged to read the materials before the workshop and to contact this researcher if they needed any further clarifications.

### **7.3 Outcome of Step 2: The External Scenarios**

This section presents the outcomes of Step 2 (Section 6.4). Below, four scenarios are presented as the outcomes of the literature review carried out in Section 6.4: East Legon, Trasacco Valley, McCarthy Hill and Nima-Mamobi. These scenarios demonstrate the spectrum of possibilities when the critical uncertainties highlighted in Section 6.4 are crossed. Admittedly, these are not the only possibilities for the future.

Nevertheless, as the case is with most scenario planning exercises, the purpose of these scenarios is not to assert that a particular set of scenarios rule out the existence of many others. However, the scenarios presented in Figure 7.1 are intended to bring uncertainty to the fore. They aim to address the focal question - given that all four scenarios are plausible futures that could emerge in the future, how should transport planners, policymakers and other stakeholders determine a desirable course of evolution for Ghana's transport system? In Sections 7.3.1 to 7.3.4, each of the four scenarios that resulted is described.



**Figure 7.1: Plausible scenarios for Ghana in 2046.**

### 7.3.1 East Legon (a free market world)

This world envisages the predominance of market forces. These market forces create fertile grounds for open global competition, high levels of privatization, and trade liberalisation. As there are no barriers in the market, the central players in this world are the private sector, entrepreneurs and multinational companies. Inter-state rivalry in the world system is dampened with limited struggles between the world superpowers for hegemony even though a few trade disputes persist. Activities are [re]organized along “time-space compressions” or ‘time-space distancing’ (i.e. the intensification of worldwide social relations which link distant localities in such a way that local happenings are shaped by events occurring many miles away and vice versa). Information Communications Technology (ICT) becomes even more prevalent as

emerging innovation centres compete to attract investment capital. With that comes greater connectivity across the globe making “virtuality” a reality. Even though private capital is readily-available, this capital is invested in what investors perceive to be more profitable. Generally, income *per capita* in this scenario is high especially in the Global North. The Global South (Africa) remains relatively marginalised. Savings reduce while consumer spending increases. Corruption, and red-tape however, decrease in many regions of the world. East Legon further assumes that even though market forces predominate, there is consensus among the countries of the world on climate-change mitigation and on working collaboratively to improve human well-being, and the environment. This consensus is reached because of decades of evidence of the effects of climate change. The effect is that government, civil society and the private sector work in tandem to actualize the ideals of the Brundtland Commission at all levels.

### **7.3.2 Trasacco Valley: (A Heavily-regulated World)**

This scenario assumes that there is some significant regulation of the market by regional governments. Movement of goods and services is conducted at a powerful regional level. The movement of people, culture and capital is constrained as a more communitarian and conservationist paradigm takes precedence. Regionalisation ensures that diverse political and economic systems are developed. These political systems are not only transparent, participatory and inclusive but also democratic. Within this political system, decision-making is devolved downwards from within a federal system. There is an increase in funding for large infrastructural projects. There is also transfer of technology through international research and co-operation. Economic performance however, is relatively moderate. In worse times in this scenario, there is widespread political volatility because of perceptions of corruption and inefficiencies in investments in public infrastructure programmes. In addition, even though economic growth is high, the distribution of incomes is uneven. Furthermore, public sector debts accumulate as spending is heavily skewed towards government spending. Like in East Legon, in this scenario there is consensus on the preservation of ecological systems, preservation of human well-being and economic systems. However, the preservation of these values is perceived at the regional level. Like in the East Legon, this consensus is reached after several years of research and overwhelming evidence adduced to climate change. This evidence succeeds in dousing the rhetoric of ‘environmental alarmism’ and scepticisms, which hitherto permeated the climate-change, discourse.

### **7.3.3 McCarthy Hill (Self Reliance and Local Identities)**

In this scenario, there is a sense of community with conservative values predominating. Political and economic systems are diverse because of regionalisation. The community spirit held by members of society reinforces a sense of self-reliance, and the preservation of resources. In the long-term, issues of equity and social inclusion assume primacy. Political systems are not only inclusive and democratic, but also transparent and participatory. These are reinforced by the high levels of government provision of educational, health, and social services. There is a revival of cultural, local, and regional identities with a strengthening of the family as the basic or most important social unit in the context of the local community. The movement of culture, people, capital, goods and services across political and economic boundaries is limited to the regions. There is a devolution of decision-making powers downwards from the powerful regional units to individual countries. In addition, there is some degree of dissension among the regional blocs on climate change and the issues of its mitigation. This is because the regional blocs remain unconvinced about the evidence adduced for climate change. As a result, the main values in the short-term are consumerist with little or no attention paid to ecology and equity issues. Actualising the objectives of the Brundtland Commission disappears as a political objective. In this scenario, therefore there is some moderate to high economic growth because of members of the regional trade blocs taking advantage of the benefits brought about by protectionist trade policies. Emphasis is placed on sustainable development issues only to the extent that it helps in maximising access to the use of natural resources by a rich and privileged few. Emissions reduction and the use of alternatively-fuelled vehicles are de-emphasised as political objectives.

### **7.3.4 Nima-Mamobi (Disparity and Growing Inequality)**

Here, there is a thrust towards globalization and liberalisation to enhance corporate wealth, create new enterprises and livelihoods. Governance structures are globalised with cultural convergence, world tourism and cosmopolitanism as the predominant features of the new order. There is a growing system of Transnational Practices (TNPs): transnational capitalism, cultural-ideological and transnational capitalist class. Global capitalist economic structures are well-embedded in national governance systems. Social values in this scenario are largely materialistic with resultant high levels of consumption and mobility. As the world fails to reach a common ground on climate-change mitigation, sustainability is marginalised. The price of oil and energy remains low in this scenario with less and less priority attached to environmental and ecological

concerns. The gap between the haves and have-nots widens. Environmental and social issues give rise to mass protests and a destabilization of geo-politics.

## **7.4 Outcomes of Step 3: Understandings of Social Justice**

This section presents the outcomes of Step 3 of the TriSA methodology as implemented in Section 6.5. Each of Sections 7.4.1 to 7.4.4 therefore corresponds to each of the four vignettes given in Table 6.5.

### **7.4.1 Major Redevelopment Scheme**

Columns 3 and 4 of Table 6.5 highlight respectively the issues this vignette aimed to explore and the main distributive principles implicit in the vignette. Participants (MoRH2, MoT1, MoT3, DVLA, TCP2, C2, MoT3, MEST, TCP1, MoRH1, C2, TLE, MoT1 and C1) in all the four groups noted that the overarching social justice issues expressed in the vignette to relate to “public transport”, “pedestrian walkways”, and “cycling infrastructure”. In particular, participants MEST, TCP1, MoRH1, C2, and MoT1 noted that the provision of walking and cycling facilities in the redevelopment project would help grant access to the “transport disadvantaged”. With respect to “public transport”, there was some general understanding among the participants however, that whether disadvantaged population groups will benefit from the improved public transport services will depend on how the services are “priced” ( MoRH3). This was based on the understanding among these participants that a majority of Ghanaians (especially those on low incomes) are already paying a significant proportion of their incomes on transport. Hence, any additional increases would exacerbate the plight of these transport users even if the services were better than what they currently obtain.

In terms of the five social justice principles, all the groups identified Rawlsian justice as the main principle. However, while some of the participants (MEST, DVLA) explicitly used the term ‘Rawlsian justice’, others used other Rawlsian-related constructs such as “disadvantaged groups”. For example, one of the participants noted;

*“I think the main issue of social justice here is that disadvantaged groups such as our petty traders and our mothers stand to benefit from this intervention if it is implemented. Why because, these people mostly work around the city centre doing their petty trading. So, if more pedestrian areas are created, it will greatly boost business for them...” (DVLA )*

The first part of the statements appears to relate to Rawlsian justice because of its explicit reference to disadvantaged population groups. The other part of the statement relates directly to the creation of pedestrian-friendly areas in the city centre and the local

multiplier effects of such an intervention. The understanding here was that, by developing a more pedestrianized city centre, “market women” (who are mostly low-income populations and who engage in petty trading) stand to benefit from this intervention through increased trade. For the purposes of the Ghanaian case study and the third step of the TriSA methodology, the explicit use of the term “social justice” by participant DVLA above is significant. It suggests that this participant appreciated the aim of the exercise. Furthermore, the use of the term “disadvantaged groups” suggests that this participant recognises that there are distinct population groups that may be affected by the various interventions.

One participant (TLE) argued that “state intervention” in the provision of public transport, and the provision of pedestrian-friendly zones in the city centre infringes “on the liberties of the people” in choosing their desired transportation system. Here, the participant’s use of the phrase “state intervention” and “liberties” suggests some reference to libertarianism even though he did not use the term in explicit justice terms.

Nevertheless, the discussions above underscore the difficulties involved in delineating the social justice impacts of transport interventions such as the one presented in the vignette analysed here. It shows that the task of defining social justice impacts or ‘social impacts’ in general, is not easy given that such impacts overlap, and in some cases compete with economic and ecological impacts.

#### **7.4.2 Differential Fares**

Participants EPA1, TCP1, MoT3, MoRH1, C2, DVLA, MoT5, TCP2, MoT2, MoRH2, EPA2, and MoT4 identified the justice issues implicit in the second vignette. They noted that the situation described in the vignette is currently happening in some parts of the Accra metropolis where some operators of commercial vehicles called “Tro-tros” charge different fares for (almost) similar journeys in different parts of Accra. A participant observed that charging different fares means that;

*“...some people will not be able to come to the city centre if they cannot afford the fare. Seeing that everything in Ghana is based in Accra Central, it means that those people will be greatly disadvantaged” (MoT3).*

Two issues (albeit interrelated) are conflated in the quotation above. In the first place, the quotation speaks directly to the correlation between low-incomes and the processes leading to transport-related social exclusion. In that regard, the point here appears to be that the effect of the differential fares is not only the monetary cost of travel but also the amount of time that would be spent by these people to access the city centre (where most activities are located). This is because, both components significantly reduce the

potential for participating in other life-supporting activities. As highlighted in Section 5.5.4, the cost of travel is a constraint for people on low incomes in Ghana and this cost is largely attributable to the low-income populations' over-dependence on the privately operated tro-tro. Expressed another way, this participant also appears to be talking about 'spatial justice': that is, the influence the organization of space has on activity participation. Here, the argument appears to be that it is unfair to charge more for travelling longer distances in that the people who are hard-hit are the poor people living in the outskirts of the city. This can be inferred from this participant's argument about the "over-centralisation" of most activities in the central business district of Accra. In other words, what this participant appears to be saying is that charging different fares for the same length of journey reduces 'activity participation' for low income population groups and that this situation is exacerbated by the over-centralisation of most activities in the central business district of Accra.

However, not all the participants thought that the current inconsistent pricing by Trotro drivers is unfair. Participants EPA2 and MoT2 considered that whether or not the fare differentials should be treated as unfair depends on where one lives in the city. In that regard, participant MoT5 contended that there is the need for government to not only curb the "unfair" practices in the informal transport sector, but to also "decentralise" government business to various regions and local authorities. Other participants (TCP1 and C2) argued that a way to circumvent the problem of inconsistent pricing by Trotro drivers is for government to either regulate the largely unregulated informal transport market, or to completely take over the provision of public transport services in Accra in particular, and all cities in Ghana in general. That way, they noted, it will be possible for prices to be regulated to reduce the 'inequities' meted out to people on low incomes because of the inconsistencies in pricing.

Exploring the explicit justice concept expressed in the vignette, participant DVLA observed that:

*"I think that in terms of the principles [referring to the five distributive principles], we can relate this scenario to Rawlsianism. This is because it is the very poor in our society who bear the brunt of these haphazard decisions."* (DVLA).

Here, the reference to Rawlsianism and other (Rawlsian) justice-related constructs such as the "very poor in our society..." is significant for the analysis here. It suggests that the participant understands that there are different distributive principles and that different transport interventions have differential impacts on discrete population groups and the levels of access they are afforded.

Interestingly, the discussions generally centred on the effects of the fare differentials on (especially) people on low-incomes. While this is understandable from a social justice standpoint, it is critical to note that none of the participants highlighted the fact that the fare differentiation could have been a result of improved services on those routes or that the differences in fares are as a result of the passengers' perceived value of the service provided on the different routes. From a social justice perspective, while cost considerations are important, the quality of service is equally important. It is important to note here that fares charged by transit operators are not only a function of the distance covered, but also time (e.g. off-peak and peak periods), operating costs, (e.g. bus services with and without air-conditioners), and quality of service as already highlighted. Given that the tro-tro services are dominated by mini-buses that are mostly worn out, over-worked and minimally maintained, it is intriguing that the participants didn't consider that the fare differentials could have been as a result of improved services (even though participants EPA2 and MoT2 made subtle references to this point).

### 7.4.3 Disabled Access

The situation described in the third vignette was familiar to all the participants. This is because it was an incident that happened at the Kotoka International Airport, Accra and was widely reported in the Ghanaian press and social media platforms. With regards to the justice issues inherent in the vignette, some of the participants (MoT3, MoRH1, MoT5, MoT2, MoRH2 and MoT4) noted that even as policymakers, they only gave the issue some perfunctory thought. All the participants bemoaned the lack of attention paid to the transport “injustices” meted out to [especially] disabled people. For example, participant MoRH2 noted that;

*“...in this country, nobody really pays attention to the problems of disabled people - which is sad. The laws in this country are very clear about how disabled people are to be treated with respect to places of residence, access to public spaces etc. and there are very clear guidelines in Act 715<sup>51</sup> regarding contravention and things like that. However, like most things in this country, there is a certain disconnect between what we as policymakers see as the ideals and how the enforcing bodies deploy these ideals. For example, have you ever seen disabled access facilities on any Tro-tro or even the metro mass buses?”* [Participant MoRH2].

Here, what this participant appears to be saying is that even in the face of legal stipulations, the travel needs of the disabled in Ghana only receive perfunctory attention. For example, Act 715 [Ghana's law on persons with disabilities] is categorical in stating that the ministries responsible for rail, air, and road transport shall ensure that the needs

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<sup>51</sup> This is Ghana's law on persons with disabilities.



of persons with disabilities would be considered in the design, construction, and operation of the transportation network. Yet, the participants noted that some of the transport infrastructures being developed in Accra even relatively recently do not appear to consider the needs of persons with disabilities in their design and construction. Even beyond the issue of the design of the transport infrastructure, another issue highlighted by the participants relates to the point that the public transport services (tro-tros) used in urban centres do not permeate many areas of the urban areas in Ghana. Consequently, most people have to walk several minutes to access these services. For people with disabilities, this can be a challenging experience. Significantly, the quotation above eloquently sums up some of the challenges of addressing social justice concerns in the Ghanaian context in terms of the “disconnect” between policymaking and policy implementation in Ghana.

A member of staff at the Ministry of Transport (participant MoT1) noted that even as policymakers, they sometimes fail to recognize the inherent (in)justices of such issues (referring to the vignette):

*“...these things happen in this part of the world on a daily basis and nobody really thinks about them. Have you ever seen wheel chair access in any of the Tro-tros in this country or even seats for disabled people?... We have a long way to go...”* (MoT1).

Two participants (MoT5 and MEST), noted that even where policymakers or transport planners recognise the issues of justice implicit in the vignette, such concerns tend to be “crowded out” by the priority they place on developing the transport infrastructure. In other words, they adopt a “utilitarian” approach to infrastructural development with little or no attention paid to how discrete population groups use these systems. In that respect, another participant (EPA2) noted that *“we cannot begin to talk about disadvantaged groups and all that until we have put the infrastructure in place”*. This was a position supported by all the other participants in the group (that is, in the Trasacco Valley - TCP2, MoT4, and MoRH3) who maintained that because the infrastructure in Ghana is not ‘fully’ developed, the implementation of some policy interventions is difficult. Their argument was that physical infrastructure is fundamental to the issue of accessibility for any population group including the disabled. Given that these are not fully developed in most parts of Ghana, policymakers consider that their main priority is to develop the infrastructure first.

On the specific question of what conception of social justice the vignette expresses, Participant C1 responded: *“I could be wrong, but I think it is Rawlsian justice”*. Another

participant (MoRH2) responding to the same question was more categorical in stating that the vignette bears the characteristics of Rawlsianism. He stated;

*“The fact that the disabled man was not allowed on the plane because of the lack of disabled access facilities makes it clearly an issue of ‘Rawlsianism’. If I understood the term, it talks about the ability of disadvantaged people to use the transportation system” (MoRH2).*

Participant MoT2 argued that while the premise of providing "access for all population" groups is utilitarian, the reality is that there will still be some people who will have to use other means of transport in Ghana to reach their chosen destinations. This is because the design of the existing stock of airplanes is such that they are unable to accommodate everyone. Also, the domestic airline industry in Ghana is still 'young' and will, therefore, need time to incorporate new technologies, ideas and methods into their designs to make them more inclusive in the future. Participant MoT2 further argued that to design an airplane that accommodates the needs of the disabled might also stand against the “profit maximization” goal of the airline companies. In that regard, MoRH2 argued that a way to reconcile this profit-maximizing goal and the ethos of social justice is for Ghana to move away from the voluntaristic provision of accessible transport to a position where the absence of accessibility for a proportion of the population is deemed to be an infringement of their basic human liberties.

In conclusion, the vignette on disabled access generated a lot of discussion among the workshop participants. For the purposes of this research, however, the critical issue here (as the case is with all the other vignettes) is whether the participants were able to ‘tease out’ the social justice issues implicit in the vignette. The discussions above may suggest that the objectives of the vignette have largely been achieved. As indicated in Section 6.5.2, the aim was not to find right or wrong answers but to explore the extent to which the participants appreciated the different conceptions of social justice in each vignette and whether they can relate them to everyday happenings.

#### **7.4.4 Rural Accessibility**

Across all four groups, this vignette similarly generated a lot of discussions about the types of transport infrastructure policymakers and transport planners ought to be developing especially in rural areas in Ghana. These discussions were held along the side-lines of the relatively sparse populations in rural areas. Here, participant TLE made the following observations:

*“For me, I don’t think we must provide the same quality of infrastructure across the country. In some rural areas for example, a car only goes there occasionally. You drive past these villages and what you see are goats and other livestock*

*lying down on the roads. You have to come out of your car to drive them off. I think roads built to a high-quality standard in such places are a waste of resources.” (TLE)*

What this participant appears to be saying is that, while it is important to provide the rural population with some level of accessibility, this must be done using ‘least-cost approaches’. This, according to this participant will involve developing single lane gravel or earth roads, improvement of paths and the construction of footbridges.

A participant with expertise in transport economics (MoRH2) argued that what is a socially-just transportation system (from a rural accessibility perspective) depends on how one conceptualizes the term. He noted:

*“It’s all about reducing poverty among the populace. I may decide to provide a road to a rural community. My [immediate] aim may not be to promote equity. However, the road may make it possible for some farmer to transport his farm produce to the next market (thereby) reducing post-harvest losses. That way, I will be indirectly promoting equity because the farmer will be drawn out of poverty” (MoRH2)*

The above quotation appears to mirror the debate in the literature on the role of transport infrastructure in economic development - debates that revolve around whether transport infrastructural investments lead to economic development or vice versa. This participant argued that his understanding of the different conceptions of social justice is that they are not mutually exclusive. He explained that as policymakers, they might not always have “social justice” in mind when deploying particular policy interventions. However, because transport policy objectives capture a complex account of relationships (economic, social and environmental), other ‘unintended’ goals might be achieved in the process.

#### **7.4.5 Reflections**

As indicated in Section 6.5.1, the main aim of the vignettes was to test the participants' understanding of the concept of social justice as it relates to transport. A corollary question then is – “to what extent has this goal been achieved?” The participants' responses to the vignettes and some of the discussions that followed suggest that the workshop participants have largely appreciated the concept of social justice as a moral precept in transport decision-making. This conclusion is reached because the participants were generally able to apply the five distributive principles to the vignettes. The discussions among the participants also suggested that the participants were not generally oblivious about the principles of social justice. However, and as discussed in detail in Section 7.8.4, only two of the principles (Rawlsianism and utilitarianism) appeared to have been familiar to most of the participants prior to the exercise. The

emphasis, however, appeared to be on utilitarianism which was utilized to argue for the maximisation of the benefits of transport investments for all Ghanaians. In some cases, some of the participants equated utilitarianism with libertarianism because of their understanding that both principles have some predilection to the 'market'. This is understandable given that the five principles have overlaps and elements of commonalities (see Table 2.2). Rawlsianism was conceptualized by the participants as the 'default' distributive principle for the 'transport disadvantaged' and was equated with sufficientarianism and prioritarianism in some of the discussions. Generally, the discussion about sufficientarianism and prioritarianism among the participants was muted even though there was some understanding among them that these two principles provide the moral justification for developing policies that provide minimum threshold levels of accessibility. The outcomes of the exercises carried out in Sections 7.4.1 to 7.4.4 suggest therefore that the concept of social justice was narrowly-construed in terms of both the distributive principles appealed to and the range of issues considered by the workshop participants. This point is discussed further in Section 7.8.4.

## **7.5 Outcomes of Step 4: Socially-just Transport Visions**

This section presents the outcomes of the activities carried out in Section 6.6. As indicated in that section, the aim was for each group to articulate its vision of a socially-just transportation system should the external scenario (East Legon, Trasacco Valley, McCarthy Hill and Nima-Mamobi) assigned to it unfolds in 2046. To recap, according to Step 4 of the TriSA methodology, these visions are to be articulated using the Ethical Matrix (EM) table as a structuring framework. In analysing the visions, while the overall focus is on the social justice content, it is significant to note that the scenario narratives are inextricably linked to any resultant transport visions. This suggests that while the focus of the analyses here is on the social justice content, other 'tempting side issues' cannot be divorced from the analyses. However, any analysis of these 'tempting side issues' is limited to the extent of their relevance to the theme of social justice.

For ease of intelligibility, each subsection is structured as follows. First, the visions of transport articulated by the workshop participants as presented in the ethical matrix table under each conception of justice are discussed. The analyses of the entries in the respective cells of the tables are complemented by this researcher's analyses of the transcripts of the presentations made by the nominees of each group at the end of the visions activity (see Section 6.6.4) and the audios/videos of the group discussions. A summary is then presented at the end of the discussions encapsulating the main themes

in the discussions. This summary represents the socially-just transport vision of the respective group.

### **7.5.1 Socially-just Visions for East Legon**

Table 7.2 presents the Ethical Matrix table as filled by the East Legon group. Table 7.3 on the other hand, is the transcript of the presentation made by the nominee of the group at the end of the 'visions' exercise. For the avoidance of doubt, both tables together with audios/videos as captured during the group discussions are used complementarily to guide the analyses that follow.

**Table 7.2: The Ethical Matrix filled by the East Legon Group**

Stakeholders	Distributive Principles of Justice				
	Utilitarianism	Rawlsianism	Libertarianism	Sufficientarianism	Prioritarianism
EPA1	<ul style="list-style-type: none"> <li>•Develop car-free city centers</li> </ul>	<ul style="list-style-type: none"> <li>•Walking and cycling as main modes of transport;</li> <li>•Develop effective Public transport systems to replace Trotros.</li> </ul>	<ul style="list-style-type: none"> <li>•Create congestion charging areas similar to London</li> <li>•Increase tax on very old imported vehicles</li> </ul>	<ul style="list-style-type: none"> <li>•Develop 'green' transportation systems in the rural areas using 'green' materials.</li> </ul>	<ul style="list-style-type: none"> <li>•Develop 'green' transportation systems in the rural areas using 'green' materials.</li> </ul>
TCP1	<ul style="list-style-type: none"> <li>•Develop an effective public transportation system</li> <li>•Increase road capacity across all regions.</li> </ul>	<ul style="list-style-type: none"> <li>•Develop cheap and affordable public transport.</li> <li>•Free travel for 'senior citizens' and disabled people;</li> <li>•Subsidized travel for children of school going age</li> </ul>	<ul style="list-style-type: none"> <li>•Increase road capacity across all regions.</li> <li>•Transit-oriented developments</li> </ul>	<ul style="list-style-type: none"> <li>•Build 'other' infrastructure in rural communities (more schools, hospitals)</li> <li>•Build all-season roads to connect rural communities to cities</li> </ul>	<ul style="list-style-type: none"> <li>•Develop all season roads to connect rural communities to cities</li> </ul>

<p>MoT3</p>	<ul style="list-style-type: none"> <li>•Build more railway systems to reduce the pressure on roads</li> <li>•Develop more inland ports such (Boankra)</li> </ul>	<ul style="list-style-type: none"> <li>•Use of non-motorized transport, light rail, buses</li> <li>•Develop water transport</li> <li>•Educate transport users to understand the burden of transport on other users.</li> </ul>	<ul style="list-style-type: none"> <li>•Develop the Railways system to world class standards;</li> <li>•Build more roads;</li> <li>•Charge user fees (e.g. tolls at strategic entry routes for vehicles from other countries)</li> <li>•Charge directly for road use,</li> </ul>		
<p>MoRH1</p>	<ul style="list-style-type: none"> <li>•Improve all modes of transport – roads, railways, air and water.</li> <li>•Make Ghana the transportation hub of Africa.</li> </ul>	<ul style="list-style-type: none"> <li>•Use public transport (i.e. buses and light rail, water transport and private vehicles)</li> <li>•Define car-restricted, pedestrian-friendly zones in city centres</li> </ul>	<ul style="list-style-type: none"> <li>•Make Ghana the transportation hub of Africa</li> </ul>	<ul style="list-style-type: none"> <li>•Decentralize government activities to the regional capitals and rural areas</li> <li>•Use more ICT</li> </ul>	<ul style="list-style-type: none"> <li>•Improve the roads to make them motorable</li> <li>•Develop infrastructure for other transport modes where possible</li> <li>•Improve public transport services to the rural areas</li> </ul>

C2		<ul style="list-style-type: none"><li>•Encourage the use of bicycles as the main mode of transport in Ghanaian cities</li><li>•Encourage people to walk</li><li>•Encourage the use of ICT to reduce the need to travel</li><li>•Decentralize government business from Accra to the regions</li></ul>			
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**Table 7.3: Transcript of the presentation made by the nominee of the East Legon group at the end of the 'visions' exercise**

We were looking at East Legon (Free Market) and what we were doing was to come out with a vision [of transport] for the next 30 years. I will start by picking the spatial and land use measures whereby we assume that the land use should be like this [showing drawing], whereby there will be a residential area with a mix of satellite components of the CBD. Then we try to come out with the infrastructural investments, that is, what type of transport system that needs to be in residential areas that should connect to the CBD that should connect to the industrial hub. That is what we looked at. So when it comes to the residential area, we are looking at a transport system of non-motorized transport, private vehicles, home zones and parks. I will explain Home Zones. Then when it comes to the CBD area, we are looking at non-motorized transport, light rail, buses, water transport and parks. With the CBD, we tried to get the core and the peripherals. So with the peripheral, we are allowing private vehicles to be used. Then, when it comes to the industrial hub, the transport systems we are looking at are only private vehicles. Then with the connections, we are saying to connect from residential areas to the CBD, we should be using public transport i.e. buses and light rail, water transport and private vehicles. And to connect from the CBD to the industrial area, we are saying we should be using rail, water transport, bus and trams. Then we tried to connect the industrial hub to the residential area that we are looking at trains, buses, air transport and private vehicles.

- *Utilitarianism*: Table 7.2 shows that under utilitarianism, seven items are proposed by all the five participants in this group as desired transport futures in 2046 should the East Legon scenario unfold. Of particular interest for the purposes of this thesis is how each of these elements is justified under this conception of justice. In that regard, the participants gave some interesting explanations. The participants generally saw the vision of car-free city centres as an ideal future and rationalized this vision on utilitarian grounds. Participant EPA1, for example, noted that a "majority of Ghanaians" use the city centres to access various services. Consequently, they argued that having a car-free city centre will make the city more accessible to all population groups (especially the 'majority' who do not own cars). EPA1 justified the choice of "car-free city centres" thus:

*"While some advanced countries are investing millions of dollars to encourage people to use walking and cycling in these contexts, we already have a population who are using these modes out of necessity...But instead of encouraging these modes, we are rather repeating the mistakes of these countries by developing road networks that encourage the use of cars"* (EPA1 during the group discussions).

What this participant appears to be saying is that if the majority of Ghanaians are already using walking and cycling as the main transport mode, it is only appropriate to develop car-free cities in Ghana to encourage people to walk and cycle. This is understandable if one considers that a "majority" of Ghanaians already walk and cycle and that the ethos of utilitarianism is to grant maximum access to the largest number. Similarly, the choice is understandable given that in the East Legon scenario in 2046, environmental concerns are expected to become topical. That said, in making the point about encouraging walking and cycling, this participant appears to be suggesting that this transport mode is expected to dominate 30 years from now. A critical question, however, is whether this trend will continue into the future given the high rates of motorisation in Africa buoyed by the rise of income levels and the emergence of a middle class in many African countries including Ghana.

For road transport, the arguments put forward by the participants for the development and improvement of roads is that this is the dominant transport mode in Ghana. Given that this mode benefits the greatest number, it is only germane to envision a future where road capacity is increased. While this position is understandable, the fact that only a small percentage of Ghanaians currently own cars appears not to have been considered by these participants.

But this could also be explained by the fact that they perhaps, expect car ownership trends in Ghana to continue to increase.

For the vision of rail transport, the arguments by the participants suggest that they see rail transport as a need more than anything else. From a utilitarian position, however, the argument among the participants is that it will benefit the largest number of people. However, that will depend on how the resultant services are priced and the quantum of subsidies that are likely be granted to people on low incomes.

For the vision of public transport, the argument put forward by the participants is that it will benefit the largest number of transport users who coincidentally are people on low incomes. Nevertheless, and as already pointed out under the discussions on rail transport, that will depend on the interplay of other factors such as the pricing of the services and the degree of subsidies awarded to discrete population groups.

Of all the visions proposed under utilitarianism, the proposal for "inland ports" is interesting in that one may question how this item fits into a utilitarian vision of transport. While MoT3 gave no direct explanation for this, it appears that this element is proposed to underscore this participants' argument that there is currently an 'economic case' for inland ports in Ghana (a point that will be discussed in other sections below). Similar arguments were also put forward for the vision of making Ghana the transport hub of West Africa.

- *Rawlsianism*: Table 7.2 shows that under Rawlsianism, 14 elements are proposed by the participants in this group as their vision of transport in 2046 should the East Legon scenario unfold. Of these, the use of public transport, walking and cycling dominate. The explanation given by the participants is that these modes are [generally] relatively more affordable. It is significant to note, however, that the development of transport infrastructure (across all the modes) dominated the discussions here. Discussions about in-vehicle comfort, and disabled access, for example, were muted. The justifications given by the participants for elements such as the "education" of transport users, the use of information communication technology, and decentralisation of government business from the capital are also interesting. The use of ICT, in particular, was justified on grounds that it is relatively affordable to a majority of income-poor Ghanaians as an alternative to physical travel. Here, the increasing proliferation of mobile telephony and cheap internet data were cited as the justification for this vision. The participants, therefore, envisioned a future to help reduce the

need for physical travel among low-income population groups. While this vision could help reduce the need for physical travel, the downside is that 'interpersonal relationships' (important for the ethos of social inclusion) might be affected. In that regard, the participants noted that even though interpersonal relationships are considered important in Ghana, infrequent transport services, and the potentially perilous journeys on badly maintained vehicles, with the added uncertainties of highway robberies suggests that in the near to long-term future, 'virtual mobility' will remain crucial.

- *Libertarianism*: Here, nine items were proposed by the participants under libertarianism as desired transport futures in 2046 should the East Legon scenario unfold. These are mostly what can generally be looked at as 'pricing interventions' – road tolling, taxes on imported vehicles, congestion charging, road user fees, etc. For example, the suggestion that more roads be built in an East Legon world in 2046 (see MoT3 under libertarianism) appears to be based on the libertarian position that the car is “a potential weapon of the free market and individual liberty” (Docherty and Shaw, 2011 p.3). While the premise of some of the interventions suggested here might be readily understandable, others are not particularly clear. Of the nine items, for example, only four appear to be in keeping with the 'libertarian agenda' - the building of more roads, developing rail transport, increasing road capacity and making Ghana the transport hub of West Africa. It is, however, not clear why the participants included 'tax-heavy' elements under a libertarian vision given that libertarians are inherently opposed to taxation<sup>52</sup>. A possible explanation is that these participants expect these taxes to be used to pay for transport services that cannot be paid for privately (e.g. the road and rail developments in the visions).
- *Sufficientarianism*: Table 7.2 shows that five items were proposed as desired transport futures under a sufficientarian vision should East Legon unfold in 2046. Interestingly, most of the items were proposed with reference to rural transport. For instance, the proposal on the need to build 'other' infrastructure such as schools and hospitals (see TCP1 under sufficientarianism) was made with direct reference to rural transport. While the reasons for associating sufficientarian visions with rural transport are not clear, it was clear from the discussions that the participants believe that if the goal of sufficiency is to provide some minimum level of access, then the starting point is rural accessibility. This, according to

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<sup>52</sup> See <https://www.libertarianism.org/columns/is-taxation-theft> accessed 29/03/2018

the participants, ought not be a 'transport-only' problem. By providing "other infrastructure" such as schools, hospitals, and markets in these relatively deprived communities, people's activity participation and life chances would be enhanced. This was the explanation given for the inclusion of "decentralization" of government business under the sufficientarian vision here.

- *Prioritarianism*: Under prioritarianism, five items were proposed should East Legon unfold in 2046. Each of these items was argued by the participants to have the potential of giving access to all individuals with some extra weight placed upon the needs of those who are worse off in absolute or non-comparative terms. For example, the proposal for public transport in the prioritarian vision is grounded in this thought in the sense that it will benefit those without private motorised transport. The same reasons were given for the vision of "all-season roads". A critical question, however, is whether the development of these systems of transport means that all population groups would be able to access them. As indicated in Section 7.4, that would depend on the interplay of a combination of factors including, for example, the existence of subsidies.

*What then is the overall vision of transport articulated by the workshop participants should the East Legon scenario unfold in year 2046? Analyses of the contents of Table 7.2, Table 7.3 and the audio/video discussions of the East Legon group suggests that the overall vision of transport desired by the participants in this group is: a transportation system characterized by investments in all modes of transport that caters for the needs of all transport users but where;*

- walking and cycling are the predominant transport modes;
- motorized transport modes are important but users are charged directly for the use of roads;
- public transport is heavily subsidized for children, senior 'citizens' and disabled people;
- activity patterns are decentralised from urban centres to rural peripheries;
- information communications technology is used to reduce the need to travel among all population groups; and
- Ghana becomes the transportation hub of Africa.

### **7.5.2 Socially-just Visions for Trasacco Valley**

Table 7.4 presents the Ethical Matrix table as filled by the Trasacco Valley group. Table 7.5, on the other hand, is the transcript of the presentation made by the nominee of the group at the end of the 'visions' exercise. Similar to Section 7.5.1 and for the avoidance

of doubt, both tables together with the audios/videos as captured during the group discussions are used complementarily to guide the discussions that follow.

**Table 7.4: The Ethical Matrix Table as filled in by the Trasacco Valley Group.**

Stakeholders	Distributive Principles of Justice				
	Utilitarianism	Rawlsianism	Libertarianism	Sufficientarianism	Prioritarianism
EPA2	<ul style="list-style-type: none"> <li>•Introduce tax on low-occupancy vehicles</li> </ul>	<ul style="list-style-type: none"> <li>•Develop commuter rail services</li> </ul>	<ul style="list-style-type: none"> <li>•Privatize the road network to get value for money</li> </ul>	<ul style="list-style-type: none"> <li>•Increase the overall level of investments in rural transport infrastructure and services.</li> </ul>	<ul style="list-style-type: none"> <li>•Operate public transport at cheap and affordable cost</li> </ul>
TCP2	<ul style="list-style-type: none"> <li>•Encourage car sharing to reduce the travel on the network</li> </ul>	<ul style="list-style-type: none"> <li>•Operate public transport services daily</li> </ul>			
MoT4	<ul style="list-style-type: none"> <li>•Declare some areas as car-free zones</li> </ul>	<ul style="list-style-type: none"> <li>•Improve walking and cycling facilities</li> </ul>	<ul style="list-style-type: none"> <li>•Decentralize the freight distribution;</li> </ul>		
MoRH3	<ul style="list-style-type: none"> <li>•Restrict heavy vehicles coming into the city during the day time.</li> <li>•Develop rural transport infrastructure to enable</li> </ul>	<ul style="list-style-type: none"> <li>•Develop mixed type of land use to reduce the need for people to travel;</li> <li>•Development of high density</li> </ul>	<ul style="list-style-type: none"> <li>•Introduce tax on low-occupancy vehicles;</li> <li>•Improve other forms of rural transport infrastructure (RTI) – (e.g. district roads,</li> </ul>	<ul style="list-style-type: none"> <li>•Improve other forms of rural transport infrastructure (RTI) – (e.g. district roads, trails, suspension bridges, tracks, paths, and public</li> </ul>	

	movement of goods and services back and forth rural areas	areas around major public transport terminal facilities in areas which are well-served by the transport	trails, suspension bridges, tracks, paths, and public transport interchanges.	transport interchanges	
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**Table 7.5: Transcript of the presentation made by the nominee of the Trasacco Valley group at the end of the ‘visions’ exercise.**

Based on the background [about the scenario], we had to come out with a vision for the country based on this scenario. Under thematic areas, one was infrastructure and investment measures, spatial and land-use measures, economic measures, behavioural changes, freight management and telecommunications. So based on these thematic areas that I mentioned, we have come up with something. There were two options we considered: should it be theoretical or academic or should it be something practical that can be implemented to influence decisions? Based on this background and all things being equal, we came out with some visions that can be implemented. For infrastructure and investment measures we thought it wise that we develop commuter rail services. Currently, government has already started processes in this area. Government is already implementing some form of BRT. There are some commuter rail services already on-going so there is the need for government to improve on its services to improve public transport services. Operating public transport services daily also came as one of the visions. That is we expect 24-hour operations. We expect that government also improve walking and cycling facilities – that is of the visions. In this case, these are the new drives because with the current development that we are having, the designs are such that all such issues are incorporated, that is the grid designs, the road network. We have walking and cycling facilities. An example is the Adenta-CBD corridor. For spatial and land use measures, looking at the circumstances we find ourselves we thought it wise that in the short-term... we should be looking at a mixed type of land use which will reduce the need for people to travel. Currently all activities are concentrated in the CDB, so people always have to travel to the city to get one thing or the other. So if you have a mixed land use whereby it is easy to move to the next house to get one thing or the other... Another suggestion that [came up] was [that] we concentrate development of high density areas around major public transport terminal facilities in areas which are well-served by the transport. We believe that even those areas will provide the throughput of passenger numbers for the public transport. One area we thought could have been ideal is the Achimota Terminal. That terminal could have been developed to a multi-, high-rise area where the base could have been a terminal and the residential properties could have served as a throughput for the terminal itself. In terms of the economic measures, what we intend to do is first we have the revenue motive and the other was some



restrictions using fiscal reforms to kind of change people's behaviour. On the revenue motive, we want to introduce tax on low-occupancy vehicles. The idea is that because in the first year, we are looking at improving public transport that is the BRT and the commuter rail services. Once we improve public transport, we assume that the services are there; we need to create the demand. Introducing those taxes will limit the importation of low occupancy vehicles and people will be ready to board the buses. For behavioural changes, we have car-sharing in the sense that currently there is some form of car-sharing but it's not so publicly induced. So if government is willing to encourage such car-sharing, it will help reduce the travel on the network. Currently there is no government policy on car sharing but I am aware that there is a programme by the Accra Metropolitan Authority aimed at introducing some traffic management measures. One of the options is to declare some areas as car-free zones and the rest. These are all under discussion. For freight management, we are talking of travel management systems for freight e.g. restricting access of heavy vehicles coming into the city during the day time but rather do the deliveries during the evening so that during the day time it [the city] will be free for commuting by other users. That is the whole idea. So we want to use time for the freight and we want to also decentralize the distribution itself. Coming from the ports, we have somewhere we could move them to so that those places could be central distribution points like we are having the Boankra inland port, which will be a distribution point for all freight. So instead of moving them from Tema all the way to Tamale, we will rather move them to Boankra so that we can start distribution [from there]. So we want to have some of these ports dotted around the country, which will serve as distribution points. For communication and technology, currently there are some systems in place. What is missing in that aspect is the delivery system? So these are areas where government needs to look at properly.

- *Utilitarianism*: Table 7.4 shows that under utilitarianism, five items were proposed by the participants in this group as their preferred vision of transport should the Trasacco Valley external scenario unfold in 2046. As already highlighted under Section 7.3.1, a critical issue for the purposes of the analyses here relates to the reasons for the choice of these items. Different reasons were given for the choice of each of these interventions. For 'taxes on imported low-occupancy vehicles', participant EPA2 argued that the aim is to dissuade people from using these vehicles and to get them to use public transport. Implicit in the argument advanced by participant EPA2 about this vision is that there will be concomitant improvements in the public transportation system such that the reduced demand for private cars will be met by improved public transport services:

*"Once we improve public transport, we assume that the services are there; we need to create the demand. Introducing those taxes will limit the importation of low occupancy vehicles and people will be ready to board the buses" [see Table 7.5]*

While not explicitly expressed in the above quotation, the discussions in the group suggest that the participants in this group expect that the public transport services will be subsidized to ensure that the majority of people would be able to use them. But in a Ghanaian context where the private car is still seen as a status symbol, and where the public transport sector remains largely unregulated and dominated by an informal group of suppliers, the premise that tax increases on imported low occupancy vehicles will make public transport use popular, is debatable.

Another reason given by participant EPA2 for the choice of taxes on low occupancy vehicles relates to the impacts of these vehicles on the environment. He argued that most of the low occupancy vehicles currently imported into Ghana are used vehicles that emit very high levels of pollution with adverse health and environmental impacts. However, this latter explanation can be argued to be more consistent with the 'environmental sustainability' discourse than it is to the principles of social justice. This is understandable given that the scenario narratives of Trasacco Valley are characterised by a consensus on climate change mitigation (see Section 7.3.2).

The reasons for the choice of 'car sharing' were two-fold: the reduced cost for [especially] people on low incomes and better air quality and lower carbon emissions due to reduced traffic pollution. The participants lamented on the lack

of government policy on car sharing given that most Ghanaians in urban areas currently share their cars. For car-free zones, while very little was said by the group's nominee, audio recordings of the group discussions suggest that the reason for proposing this vision is to afford as many people as possible the opportunity to walk and cycle especially for shorter trips. This argument was also put forward by the participants to underscore their vision for restricting heavy vehicles into city centres. Nonetheless, while the benefits of car-free cities are acknowledged, there is a discussion to be had on whether a vision of car-free city centres will deliver socially-just outcomes in Ghana. This is because most of the traders in the city centres are people on low-incomes. Developing car-free cities could potentially lead to poorer cities with 'less life'. This is because many of these traders depend on people coming from far away. These people may therefore not be willing to go if they are not allowed to drive into the city centres. On the choice of rural transport, the participants argued that a majority of Ghanaians currently live in rural areas. Even though this trend is fast changing, the understanding among the participants was that developing the rural transport infrastructure will help curb rural-urban migration with its concomitant problems. The participants' arguments here appear to be consistent with the discourse on the role of transport in reducing rural poverty.

- *Rawlsianism:* Table 7.4 shows that under Rawlsianism, five items were proposed by the workshop participants as their vision of transport should the Trasacco Valley scenario unfold in 2046. Two of these items relate to public transport while the remaining three are land-use measures. With respect to mixed land-uses, the understanding among the group is that by having a functionally integrated urban development form where residential, cultural, commercial and institutional uses are all integrated, the need for travel will be reduced. This is especially important for people without cars. For the public transport element, the participants argued that beyond making accessibility easy for Ghanaians without cars, it is an indispensable component of any future transportation system and one that the Ministry of Transport in Ghana is vigorously pursuing.
- *Libertarianism:* Table 7.4 shows the items proposed by the workshop participants as their vision of transport should the Trasacco Valley scenario unfold in 2046. Of all the interventions, however, the privatization of the road sector received considerably more attention from the participants during the group discussions. They argued that given the deficits in transport infrastructure in Ghana, coupled with a squeeze in public funding for it, privatising the road

sector would help to raise the needed finance for the construction and operation of roads through tolls. The participants also premised their arguments on the current government's drive towards the use of "public-private partnerships" as a conduit for addressing the financial shortfalls in transport infrastructure provision. Whatever the reasons may be, however, there was a muted discussion in this group about who the winners and losers are likely to be from road tolling. From a social justice perspective, however, every road-tolling system has distributive implications for discrete population groups especially for people on low incomes. Implicit in the participants' arguments here is that road tolling satisfies some form of intergenerational equity. That is, road tolls provide some form of intergenerational compensation for the 'investing generation' to benefit future generations.

Participant MoT4 highlighted the need for the "decentralisation of freight distribution centres". The argument given by the group is that the existing freight distribution process in Ghana leads to an inequitable appropriation of road space. This is because "articulated trucks" and other vehicles carrying freight from the Tema harbour and other ports in Ghana tend to have some 'unfair' use of road space especially during the day:

*"For freight management, we are talking of travel management systems for freight e.g. restricting access of heavy vehicles coming into the city during the daytime but rather do the deliveries during the evening so that during the daytime it [the city] will be free for commuting by other users."*

The participants' argument from a social justice standpoint, therefore, is for policymakers to target transportation and traffic policies to ensure that road space is equitably appropriated to benefit not just motorised transport but also non-motorised forms of transport.

- *Sufficientarianism*: Under a sufficientarian vision of transport in 2046, two issues were raised by the participants in this group – "increase the overall level of investments in rural transport infrastructure and services" (EPA2) and "improve other forms of rural transport infrastructure (RTI) – (e.g. district roads, trails, suspension bridges, tracks, paths, and public transport interchanges)" (MoRH3). A theme running through both issues is rural transport infrastructure, which suggests the priority placed on this component in discussions about rural accessibility to transport. In the discussions of the group, it appears that there was a certain inertia among the participants to discuss other interventions that potentiate rural accessibility. The argument appears to be that until the infrastructure is put in place, encouraging public- transport use and deploying

other policy interventions that help address the accessibility needs of the transport disadvantaged will not achieve the desired outcomes. But as highlighted in Section 7.4.4, solutions to rural accessibility issues ought not be looked at in terms of 'transport-only' solutions.

- *Prioritarianism*: Under prioritarianism, only one item was proposed: the operation of public transport services at cheap and affordable cost to the user. The aim, according to the participants is to afford access to the transport disadvantaged.

*What then is the overall vision of transport articulated by the workshop participants should the Trasacco Valley scenario unfold in the year 2046?* Analysis of the content of Table 7.4, the transcript of the presentation made by this group (Table 7.5) and the audio/video of the discussions suggests that the overall vision of transport covers six thematic items:

- infrastructure: such as investments in rural and urban transport infrastructure - commuter rail services, bus rapid transit systems;
- spatial and land-use: such as the development of high-density areas, and mixed land uses;
- economic: such as taxes on low occupancy vehicles, privatization of the road network;
- behavioural: such as car-sharing;
- freight management: such as a decentralization of freight distribution centres across Ghana and
- telecommunications: such as home delivery systems to reduce the need to travel.

### **7.5.3 Socially-just Visions for McCarthy Hill**

Table 7.6 presents the Ethical Matrix table as filled by the McCarthy Hill group. Table 7.7, on the other hand, is the transcript of the presentation made by the nominee of the group at the end of the 'visions' exercise. Similar to Section 7.5.1 and for the avoidance of doubt, both tables together with audios/videos as captured during the group discussions are used complementarily to guide the discussions that follow.

**Table 7.6: The Ethical Matrix Table as filled in by the McCarthy Hill Group.**

Stakeholders	Distributive Principles of Justice				
	Utilitarianism	Rawlsianism	Libertarianism	Sufficientarianism	Prioritarianism
MEST	<ul style="list-style-type: none"> <li>•Mixed, high density developments around major public transport terminal facilities;</li> </ul>	<ul style="list-style-type: none"> <li>•Encourage the use of non-motorized transport;</li> <li>•Replace 'Tro-tros' with well-integrated public transportation systems;</li> </ul>	<ul style="list-style-type: none"> <li>•Connectivity between rural and urban areas using rail links and roads;</li> </ul>		
MoT1	<ul style="list-style-type: none"> <li>•Improve the physical infrastructure at other regional airports;</li> </ul>	<ul style="list-style-type: none"> <li>•Walking and cycling facilities must be fully incorporated into the integrated system</li> </ul>	<ul style="list-style-type: none"> <li>•Inter-urban transport must be mainly by high speed trains;</li> </ul>	<ul style="list-style-type: none"> <li>•Improve access to health care and education</li> </ul>	<ul style="list-style-type: none"> <li>•Improve access to health care and education</li> </ul>
MoT5		<ul style="list-style-type: none"> <li>•Walking and cycling to be the main mode of transport in urban and rural areas;</li> </ul>	<ul style="list-style-type: none"> <li>•Develop freight distribution centers all over the country from Tema and Takoradi up into the Northern parts to take</li> </ul>		

		<ul style="list-style-type: none"> <li>•Create an accessible, affordable, reliable, effective and efficient transport system that meets user needs;</li> </ul>	<p>care of freight meant for our neighbours such as Burkina Faso, Niger and Mali;</p> <ul style="list-style-type: none"> <li>•Privatize road (toll-booting systems across the country)</li> </ul>		
DVLA	<ul style="list-style-type: none"> <li>•Improve railways as a primary mode of transport (rural, urban and peri-urban transport).</li> </ul>	<ul style="list-style-type: none"> <li>•Improve public transportation systems to enable disadvantaged people to travel,</li> <li>•Improve access to health education, health and markets both in the rural and urban areas</li> </ul>	<ul style="list-style-type: none"> <li>•Improve air, and road transport to give access to global and regional markets</li> </ul>	<ul style="list-style-type: none"> <li>•Improve access to health education, health and markets both in the rural and urban areas</li> </ul>	<ul style="list-style-type: none"> <li>•Improve access to health education, health and markets both in the rural and urban areas</li> </ul>

**Table 7.7: Transcript of the presentation made by the nominee of the McCarthy Hill group at the end of the ‘visions’ exercise.**

We looked at McCarthy Hill which is a world of “self-reliance and local identities”. We organized our visions by rural, urban and interurban transportation systems. For the rural, we thought that it will be good to have a transportation system where there will be connectivity between rural and urban areas using rail links and roads. We think that if this vision will be realized, then the road capacity going from the rural hinterlands and urban areas or towns need to be improved. As for the rail network, we don’t even have them. It will be good for us to start thinking about developing good rail systems in the country. At the moment, what we have are only good for carting freight they are not meant to be used for passenger traffic. In urban areas, we looked at both passenger and freight transport. We think that public transport must be developed as the major transportation system in all urban areas. This must be fully-integrated with metro-style systems that have interchanges at central locations. We think that the interchanges must be employment and retail centres to offer city dwellers jobs. We also think that walking and cycling facilities must be fully incorporated into this integrated system. . . we are lucky that by accident and not design, our people use walking and cycling as major means of transport. In some places, governments spend millions to implement such policies. We think it is important we encourage this [walking and cycling] thing here. Apart from being cheap, the health benefits are also good. Even though in this world there are no restrictions on CO<sub>2</sub> emissions, we think that promoting the use of private cars is not in the best interest of the country. I know that evidence from other countries shows that more cars do not solve the transport issues . . . so I don’t think we should not be repeating the mistakes of other places by promoting more use of cars. For freight transport, we also considered that the current [freight] system is untenable. In 30 years’ time, we need to have freight distribution centres all over the country from Tema and Takoradi up into the Northern parts to take care of freight meant for our neighbours such as Burkina Faso, Niger and Mali. The use of articulated trucks to transport freight through our towns and villages through to these places is such a bad practice, we must stop it. Most of the accidents on our roads are caused by these big, big trucks and it is only going to get worse as demand increases. We also think that the inter-urban transport must be mainly by high speed trains so that this thing (domestic air travel) can be minimized. We are developing airports left, right and centre but how many of our people can afford to travel by air . . . we need to think about these things. We are not saying don’t develop air transport . . . we are saying don’t give too much emphasis. Rail is a cheaper option and more sustainable.



- *Utilitarianism*: Table 7.6 shows that under utilitarianism, three items are desired should the McCarthy Hill scenario unfold in 2046. The discussions in this group suggest that the choice of the first item (high-density developments around major public transport terminal facilities) from a social justice standpoint hinges on its benefits for the transport disadvantaged. They identified reduced transportation costs for individuals and families and expanded mobility choices as some of such benefits. Also, they noted that when access to transport is improved, better access to economic opportunities located in other areas will result. Indeed, the participants also discussed the environmental benefits of this intervention even though these are not particularly pertinent to the discussion here. In discussing the benefits of high-density developments around major public transport terminals, however, the participants were silent on its disbenefits in terms of the potential of such developments to increase property values around these terminals (that is, transit-induced gentrification). This suggests that from a social justice standpoint, the level of collaboration between various ministries, departments and agencies in terms of deploying other policies to ameliorate the plight of people on low incomes is critical in determining whether such a vision will deliver socially-just outcomes in the McCarthy Hill scenario.

The reasons given for improving infrastructure at regional airports and improved railways were more economic than social even though there were suggestions that these will benefit the "majority of the population". In some cases, the participants saw these interventions as 'needs' that must be met as part of an overall process of 'revamping' transport infrastructure in Ghana.

- *-Rawlsianism*: Table 7.6 shows that under Rawlsianism, seven items are desired should the McCarthy Hill scenario unfold in 2046. The reasons given by the participants for the choice of non-motorised transport, public transport, walking and cycling under a Rawlsian conception of social justice in this scenario are not very different from those given in the other scenarios discussed above and will therefore not be repeated here. The proposition to "improve access to health, education, and markets..." (see DVLA under Rawlsianism) is of particular interest in that the participants appear to recognise the role 'non-transport' interventions can play in determining the levels of access for various transport users. In that regard, MoT1 noted that:

*"As policymakers, we sometimes forget that most of the issues that are placed on our table have got nothing to do with us, really. They are someone else's problems but which get shifted to us . . . Take for example the provision of healthcare and education. They are quite clearly*

*not our cup of tea. But the issue metamorphoses into ours because, in the absence of these facilities where they are needed, people have to travel several hundred kilometres to Accra, Tamale and Kumasi to get them. And how do they get there? Transport!” [participant MoT1]*

Of all the interventions, the need for integrated public transportation systems was seen by all the participants as one vision that will deliver just and equitable transport outcomes should McCarthy Hill unfold. The participants discussed the need for an integrated payment system that will permit passengers to use different modes of public transport using the same electronic ticketing systems similar to those used in other contexts such as London. This according to the participants in this group, should not only make it easy for the government of Ghana to subsidize these services for people on low incomes but might also enable the government to abolish the current tro-tro system with its unfair practices (see Section 5.5.2 above for the discussion of these practices). In making the point about overhauling the public transport system, however, these participants appear to underestimate the point that tro-tros provide a service (albeit at low quality and safety standards) at lower prices than the mainstream public transport systems desired. As highlighted in other sections above, this suggests that far greater subsidies will have to be granted to allow people on low incomes to ‘migrate’ to this overhauled public transportation system. The TransSantiago (see e.g. Figuora, 2005) experience is a good example of how such formalizations end up requiring greater subsidies.

- *Libertarianism:* Table 7.6 shows that under Libertarianism, five items are desired should the McCarthy Hill scenario unfold in 2046. The video of the group discussion shows that of all the items proposed, the participants in this scenario demonstrated some considerable interest in rail transport. They justified their interest in rail transport both as a means of enhancing Ghana’s economic competitiveness in the African sub-region and as a cheaper, sustainable alternative to private motorized transport (see participant MoT5’s contribution under Libertarianism). Furthermore, the participants deplored the lack of rail transport in Ghana, arguing that poverty (especially in rural Ghana) is exacerbated by the general lack of transport infrastructure (whether road or rail). Indeed, participant DVLA noted that the lack of improved transport infrastructure, in general, is the main cause of rural-urban migration in Ghana:

*“Most of the kayayes<sup>53</sup> you see in Accra and Kumasi were virtually forced out of the village because of the deplorable economic conditions they found themselves in . . .As we all know, farming is the mainstay of the rural communities here in Ghana. Farming is not only a seasonal enterprise, the lack of proper systems of preservation means that once the farmers harvest their produce, they have to reach the markets straight away. The lack of suitable transportation systems to cart these farm produce to the markets in the cities leads to post-harvest losses . . .which means no money to cater for basic needs...the young men and women, therefore, come here for greener pastures...It is a vicious cycle, really”* [participant DVLA].

What this participant appears to be saying is that the general lack of transport infrastructure connecting the rural farming areas to the urban markets contributes to post-harvest losses - thereby making farming unattractive as an occupation for the rural youth. This results in rural-urban migration with all the challenges associated with it. The point here appears to be that by developing the [rail] transport infrastructure connecting the rural farming areas to the urban markets, poverty among the rural populace could be reduced. This argument appears to speak directly to the discourse on the relationship between transport and economic development (a theme that has been highlighted in Section 7.4.4). Closely related to the preceding discussion is the vision of high-speed trains in 2046 (see participant MoT1 under Libertarianism). On the face of it, this vision appears rather unrealistic in view of the financial costs associated with such interventions. However, from a libertarian standpoint, this vision is understandable even though the likelihood of achieving such a vision in Ghana within the 30-year time horizon considered remains debatable.

- *Sufficientarianism and Prioritarianism*: For sufficiency and priority, the same items were desired: improving access to health care, education and markets at the rural and urban levels. The reasons given for choice of these interventions mirror those given in Sections 7.5.1 and 7.5.2 and will therefore not be repeated here.

*What then is the overall vision of transport articulated by the participants should the McCarthy Hill scenario unfold in the year 2046?* Analyses of the content of Table 7.6, Table 7.7 and the audios of the group discussions suggest that the overall vision of transport articulated by the participants in this group can be captured under three main headings:

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<sup>53</sup> A term used to refer to head portage in Ghana.

- For rural transport: a transportation system with connectivity between rural and urban areas using rail links and roads.
- For urban transport:
  - For passenger transport - a fully-integrated public transport system that incorporates walking and cycling facilities, that utilizes metro-style systems with interchanges at central locations to serve as employment and retail centres through mixed land use forms, and high-density developments around major public transport terminal facilities.
  - For freight transport - the development of freight distribution centres to ease off pressure at the ports in Tema and Takoradi.
- For Interurban transport: travel between urban centres in Ghana to be by high-speed trains.

#### **7.5.4 Socially-just Visions for Nima-Mamobi**

Table 7.8 presents the Ethical Matrix table as filled by the East Legon group. Table 7.9, on the other hand, is the transcript of the presentation made by the nominee of the group at the end of the 'visions' exercise. Similar to Section 7.5.1 and for the avoidance of doubt, both tables together with audios/videos as captured during the group discussions are used together to guide the discussions that follow.

**Table 7.8: The Ethical Matrix Table as filled in by the Nima-Mamobi Group.**

Stakeholders	Distributive Principles of Justice				
	Utilitarianism	Rawlsianism	Libertarianism	Sufficientarianism	Prioritarianism
TLE	<ul style="list-style-type: none"> <li>•Develop the road network in the villages</li> </ul>	<ul style="list-style-type: none"> <li>•Roll out incentives to encourage rural people to walk and cycle</li> </ul>	<ul style="list-style-type: none"> <li>•Roll out street licensing in urban areas;</li> <li>•Embark on street naming across Ghana</li> </ul>	<ul style="list-style-type: none"> <li>•Roll out incentives to encourage rural people to walk and cycle</li> </ul>	<ul style="list-style-type: none"> <li>Roll out incentives to encourage rural people to walk and cycle</li> </ul>
MoT2		<ul style="list-style-type: none"> <li>•Develop facilities for walking and cycling</li> </ul>	<ul style="list-style-type: none"> <li>•Introduce speed cameras and spot fines system</li> </ul>		
MoRH2	<ul style="list-style-type: none"> <li>•Adopt international standards for every transport mode</li> </ul>	<ul style="list-style-type: none"> <li>•Encourage use of more Information Communications Technology in rural communities (e.g. MTN money).</li> </ul>	<ul style="list-style-type: none"> <li>•Introduce advanced forms of transport management systems (electronic ticketing systems in all commercial buses).</li> </ul>	<ul style="list-style-type: none"> <li>•Develop facilities for walking and cycling</li> </ul>	<ul style="list-style-type: none"> <li>•Develop facilities for walking and cycling</li> </ul>
C1	<ul style="list-style-type: none"> <li>•Development of parking lots</li> </ul>	<ul style="list-style-type: none"> <li>•Encourage the use of bicycles to work;</li> </ul>			

Stakeholders	Distributive Principles of Justice				
	Utilitarianism	Rawlsianism	Libertarianism	Sufficientarianism	Prioritarianism
	at strategic places				

**Table 7.9: Transcript of the presentation made by the nominee of the Nima-Mamobi group at the end of the ‘visions’ exercise.**

We believe that we need to expand the roads. Currently we see that they are either single lanes or...so we feel they should be expanded to dual carriage or wider so they can accommodate more vehicles. Then when it comes to the rail infrastructure, we realize that that this is the trend in most advanced countries, but when you come to our part of the world, they are so limited. We believe within the next 30 years, the focus should be on extending the rail coverage (expanding as well) to strategic areas...Let’s say if we can expand the rail network inter-regionally...if we can link all rail lines to all the regions, it will really help with mass movement of people and goods. Then we are also thinking that we are blessed with a lot of rivers in the country. We have the Black- and White- Volta running all the way from the North to the South. So we believe we should develop proactively the water transport system by encouraging more use of ferries, boats or any machines you can use in water to transport. So the choice will now be up to the citizens if all modes of transport are well developed by water, by road, by rail...[so that] depending on your preference...if you are a business executive and of course we added air transport too. We want to encourage government to go ahead to develop this domestic transport system to connect all regions by air then erm ...so depending on your nature of business...if you are a market woman and you carry large goods, you can go for the rail or water system. And if you are a businessman, you can go for the air transport to manage your time efficiently and the like. Then we also think that erm, there should be things like street naming, because ....Recently, they started doing it. We feel within the next 10 years, all urban areas must be encouraged to name their streets so that driving round town will be easy and self-directory: you don’t need to stop by the road side to ask people “I want to go here, where should I pass? “And we also believe that this initiative that was started by the Urban Transport Project...Route Licensing and the Transport Operators’ Licensing must continue because currently, erm, haphazardly, we have commercial drivers who operate from Adenta to Accra and Nima to... they just roam round the city tracking passengers. The regulation is very difficult. So when we license them and license the route on which they ply, erm, we can regulate their activities better. Then, we also think it will be better because most of our people in this part of our world are poor, so we feel this discounted transport services for the aged and school children and the like should be encouraged. The government should pursue it and cover more people. Then we are also of the view that in the next 10 years we should introduce this policy which has been dormant for a while – towing system. A number of broken vehicles cause accidents. I know National Road Safety Commission is trying to license some bodies to tow

broken down vehicles, accident vehicles and the like. Then we also believe that we can introduce these speed cameras and spot fines system to ensure that drivers are disciplined. So once we have the infrastructure and all these regulatory things laid out in the first 10 years, in the next decade up to 2036, we would now proactively encourage the use of bicycles to work [That is, once the lanes are created]. In fact when you travel to other countries, it is common – I was surprised when I was in Japan for instance, it's what people use to go to work. They have parking lots for them [stacked] very high. And then walking - most of our streets are designed such that if you are walking and you are not careful, they will clear you...so we should deliberately encourage the redesign of our infrastructure to create paths for people to walk. If you are a disabled person, you should be able to use your wheel chair [on the transportation system]. Once all those are in place, we should also encourage more people to walk to work and using bicycles. Development of parking lots at strategic places: The design, I don't know if the people from the Ministry of Roads and Highways are here, but in some places they design. The parking lots are created in places where you can park your car, you step down and there is a means of public transport to just jump in...Otherwise if you have to walk several meters to get to public transport system, it may discourage people from patronizing. So the location of such parking lots should be encouraged and this should be very strategic. Then in the long-term, we are looking at ... after all these when you also develop standards for the type of buses that should be used within cities, and within rural areas, we introduce other advanced forms of transport management in the long-term. So by then we are also looking at introducing the electronic ticketing systems in all commercial buses. These days it's annoying when you go for your change from these driver's mates...and the way people cheating and other things. If we were in an electronic world, you could load the card, so you don't need to carry cash. So you can roam around and when it is finished, you can go and load it again. So we are hoping that within the next 30 years we should be able to catch up with our counterparts in the advanced world where all our commercial cars can ... Then we also believe that in the next 30 years, we should be able to introduce this scheduling where every one-hour or 30 minutes either a train or a bus will pass. That will be after we have put in place the infrastructure, the logistics and equipment. Then we also think that in the next 30 years we should introduce this underground system... I think that our last point here is we want to, as much as possible encourage, within 30 years adopt international standards for every transport mode. I know the air industry is compliant with international standards but when you come to the roads side, like we were just talking about the emissions, the advanced countries are moving to more advanced...we have not even adopted Euro3. If you look at what the EPA proposed, it was Euro3 standards that they tried to localize to suit our local situation. But the advanced countries have moved and are now looking at very high level....so we are backwards and we are trying to catch up. Within 30 years, we believe gradually we should start now with the very lowest standards and by 30 years we should.

- *Utilitarianism:* Table 7.8 shows that under utilitarianism, three items are desired by the participants in this group should the Nima-Mamobi scenario unfold in 2046: roads, adoption of international standards and the development of parking lots. While a vision about roads and parking lots could be rationalised under a utilitarian conception of social justice, it is not clear why the participants the adoption of 'international standards' in this vision. Here, the explanation given by the participants for this item is that Ghana is lagging behind other countries in terms of its regulations on acceptable limits for exhaust emissions:

*"I know the air industry is compliant with international standards but when you come to the roads side like we were just talking about the emissions, the advanced countries are moving to more advanced...we have not even adopted Euro3. If you look at what the EPA proposed, it was Euro3 standards that they tried to localize to suit our local situation. But the advanced countries have moved and are now looking at very high level....so we are backwards and we are trying to catch up. Within 30 years, we believe gradually we should start now with the very lowest standards and by 30 years we should [catch up]" (see Table 7.9).*

Even with the explanation above, it would appear that this element is still not consistent with the narratives of the Nima-Mamobi scenario given that this scenario is characterized by dissensions on climate change mitigation. The idea behind the "parking lots" is rooted in the participants' vision of an integrated transport system that ensures easy interchange (in terms of both time and proximity) - thereby resulting in trips with minimal disruptions:

- *Rawlsianism:* Under Rawlsianism, four items are desired should the Nima-Mamobi scenario unfold in 2046. These mainly relate to walking and cycling at the rural and urban levels and as part of the integrated transport system alluded to above. The dominance of these modes of transport under a Rawlsian conception of social justice is understandable given that they generally benefit the transport disadvantaged. This researcher's reflections on these interventions discussed under Rawlsianism in earlier sections are relevant here and will therefore not be repeated.
- *Libertarianism:* Under Libertarianism, Table 7.8 shows that four items are desired should the Nima-Mamobi scenario unfold in 2046: street licensing in urban areas, street naming, speed cameras and spot fines, and advanced forms of transportation management systems. The reasons for suggesting these items are that the current transportation system in Ghana is highly unregulated - a situation they think should be reversed in 30 years' time. When the participants were questioned about the implementation probability of these visions given their



own discussions about the lack of basic infrastructure, they explained that 30 years is a long time within which it should be possible to realize these visions. Even then, the idea of spot fines and general regulation of the transportation sector would appear not to be consistent with the 'libertarian creed'.

- *Sufficientarianism and Prioritarianism*: Interestingly, both sufficientarianism and prioritarianism were filled with the same items - roll out incentives to encourage rural people to walk and cycle and develop facilities for walking and cycling.

Overall, the ethical matrix table as filled in by the participants in this group appears to have relatively less information. This is explained by the fact that (and as noted in this researcher's reflections below) this group in particular initially found this exercise difficult. *What then is the overall vision of transport articulated by the participants should the Nima-Mamobi scenario unfold in the year 2046?* Analyses of the content of Table 7.8, Table 7.9 and the audios of the group discussions suggest that the overall vision of transport articulated by the participants in this group is:

- A fully developed transport system for all modes (roads, rail, water and air) that is integrated, safe, reliable, efficient and available to all;
- A transportation system that has walking and cycling and other non-motorized transport modes as major alternatives to the private car;
- Where there is a widespread use of information communications technology to reduce the need to travel;
- A well-developed land-use system with route licensing and street naming as identifiable features.

## **7.6 Outcomes of Step 5: Pathways to the Visions**

This section presents the outcomes of the pathways exercise carried out in Section 6.7. As indicated in that section, the idea of the pathways is to answer the question – *How might the socially-just transport visions articulated by the workshop participants for each of the four external scenarios be achieved?* Table 7.10 presents the outcomes of the pathways exercise. Sections 7.6.1 to 7.6.4 discuss the pathways in further detail.

**Table 7.10: Policy measures and pathways selected by the workshop participants for the four visions.**

Policy Measure	East Legon			Trasacco Valley			McCarthy Hill			Nima-Mamobi		
	2016-2026	2026-2036	2036-2046	2016-2026	2026-2036	2036-2046	2016-2026	2026-2036	2036-2046	2016-2026	2026-2036	2036-2046
<b>INFRASTRUCTURAL INVESTMENT MEASURES</b>												
Improvement of public transport - bus, Light Rail Transit, ultra-light rail.	✓			✓			✓			✓	✓	
Increased rail capacity and high-speed trains (HST)	✓			✓			✓			✓		
Public transport subsidy (investment)	✓			✓			✓					
Developing parking spaces in zones that are well served by public transport												
Fare integration and schedule co-ordination												
Operating public transport daily, 24 hours a day		✓						✓			✓	
Walking and cycling facilities	✓			✓			✓			✓	✓	
Cycle/public transport integration	✓	✓		✓			✓	✓			✓	
Extensive development of new roads	✓	✓		✓			✓	✓		✓	✓	
Development of infrastructure for other modes (rail, air, sea)	✓			✓			✓			✓		
Street Naming and route Licensing										✓		

Policy Measure	East Legon			Trasacco Valley			McCarthy Hill			Nima-Mamobi		
	2016-2026	2026-2036	2036-2046	2016-2026	2026-2036	2036-2046	2016-2026	2026-2036	2036-2046	2016-2026	2026-2036	2036-2046
Small wheeled public transport/paratransit												
Reducing the development of new roads				✓								✓
<b>SPATIAL AND LAND USE MEASURES</b>												
Defining car-restricted, pedestrian-friendly zones in city centers	✓	✓		✓			✓	✓			✓	
High density land uses along main public transport corridors	✓			✓			✓			✓		✓
High density development near major public transport stations (i.e. transit oriented development)	✓			✓			✓			✓		
Green belts, development restrictions	✓			✓						✓		
Mixed land use development	✓			✓			✓			✓		
High density development around the Central Business District							✓					
Regeneration of decaying areas (city centre, inner city, waterfront, suburban)	✓	✓					✓	✓			✓	
<b>ECONOMIC MEASURES</b>												

Policy Measure	East Legon			Trasacco Valley			McCarthy Hill			Nima-Mamobi		
	2016-2026	2026-2036	2036-2046	2016-2026	2026-2036	2036-2046	2016 -2026	2026-2036	2036-2046	2016-2026	2026-2036	2036-2046
Heavy subsidization of public transport in order to decrease fares					✓							
Road pricing – congestion or environmental basis		✓			✓			✓			✓	
Road tolls for freight												
High Occupancy Vehicle (HOV) pricing												
Introduce tax on importation of low occupancy vehicles					✓			✓				
Vehicle purchase tax		✓			✓	✓		✓			✓	
Pay as you drive vehicle insurance		✓									✓	
<b>BEHAVIOURAL CHANGES</b>												
Alternative work schedules	✓		✓	✓		✓	✓		✓	✓	✓	
Changing lifestyles – e.g. not travelling at weekends	✓		✓	✓		✓			✓	✓	✓	
Promotion of local destinations and local activity patterns	✓		✓	✓	✓		✓		✓		✓	
Car sharing	✓		✓	✓		✓	✓		✓	✓	✓	
Flexitime				✓		✓						
<b>FREIGHT MANAGEMENT</b>												

Policy Measure	East Legon			Trasacco Valley			McCarthy Hill			Nima-Mamobi		
	2016-2026	2026-2036	2036-2046	2016-2026	2026-2036	2036-2046	2016-2026	2026-2036	2036-2046	2016-2026	2026-2036	2036-2046
Freight distribution – centralized/decentralized centers	✓			✓	✓		✓				✓	
Traffic management system (freight movement in the night)								✓				
Home delivery of goods/services							✓					
<b>TELECOMMUNICATION AND TECHNOLOGY</b>												
Teleworking/telecommuting/teleconferencing	✓	✓	✓									
Teleshopping	✓	✓	✓									
<b>OTHERS</b>												
Licensing and regulation of commercial vehicle operators										✓		
Connect all regions by air transport		✓										
Roll out Bus Rapid Transit (BRT) systems to all urban areas in all the regions		✓										
Towing of broken-down vehicles												
Provide disability-friendly infrastructure		✓										
Spot fines and speed cameras										✓		





### 7.6.1 Pathways to Visions of East Legon

The consensus among the five participants in this group (EPA1, TCP1, MoT3, MoRH1 and C2) appeared to be that in the 2016-2026 periods, the main priority ought to be on developing the physical infrastructure first – that is investments in infrastructure to improve public transport, development and/or improvements in walking and cycling facilities and the provision of disability-friendly infrastructure. Land use measures also received attention among these participants for the 2016-2026 periods with a participant arguing that land use planning must take precedence over the development of transport infrastructure:

*“The issue in this country is very much a land use planning issue as it is a transport issue. If we have to do any serious transport planning in this country, we need to go back to the basics. Ownership and control of land, building planning and regulation needs to be in proper force. The haphazard manner in which some people build in this country makes the work of planners really difficult and that is what we need to tackle first.” [Participant C2]*

While infrastructure and land use measures were considered to be ongoing long-term issues, the participants also considered that some of the measures could be deployed straight away within the 2016-2026 pathway. Such measures include teleworking/telecommuting/teleconferencing, alternative work schedules and flexible working. The participants noted that access to the internet and the use of mobile phones has significantly changed and continues to change people’s travel behaviours in Ghana (a point already highlighted above). With the increasing number of mobile service providers, the participants argued that some of trips might no longer be necessary because of the substitution effects of mobile telephony.

In the 2026-2036 pathway, the participants considered that the focus ought to be on ‘economic measures’ such as vehicle purchase tax, pay-as-you-drive vehicle insurance, road and congestion charging. The understanding among the participants here is that once the infrastructure and land use issues have been sufficiently addressed, it should then be possible to begin deploying measures that will encourage the use of public transport (e.g. operating public transport daily) while simultaneously discouraging the use of private motorized transport. This, according to the participants is the reason for deploying the ‘fiscal measures’ in the 2026-2036 pathway. Nevertheless, there was also a recognition among the participants that developing transport infrastructure is a long-term issue. That explains why infrastructural developments (provision of disability-friendly infrastructure, extensive development of new roads) continues in the 2026-2036 pathway.



In the 2036-2046 pathway, the measures that take precedence are mainly behavioural measures (promotion of local destinations and local activity patterns, car sharing) and telecommunication and technology measures (teleworking/telecommuting/teleconferencing). The reason given for the 'dominance' of telecommunication and technology measures in this period is somewhat different from that given for the choice of the same measures in the 2016-2026 pathway. Here, the understanding is that, in 30 years' time, there will be greater connectivity across Ghana thereby making "virtuality" a reality. From the point of view of the participants, this should make it relatively easy to promote policies that reduce the need to travel through the substitution effects of information communications technology.

### **7.6.2 Pathways to Visions of Trasacco Valley**

For all the pathways to Trasacco Valley, 40 policy measures were selected by the participants in this group (EPA2, TCP2, MoT4 and MoRH3) corresponding to the different timelines in Table 7.10. For the 2016-2026 pathway, the main policy measures selected include the improvement of public transport, subsidies on public transport, development of walking and cycling facilities, defining pedestrian-friendly zones in city centres, development of high-density land uses along main public transport corridors to reduce the need to travel, and the promotion of local destinations and local activity patterns. Again, improvements in transport infrastructure and land-use measures dominated the discussions among the participants in this group – suggesting the importance of these measures to the Ghanaian context. Like the East Legon pathways, the participants selected other measures such as car sharing, flexible working arrangements and lifestyle changes only because the participants argued that some of these measures are already in place in Ghana, albeit on a very small scale. For example, some of the participants observed that in many parts of Accra and because of the cost involved, most people who work in the city have informal car-sharing arrangements. From the perspective of these participants therefore, all that is needed is for government to provide incentives (e.g. a tax incentive) to encourage people to car-share. While some of the participants admitted that car-sharing may have more of environmental outcomes, other participants (TCP2, MoT4) argued that in the absence of an effective public transportation system in Ghana, people without cars (i.e. the transport disadvantaged) benefit from these car-sharing arrangements.

In the 2026-2036 pathway, the measures selected include subsidization of public transport to decrease fares, vehicle purchase tax, tax on importation of low occupancy vehicles, introduction of electronic ticketing in all commercial buses and trains, and the

introduction of bus/rail scheduling. The arguments put forward for both electronic ticketing and bus/rail scheduling were interesting from a justice perspective. With respect to bus/rail scheduling, the understanding of the participants was that, having a reliable public transportation system that gives users prior information about departure and arrival times at various locations is good for people who do not own cars:

*“I was in London a couple of years ago...Using the public transport system, I felt like there is no need to even own a car in this city. The information on arrival and departure times at various bus stops and terminals is visibly available to everyone. And most of the buses come on time so that people without cars can plan their travel arrangements around the public transport system in the city. That is the kind of thing we are talking about...”* [Participant MoRH3]

For electronic ticketing, the argument appears to be that the existing informal transport (i.e. tro-tros) is very expensive and inequitable especially for people who are on low incomes (who incidentally are the majority). This is because of unfair practices associated with this system including “cream-skimming” (as highlighted in Section 5.5.2). The participants’ argument is that, by having an effective public transportation system with electronic ticketing facilities, it should be possible for policymakers to ‘cap’ how much people on low incomes spend on transport in a day. However, a participant (TCP2) expressed some scepticism on whether such a “grandiose plan” could be actualized within the 2026-2036 timeframe given that the infrastructure (e.g. dedicated lanes for buses) is not yet developed in many places. Participant MoRH in reaction noted that plans are far advanced by the Government of Ghana on a pilot scheme like what is being discussed and that the success of this pilot would go a long way to influence policy direction on rolling out effective public transportation systems in Ghana.

For the 2036-2046 pathway, the participants in this group selected 11 measures. These were mostly ‘Other Measures’ (i.e. measures suggested by the participants themselves): introduction of electronic ticketing in all commercial buses and rails, introduction of bus/rail scheduling, development of additional international airports at strategic urban centres such as Kumasi, Takoradi and Tamale, introduction of international environmental standards for all modes of transport, demand responsive transport, and intelligent transport systems. The premise for the participants’ selection of introduction of electronic ticketing in all commercial buses and rails and introduction of bus/rail scheduling has already been discussed above and will not be repeated here. Admittedly, the “development of additional international airports at strategic urban centres such as Kumasi, Takoradi and Tamale” appears to be an odd juxtaposition from a justice standpoint. However, the argument put forward by these participants appears to be that in the long-term, a more utilitarian-leaning approach ought to be taken (that is, “transport

for all”- participant (EPA2)). For the demand responsive policy measures, they were selected to serve the transport needs of the rural populace.

### **7.6.3 Pathways to Visions of McCarthy Hill**

The participants in this group as pathways to the McCarthy Hill transport vision selected thirty policy measures. In the 2016-2026 pathway, there is a dominance of infrastructure and land-use measures. Similar to the 2016-2026 pathways in the East Legon and Trasacco Valley visions discussed above, the participants' justifications for choosing these pathways are quite similar to those given under East Legon and Trasacco Valley and will therefore not be repeated.

In the 2026-2036 pathway, the participants mostly selected behavioural measures: alternative work schedules, changing lifestyles, promotion of local destinations and local activity patterns, and car sharing. Other measures selected include deploying intelligent transport systems, regulation and governance of the transport sector, and demand responsive transport. Here, there is relatively little in the form of land-use and infrastructural measures. The understanding among the participants is that individuals do not change their behaviours overnight. Twenty years (that is, 2016-2036) is long enough for these non-infrastructure measures to, therefore, take centre stage in Ghana. However, it may be argued that this postponement of non-infrastructure measures for later is a reality of everyday life in Ghana – in the sense that it does not matter what the decision makers say about 2026-36 as they can change their minds if they are still in post.

Finally, in the 2036-2046 pathway, behavioural measures dominate. Other measures considered are the governance of the transport sector. The participants considered that in 30 years' time, Ghana's transportation system ought to be at a 'self-actualising' state in its evolution. This implies a shift from a focus on infrastructure and land use to more behavioural and governance issues. Whether this is a realistic aspiration or not is discussed in Section 7.7 below.

### **7.6.4 Pathways to Visions of Nima-Mamobi**

For the 2016-2026 pathway, the participants chose improvements in public-transport systems, operation of public transport daily, development of walking and cycling facilities; development of high-density land uses along main public transport corridors and improved standards for public-transport provision. There was some emphasis among the participants on public transportation systems such as light rail transit, and trams. This is despite scepticisms among other participants about the implementation

probability of such measures given other challenges in the country. In particular, C1 and MoT2 referred to Ghana's energy situation as a potential barrier to the effective deployment of such measures as they depend directly on electricity supplies.

For the 2026-2036 pathway, 21 measures were selected. Of these, five (5) are infrastructural measures, four (4) are spatial and land-use measures, two (2) are economic measures, four (4) are behavioural measures, a measure belongs to freight, while the remaining five belong to "Other Measures". In the discussions about walking and cycling pathway, there was a sense among the participant that it is a component that ought to have been in place. Citing the success of cycling in the Tamale municipality as a case in point, the participants wondered why such interventions have not been actively promoted through government policy. A participant argued that the main reason why people do not walk and cycle is because of two main reasons: the status associated with driving and a lack of education about the benefits of walking and cycling:

*"...as we develop and become more urbanised, our lifestyles change. So one will think that walking and cycling will become more appropriate...But the difficulty in Ghana is...people have not been well educated. It is a status thing to own a car. It is a bit funny, but in our part of the world, the more big cars you have, the more you are recognised. But with the pace we are moving, I'm of the view that in 10 to 20 years' time, we probably will not see a car as a status thing anymore..."* [Participant TLE]

In the 2036-2046 pathway, eight measures were selected and were mainly from the 'Others' category including:

- The introduction of electronic ticketing in commercial buses and rails;
- Introduction of underground and high-speed rail systems to connect all regions;
- Development of additional airports at strategic urban centres such as Kumasi, Takoradi and Tamale;
- Introduction of demand responsive transport in areas that are not well-served by other public transport modes;
- Regulation and governance of the transport sector.

The choice of interventions for this pathway appears to constitute a slight departure from those chosen for the 2036-2046 pathway in the other visions. This is because this pathway incorporates elements of infrastructure developments (railways, airports). In the other pathways, this component is more dominant in the 2016-2026 and the 2026-2036 pathways.

## **7.7 Outcomes of Step 6: Assessment of the Visions and Pathways**

This section presents the outcomes of Step 6 of the TriSA methodology as implemented in Ghana. As indicated in Section 6.8, this researcher conducted the evaluation as a desk exercise for the reasons explained in that section.

### **7.7.1 Assessment of the Visions**

This section discusses two main questions - (1) What are the differences and/or similarities between the visions; (2) Are the visions articulated in accord with the scenario narratives?

#### **7.7.1.1 Accord between the Visions and Scenario Narratives**

- **East Legon**

The Rawlsian vision of transport proposed by the participants appears to have a coherent fit with the narratives of the East Legon scenario in a number of respects. For example, if one proceeds on the "globalisation" trajectory of this scenario, it may be argued that as society becomes more complex and globally integrated, there is a potential for the 'neoliberal agenda' taking centre-stage. From a social justice standpoint therefore, a key question then relates to how decision-making in this environment might support broader social justice policy imperatives. As indicated in Table 7.2, the vision of transport articulated here [and to the extent that the vision generally benefits the transport disadvantaged] appears to flow directly from Rawls' argument that inequalities are justified insofar as they serve to maximise the position of the least well-off members of society. Conversely, if one proceeds on the CO<sub>2</sub> trajectory of the East Legon scenario, there appears to be some congruence between the scenario and the transport vision. In other words, interventions such as walking and cycling, and the use of public transport are generally considered to be eco-friendly in keeping with the CO<sub>2</sub> narrative of this scenario. Under a utilitarian transport vision, a mixture of items was proposed. These items can largely be argued to be in accord with the narratives of the East Legon scenario. For example, the vision to "develop car-free city centers" in this vision is largely in consonance with the environmental sustainability component of the East Legon scenario. The same is true of the vision for an "effective public transportation system". However, the vision to "increase road capacity across all regions" of Ghana appears inconsistent with the environmental sustainability narrative of the scenario (on the face of it). However, even here one may argue that there is some accord with the globalisation narrative of the scenario. Under a libertarian vision of transport, while

elements such as congestion charging appear to be in accord with the environmental sustainability narrative of the East Legon scenario, the building of more roads to accommodate motorised transport would appear to stand against the ethos of sustainability as espoused in this scenario. That notwithstanding, these interventions can largely be seen to be consistent with the scenario narratives if one proceeds on the globalisation trajectory. For example, while a vision of making Ghana the "transportation hub" of West Africa may largely be argued to go against the ethos of sustainability (assuming the concomitant transportation systems are not eco-friendly), this vision is largely consistent with the neoliberal agenda of globalisation. Interventions such as green transportation systems articulated under the sufficientarian vision of transport under East Legon are evidently in congruence with the sustainability narrative. Similarly, building "other infrastructure", and "all-season roads" may be argued to be consistent with the scenario narrative if one proceeds on the globalisation trajectory. The same points can be made under the prioritarian vision.

- **Trasacco Valley**

Under the utilitarian vision of transport, elements such as taxes on low-occupancy vehicles, car-sharing, and car-free zones all appear consistent with the sustainability component of the Trasacco Valley scenario. Similarly, elements of the utilitarian vision such as encouraging car-sharing appear consistent with the communitarian spirit of Trasacco Valley. As indicated in Section 6.6.2, it is expected that energy prices in this scenario will increase in this scenario leading to sharp increases in transport cost. It would, therefore, appear that the vision of restricting heavy vehicles into the city centre is consistent with this narrative in two main respects. It has the benefit of improving the environment while at the same time reducing the cost of transport for manufacturing companies - being out of hours deliveries. Again, under a Rawlsian transport vision in Trasacco Valley, one finds congruence between the scenario narratives and the constituent elements of the vision. For example, it could be argued that components such as walking, cycling, and public transport are in direct accord with the communitarian spirit of Trasacco Valley. Similarly, the vision to develop mixed land uses in order to reduce the need to travel is essentially a sustainable transport option that accords with the CO<sub>2</sub> trajectory of this scenario. Under libertarianism, while the vision of privatizing roads may be viewed as being against the communitarian spirit of Trasacco Valley, other elements such as rural transport are generally in accord with the community spirit of the scenario. Even taxes on low occupancy vehicles, while essentially 'anti-libertarian' can be 'justicized' when looked against the backdrop of the

environmental sustainability narrative of the scenario. Under both sufficiency and priority, the focus on rural infrastructure is in accord with the communitarian ethos of Trasacco Valley.

- **McCarthy Hill**

Under utilitarianism, it appears that there is a lack of congruence between the elements of the utilitarian vision and the scenario narratives. For example, it cannot be argued that the vision to develop physical infrastructure at all regional airports marries well with the narrative of slow economic growth in this scenario. Similar observations can be made with respect to the vision to improve railways as the primary mode of transport. Unless such infrastructural developments are justified as 'general needs' that ought to be met, the case for developing them in an environment expected to experience a slowdown in economic growth remains unclear. Furthermore, the vision of developing mixed, high-density developments around major public transport terminals appears not to be in accord with either trajectory of McCarthy Hill. It is, however, interesting to note that for a scenario characterised by dissensions on climate change mitigation, increased car ownership is not an element of the vision articulated. Under a Rawlsian transport vision, items such as the use of non-motorised transport, public transport, walking and cycling can generally be argued to be in accord with the narrative of communitarianism. Also, the vision to provide access to health, and education is in accord with the regionalism component of the scenario. For libertarianism, and similar to the utilitarian vision discussed above, the vision of high-speed rail and air transport would appear inconsistent with McCarthy Hill given that this scenario is expected to experience some slow economic growth in the next 30 years. Both the sufficientarian and prioritarian transport visions are also consistent the narratives of McCarthy Hill especially if one proceeds along the regionalism trajectory.

- **Nima-Mamobi**

In Nima-Mamobi, the development of extensive network of roads, and parking lots are generally in accord with the scenario narratives. Here, it is significant to reiterate that this scenario is characterised by materialistic social values with high levels of consumption and mobility. The development of roads (to accommodate private motorised transport) is therefore largely consistent with the materialistic values of this scenario. However, the vision to "adopt international standards..." is largely inconsistent with the scenario given that this scenario is characterised by dissensions in climate change mitigation. It is important to note that from the transcript of the presentation made

by the Nima-Mamobi group (see Table 7.9), these "international standards" are understood by the participants as European emission standards that define the acceptable limits for exhaust emissions of new vehicles. Similar to the discussions about on Rawlsian transport visions, the items proposed here all appear to be consistent with the Nima-Mamobi narrative. The discussions above (under Rawlsian visions) are relevant here and will not be repeated. Under libertarianism, given the individualistic, consumerist values of this scenario it is interesting that the items proposed here do not appear to reflect these values. Indeed, the idea of introducing advanced transport management systems would appear inconsistent with this narrative of the scenario.

#### **7.7.1.2 Differences and Similarities between the Visions**

In terms of the individual visions, East Legon can be looked at as being essentially Rawlsian-leaning because of the dominance of interventions that favour the transport disadvantaged in this vision. Libertarianism comes in close proximity with libertarian-leaning 'values'. It is difficult to 'pin down' Trasacco Valley to any specific justice principle in that it appears to give equal weight to utilitarianism, Rawlsianism, and libertarianism. It incorporates a wide range of elements in the vision straddling infrastructure investments, land use planning, fiscal interventions, behavioural interventions and information communications technology. Like East Legon, McCarthy Hill appears to be Rawlsian-leaning. Nima-Mamobi has some equal mix of Rawlsian-leaning and libertarian-leaning items.

Across all four scenarios, Table 7.11 shows that the most dominant social justice principle is Rawlsianism. This suggests that irrespective of which future unfolds in 2046, the participants desire a transportation system that prioritises the needs of the transport disadvantaged. This is both at the urban and rural levels. Consequently, in terms of content, walking and cycling, car-sharing, subsidized public transport services (for all modes), and decentralised activity patterns (to reduce the need to travel) are dominant across all the visions. The second dominant principle is libertarianism – favouring interventions such as high-speed trains, development of more roads for private motorized transport, privatization of the road network, decentralisation of freight distribution centres, and improved transportation systems to increase Ghana's competitiveness in the African sub-region. Next is utilitarianism with a mix of interventions such as improved infrastructure across all modes, taxes on low occupancy vehicles, walking and cycling, improved public transport services and the development of inland ports. Throughout the exercise, there was a sense that the participants generally found it difficult to articulate transport visions under the prioritarian and



sufficientarian principles. This is reflected in the content of the visions proposed under each of these principles. While the reason for this is not clear, it suggests that perhaps more work need to be done to increase the participants' understanding of these principles.

Figure 7.2 shows the word-cloud of the 100 most frequently used words in the visions (i.e. in the ethical matrix tables and in the presentations made by the nominees of each group). It shows that after excluding the word 'transport', the most frequently used words of relevance to the discussion here are people (16)<sup>54</sup>, develop (13), freight (12), public (11), road (10), walking (10), water (7), cycling (5) and cars (4). With respect to the word 'people', it was used in the context of discussions about the central business district of Accra, infrastructure for walking and cycling, reducing the need to travel, public transport, and mass movement of people. What this suggests is that across all the four visions, 'people' is at the centre. The word 'develop' was used 13 times. The context in which the word was used suggests the priority the participants place on the development of transport infrastructure as a vision. This is understandable in light of the deficits in transport infrastructure in Ghana. Next is the word 'freight', which occurred 12 times in the visions. Again, this was mostly used with respect to the development of freight distribution centres. This highlights current discussions about the inefficiencies in the current freight distribution and management systems in Ghana. As highlighted in the earlier discussions, there is some thinking among most Ghanaians and policymakers that the current system where international consignments (for neighbouring Mali and Burkina Faso) are transported on articulated trucks is unsafe, unsustainable and inefficient. This, it is argued ought to be replaced with a faster and more efficient rail system complemented by freight distribution centres developed at strategic locations across Ghana. The importance placed on the word 'freight' therefore reflects this thinking.

The word 'public' comes next and has been used throughout to underscore the importance of public transport in all the visions. Of the different public transport systems, however, bus rapid transit (BRT) and light rail appear to be the main priorities. This appears to be in keeping with current thinking among policymakers in Ghana about the role of BRT systems in addressing some of the transport challenges in the cities of Ghana. Roads, walking and cycling are all words used in the context of infrastructural provision - again, underscoring the primacy of infrastructure in all the visions.

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<sup>54</sup> Note that numbers in parenthesis indicate frequencies.



**Table 7.11: Comparison of the transport visions in terms of social justice principles.**

<b>Social justice principle</b>	<b>Number of items in each cell</b>				
	<b>East Legon</b>	<b>Trasacco Valley</b>	<b>McCarthy Hill</b>	<b>Nima-Mamobi</b>	<b>Totals</b>
Utilitarianism	7	5	3	3	18
Rawlsianism	11	5	7	4	27
Libertarianism	9	4	5	4	22
Sufficientarianism	5	2	2	2	11
Prioritarianism	5	1	2	2	10

## **7.7.2 Assessment of the Pathways**

Similar to Section 7.7.1, this section discusses two main questions- (1) What are the differences and/or similarities between the pathways? (2) Are the pathways spelt out in accord with the visions?

### **7.7.2.1 Accord between the Visions and the Pathways**

Mapping each vision in Sections 7.5.1, 7.5.2, 7.5.3 and 7.5.4 to the pathways in Sections 7.6.1, 7.6.2, 7.6.3 and 7.6.4 respectively, it can generally be argued that the pathways (in terms of the policy measures) are in accord with the visions. For instance, the vision of walking and cycling as a predominant transport mode in the East Legon scenario is in accord with the strategy of developing an extensive network of walking and cycling infrastructure (see Table 7.10). Similarly, the vision of the widespread use of public transport in the Trasacco Valley scenario is in accord with the strategy of investing in a network of infrastructure for public transport - bus, light Rail Transit, ultra-light rail (see Table 7.10). That notwithstanding, it is understood here that it is difficult to work out complete strategies for the time span of 30 years considered in this thesis. This is because several things will happen in the future that are impossible to foresee today. This contention holds even with the incorporation and use of the scenario planning methodology. While there appears to be some accord between the visions and the pathways, it is instructive to note that both the visions and pathways are intended to guide policymaking today, but with a view to long-term goals of social justice. The long view of this exercise could therefore, help to broaden the scope of the options considered, but the aim is to advise short-term policymaking.

### **7.7.2.2 Differences and Similarities between the Pathways**

A first similarity across all the pathways is infrastructural and land use measures in the 2016-2026 pathway (see Table 7.12). This applies to all four scenarios. This is understandable for two main reasons. In the first place, it reflects the 'developing' status of Ghana. This is because, there appears to be some understanding in the literature that one of the characteristics of transportation systems in developing countries relates to shortfalls in their infrastructure (see e.g. Gwilliam, (2011)). In that respect, Gwilliam (2011) for example reports that the cost of redressing Africa's transport infrastructural needs is about \$19.2 billion a year or some 3 percent of Africa's gross domestic product (GDP). The focus on infrastructure as a priority area in all the pathways in the 2016-2026 will, therefore, appear to reflect this need in the Ghanaian context. Also, the focus on infrastructure and land-use measures is in recognition of the fact that these measures generally have long lead times. This means that they need to be implemented early in

order for them to take effect by 2046. However, it is critical to note that even with respect to the infrastructural measures, the discussions in the groups focused mainly on roads. From a social justice perspective, however, the issue is not very much about roads per se, but rather on the nature of roads and the uneven right to the use of road space. Put another way, what is important from a social justice perspective is to challenge the perception of roads as the means for collective consumption by ensuring that investments in road infrastructure favour of all transport users including transport-disadvantaged population groups and not just those with cars. The constant reference to walking and cycling facilities by the participants across all the four groups, suggests that the participants appreciate the notion of equitable appropriation of space.

Table 7.12 shows that in the 2026-2036 pathway, the focus across all the visions is public transport, the development of new roads, regeneration of decaying areas, road pricing and vehicle purchase tax. Compared with the 2016-2026 pathway, there is less emphasis here on infrastructure and land use measures. As indicated elsewhere in this thesis, the understanding among the workshop participants was that once the infrastructure and land-use issues are sufficiently addressed in the first 10 years, it should then be possible to deploy these other measures for the purposes of raising revenues to address the needs of the transport disadvantaged. Indeed, there was also a sense among the participants that interventions such as vehicle purchase tax and road pricing could be used to address the externalities associated with road travel.

For the 2036-2046 pathway, Table 7.12 shows that the predominant measures are 'behavioural measures' like alternative work schedules, teleshopping and other measures that aim to reduce the need for physical travel. But this pathway has also got interventions such as transport governance and regulatory measures. The participants considered these measures to be "self-actualising"<sup>55</sup> in the sense of being the 'final' elements of a process of developing a socially-just transportation system in Ghana. The sense among the participants is that the interventions suggested in this pathway such as alternative work schedules, flexitime, and the introduction of high-speed rails are 'higher level' interventions that can only be deployed once the basic "physiological needs" of Ghana's transport are sufficiently addressed.

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<sup>55</sup> To draw a similitude with Maslow's (1943) "Hierarchy of Needs" thesis.

**Table 7.12: Common elements across the pathways**

<b>2016-2026</b>	<b>2026-2036</b>	<b>2036-2046</b>
Improvement of public transport - bus, Light Rail Transit, ultra-light rail.	Operating public transport daily, 24 hours a day	Alternative work schedules
Increase rail capacity and develop high speed trains (HST)	Cycle/public transport integration	Changing lifestyles – e.g. not travelling at weekends
Develop Walking and cycling facilities	Extensive development of new roads	Promotion of local destinations and local activity patterns
Extensive development of new roads	Defining car-restricted, pedestrian-friendly zones in city centers	Car sharing
Development of infrastructure for other modes (rail, air, sea)	Regeneration of decaying areas (city centre, inner city, waterfront, suburban)	Flexitime
High density land uses along main public transport corridors	Road pricing – congestion or environmental basis	Teleworking/telecommuting/teleconferencing
Mixed land use development	Vehicle purchase tax	Teleshopping
Alternative work schedules		Introduce electronic ticketing in all commercial buses and rails
Changing lifestyles – e.g. not travelling at weekends		Introduce underground and high-speed rail systems to connect all regions
Promotion of local destinations and local activity patterns		Develop additional international airports at strategic urban centres such as Kumasi, Takoradi and Tamale.
Car sharing		Demand responsive transport
		Regulation and Governance of the transport sector

2016-2026	2026-2036	2036-2046
		Introduce bus/rail scheduling

## 7.8 Evaluation of the TriSA Methodology

This section evaluates the TriSA methodology developed in Chapter 4. Among other things, Chapter 4 shows that the method is predicated on four main components - scenario planning, social justice, visioning and backcasting. For the purposes of clarity, these components are used in this section to frame the evaluation of the TriSA methodology. For each of these components therefore, the evaluation seeks to explore:

- whether the explicit insertion of a scenario planning step into the TriSA methodology led to improved decisions;
- whether the explicit insertion of a visioning step strengthened, engaged and inspired coordinated action among the workshop participants;
- whether the explicit insertion of a backcasting step galvanized public awareness of social justice issues among the workshop participants in Ghana;
- whether the explicit insertion of a justice step into the TriSA methodology impacted the justice content of the visions and pathways.

### 7.8.1 On the insertion of a Scenario Planning Step

Section 4.2.1.1 noted that a benefit of the scenario planning methodology is that it leads to improved decisions. For the purposes of this section therefore, the challenge is to explore whether the insertion of a scenario-planning step resulted in decision outcomes that would otherwise not have been considered by the participants at the Ghanaian workshop. Based on the feedback received during and after the workshop, the participants considered that presenting them with four alternatives of how the future might unfold in 2046 helped them to mainstream no-regrets strategies to future uncertainty, including issues of social justice in transport. This allows some tentative conclusions to be drawn about the insertion of a scenario planning into the TriSA methodology. Specifically, based on the feedback received from the participants, it can be concluded that the insertion of a scenario planning step into the TriSA led to improved decisions. This can be gleaned from the pathways to each of the transport visions. While some of these measures are essentially 'incremental', others can be conceptualized as being 'transformative'. The incremental strategies such as land use and infrastructural

measures chosen by the participants for the 2016-2036 pathways work within the existing transportation system (in Ghana) to tackle proximate transport issues (including transport injustice). The transformative strategies such as technological, behavioural, fiscal and institutional measures are not 'business as usual' strategies in that they are essentially 'new' to the Ghanaian transportation system. These transformative strategies generally point to the benefits of inserting a scenario planning step into the TriSA methodology. This is because they, arguably, encapsulate the strategies the participants would otherwise not have considered had the scenario planning approach not been used. While useful, there are some obvious limitations to this subjective 'self-reporting' evaluation. A between-methods comparison would have been suitable in that it would have allowed a more robust assessment of whether the insertion of a scenario planning step impacted decisions (even though that as well is not without its limitations).

### **7.8.2 On the insertion of a Visioning Step**

Section 4.2.1.2 highlights the arguments for inserting a 'visioning step' into the TriSA methodology - that is, the importance of inclusive and pluralistic decision-making important for establishing ethical and political legitimacy. A corollary for the purposes of this section is: 'Has the insertion of a visioning step helped to strengthen, engage and inspire coordinated action among the workshop participants?' Feedback received by this researcher shows that the participants considered that in a developing country context where the capacities of stakeholders are generally low, the visioning exercises were important as the first stages of a long-term capacity- building process that ought to be maintained to enable all relevant stakeholders to conscientiously reflect and learn iteratively. In the Ghanaian case study, even though most of the stakeholders indicated that they were not familiar with the idea of articulating transport visions *tabula rasa*, they thoroughly enjoyed the visioning exercises. They noted that it offered them the opportunity to not only develop and articulate desirable future images of transport for Ghana but to also brainstorm the feasibility or otherwise of their visions. The participants noted that the visioning exercise especially because of the participatory process embedded in it challenged their conventional views, led to innovative ideas, and new insights they would otherwise not have considered under business-as-usual. With respect to the use of the ethical matrix, in particular, the participants noted that it helped to expand their perspectives – making them take a more holistic perspective of the broad range of social justice positions that may shape transport policies and their outcomes.



### **7.8.3 On the insertion of a Backcasting Step**

Section 4.2.1.3 discusses the justifications for the insertion of a backcasting step in the TriSA methodology. A corollary for the purposes of evaluating the TriSA methodology is: 'What evidence exists in the outcomes of the Ghanaian case to justify the insertion of a backcasting step into the TriSA method?' Throughout the workshop in Ghana, a considerable amount of debate was generated by the workshop participants about the most-suitable pathways to socially-just visions of transport in Ghana. All the debates and discussions formed an integral part of the process of refining ideas and defining suitable pathways to the Ghanaian visions. These discussions were framed in terms of:

- The acceptability or otherwise of particular pathways and timelines,
- The likelihood of implementing particular strategies within the time horizon considered and
- Whether Ghana has the wherewithal to implement particular strategies within the time horizon considered.

According to the participants, the discussions here proved to be a creative part of the backcasting approach while serving as a 'social learning' environment for them. From the perspective of some of the participants this researcher contacted after the workshop, this resulted in a continuous process of understanding the moral and philosophical principles upon which their policy choices and evaluation frameworks are based and the potential value biases inherent within them. For these participants therefore, this was possible because of the participatory, inclusive platform offered through the backcasting methodology. As a technique therefore, the Ghanaian case highlighted the point that backcasting has much potential with regards to raising levels of interest and debate in the understanding of the complexities of the future of transport. For example, the use of the backcasting methodology helped to highlight the point that very significant changes in the existing infrastructure and land-use forms together with a good mix of technological and behavioural changes are likely to be required in the next 30 years in Ghana to achieve a socially-just transport future.

### **7.8.4 On the insertion of a Social Justice Step**

Section 4.2.1.4 provides the justifications for the insertion of a social justice step in the TriSA methodology. Similar to Sections 7.8.1, 7.8.2 and 7.8.3, a corollary question for the purposes of this section is: 'Did the insertion of a justice step in the TriSA methodology impact the justice content of the visions created in the Ghanaian workshop?' Based on the feedback received during and after the workshop, the

participants considered that explicitly asking them to think about socially-just transport futures (in the way the TriSA methodology did) made them to think more about transport justice. They conceded that under normal circumstances, efficiency concerns would have taken centre stage in the discussions of the visions and their attendant pathways. However, they noted that by providing a learning environment where the different conceptions of social justice were discussed, they were 'forced' to think not only in terms of transport justice per se, but also in term of the distributional impacts of various strategies on discrete population groups. Some of the participants also conceded that prior to the workshop, their understanding of social justice and its relevance to the field of was limited. The workshop exercise therefore allowed them to more conscientiously engage with the issues of social justice relevant to the field of transport at both theoretical and practical levels. But the participants also agreed that while the exercise was useful in providing them with the knowledge, understanding, skills, and credentials to deal with questions of transport [in]justice, without a more in-depth bottom-up understanding of the concept of social justice, they could put transport strategies against justice principles but this will have little meaning and context.

## **7.9 Chapter Conclusions**

This Chapter presented the outcomes of the implementation of the TriSA methodology developed in Chapter 4. More specifically, the chapter addressed the second component of the second objective of this research. For clarity, this second component aims to 'evaluate' the Triangulated Scenario planning Approach (TriSA) proposed and developed in this thesis. With respect to the insertion of a scenario planning step into the TriSA methodology, the findings show that scenario planning helped policymakers and other stakeholders in Ghana to deal with uncertainty by allowing them to explore the implications of several alternative futures (East Legon, Trasacco Valley, McCarthy Hill and Nima-Mamobi). This should arguably help to avoid the uncertainties associated with planning for long term futures. With reference to the utility of the visioning (and by extension, its insertion into the TriSA methodology), the findings in this chapter show that by providing a social learning environment, backcasting offered the platform for the workshop participants to build some consensus on what they consider to be a desirable future. The findings also show that in a developing country context such as Ghana where the capacities of stakeholders are generally low, visioning exercises are an important first stage of a long-term capacity- building process that ought to be maintained to enable all relevant stakeholders to conscientiously reflect and learn iteratively. In terms of the utility of the backcasting methodology, the Ghanaian case study shows that the

backcasting methodology through its use of participatory processes provides a platform for stakeholders and policymakers to take an action-oriented approach to the development of effective policy paths for moving forward. With respect to the theme of social justice, the outcomes of the Ghanaian case study suggest that the insertion of an explicit justice step into the TriSA may help steer a discourse on transport justice but may not necessarily change the dominant discourse in transport decision-making in Ghana (infrastructure and land use). Also, the Ghanaian case study highlights some of the conundrums, dilemmas, and predicaments that could potentially be faced by transport planners and policymakers with respect to developing visions and pathways of socially-just transport in Ghana.

Considering the three futures approaches together, the findings in this research suggest that more insights could be gained by amalgamating different futures approaches into a single futures methodology. This is because by amalgamating multiple futures methods into a single methodology, the limitations of stand-alone methods could be overcome. To conclude, the findings in this chapter suggest that the TriSA methodology is a useful tool for imagining socially socially-just transport futures. It does not only help transport planners and policymakers to deal with uncertainty, it also opens up a debate on the various pathways to achieve socially-just transport futures, and emphasises the commitments and investments needed to actualise a vision of social justice in transport. However, it is significant to note that while the TriSA methodology has some advantages when used as a tool for imagining socially-just transport futures, it ought not to be construed as a de facto panacea to the issues of social justice in strategic transport planning in Ghana. Without a concerted effort on the part of policymakers in Ghana to address transport injustice, the use of TriSA by itself is unlikely to result in socially-just transport futures.

## Chapter 8 – CONCLUSIONS AND FURTHER RESEARCH

### 8.1 Introduction

This chapter summarises the main findings of the research presented in this thesis and evaluates the extent to which the aims and objectives presented in Chapter 1 have been achieved. The chapter is structured as follows. Section 8.2 summarises the main findings and original contributions of this research. Section 8.3 then describes the limitations of the research together with suggestions on how these could be addressed. Section 8.4 sets out a range of ideas for further research. Section 8.5 then draws the implications of the research for transport planning and policy. Finally, this researcher reflects, in Section 8.6, on the possibilities of introducing the TriSA methodology into the wider transport decision-making process together with the possibility of transferring the method to other African contexts.

### 8.2 Review of the Research Objectives and Key Findings

The overall aim of this research as set out in Section 1.3 was to develop a method for imagining socially-just transport futures in Sub Saharan Africa. To achieve this aim, this research was guided by two main objectives:

- (1) To develop a futures method to help transport practitioners in Sub Saharan Africa to imagine socially-just transport futures;
- (2) To implement and critically evaluate the usefulness of the futures method developed in (1) using Ghana as a case study.

This section will review how each of the above objectives has been addressed in this research.

#### 8.2.1 Research Objective 1

To address the first objective of this research, a desk research approach was adopted. This involved a state-of-the-practice review of the approaches used to imagine transport futures in general and in Sub Saharan Africa in particular (Chapter 2). The aim was to explore what approaches are currently used, what works well and items that need to be improved. In terms of the futures approaches used, the review found that forecasting is the most dominant approach used in strategic transport planning in SSA. This is in spite of its limitations especially when used to imagine medium- to long-term transport futures.

Also, the review found a muted discussion on the use of scenario planning and backcasting methodologies in transport planning practices in SSA. This is against the backdrop of the espoused strengths of these methods by their proponents. In terms of the substantive issues addressed, the literature review found that concerns about economic efficiency and (to a limited extent) environmental concerns dominate strategic transport planning in SSA. Social concerns such as the goal of delivering socially-just transport planning outcomes, where treated, only receive perfunctory treatment. Consequently, where words such as equity and fairness are used in strategic transport policy documents in SSA, they are often seen as somehow less important compared to economic growth and efficiency concerns. These findings informed the choice of scenario planning, backcasting, visioning and the principles of social justice as inputs into the Triangulated Scenario planning method (or TriSA, for short) developed in Chapter 4.

Significantly, TriSA argues that the starting point for the development of any strategic transport plan is the development of a compelling vision that captures the inherent uncertainties of the future, incorporates the multiplicity of values in pluralistic societies while providing well-defined pathways about how the vision is to be actualized. The TriSA methodology has six main steps. While Steps 3 to 5 are intended to be implemented in a series of workshops involving policymakers, transport planners and all relevant stakeholders in transport, Steps 1 and 2 are pre-workshop activities. Step 6, on the other hand, is a post-workshop activity.

Compared with other futures approaches, TriSA is both similar and novel in a number of respects. For example, it is similar to the backcasting methodology in the sense that the method explicitly engages with, and specifies the pathways (in terms of both timelines and policies) required to achieve an envisioned end-state. TriSA is also novel in a number of respects. For instance, it explicitly incorporates the concept of social justice into the strategic transport planning process. To the limits of this researcher's knowledge, this has not been done previously. Also, the TriSA methodology explicitly uses the ethical matrix tool to map values (or social justice principles) to different stakeholders in the field of transport. Again, this has never been attempted in the field of transport – to the limits of this researcher's knowledge.

### **8.2.2 Research Objective 2**

The second objective of this research has two components: the implementation of the method, and a critical evaluation of the usefulness of the method. The TriSA methodology was implemented in Chapter 6 using Ghana as the case study (Chapter

5). Each of the six steps of the method was implemented in turn. While some of the activities were carried out in the back-office, others were carried out in a workshop with policymakers and other stakeholders in transport in Ghana. The outcomes of each step were presented and discussed in Chapter 7. The TriSA method was evaluated in Section 7.8 with respect to the value in inserting each of scenario planning, visioning, backcasting and social justice into the TriSA methodology.

With respect to the insertion of the scenario planning methodology, the results showed that a benefit of the TriSA methodology is that it leads to improved decisions in long-term transport futures through the introduction of alternative images of the future. This helps to place decision-making in a more adaptable, and flexible position to cope with uncertainties in the decision-making environment. This finding is broadly consistent with some of the theoretical arguments justifying scenario-based decision making (see van der Heijden (1996) and Phelps et al., (2001)). With respect to the insertion of a visioning step, a benefit of the TriSA methodology is that it provides an opportunity for all stakeholders in transport to take action-oriented rather than a passive approach to developing socially desirable images of transport. This finding is consistent with Jarvi et al., (2015) who similarly combined visioning, pluralistic backcasting and scenario planning to develop a tool for the reduction of CO<sub>2</sub> emissions in Finland. Concerning the insertion of a backcasting step, the findings discussed in Section 7.8.3 show that a benefit of the TriSA method is that it facilitates the design of pathways to socially-just transport by providing a platform for a discourse on how socially-just transport planning outcomes can be achieved in the near to long-term futures. This finding is consistent with Dreborg (1996) who argues that backcasting, because of its problem-solving character is well suited to long-term problems.

Concerning the insertion of a social-justice step into the TriSA methodology, the outcomes discussed in Section 7.8.4 suggest that in the first place, while policymakers and other stakeholders in Ghana are not completely oblivious to issues of justice in transport, their understanding of the term is narrowly construed. As discussed in Section 7.8.4, the overriding social justice principle familiar with the participants is utilitarianism. Consequently, other conceptions such as Rawlsianism, libertarianism, sufficientarianism and prioritarianism are generally not emphasized. A result of this monistic conceptualisation is that issues of transport justice in Ghana appear to be traded off against a dominant paradigm that prioritises economic growth over other goals. This paradigm relies on a neoliberal economic agenda to determine whose accessibility needs are to be addressed. This is against the backdrop of the recognition

that while economic goals such as poverty reduction are important constructs of social justice in transport, they are by no means the only constructs. Also, the findings highlight some challenges of adopting a pluralistic conceptualization of social justice, especially in terms of defining visions and pathways in transport. In this research, the adoption of a pluralistic meaning of social justice resulted in an assemblage of policy measures or pathways covering all types of issues. While this conceptualisation has the advantage that it helps capture the multiplicity of values in Ghana's pluralistic society, it makes it difficult to delineate what social justice means in practical transport policy terms. This observation is consistent with the conclusions of Bonnycastle (2011) who noted among other things that social justice is a polysemic construct that means different things to different people and so difficult to pin down conceptually.

With respect to the implementation of the TriSA methodology, the Ghanaian workshop was generally very successful. This is judged from the success of in implementing each of the steps and especially the workshop activities. For example, the participants demonstrated a high degree of interest in discussing the principles of social justice and their operationalisation in the field of transport. This was perhaps because most of the participants were not previously conversant with some of the concepts. For these participants, therefore, the discussions appeared to offer a social learning environment that encouraged co-learning and the integration of knowledge to catalyse collective action on transport justice. Another aspect of the workshop that was largely successful was the pathways exercise. This may be because the participants were presented with a 'menu' of policy measures (and time-frames) from which they could select. Contrary to this researcher's expectations, the group dynamics worked really well. In designing the workshop activities, one of this researcher's considerations was to ensure that the discussions among that the participants were not dominated by tendencies such as groupthink. The idea was to ensure that the competing values, goals and knowledge of the various stakeholder groups were mutually recognised and negotiated through knowledge co-production and learning. This was considered important because of the hierarchies that exist in African cultures. As indicated above, it was interesting for this researcher to observe a contrarian exchange of ideas between the participants.

In terms of what did not work well in the workshop, however, the idea of developing transport visions appeared unfamiliar with most of the participants. Here, most of them found the process of developing visions of transport rather chimerical or wildly fanciful. This is interesting given that there is a long tradition in Ghana of developing strategic transport plans (and their concomitant visions). This then raises the question about who

develops these 'visions' and what their nature of involvement is. Also, the visions and pathways were rather broad in terms of their spatial coverage (urban, rural), and mode (all urban and rural modes of transport). The broad range of issues covered, therefore, made facilitation of the workshop difficult.

To conclude, the findings in this research show that the TriSA methodology is a useful tool for imagining socially socially-just transport futures by helping transport planners and policymakers to deal with uncertainty, open up debates on the various pathways to achieve socially-just transport futures, and emphasises the commitments and investments needed to actualise a vision of social justice in transport. However, TriSA methodology ought not to be construed as a *de facto* panacea to the issues of social justice in strategic transport planning in Ghana. Without a concerted effort on the part of policymakers in Ghana to address transport injustice, the use of TriSA by itself is unlikely to result in socially-just transport futures.

### **8.3 Limitations and Suggested Refinements**

This research has developed a novel approach for imagining socially-just transport futures in Sub Saharan Africa. However, the research is not without some limitations. Whilst some of these limitations were addressed through good research design, others remained unresolved, and could have impacted the outcomes reported in Chapter 7.

- The first major weakness of this research is the lack of 'experimental design' to more robustly test the TriSA methodology. This would have involved designing another futures method similar to the TriSA methodology, but without steps that explicitly incorporates the four elements –scenario planning, visioning, backcasting and the principles of social justice. This 'placebo' would then have been implemented using the same format outlined in Chapter 6 and the results compared. This 'controlled experiment' would have helped to isolate any key outcome variables by (for example) helping to determine whether, and to what extent the inclusion of a justice-step in the TriSA method impacted the justice-content of the outcomes of the Ghanaian case study (i.e. both in terms of the visions and the pathways). It is however important to note that while a 'placebo' study design would have been more desirable, it too would have been subject to some limitations as the 'control' and 'treatment' groups would probably have had to be different. Also, there would have been some challenges to evaluating whether any resulting differences were a result of group dynamics or the approach being followed.



- Another major weakness of this research is the lack of a common evaluation framework for the evaluation of the TriSA methodology - one that had been vetted by other scholars on other projects. For example, a more reliable evaluation approach would have used 'instrumentation' that had been validated by other scholars in some peer review projects. However, even though every effort was made by this researcher to identify and use a common evaluation framework, the relative novelty of this research prevented the use of a pre-existing evaluation framework. As a result, an exploratory approach was adopted. This was intended to sketch the boundaries of the research design space, thereby providing the basis for a more rigorous research in future. While this limitation does not invalidate the conclusions reached in this research, it does place some limits on the ability to generalize the conclusions, and by extension the confidence with which they can be asserted.
- With respect to the number of workshops used, it is acknowledged that at least more than one workshop was needed in order to more exhaustively implement the TriSA methodology. Even though some interesting insights emerged from the single workshop exercise in Ghana, it is possible that some interesting insights may have been missed because of the fast-moving, brainstorming format used and the results, in terms of the visions and their concomitant pathways ought to be understood in that light. However, while 'collapsing' what should ideally be a 3-day exercise into a single day has some limitations, it is instructive to note that it is optimal to use TriSA in less time if it is not feasible for participants to 'spare' three days (as the case was in the Ghanaian case study).
- Finally, there are general limitations to the use of the focus group workshop used in the implementation of the TriSA methodology. Although a heterogeneous sample of stakeholders with prior experience in transport planning issues in Ghana was used, the use of a purposive sample in this research means that other important viewpoints may have been missed.

#### **8.4 Opportunities for Further Research**

This research, being of an exploratory and interpretive nature, raises a number of opportunities for future research, both in terms of theory development and concept validation. More research will be necessary to refine and further elaborate the novel findings of this research.

- First, there is a need for a new research agenda that focuses on the concept of social justice as it relates to transport planning in Sub Saharan African countries. This new research agenda must focus on both procedural and distributive justice concerns. With respect to procedural justice, it would be interesting to explore how the ideal of 'public participation' is conceptualised and prioritized in transport decision-making in Sub Saharan Africa. For example, this could explore the current approaches to the engagement of socially excluded population groups within the strategic transport planning process. Here, it is significant to mention that while most of the strategic policy documents reviewed by this researcher indicate the use of some form of 'consultation', it is not clear who is involved in these consultations and what the nature of their involvement is. Exploring these issues through, for example, a content analysis of strategic policy documents complemented by semi-structured interviews may help provide some insight into the contribution, current and potential, of public participation to the practice of strategic transport planning in Sub Saharan Africa.

With regards to distributive justice, there is a need to conceptually delineate the term in strategic transport planning in general. The Ghanaian case study highlighted the difficulties of employing a pluralistic conceptualisation of the term in strategic transport planning. 'Mapping out' the social justice territory in strategic transport planning will, therefore, help organize the theory on the concept of social justice and also help to examine how the concept affects the work done by transport planners and policymakers at the strategic decision-making level. Still, on distributive justice, a further area that may interest future researchers relates to the distributional impacts of various socially-just interventions or pathways for each vision of transport. One way of doing this would be to use geographic information systems (GIS) to identify the locations of socially-excluded populations for each vision, and to then analyse the distributional impacts of the pathways on these groups. In other words, for each of the socially-just transport visions, a travel demand model could be used to carry out accessibility analysis in order to forecast changes in communities' access to jobs and/or other activity centres.

- Another theme that may be of interest in future research relates to the use of ethical tools (Ethical Delphi, Ethical Matrix, and the Ethical Grid) in transport planning in general. The review of the literature highlighted the dearth of use of these tools in transport planning even though they have received some attention in other fields - biotechnology, business and agriculture. If the argument that any

given procedure for analysing ethical issues in policy-making ought to operate as a structured decision-support framework (see Kaiser, 2004) is anything to go by, then it is only appropriate that the use of these tools in ethical decision-making in transport is fully explored. This is especially important given the burgeoning body of literature on transport ethics (see e.g. Van Wee and Geurs, 2011).

## **8.5 Implications for Policy and Planning**

The main aim of this research was to address the lack of a method for imagining socially just transport futures in Sub Saharan Africa. This has been done by developing the Triangulated Scenario planning Approach (TriSA). Accordingly, the first major contribution of the present research to transport planning practice is the development a much-needed futures method to help transport planners in Sub Saharan Africa to think about socially-just transport futures. Overall, this method complements existing futures methods used by transport planners in SSA such as forecasting and has a number of benefits for transport planning practice.

A benefit of TriSA is that it more explicitly addresses the important issue of ‘uncertainty’ in transport decision-making in Africa. For transport planning practice in SSA countries, this is important because African countries are more vulnerable (socially and economically) to the risks of uncertainty. This is because of their lower adaptation capacities, weaker governance institutions, and limitations in resources to invest in adaptation. Also, African countries, in general, may come up against greater barriers such as a lack of information, more pressing short-term needs, and a lack of political will and weaker institutions. This suggests that there is an even greater need for transport planners and decision-makers in SSA to develop robust strategies to cope with uncertainty within existing priorities, transport planning processes and policy-making. That said, there is also some recognition that developing such strategies need not apply complex and resource-intensive decision analyses approaches. The TriSA approach developed in the present research is, therefore, highly beneficial to policy- and decision-makers in Africa because it is relatively less resource-intensive and very simple to implement.

This research also responds to calls by scholars such as Vasconcellos (2001), and Vasconcellos et al., (1997) who vociferously advise policymakers in developing contexts

to make a paradigm shift from the use of forecast-based approaches to "sociological approaches" because of the limitations of the former approaches.

A second important implication of this research derives from the findings in relation to the four components of the tool developed in this research. For example, by incorporating the scenario planning methodology, TriSA has the added benefit of providing information aids to decision-makers with limited information-processing capabilities to analyse more information about the inherent uncertainties of the future. Similarly, by explicitly inserting a social justice step, the method has the advantage that it allows policymakers and decision-makers in Africa to more conscientiously engage with the issue of social-justice in strategic transport planning. In this sense, this research is timely in view of the burgeoning body of work in transport justice in other contexts. It is also timely in the sense that while the intuitive importance of value pluralism in transport decision making may be acknowledged, these values are generally not explicitly incorporated into the decision-making process. The method developed in this thesis addresses this limitation through the use of the ethical matrix tool. However, this research also highlighted some limitations of the ethical matrix as a tool for imagining socially-just transport futures. For example, it shows that without a more in-depth bottom-up understanding of the concept of social justice, policymakers and other stakeholders could put transport strategies against justice principles but this will have little meaning and context.

## **8.6 Concluding Reflections**

To conclude, the following issues require some further critical reflection:

- What is the level of justice content in the visions?
- What are the possibilities of introducing the TriSA method in the complex decision-making processes of transportation planning at the national level?
- How would TriSA fit into a wider transport planning process for Ghana or in other SSA countries?

*What is the level of justice content in the visions?* In this thesis, a pluralistic understanding of social justice was adopted. Consequently, in reflecting on the justice content of the visions and pathways, a particular difficulty is - which conceptualisation of social justice does one adopt in order to tease out the social justice content of the visions and pathways? This question is especially important if one conceptualises the 'justice content' of the visions and pathways on a continuum between oppositional

notions of "public" and "private" transport (as the different distributive principles used in this thesis appear to imply). Using this illustrative model and proceeding along the "public transport" continuum, it can be argued that there was sufficient social justice content in the visions and pathways. This is seen from the prevalence of interventions generally perceived to favour the transport disadvantaged such as walking, cycling and public transport. Conversely, if one proceeds along the "private transport" continuum, it could again be argued that there is sufficient social justice content in the visions and pathways. This can be deduced from the interventions that favour private motorised transport. While useful, a limitation of the pluralist conception of social justice (and by extension, the illustrative framework) used here is that it makes it difficult to 'pin down' the term in practical transport planning terms. This is because this pluralistic understanding results in a miscellany of interventions cutting across different dimensions. Here, it may be argued that the mishmash of interventions proposed for each of the transport visions (a consequence of the pluralistic view of social justice adopted) does little to address the classic conundrum of teasing out the justice content of the visions. Fortunately, all the justice theories (Rawlsianism, utilitarianism, libertarianism, sufficiency and priority) appear to converge on the short- to medium-term strategy on some sort of priority for the least-advantaged. Proceeding on the basis of this last point, therefore, it is possible to conclude that the transport visions, irrespective of the justice conceptualisation employed, had sufficient social justice content. Significantly, the discussions here highlight the point that developing socially-just visions of transport is a challenging enterprise. That notwithstanding, it can be concluded that it is more stimulating to aspire to a contested ideal than to simply optimise whatever transportation system we find ourselves in.

*What are the possibilities of introducing TriSA into the wider decision-making process?*

The outcomes of the Ghanaian case study suggest that a number of factors are important for the successful introduction of the TriSA into the wider decision-making process:

- Governance structures;
- Political factors (that is, the willingness of transport planning organisations in the decision context to take a long-term view of the future);
- Availability of resources;
- Skills and experience of those applying and using the outputs of the methodology.

Of all these factors, however, governance is the most important factor. Here, governance structures are understood as the regimes of rules, laws, administrative structures and actors that prescribe, constrain and enable the delivery of effective transportation systems in the 'receptor' country. These governance structures also include the relationships between organisations and the network of actors through who transport policies may be delivered. It means that for TriSA to be effectively introduced into the wider decision-making process, governments in the receptor countries must institutionalize comprehensive futures programmes anchored in all relevant ministries, departments and agencies (MDAs). The institutional capacity building process can benefit from best practices from other contexts such as the United Kingdom, Sweden, and Finland where such futures exercises have been institutionalized. For example, in the United Kingdom, a comprehensive futures programme has been institutionalized at the Government Office for Science to advise the Prime Minister and members of the Cabinet. This programme ensures that best scientific evidence and strategic long-term thinking inform government policies and decisions. An example of the use of this "foresight programme" to frame and support decision-making includes the United Kingdom's strategy to investigate the future of mobility. Similarly, in Finland, the government institutionalized a national foresight programme that requires the Finnish Prime Minister's office to publish one report per electoral period to address a range of long-term issues. Also, in Sweden, futures thinking has been institutionalized using the Swedish Environmental Objectives Council. This council is a platform for all heads of government agencies that are strategically important to achieving environmental objectives in Sweden.

In general, some important elements of institutional arrangements can be delineated. The futures programme can be conducted by actors within the transport planning organisation, or by an external party. Where internal actors conduct the futures exercise, their mandate can be temporary or permanent. A cross-departmental and/or sector-based approach can also be utilised. For example, the UK Foresight Programme is cross-sectoral, and conducts its own analysis, even though in some cases it commits external analysis.

Apart from developing permanent institutional settings and organisational capacities, better use of existing knowledge and knowledge platforms is also a *sine qua non* for a successful introduction of TriSA into the wider decision-making process. Within the political system, the right incentives for transport planners and policy-makers to engage in transport futures thinking, gain trust and build elements of accountability into the TriSA

methodology are other important requirements. In terms of knowledge, it is imperative for transport planners and policymakers to gain some understanding of the workings of futures approaches in general, and the TriSA methodology in particular. The importance of raising users' skills and knowledge in the use of these tools as a conduit for the successful introduction of TriSA into the decision-making process cannot be overemphasized. Here, understanding the theoretical underpinnings of the concept is as important as understanding how the concept is or can be operationalised in the complex transport decision-making processes. Finally, to be successfully integrated into the broader decision-making process, TriSA will have to conform to a constellation of demands both within and outside transport planning. These demands include but are not limited to scientific credibility, relevance and legitimacy. These are much more complex requirements than what has been considered in the TriSA methodology.

*Can TriSA be transferred to other African countries?* That will depend on the existence of the conditions (discussed above) in the 'receptor' country. In terms of governance, the state-of-the-practice review carried out in Chapter 2 suggests that countries such as South Africa, Botswana, Mauritius, and Rwanda have relatively stronger governance and institutional structures. This suggests that TriSA can be implemented in these countries. However, the review also shows that governance structures in many other African countries are relatively weak thereby creating what Gwilliam (2011 p.236) refers to as a "strategy vacuum". In this case, a starting point for the successful transfer of TriSA to these contexts is the development and honing of the governance and institutional structures in these countries. Another factor that contributed to the success of the Ghanaian case study relates to 'power relations' among the workshop participants. This suggests that for TriSA to transfer successfully to other African contexts, superior/subordinate relationships need to be deemphasized in favour of consensus participatory processes. In other words, it must be possible to encourage stakeholders [and particularly those from local levels] to conceive the future over long-time horizons, while mitigating any potential power asymmetries usually associated with the involvement of higher-level actors in such exercises. Consequently, in contexts where power asymmetries are emphasized, there is the possibility that TriSA may not successfully transfer. Finally, TriSA is quite clearly a strategic decision-making tool. It follows then that how well the tool will transfer to other transport planning contexts in Africa depends on the extent to which politicians in the "receptor" country are willing to commit to long-term decisions. Where decision making in the receptor country is characterised by an 'incrementalist philosophy', TriSA might not transfer well.

Conversely, where decision making in the receptor country is 'long-termist' in outlook, TriSA will transfer well.



## LIST OF REFERENCES

- ADOLEHOUME, A., Diaz Olvera, L., Plat, D., Pochet, P., & Sahabana, M. (2005). *Pauvreté et mobilité urbaine à Conakry et à Douala*. *Transport en Afrique – Mobilité urbaine*, 39, 4.
- ÅKERMAN, J. (2005), 'Sustainable Air Transport—On Track In 2050', *Transportation Research Part D: Transport and Environment* 10(2), 111--126.
- BANISTER, D.; Akerman, J.; Dreborg, K.; Nijkamp, P.; Schleicher-Tappeser, R.; Stead, D. & Steen, P. (2000), *European Transport Policy And Sustainable Mobility*, Routledge.
- ANAMAN, A. K. (2006), 'What Factors Have Influenced Economic Growth In Ghana', *ISSER Ghana Policy Analysis* 2(2).
- ANGEN, M. J. (2000), 'Evaluating Interpretive Inquiry: Reviewing the Validity Debate and Opening the Dialogue', *Qualitative health research* 10(3), 378--395.
- ARMSTRONG, J. S. (1985), *Long-Range Forecasting*, Wiley New York ETC.
- ARNSTEIN, S. R. (1969), 'A Ladder of Citizen Participation', *Journal of the American Institute of planners* 35(4), 216--224.
- ATKINS, S. (1977), 'Transport Planning: Is There A Road Ahead', *Traffic Engineering and Control* 21(4), 168--176.
- ATKINS, S. T. (1987), 'The Crisis for Transportation Planning Modelling', *Transport Reviews* 7(4), 307--325.
- AU, S. (1998), 'Research To Develop A Methodology For The Assessment Of Risks To Crowd Safety In Public Venues: Parts 1 & 2', *HSE CONTRACT RESEARCH REPORT*.
- BAKER, S. E. & Edwards, R. (2012), 'How Many Qualitative Interviews Is Enough'.
- BALDWIN, W. & Diers, J. (2009), 'Demographic Data for Development in Sub-Saharan Africa.'
- BANISTER, D. & Hickman, R. (2006), 'Visioning and Backcasting for UK Transport Policy (VIBAT)', Stage.
- BANISTER, D. & Hickman, R. (2012), 'Transport Futures: Thinking the Unthinkable', *Transport Policy* 29, 283--293.
- BANISTER, D. (1999), 'Designs To Avoid The Need To Travel In Europe'.
- BANISTER, D. (2002), *Transport Planning*, Taylor & Francis.
- BANKSTON III, C. L. (2010), 'Social Justice: Cultural Origins of A Perspective and A Theory', *The Independent Review* 15(2), 165--178.
- BARANDIER, J. R. (2015), 'Applying the Backcasting Method to Achieve Sustainable Mobility: The Case of Niteroi', *Transportation Research Procedia* 8, 5--16.
- BARRELLA, E. & Amekudzi, A. (2011), 'Backcasting for Sustainable Transportation Planning', *Transportation Research Record: Journal of the Transportation Research Board* (2242), 29--36.
- BAUMEISTER, R. F. & Leary, M. R. (1997), 'Writing Narrative Literature Reviews.' *Review of general psychology* 1(3), 311.

- BAUMGARTNER, T. A.; Strong, C. H. & Hensley, L. D. (2005), *Conducting And Reading Research In Health And Human Performance*, McGraw-Hill Humanities/Social Sciences/Languages.
- BECKER, T. (2012), *Can The Concept Of Environmental Justice In Transport Be Transferred To Cities Of The South? A Case Study Of Nairobi*, in 'CODATU XV: The role of urban mobility in (re) shaping cities'.
- BEEKMAN, V. & Brom, F. W. A. (2007), '*Ethical Tools To Support Systematic Public Deliberations About The Ethical Aspects Of Agricultural Biotechnologies*', *Journal of Agricultural and Environmental Ethics* 20(1), 3--12.
- BENTHAM, J., (1962) *Principles of Penal Law*. In J Bowring (Ed) the works of Jeremy Bentham. Edinburgh: W. Tait (Original work published 1843)
- BERG, B. L. (2009), *Qualitative Research Methods for the Social Sciences*, Vol. 5, Pearson Boston, MA.
- BEYAZIT, E. (2011), '*Evaluating Social Justice in Transport: Lessons to Be Learned from the Capability Approach*', *Transport reviews* 31(1), 117--134.
- BICKERSTAFF, K.; Tolley, R. & Walker, G. (2002), '*Transport Planning and Participation: The Rhetoric and Realities of Public Involvement*', *Journal of Transport Geography* 10(1), 61--73.
- BIRD, C. M. (2005). *How I Stopped Dreading And Learned To Love Transcription*. *Qualitative Inquiry*, 11(2), 226-248.
- BIRMINGHAM, W.; Neustadt, I. & Omaboe, E. N. (1966), *A Study Of Contemporary Ghana*, Vol. 2, North-western University Press.
- BONNYCASTLE, C. R. (2011). *Social justice along a Continuum: A Relational Illustrative Model*. *The Social Services Review*, 85, 267--295
- BOSCHMANN, E. E. & Kwan, M.P. (2008), '*Toward socially sustainable urban transportation: progress and potentials*', *International Journal of Sustainable Transportation* 2(3), 138--157.
- BOWIE, N.E. & Simon, R.L., (2007) *The Individual and the Political Order: An Introduction to Social and Political Philosophy* (4<sup>th</sup> ed). New York: Rowman & Littlefield.
- BOYATZIS, R. E. (1998). *Transforming qualitative information: Thematic analysis and code development*. Thousand Oaks, CA: Sage.
- BRADFIELD, R.; Wright, G.; Burt, G.; Cairns, G. & Van Der Heijden, K. (2005), '*The Origins and Evolution of Scenario Techniques in Long Range Business Planning*', *Futures* 37(8), 795--812.
- BRAUERS, J. & Weber, M. (1988), '*A New Method of Scenario Analysis for Strategic Planning*', *Journal of forecasting* 7(1), 31--47.
- BRYMAN, A. & Bell, E. (2011), *Business Research Methods 3e*, Oxford university press.
- CASAL, P. (2007), '*Why Sufficiency Is Not Enough*', *Ethics* 117(2), 296--326.
- CHATTERJEE, K. & Gordon, A. (2006), '*Planning For an Unpredictable Future: Transport in Great Britain in 2030*', *Transport Policy* 13(3), 254--264.
- CITY of Johannesburg, 2013: *Strategic Integrated Transport Plan Framework for the City Of Joburg* (2013 – 2018).

- CLARKE, V. (2005). *'We're All Very Liberal In Our Views': Students' Talk About Lesbian And Gay Parenting*. *Lesbian & Gay Psychology Review*, 6(1), 2-15.
- COATES, J. F. & others (1985), *'Foresight in Federal Government Policy Making'*, *Futures Research Quarterly* 1(2), 29--53.
- CONSORTIUM, T. & others (2003), *'Achieving Sustainable Transport And Land Use With Integrated Policies.'*
- COTTON, M. (2006), *'Developing a Deliberative Process for Ethically Informed Radioactive Waste Management Decision-Making in the UK'*, *VALDOR 2006-values in decisions on risk*, 181.
- COTTON, M. (2014), *Ethics and Technology Assessment: A Participatory Approach*, Vol. 13, Springer.
- CRESWELL, J. (2003), *'Research Design: Qualitative, Quantitative, and Mixed Methods Approaches'*.
- CROTTY, M. (1998), *"The Foundations of Social Research: Meaning and Perspective in the Research Process*, Sage.
- CUHLS, K. & others (2003), *'From Forecasting to Foresight Processes New Participative Foresight Activities in Germany'*, *Journal of forecasting* 22(2-3), 93--111.
- CURTIS, C.; Scheurer, J. & Burke, M.. (2010), *The Dead End Of Demand Modelling: Supplying A Futures Based Public Transport Plan*, in '24th AESOP Congress, Helsinki, Finland, June'.
- DENZIN, N. K. & Lincoln, Y. S. (2005), *The Sage Handbook of Qualitative Research*, Sage.
- DENZIN, N. K. (2001), *Interpretive Interactionism*, Vol. 16, Sage.
- DEPARTMENT for Transport, South Africa, 2010: *National Transport Master Plan (NATMAP 2050)*
- DESSUS, S.; Medvedev, D.; Land, B.; Bain, K.; Kwawukume, S.; Andrade, M.; Calvacanti, C.; Stevens, M.; Foster, V.; Vagliasindi, M. & others (2009), *'Economy Wide Impact Of Oil Discovery In Ghana'*, Document of the World Bank.
- DIMITRIOU, H. T. (1984), *Transport Planning For Third World Cities*, Routledge.
- DOCHERTY, I.; Shaw, J.; Flint, J. & Raco, M. (2011), *'Transport In A Sustainable Urban Future'*, *The Future Of Sustainable Cities: Critical Reflections*, 131--152.
- DOLOWITZ, D. P. & Marsh, D. (2000), *'Learning From Abroad: The Role of Policy Transfer in Contemporary Policy-Making'*, *Governance* 13(1), 5--23.
- ETHEKWINI Transport Authority, South Africa, 2005; *Integrated Transport Plan (2005 – 2010)*
- FAINSTEIN, S. S. (2010), *The Just City*, Cornell University Press.
- FERN, E. F. (2001), *Advanced Focus Group Research*, Sage publications.
- FLYVBJERG, B.; Skamris Holm, M. K. & Buhl, S. L. (2005), *'How (In) Accurate Are Demand Forecasts In Public Works Projects?: The case of transportation'*, *Journal of the American Planning Association* 71(2), 131--146.

- FOOK, J.; White, S.; Gardner, F. & others (2006), *'Critical Reflection: A Review of Contemporary Literature and Understandings'*, Critical reflection in health and social care, 3--20.
- FORKENBROCK, D. J.; Benshoff, S. & Weisbrod, G. E. (2001), *Assessing the Social And Economic Effects Of Transportation Projects*, Transportation Research Board Iowa City, IA, USA.
- FOULKES, S. H. (1984), *Therapeutic Group Analysis*, Karnac Books.
- FRANKENA, W. K. (1962), *'The Concept Of Social Justice'*, Social justice 1, 17.
- GEERTZ, C. (1994), *'Thick Description: Toward an Interpretive Theory of Culture'*, Readings in the philosophy of social science, 213--231.
- GEORGHIOU, L. (2003), *Evaluating Foresight and Lessons for Its Future Impact*, in 'Second International Conference on Technology Foresight'.
- GERRING, J. (2007), *'Is There A (Viable) Crucial-Case Method?'*, Comparative Political Studies 40(3), 231--253.
- GIVONI, M.; Macmillen, J.; Banister, D. & Feitelson, E. (2013), *'From Policy Measures to Policy Packages'*, Transport Reviews 33(1), 1--20.
- GLASER, B. S. & Strauss, A. (1967), *The Discovery of Grounded Theory'*, New York.
- GODET, M. & Roubelat, F. (1996), *'Creating the Future: The Use and Misuse of Scenarios'*, Long range planning 29(2), 164--171.
- GODET, M.; Monti, R.; Meunier, F. & Roubelat, F. (2003), *'A tool-box for scenario planning'*, Futures research methodology version 2.
- GOMM, R.; Hammersley, M. & Foster, P. (2000), *Case Study Method: Key Issues, Key Texts*, Sage.
- GOODPATER, K.E. 1991. *'Business Ethics and Stakeholder Analysis'*, Business Ethics Quarterly 1: pp. 53--73.
- GOULD, P. R. (1960), *The Development of the Transportation Pattern in Ghana*, Dept. of Geography, Northwestern University.
- GWILLIAM, K. (2011), *Africa's Transport Infrastructure: Mainstreaming Maintenance and Management*, World Bank.
- HAKIM, C. (2000), *Research Design: Successful Designs for Social and Economic Research*, Psychology Press.
- HANSEN, W. G. (1959), *'How Accessibility Shapes Land Use'*, Journal of the American Institute of Planners 25(2), 73--76.
- HAY, A. & Trinder, E. (1991), *'Concepts Of Equity, Fairness, And Justice Expressed By Local Transport Policymakers'*, Environment and Planning C: Government and Policy 9(4), 453--465.
- HELLING, A. (1998), *'Collaborative Visioning: Proceed With Caution! Results From Evaluating Atlanta's Vision 2020 Project'*, Journal of the American Planning Association 64(3), 335--349.
- HENWOOD, K. L. (1996), *'Qualitative Inquiry: Perspectives, Methods and Psychology'*, Handbook of qualitative research methods for psychology and the social sciences, 25--40.

- HIEMSTRA, G. (2006), *Turning The Future Into Revenue: What Business And Individuals Need To Know To Shape Their Futures*, John Wiley & Sons.
- HILL, N.; Brannigan, C.; Smokers, R.; Schroten, A.; van Essen, H. & Skinner, I. (2012), 'EU Transport GHG: Routes to 2050 ii', Final Project Report Funded By The European Commission's Directorate-General Climate Action, Brussels.
- HINE, J. & Mitchell, F. (2001), 'Better for everyone? Travel experiences and transport exclusion', *Urban studies* 38(2), 319--332.
- HINE, J. & Mitchell, F. (2001), 'Better for everyone? Travel experiences and transport exclusion', *Urban studies* 38(2), 319--332.
- HOFSTEDE, G. (2011), 'Dimensionalizing Cultures: The Hofstede Model in Context', *Online Readings in Psychology and Culture* 2(1), 8.
- HUSS, W. R. & Honton, E. J. (1987), 'Scenario planning—what style should you use?', *Long range planning* 20(4), 21--29.
- JACKSON, B. (2005), 'The Conceptual History of Social Justice', *Political Studies Review* 3(3), 356--373.
- JÄRVI, T., Tuominen, A., Tapio, P. & Varho, V. (2015) *A Transport Policy Tool For Reduction Of Co<sub>2</sub> Emissions In Finland – Visions, Scenarios And Pathways Using Pluralistic Backcasting Method*. *Transportation Research Procedia* 11: 185-198
- JEFFERSON, G. (1996), 'A Case of Transcriptional Stereotyping', *Journal of Pragmatics* 26(2), 159- -170.
- JONES, H.; Higgins, K. & Bird, K. (2009), *Equity in Development: Why It Is Important and How to Achieve It*, Overseas Development Institute London.
- JOST, J. T. & Kay, A. C. (2010), 'Social Justice: History, Theory, And Research', *Handbook of social psychology*.
- KAISER, M. (2004). *Practical Ethics in search of a toolbox: Ethics of science and technology at the cross roads*. Oslo: National Committee for Research Ethics in Science and Technology (NENT), <http://www.ccels.cardiff.ac.uk/archives/>
- KARAU, S. J. & Williams, K. D. (1993), 'Social Loafing: A Meta-Analytic Review and Theoretical Integration.', *Journal of personality and social psychology* 65(4), 681.
- KUMAR, S. & Phrommathed, P. (2005), *Research Methodology*, Springer.
- LAPADAT, J. C. & Lindsay, A. C. (1999), 'Transcription in Research and Practice: From Standardization of Technique to Interpretive Positioning', *Qualitative inquiry* 5(1), 64--86.
- LAPADAT, J. C. (2000), 'Problematizing Transcription: Purpose, Paradigm And Quality', *International Journal of Social Research Methodology* 3(3), 203--219.
- LEVENTHAL, G. S. (1980), *What Should Be Done With Equity Theory?* 'Social exchange', Springer, , pp. 27--55.
- LEWIN, K. (1946), 'Action Research and Minority Problems', *Journal of social issues* 2(4), 34--46.
- LINCOLN, Y. S. & Guba, E. G. (2000a), 'The Only Generalization Is: There Is No Generalization', *Case study method*, 27--44.

- LINCOLN, Y. S. and Guba, E. G. (2000b) Paradigmatic controversies, contradictions and emerging confluences. In Y. S. Lincoln and E. G. Guba (eds.) *Handbook of Qualitative Research* Thousand Oaks, CA: Sage, pp.163-188
- LIST, D. (2005), '*Scenario Network Mapping: The Development of a Methodology for Social Inquiry*', Ph.D. thesis, University of South Australia.
- LITMAN, T. (2007), '*Evaluating Transportation Equity: Guidance For Incorporating Distributional Impacts In Transportation Planning Victoria*', BC: Victoria Transport Policy Institute.
- LUCAS, K. (2011), '*Making the Connections between Transport Disadvantage and the Social Exclusion of Low Income Populations in the Tshwane Region of South Africa*', *Journal of Transport Geography* 19(6), 1320--1334.
- LUCAS, K.; Wee, B. & Maat, K. (2016), '*A Method to Evaluate Equitable Accessibility: Combining ethical Theories and Accessibility Based Approaches*', *Transportation* 43(3), 473--490.
- LUCE, R. D. & Raiffa, H. (2012), *Games and Decisions: Introduction and Critical Survey*, Courier Corporation.
- MARSDEN, G.; Ferreira, A.; Bache, I.; Flinders, M. & Bartle, I. (2014), '*Muddling Through With Climate Change Targets: A Multi-Level Governance Perspective on the Transport Sector*', *Climate Policy* 14(5), 617--636.
- MARTENS, C. (2006), '*Basing Transport Planning On Principles of Social Justice*',
- MARTENS, K (2017), *Transport Justice: Designing Fair Transportation Systems*. Routledge
- MARTENS, K. (2012), '*Justice in Transport as Justice in Accessibility: Applying Walzer's 'Spheres of Justice' to The Transport Sector*', *Transportation* 39(6), 1035--1053.
- MARTENS, K.; Di Ciommo, F. & Papanikolaou, A. (2014), '*Incorporating Equity into Transport Planning: Utility, Priority and Sufficiency Approaches*'.
- MARTENS, K.; Golub, A.; 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: policy and practice*. Volume 46(4), 684-695.
- MARTENS, K.; Hurvitz, E. & Board, T. R. (2007), *Transport Modelling and Justice: The Case of the Fourstep Model*, in '85th Annual Meeting of the Transportation Research Board'.
- MARTINO, J. P. (1993), *Technological Forecasting For Decision-making*, McGraw-Hill, Inc.
- MASLOW, A. H. (1943), '*a Theory of Human Motivation*.' *Psychological Review* 50(4), 370.
- MASON, J. (2002), *Qualitative Researching*, Sage.
- MAY, A.; Karlstrom, A.; Marler, N.; Matthews, B.; Minken, H.; Monzon, A.; Page, M.; Pfaffenbichler, P. & Shepherd, S. (2003), '*Developing Sustainable Urban Land Use and Transport Strategies-A Decision Makers' Guidebook*', Institute for Transport Studies, University of Leeds, Leeds.

- McELROY, B. and C. Mills. 2000. '*Managing stakeholders*', in R.J. Turner and S.J. Simister (eds.), *Gower Handbook of Project Management* (Aldershot: Gower publishing limited), pp 757–777.
- MEEHAN, T., Vermeer, C., & Windsor, C. (2000). *Patients' Perceptions Of Seclusion: A Qualitative Investigation*. *Journal of Advanced Nursing*, 31(2), 370-377.
- MEPHAM, B. (2000), '*A Framework For The Ethical Analysis Of Novel Foods: The Ethical Matrix*', *Journal Of Agricultural And Environmental Ethics* 12(2), 165--176.
- MEPHAM, B.; Kaiser, M.; Thorstensen, E.; Tomkins, S. & Millar, K. (2006), '*Ethical Matrix Manual*', Technical report, LEI, onderdeel van Wageningen UR.
- MEREDITH, M. (2005), '*The State Of Africa: A History Of 50 Years Of Independence*', New York: Free Press.
- MERRIAM, S. B. (1988), *Case Study Research in Education: A Qualitative Approach*. Jossey-Bass.
- MEYER, L. H. & Roser, D. (2006), '*Distributive justice and climate change. The allocation of emission rights*', *Analyze & Kritik* 28(2), 223--249.
- MEYER, M. D.; Miller, E. J. & others (1984), '*Urban Transport Planning*', McGraw-Hill Book Company, New York.
- MILES, M. B. & Huberman, A. M. (1994), *Qualitative Data Analysis: An Expanded Sourcebook*, Sage.
- MILLER, D. (1999), *Principles of Social Justice*, Harvard University Press.
- MINISTRY of Transport, Ghana, 2008: National Transport Policy
- MINISTRY Of Transport, Ghana, (2011); 3rd Draft Sector Medium-Term Development Plan (SMTDP): 2012 – 2014
- MITIKU, T. N. (2009), '*A Framework for a Pro-Growth, Pro-Poor Transport Strategy: Guidance Note*',.
- MORGAN, D. L. (1996), '*Focus Groups*', *Annual review of sociology*, 129--152.
- MORSE, J. M. (1991), '*Approaches To Qualitative-Quantitative Methodological Triangulation.*' *Nursing research* 40(2), 120--123.
- MULLEN, C.; Tight, M.; Whiteing, A. & Jopson, A. (2014), '*Knowing Their Place On The Roads: What Would Equality Mean For Walking And Cycling?*', *Transportation research part A: policy and practice* 61, 238--248.
- MUNOZ-LOUSTAUNAU, A. & Sussman, J. M. (1999), '*Scenarios and Regional Strategic Transportation Planning*', *Transportation Research Record: Journal of the Transportation Research Board* 1685(1), 90--98.
- MURRAY, S. (2009), '*Improving Connectivity: Investing in Transport Infrastructure in Sub-Saharan Africa*', .
- NAKICENOVIC, N. & Swart, R. (2000), '*Special Report On Emissions Scenarios*', *Special Report On Emissions Scenarios*, Edited by Nebojsa Nakicenovic and Robert Swart, pp. 612. ISBN 0521804930. Cambridge, UK: Cambridge University Press, July 2000. 1.

- NANUS, B. (1992), *Visionary Leadership: Creating a Compelling Sense of Direction for Your Organization*. ERIC.
- NELLTHORP, J. (2011), '*Political Economy of Transport Investment, Pricing and the Use of Resources*', Ph.D. thesis, University of Leeds.
- NEY, S. (2012), *Resolving Messy Policy Problems: Handling Conflict In Environmental, Transport, Health And Ageing Policy*, Routledge.
- OCHS, E. & others (1979), '*Transcription as Theory*', *Developmental pragmatics* 10(1), 43--72.
- OECD, 2000. *EST! Environmentally Sustainable Transport. Futures, Strategies and Best Practice. Synthesis Report*. OECD, Paris. /<http://www.oecd.org/env/ccst/estS>.
- OLIVER, D. G.; Serovich, J. M. & Mason, T. L. (2005), '*Constraints and Opportunities with Interview Transcription: Towards Reflection in Qualitative Research*', *Social forces* 84(2), 1273- -1289.
- ONWUEGBUZIE, A. J.; Dickinson, W. B.; Leech, N. L. & Zoran, A. G. (2009), '*A Qualitative Framework For Collecting And Analyzing Data In Focus Group Research*', *International journal of qualitative methods* 8(3), 1--21.
- ORTUZAR, J. D. , D. and LG Willumsen (1994) *Modelling Transport*', John Wiley and Sons Ltd.
- PARFIT, D. (1997), '*Equality and Priority*', *Ratio* 10(3), 202--221.
- PARKHE, A. (2004), '*Interviews: A Key Data Source in International Business Research*', *Handbook of Qualitative Research Methods for International Business*.
- PAS, E. I. (1988), '*Weekly Travel-Activity Behavior*', *Transportation* 15(1-2), 89--109.
- PATTON, M. Q. (1990), *Qualitative Evaluation and Research Methods*. SAGE Publications, inc.
- PAYNE, G. & Williams, M. (2005), '*Generalization in qualitative research*', *Sociology* 39(2), 295- -314.
- PEARMAN, A. (1988), '*scenario Construction for Transport Planning*', *Transportation Planning and Technology* 12(1), 73--85.
- PEDERSEN, P. O. (2001), *The Freight Transport And Logistical System Of Ghana*, Centre for Development Research..
- PORTER, G. & Blaufuss, K. (2002), *Children, Transport and Traffic In Southern Ghana, In 'International Workshop on Children and Traffic, Copenhagen: Denmark'*.
- PORTER, G. & Dube, S. (2012), '*Child porterage and Africa's transport gap: Evidence from Ghana, Malawi and South Africa*', *World Development* 40(10), 2136--2154.
- PORTER, G. (1997), '*Mobility and Inequality in Rural Nigeria: The Case Of Off- Road Communities*', *Tijdschrift voor economische en sociale geografie* 88(1), 65--76.
- PORTER, G. (2002), '*Living In a Walking World: Rural Mobility And Social Equity Issues In Sub-Saharan Africa*', *World development* 30(2), 285--300.
- PORTER, G. (2007), '*Transport Planning In Sub-Saharan Africa.*', *Progress in development studies*.7 (3), 251--257.



- PORTER, G.; Hampshire, K.; Abane, A.; Munthali, A.; Robson, E.; Mashiri, M.; Tanle, A.; Maponya, G. & Dube, S. (2012), '*Child Porterage And Africa's Transport Gap: Evidence From Ghana, Malawi And South Africa*', *World Development* 40(10), 2136--2154.
- PRIOR, L. (2003), *Using Documents in Social Research*, Sage.
- PRIYA, T. & Uteng, A. (2009), '*Dynamics of Transport and Social Exclusion: Effects of Expensive Driver's License*', *Transport policy* 16(3), 130--139.
- N. C. H. R.; of State Highway, A. A.; Officials, T. & Systematics, C. (2012), *Travel Demand Forecasting: Parameters and Techniques*, Vol. 716, Transportation Research Board.
- PUNCH, K. F. (2013), *Introduction to Social Research: Quantitative and Qualitative Approaches*, Sage.
- RALSTON, B. & Wilson, I. (2006), '*The Scenario Planning Handbook: Developing Strategies in Uncertain Times*', *United States: Thompson-South-western*.
- RANGER, N. & Garbett-Shiels, S.-L. (2011), '*How Can Decision-Makers In Developing Countries Incorporate Uncertainty About Future Climate Risks Into Existing Planning And Policymaking Processes?*', Grantham Research Institute on Climate Change and the Environment.
- RASMUSSEN, B. K.; Andrew, J.; Simmons, E.; Epstein, A.; Colton, P. & Daddio, D. (2015), '*Integrating Climate Change In Transportation And Land Use Scenario Planning: An Example from Central New Mexico*'.
- RAUWS, W. & van Dijk, T. (2011), '*A Design Approach to Forge Visions That Amplify Paths of Peri-Urban Development*', *Environment and Planning B: Planning and Design* 40(2), 254--270.
- RAWLS, J. (1971), *A Theory of Justice*, Harvard University press
- RAWLS, J. (1999), *A Theory of Justice*, Harvard University press
- RAWLS, J. (2003), *A Theory of Justice*, Harvard University press
- RAWLS, J. (2009), *A Theory of Justice*, Harvard University press.
- REISCH, M. (2002), '*Defining Social Justice in A Socially Unjust World*', *Families in Society: The Journal of Contemporary Social Services* 83(4), 343--354.
- REMENYI, D. (1998), *Doing Research in Business and Management: An Introduction to Process and Method*, Sage.
- REPUBLIC Of Mauritius, 2001; *Integrated National Transport Strategy Study*
- REPUBLIC of Rwanda (2011): *Strategic Transport Master Plan for Rwanda*
- RIENSTRA, S. A. & Nijkamp, P. (1998), '*The Role of Electric Cars in Amsterdam's Transport System in the Year 2015; A Scenario Approach*', *Transportation Research Part D: Transport and Environment* 3(1), 29--40.
- RINGLAND, G. & Schwartz, P. P. (1998), *Scenario Planning: Managing For The Future*, John Wiley & Sons.
- RINGLAND, G. (2003), '*Using Scenarios to Focus R&D*', *Strategy & Leadership* 31(1), 45--55.
- ROBINSON, D. & Reed, V. (1998), *The AZ Of Social Research Jargon*, Ashgate Publishing.
- ROBINSON, J. B. (1982), '*Energy Backcasting a Proposed Method of Policy Analysis*', *Energy policy* 10(4), 337--344.

- ROBINSON, J. B. (1990), *'Futures Under Glass: A Recipe For People Who Hate To Predict'*, *Futures* 22(8), 820--842.
- ROBSON, P. & Lury, D. A. (2010), *The Economies Of Africa*, Vol. 53, Routledge.
- ROWE, C. & Broadie, S. (2002), *Nicomachean Ethics*, Oxford University Press.
- ROWNTREE, J. E.; Raven, M. R.; Schwehofer, J. P.; Buskirk, D. D. & Colyn, J. W. (2012), *'Extension Facilitated Scenario Planning To Direct A Preferred Agriculture Future'*, *Journal of Extension* 50(3).
- RUBIN, H. & Rubin, I. (2005), *'Qualitative Interviewing: The Art Of Hearing Data'*,.
- RWEBANGIRA, T. (2001). *Cycling In African Cities: Status And Prospects*. *World Transport Policy & Practice*, 7(2), 7--10.
- SAUNDERS, M.; Lewis, P. & Thornhill, A. (2007), *'Research Methods for Business Students'*,
- SCHOEMAKER, P. J. (1991), *'When and How to Use Scenario Planning: A Heuristic Approach with Illustration'*, *Journal of forecasting* 10(6), 549--564.
- SCHOEMAKER, P. J. (1995), *'Scenario Planning: A Tool for Strategic Thinking'*, *Sloan management review* 36(2), 25--50.
- SCHWANDT, T. A. (2000), *'Three Epistemological Stances for Qualitative Inquiry'*, *Handbook of qualitative research* 2, 189--213.
- SCHWARZ, P. (1991), *'The Art of the Long View—Planning for the Future in an Uncertain World'*, Currency Doubleday, New York.
- SEALE, C. (1999), *'Quality in Qualitative Research'*, *Qualitative inquiry* 5(4), 465--478.
- SEN, A. (1999), *'Development as Freedom*. New York: Alfred A', Knopf.
- SEN, S. (2008), *'Environmental Justice in Transportation Planning and Policy: A View from Practitioners And Other Stakeholders In The Baltimore-Washington, Dc Metropolitan Region'*, *Journal of Urban Technology* 15(1), 117--138.
- SESSA, C. & Enei, R. (2009), *'EU transport demand: Trends and drivers'*, ISIS, paper produced for European Commission Directorate-General Environment.
- SHELL. (2008), *Scenarios: An Explorer's Guide*, Shell International BV.
- SHIELDS, L. (2012), *'The Prospects for Sufficiencyarianism'*, *Utilitas* 24(01), 101--117.
- SHIFTAN, Y.; Kaplan, S. & Hakkert, S. (2003), *'Scenario Building As A Tool For Planning A Sustainable Transportation System'*, *Transportation Research Part D: Transport and Environment* 8(5), 323--342.
- SHIPLEY, R. & Newkirk, R. (1999), *'Vision And Visioning In Planning: What Do These Terms Really Mean?'*, *Environment and Planning B: Planning and Design* 26(4), 573--591.
- SHIPLEY, R. (2000), *'The Origin And Development Of Vision And Visioning In Planning'*, *International Planning Studies* 5(2), 225--236.
- SHIPLEY, R. (2002), *'Visioning In Planning: Is The Practice Based On Sound Theory?'* *Environment and Planning A* 34(1), 7--22.
- SIETCHIPING, R., Permezel, M.J. & Ngomsi, C. 2012. *Transport And Mobility In Sub-Saharan African Cities: An Overview Of Practices, Lessons And Options For Improvements*. *Cities*. 29 (3): 183-189.

- SILVER, H. (1994), '*Social exclusion and social solidarity: three paradigms*', Int'l Lab. Rev. 133, 531.
- SILVERMAN, D. (2011), '*Qualitative Research*',
- SKINNER, I.; Van Essen, H.; Smokers, R. & Hill, N. (2010), 'EU Transport GHG: Routes to 2050', *Towards the Decarbonisation of the EU's Transport Sector By 2050*.
- SOCIAL Exclusion Unit, 1998. *Bringing Britain Together: a National Strategy for Neighbourhood Renewal*, Cm4045, HMSO, London
- SORENSEN, A. D. & Day, R. A. (1981), '*Libertarian Planning*', Town Planning Review 52(4), 390.
- STAKE, R. E. (1978), '*The Case Study Method in Social Inquiry*', Educational researcher, 5--8.
- STEAD, D. & Banister, D. (2003), '*Transport Policy Scenario-Building*', Transportation PLANNING AND TECHNOLOGY 26(6), 513--536.
- STERBA, J. P. (1995), '*Contemporary Social And Political Philosophy*', .
- SULEMANA, A. & Dinye, R. D. (2014), '*Access To Healthcare In Rural Communities In Ghana: A Study Of Some Selected Communities In The Pru District*', European Journal of Research in Social Sciences Vol 2(4).
- TAAFFE, E. J.; Morrill, R. L. & Gould, P. R. (1963), '*Transport Expansion in Underdeveloped Countries: A Comparative Analysis*', Geographical Review, 503--529.
- TASHAKKORI, A. (), 'C., Teddie,(eds)(2003),'*Handbook Of Mixed Methods In Social And Behavioural Research*', , Thousand Oaks, CA, Sage
- TEMKIN, L. (2000), '*Equality, Priority, and the Levelling Down Objection*', The ideal of equality, 126--61.
- TEN Have, P. (1990), '*Methodological Issues in Conversation Analysis*', Bulletin de méthodologie sociologique 27(1), 23--51.
- THIBAUT, J. W. & Walker, L. (1975), *Procedural Justice: A Psychological Analysis*, L. Erlbaum Associates.
- THOMOPOULOS, N.; Grant-Muller, S. & Tight, M. R. (2009), '*Incorporating Equity Considerations In Transport Infrastructure Evaluation: Current Practice And A Proposed Methodology*', Evaluation and program planning 32(4), 351--359.
- TIGHT, M. (2010) *Visions For A Walking And Cycling Focussed Urban Transport System*. Walk21 Conference, The Hague, November 16th-19th
- TIGHT, M., Banister, D, Day, A, Drinkwater, D, Givoni, M, Guehnemann, A, Kimble, M, Macmillen, J, Miles, A, Moore, N, Newton, E, Ngoduy, D, Timms, P and Watling, D. (2009) Visions of walking and cycling in 2030. Walk21 Conference, New York, October 6th – 8th.
- TIGHT, M.; Timms, P.; Watling, D. & Gühnemann, A. (2011), '*Pathways To Achieving Radically Different Urban Walking And Cycling Futures In The Uk By 2030*',
- TIMMS, P.; Tight, M. & Watling, D. (2014), '*Imagineering Mobility: Constructing Utopias For Future Urban Transport*', Environment and Planning A 46(1), 78--93.
- TOCQUEVILLE, A. d. (1945), '*Democracy in America*. 2 vols', New York: Vintage.
- TOYNBEE, A. J. & Ikeda, D. (1976), *The Toynbee-Ikeda Dialogue: Man Himself Must Choose*, Kodansha International; New York: distributed by Harper & Row.

- TRANFIELD, D.; Denyer, D. & Smart, P. (2003), '*Towards a Methodology for Developing Evidence Informed Management Knowledge By Means Of Systematic Review*', *British journal of management* 14(3), 207--222.
- TRINDER, E.; Hay, A.; Dignan, J.; Else, P. & Skorupski, J. (1991), '*Concepts Of Equity, Fairness, And Justice In British Transport Legislation, 1960–88*', *Environment and Planning C: Government and Policy* 9(1), 31--50.
- TUOMINEN, A.; Tapio, P.; Varho, V.; Järvi, T. & Banister, D. (2014), '*Pluralistic Backcasting: Integrating Multiple Visions With Policy Packages For Transport Climate Policy*', *Futures* 60, 41--58.
- TURNER, J. & Adzigbey, M. (2012), '*Accessibility, Planning and Urban Poverty: Tools for Equitable Transport Planning in Developing Cities*', in 'CODATU XV: The role of urban mobility in (re) shaping cities'.
- TYLER, N. (2004), '*Justice In Transport Policy*'
- UN-HABITAT (2010B). *Sustainable Mobility In African Cities*. UN-HABITAT, Nairobi
- VAN DER HEIJDEN, K. (1997), '*Scenarios, Strategies And The Strategy Process*', .
- VAN VUGHT, F. A. (1987), '*Pitfalls Of Forecasting: Fundamental Problems For The Methodology Of Forecasting From The Philosophy Of Science*', *Futures* 19(2), 184--196.
- VAN WEE, B. & Geurs, K. (2004), '*Backcasting as a Tool for Sustainable Transport Policy Making: The Environmental Sustainable Transport Study In The Netherlands*', *European Journal of Transport and Infrastructure Research* 4 (1) pp. 47-69.
- VAN WEE, B. & Roeser, S. (2013), '*Ethical Theories And The Cost–Benefit Analysis-Based Ex Ante Evaluation Of Transport Policies And Plans*', *Transport reviews* 33(6), 743--760.
- VAN WEE, B. (2011), *Transport And Ethics: Ethics And The Evaluation Of Transport Policies And Projects*, Edward Elgar Publishing.
- VAN'T KLOOSTER, S. A. & van Asselt, M. B. A. (2006), '*Practising the scenario-axes technique*', *Futures* 38(1), 15--30.
- VASCONCELLOS, E. A.; Whitelegg, J.; Chakraborti, D.; Halder, D. K.; Sen, J.; Bhattacharyya, D. & Basu, J. (1997), '*3 Editorial 4 The Urban Transportation Crisis in Developing Countries: Alternative Policies for an Equitable Space*', *World Transport Policy & Practice* 3, 3.
- VLASTOS, G. & Brandt, R. B. (1962), '*Social Justice*', New Jersey: Prentice Hall.
- VORDZORGBE, S. D. & Caiquo, B. (2001), '*Report On Status Review Of National Strategies For Sustainable Development In Ghana*', Report Prepared For OECD/DAC Dialogues With Developing Countries On National Strategies For Sustainable Development, and for IIED and NDPC.
- WACK, P. (1985), '*Scenarios: Uncharted Waters Ahead*', *Harvard business review*.
- WALKER, L.; Lind, E. A. & Thibaut, J. (1979), '*The Relation between Procedural And Distributive Justice*', *Virginia Law Review*, 1401--1420.
- WATERMAN, H.; Tillen, D.; Dickson, R. & De Koning, K. (2001), '*Action Research: A Systematic Review and Guidance for Assessment*.' *Health technology assessment (Winchester, England)* 5(23), iii--157.
- WEE, B. & Geurs, K. (2011), '*Discussing Equity and Social Exclusion In Accessibility*

- Evaluations'*, *European Journal of Transport and Infrastructure Research* 11(4).
- WEINER, E. (1986), '*Urban transportation planning in the United States: an historical overview (revised edition)*', *Technical report, Department of Transportation, Washington, DC (USA)*. Office of the Assistant Secretary for Policy and International Affairs.
- WOLLENBERG, E.; Edmunds, D. & Buck, L. (2000), *Anticipating Change: Scenarios As A Tool For Adaptive Forest Management: A Guide*, CIFOR.
- WRIGHT, G. & Goodwin, P. (2009), '*Decision-making And Planning Under Low Levels Of Predictability: Enhancing The Scenario Method*', *International Journal of Forecasting* 25(4), 813--825.
- WU, B., Hine, J., 2003. A PTAL *Approach To Measuring Changes In Bus Service Accessibility*. *Transport Policy* 10 (4), 307–320.
- WULF, T.; Brands, C. & Meissner, P. (2011), '*A Scenario Based Approach To Strategic Planning*', *Integrating Planning And Process Perspective Of Strategy*, Leipzig.
- YIN, R. (1994), '*Case Study Research: Design and Methods*'. Beverly Hills', CA: Sage publishing.
- YOE, C. (1983), '*Scenario-Based Planning and Decision-Making: Guidelines for Use in the US Army Corps of Engineers Planning Studies and Literature Review*', Studies.
- ZEGRAS, C.; Sussman, J. & Conklin, C. (2004), '*Scenario Planning For Strategic Regional Transportation Planning*', *Journal of Urban Planning and Development* 130(1), 2--13.
- ZMUD, J.; Ecola, L.; Phleps, P. & Feige, I. (2013), *The Future of Mobility*, RAND Corporation.
- ZUCKER, D. M. (2009), '*How to Do Case Study Research*'



## Appendix A QUESTION GUIDES ON VISIONS AND PATHWAYS ( All Groups)

### A.1 Section 2: Questions on Visions (All Groups)

**[Q1].** *“Should the world look like [SCENARIO NAME], in 2046, what would your vision of a socially-just transport system in Ghana look like? Describe it. This must be looked at both at the urban and rural levels for passengers and freight.”*

[Remind workshop participants to think about how the transport disadvantaged [elderly people, children, people without driving licenses, women] would travel in this transportation system]. Some areas to consider include;

- i. Where will the main urban areas be located in 2046?
- ii. What would be the predominant mode of transport in urban areas?
- iii. What will be your desired transportation systems in 2046 should this scenario unfold – rail, road, water, air: public or private transport; motorized or non-motorized modes?
- iv. What type of transport and land-use patterns would you like to have in urban areas in 2046?
- v. What type of transportation systems would you like to have for the movement of freight in 2046?
  - ✓ What will be the primary freight corridor in Ghana in 2046?
  - ✓ What are some initiatives that the Ministry of Transport should take to improve this freight corridor?

**[Q2]** What are the implications of your desired transportation system on the transport disadvantaged?

- a) Would they be able to access shops, schools, go to work and access other necessities of life?
- b) Think about who will benefit and who will lose in your desired transportation system.

## **A.2 Section 3: Questions on Pathways (All Groups)**

**[Q3]** What strategies will be needed in order to be achieve the vision you have described in 2046? [Use the format below to guide the discussion here]

- vii. What systems of infrastructure must be in invested in between 2016-2026, 2026-2026 and 2036-2046?
- viii. What land-use strategies must be deployed between 2016-2026, 2026-2026 and 2036-2046?
- ix. What economic strategies must be deployed between 2016-2026, 2026-2026 and 2036-2046?
- x. What behavioural strategies must be deployed between 2016-2026, 2026-2026 and 2036-2046?
- xi. What freight management strategies must be deployed between 2016-2026, 2026-2026 and 2036-2046?
- xii. What other measures must be deployed between 2016-2026, 2026-2026 and 2036-2046?

## **A.3 Section 4: Questions on Assessment of Visions and Pathways (All Groups)**

**[Q4]** What are the possible barriers to the delivery of this desired transportation system?

You may think about:

1. The legacy of sprawl in urban areas and low dense residential developments and the long-term challenges of retrofitting neighbourhoods in residential areas.
2. Public acceptability.
3. Perceptions of safety in relation to walking and cycling
4. Existing social norms and the lack of awareness of the benefits of socially-just transportation systems.



## Appendix B INVITATION LETTER

34-40 University Road  
Institute for Transport Studies  
University of Leeds  
LS2 9JT  
16/01/2016

### **Invitation to Attend a One-Day Workshop on “Developing Visions and Pathways for Ghana’s Transport”**

We would like to invite you to take part in a day’s workshop on the above subject matter.

- Date: 29<sup>h</sup> January, 2016
- Time: 9:00 to 17:00
- Venue: Ministry of Transport

The workshop aims to provide a platform for transport planners, policy-makers, environmentalists, transport consultants and other stakeholders to share their ideas on what socially-desirable transportation systems they would like to have in Ghana in the next 30 years. To that end, the workshop aims to:

- Develop socially-just transport visions for the future of Ghana’s transport;
- Identify the pathways or policy actions to these desirable transport futures;
- Identify some of the potential barriers to these desirable transport futures.

Please find attached a copy of the programme for the workshop.

We count on your co-operation.

Yours Sincerely

A handwritten signature in blue ink, appearing to read 'Sheriff Idriss-Yahya', with a stylized flourish at the end.

Sheriff Idriss-Yahya

(Ph.D. Student )

Email : [tsasy@leeds.ac.uk](mailto:tsasy@leeds.ac.uk)



OR

Dr Paul Timms (Lead Supervisor)

Email : [P.M.Timms@its.leeds.ac.uk](mailto:P.M.Timms@its.leeds.ac.uk)

Prof Greg Marsden

Email : [G.R.Marsden@its.leeds.ac.uk](mailto:G.R.Marsden@its.leeds.ac.uk)



## **Appendix C PARTICIPANT INFORMATION SHEET**

**Title:** Building Our Future : Developing Visions and Pathways for Ghana's Transport.

**Investigator:** Sheriff A. Idriss-Yahya

**Supervisors:** Dr Paul Timms; Prof Greg Marsden

**Ethics Committee Reference:** AREA 13-079

**Date :** 29<sup>th</sup> January, 2016

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Thank you for agreeing to participate in today's workshop. You have been invited to participate in this study because my records show that your knowledge and expertise are relevant to this research. The overall aim of the workshop is to develop visions of what type of transportation system you would like to see in Ghana in the next 30 years given a set of external constraints.

During the workshop, I will describe four (4) scenarios to you. These scenarios represent how the world could look in 2046. For each scenario or future world, you will be expected to describe what type of transportation system you will desire for Ghana should that future world unfold. Your responses will help in the development and evaluation of a decision-making tool that will help transport planners and policymakers in Africa to deliver more equitable and socially-just transportation systems.

In describing your desired transportation system, please remember that there are no wrong answers. I will be recording our discussions on a tape recorder just so that I can accurately capture some of your responses. This information will only be used for the purposes of this research and will only be available to the research team.

The attached programme outline describes in detail what we will be doing today.

Please feel free to ask me any questions if you are not clear about anything. Should you require any further clarifications or information on any aspect of this research, please contact me using the contact details below:

Sheriff Idriss-Yahya



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University of Leeds  
LS2 9JT

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OR

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## Appendix D CONSENT FORM

I, the undersigned, confirm that (please tick box as appropriate):

1.	I have read and understood the information about the research, as provided in the Information Sheet dated _____.	<input type="checkbox"/>
2.	I have been given the opportunity to ask questions about the research and my participation.	<input type="checkbox"/>
3.	I voluntarily agree to participate in the research project.	<input type="checkbox"/>
4.	I understand I can withdraw at any time without giving reasons and that I will not be penalised for withdrawing nor will I be questioned on why I have withdrawn.	<input type="checkbox"/>
5.	The procedures regarding confidentiality have been clearly explained to me.	<input type="checkbox"/>
6.	If applicable, separate terms of consent for interviews, audio, video or other forms of data collection have been explained and provided to me.	<input type="checkbox"/>
7.	The use of the data in research, publications, sharing and archiving has been explained to me.	<input type="checkbox"/>
8.	I understand that other researchers will have access to this data only if they agree to preserve the confidentiality of the data and if they agree to the terms I have specified in this form.	<input type="checkbox"/>
9.	Select only one of the following: <ul style="list-style-type: none"> <li>• I would like my name used and understand what I have said or written, as part of this study will be used in reports, publications and other research outputs so that anything I have contributed to this project can be recognised.</li> </ul>	<input type="checkbox"/>
		<ul style="list-style-type: none"> <li>• I do not want my name used in this project.</li> </ul>
10.	I, along with the Researcher, agree to sign and date this informed consent form.	<input type="checkbox"/>

Participant:

Name : \_\_\_\_\_

Organization/position : \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_



## Appendix E WORKSHOP PROGRAMME

**THEME :** Building Our Future : Developing Visions and Pathways for Ghana's Transport.

**DATE :** 29<sup>th</sup> January, 2016

**VENUE :** Ministry of Transport Conference Room, Ghana

Time	Scheduled Activity
9:00	Arrival of participants; Information Sheet and Consent Form
9:10	Objectives of the Workshop
9:15	Presentation 1 : Principles of Social Justice
10:00	Break - Tea, Coffee
10:10	Presentation 2 : Scenario Narratives for East Legon
10:30	Presentation 3: Scenario Narratives for Trasacco Valley
10:50	Presentation 4: Scenario Narratives for McCarthy Hill
11:10	Presentation 5: Scenario Narratives for Nima-Mamobi
11:30	Break – Cold Drinks
11:35	Activity 1 : Visions
13:35	Lunch
14:05	Activity 2 : Pathways
16:05	Activity 3 : Assessment of Visions and Pathways (Plenary)
16:45	Closing Remarks and close



## **Appendix F RISK ASSESSMENT FORM**

<b>Fieldwork Project Details</b>	
Faculty	Institute for Transport Studies, University of Leeds
School/Service	
Location of Fieldwork	Ministry of Transport, Accra, Ghana
Brief description of Fieldwork activity and purpose	<p>The fieldwork involves a workshop various stakeholders in Ghana who would be involved in developing</p> <ol style="list-style-type: none"><li>1. Visions of transport for Ghana</li><li>2. The pathways to the visions and</li><li>3. Assessing the visions and pathways</li></ol> <p>The aim of the workshop is to implement and evaluate the futures method proposed in this research.</p>
Fieldwork itinerary <i>e.g. flight details, hotel address</i>	<p>Flight: Not Booked yet.</p> <p>Accommodation: 278 Lakeside Estates, Ashaley Botwe, Accra, Ghana.</p>
<b>Organizer Details</b>	<b>Contact details</b> <i>Name, email, telephone</i>
Fieldwork Activity Organizer / Course Leader	Sheriff Idriss-Yahya: <a href="mailto:tsasy@leeds.ac.uk">tsasy@leeds.ac.uk</a> :
Departmental Co-ordinator	Dr Paul Timms
Nature of visit <i>Size of Group, lone working, staff, postgraduate, undergraduate</i>	Research
<b>Participant Details</b>	<b>Contact details</b> <i>Name, Address, email, telephone, Next of Kin contact details</i>
<i>Attach information as separate list if required</i>	



**Sheriff Idriss-Yahya (Research Student)**

**Miss Andree Opoku (Spouse)**

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N9 0EF

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## HAZARD IDENTIFICATION

*Identify all hazards specific to fieldwork trip and activities, describe existing control measures and identify any further measures required.*

### HAZARD(S) IDENTIFIED

### CONTROL MEASURES

*(e.g. alternative work methods, training, supervision, protective equipment)*


<b>Nature of the site</b> <i>School, college, university, remote area, laboratory, office, workshop, construction site, farm, etc.</i>	Conference Room  Ministry of Transport , Accra, Ghana :
	There are no known hazards. All health and safety requirements of the premises will be complied with.
<b>Process</b> <i>Operating machinery, electrical equipment, driving vehicles, handling or working with animals etc.</i>	Facilitated workshop
<b>Transport</b> <i>Mode of transport</i>	Public transport.
<b>Equipment</b> <i>manual handling risks, operation of machinery, tools, use of specialist equipment etc.</i>	Not Applicable
<b>Violence</b> <i>potential for violence (previous incidents etc.)</i>	Not Applicable
<b>Individual(s)</b> <i>medical condition(s), young, inexperienced, disabilities etc.</i>	Risk of Malaria – Anti-malarial tablets requested from my Doctor (GP).

<b>Work Pattern</b> <i>time and location e.g. shift work, work at night</i>	9:00 – 17:00 for workshop  Some work at home and at the Balme Library, University of Ghana, Accra.
<b>Other</b> <i>e.g. temperature, humidity, confined spaces</i>	Not Applicable

<b>Additional Control Measures</b>	
<b>Pre-departure Briefing</b> <i>Carried out and attended</i>	Not Applicable
<b>Training</b> <i>Identify level and extent of information; instruction and training required consider experience of workers</i>	Not Applicable
<b>Supervision</b> <i>Identify level of supervision required e.g. full time, Periodic telephone/radio contact</i>	Regular contacts with supervisors via email and Skype.
<b>Other Controls</b> <i>e.g. background checks for site visits</i>	Not Applicable
<b>Identify Persons at Risk</b> <i>This may include more individuals than the fieldwork participants e.g.</i>	Not Applicable

<i>other employees of partner organizations</i>	
<i>Copy of other Organization's risk assessment attached?</i>	
<b>Additional Information</b> <i>relevant to the one working activity including existing control measures; information instruction and training received, supervision, security, increased lighting, emergency procedures, first aid provision etc.</i>	Not Applicable

<b>Residual Risk</b> <i>Is the residual risk acceptable with the identified controls?</i>	Yes	Not applicable
	No	Not Applicable

<b>Assessment carried out by</b>	Name:	Sheriff Idriss-Yahya
	Signature:	
	Date:	17/01/2014
<b>Names of person(s) involved in Fieldwork</b> <i>N.B: This can take the form of a signed class register when large group work</i>	Name:	
	Signature:	
	Date:	
<b>Fieldwork Activity Organizer / Course Leader e.g. PI, etc.</b>	Name:	Sheriff Idriss-Yahya
	Signature:	
	Date:	17/01/2014