Urban Facilities Management as a systemic process to achieve urban sustainability in South Africa

Author: Luke Boyle [BYLLUK001]

Supervised by Associate Professor Kathy Michell

A dissertation submitted in fulfilment of the requirements for the award of the degree of Master of Philosophy (M.Phil.) in Urban Facilities Management

4th April 2016

Faculty of Engineering and Built Environment
Department of Construction Economics and Management
University of Cape Town
The copyright of this thesis vests in the author. No quotation from it or information derived from it is to be published without full acknowledgement of the source. The thesis is to be used for private study or non-commercial research purposes only.

Published by the University of Cape Town (UCT) in terms of the non-exclusive license granted to UCT by the author.
Declaration

This work has not been previously submitted in whole, or in part, for the award of any degree. It is my own work. Each significant contribution to, and quotation in, this dissertation from the work, or works, of other people has been attributed, and has been cited and referenced.

Signature: ___________________________ Date: 4th April 2016
Acknowledgements

I would like to express my sincere gratitude to the following:

Associate Professor Kathy Michell, the Department of Construction Economics and Management, University of Cape Town (UCT), for your dedication, supervision, and friendship during the course of my studies.

Professor Mark Roseland, Director of the Centre for Sustainable Community Development, Simon Fraser University, for exposing me to a number of valuable experiences in Canada.

All of the interview participants who took the time out of their busy schedules to help make this thesis possible.

UCT’s Postgraduate Funding office and the UCT-Nedbank urban real estate research unit for their generous contributions towards the funding of this research project.

The Construction Economics and Management Department at UCT who have been incredibly warm and welcoming over the past two years.

My wonderful family and friends whose support has been invaluable throughout this journey.

Lastly to Ruth, whose compassion, strength and love transcend all boundaries of logic or reason.
Abstract

A key challenge for urban facilities management (UFM) is to identify ways to promote sustainable urban development at a community/precinct level. One potential approach is via the application of sustainable community assessment/rating tools which have seen increased popularity amongst urban planners and developers over the past decade. This study investigates the efficacy and applicability of this approach to urban sustainability, particularly within the “developing country” context of South Africa. Furthermore, the paper suggests that the deployment of UFM in creating a management platform for urban precincts, one that focuses on the process of achieving urban sustainability within a specific locale, will deliver improved strategies for operationalising urban sustainability.

Using soft systems methodology (SSM), the study aimed to establish the fundamental requirements for sustainable community development frameworks in both “developing” and “developed countries”. Data was collected through semi-structured interviews with 11 key stakeholders who consisted of two main categories. Firstly, participants from private and public sector engaged in the management and development of sustainable urban precincts. Secondly, participants from NGO’s that develop sustainable community rating tools. The tools included: Leadership in Engineering and Environmental Design for Neighbourhood Development (LEED-ND), Building Research Establishment Environmental Assessment Methodology for Communities (BREEAM-C), Comprehensive Assessment System for Building Environmental Efficiency for Urban Development (CASBEE-UD), EcoDistricts, Green Star Communities (GSC), and the Living Community Challenge (LCC). Interviews were conducted in both Cape Town and Vancouver; representing the “developing” and “developed” contexts respectively. It was found that the prescriptive and outcomes-based nature of assessment tools excludes “developing countries” from the sustainable community development conversation. The logical next step is to develop frameworks that offer sustainable solutions appropriate to these contexts. Findings also highlighted a need for a more robust procedural framework to manage relationships between various professionals and interest groups involved in the development of sustainable communities/precincts. This in turn provides a unified method to facilitate the achievement of urban sustainability.

This research concludes that urban sustainability needs to draw upon the management principles of facilities management (FM), and more specifically UFM, to develop and assess the sustainability of communities and cities within a specific locale. Without a process-orientated method such as this, cities will continue to fall short of their sustainable imperatives.
## Table of Contents

Declaration ......................................................................................................................... 1  
Acknowledgements ............................................................................................................ 2  
Abstract ............................................................................................................................. 3  
Table of Contents .............................................................................................................. 4  
List of Figures ................................................................................................................... 10  
List of Acronyms .............................................................................................................. 11  
Chapter One: Introduction ............................................................................................... 13  
  1.1 Introduction ........................................................................................................... 13  
  1.2 Background to the Study .................................................................................... 14  
      1.2.1 The Development of the Field of Facilities Management ...................... 14  
      1.2.2 The Division within Facilities Management ......................................... 17  
            a) Operational Facilities Management ............................................. 17  
            b) Strategic Facilities Management .............................................. 17  
      1.2.3 Facilities Management Moving Forward ...................................... 18  
            The Emergence of Urban Facilities Management (UFM) ................. 19  
      1.2.4 Sustainable Development .................................................................. 20  
      1.2.5 Sustainable Community Rating Tools (SCRTs) .................................. 21  
      1.2.6 The Inefficiencies of the Execution of Sustainable Development ....... 23  
      1.2.7 The Implementation of a Systemic Approach to Sustainable Development .. 25  
      1.2.8 A Synthesis of Urban Facilities Management and Sustainable Development: A Systems-based Approach to Sustainable Urban Development and Management ...... 27  
  1.3 Problem Area ...................................................................................................... 29  
  1.4 Research Question .............................................................................................. 29  
  1.5 Research Aim ...................................................................................................... 29
1.6 Research Objectives ........................................................................................................ 29
1.7 Research Premise ......................................................................................................... 30
1.8 Research Methodology ................................................................................................. 30
   1.8.1 Research Techniques ......................................................................................... 32
1.9 Structure of the Thesis ................................................................................................. 33

Chapter Two: Urban Sustainability ........................................................................... 35
   2.1 Introduction ............................................................................................................ 35
   2.2 Current State of the Planet ................................................................................... 35
   2.3 Sustainable Development: An Ambiguous Concept ............................................. 38
      2.3.1 A Shift in Thinking ....................................................................................... 39
   2.4 Operationalising Sustainable Development ......................................................... 40
      2.4.1 Breaking Down the Concept .......................................................................... 40
      2.4.2 Issues with Operationalisation ....................................................................... 42
      2.4.3 A Fourth Dimension of Sustainability ........................................................... 45
   2.5 The Urban Environment’s Role in Sustainable Development ............................. 46
      2.5.1 Sustainable Community Development .......................................................... 47
   2.6 Conclusion .............................................................................................................. 49

Chapter Three: The Urban Landscape of a “Developing” South Africa ............. 50
   3.1 Introduction .............................................................................................................. 50
   3.2 A Brief Historical Overview of South Africa .......................................................... 50
   3.3 Urbanism in South Africa ....................................................................................... 50
   3.4 Significant Issues Affecting Urban Sustainability in South Africa ...................... 52
      3.4.1 Informal Settlements ...................................................................................... 52
      3.4.2 Housing Policy ............................................................................................. 53
      3.4.3 Government .................................................................................................. 54
   3.5 The Role of NGOs in South Africa .......................................................................... 56
Chapter Four: Urban Sustainability Assessment ....................................................... 59
4.1 Introduction.............................................................................................................. 59
4.2 Indicators.................................................................................................................. 60
4.3 Sustainable Community Rating Tools (SCRTs)...................................................... 62
  4.3.1 Introduction ........................................................................................................ 62
  4.3.2 Tools .................................................................................................................... 64
    LEED-ND .................................................................................................................... 66
    BREEAM-C ............................................................................................................... 68
    CASBEE-UD .............................................................................................................. 70
    Green Star Communities (GSC) ............................................................................... 72
    Estidama Pearl Community Rating System (PCR) .................................................... 73
    Living Community Challenge (LCC) ........................................................................ 75
4.3.3 Criticisms ............................................................................................................ 76
    Credit Weighting, Adaptability, and Robustness of Assessment ............................... 77
    Ecologically Dominant .............................................................................................. 80
    Social and Economic Aspects Under-represented ..................................................... 81
    Building-centric, Reductionist Approach ................................................................. 82
    Market-Driven Approach of Tools ............................................................................ 82
    Expert-Driven and Non-participatory ...................................................................... 84
    Institutional Sustainability .......................................................................................... 84
  4.3.4 Applicability of SCRTs in the “Developing Country” Context of South Africa ... 85
4.4 Conclusion .............................................................................................................. 86
Chapter Five: A Process-orientated Methodology for Urban Sustainability ....... 88
  5.1 Introduction .......................................................................................................... 88
5.2 A Process-orientated Methodology for Urban Sustainability ........................................... 88

5.2.1 EcoDistricts ................................................................................................................ 90

5.2.2 Violence Protection through Urban Upgrading (VPUU) ........................................ 93

5.3 Urban Facilities Management as a Process-oriented Approach to Urban Sustainability .......................................................................................................................... 96

5.3.1 Intermediaries: Holistic Urban Management and Sustainability in South Africa .. .......................................................................................................................................................... 99

5.4 Conclusion .................................................................................................................. 101

Chapter Six: Soft Systems Methodology ........................................................................ 102

6.1 Introduction ................................................................................................................ 102

6.2 Soft Systems Methodology (SSM) .......................................................................... 102

6.3 Outline of Data Collection ......................................................................................... 104

6.4 The Seven Stages of Soft Systems Methodology ...................................................... 107

6.5 Stages 1 and 2- Identifying and Expressing the Problematic Situation ................. 109

6.5.1 Background Theory ............................................................................................ 109

6.5.2 Application to the Investigation ....................................................................... 110

6.5.3 Initial Rich Picture ............................................................................................ 111

6.6 Stages 3 and 4- Root Definitions and Conceptual Modelling .................................. 114

6.6.1 Background Theory ............................................................................................ 114

6.6.2 Application to the Investigation ....................................................................... 115

6.6.2.1 South Africa (A “Systems-World” Focus) .................................................... 115

6.6.2.2 North America (A “Systems-World” Focus) ............................................. 126

6.7 Stage 5- Comparing the “Systems-World” with the “Real-World” ......................... 137

6.7.1 Emergent Themes for North America (A “Real-World” Focus) ......................... 138

6.7.1.1 Support for Sustainable Community Development .................................... 138

6.7.1.2 Challenges Implementing Sustainable Community Development .......... 146
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.7.1.3 Implementation of Sustainable Community Development</td>
<td>150</td>
</tr>
<tr>
<td>6.7.2 Emergent Themes for South Africa (A “Real-World” Focus)</td>
<td>157</td>
</tr>
<tr>
<td>6.7.2.1 Support for Sustainable Community Development</td>
<td>157</td>
</tr>
<tr>
<td>6.7.2.2 Challenges implementing Sustainable Community Development</td>
<td>162</td>
</tr>
<tr>
<td>6.7.2.3 Implementation of Sustainable Community Development</td>
<td>170</td>
</tr>
<tr>
<td>6.7.3 Discussion</td>
<td>180</td>
</tr>
<tr>
<td>6.7.3.1 Similarities between Datasets</td>
<td>180</td>
</tr>
<tr>
<td>6.7.3.2 Differences between Datasets</td>
<td>183</td>
</tr>
<tr>
<td>6.7.4 Reflection</td>
<td>187</td>
</tr>
<tr>
<td>6.7.5 North American Rich Picture and Discussion</td>
<td>188</td>
</tr>
<tr>
<td>6.7.6 South African Rich Picture and Discussion</td>
<td>191</td>
</tr>
<tr>
<td>6.8 Stages 6 and 7- Defining Action to Improve</td>
<td>193</td>
</tr>
<tr>
<td>6.8.1 Action to improve in Cape Town</td>
<td>193</td>
</tr>
<tr>
<td>6.8.2 Lessons learnt from North America</td>
<td>194</td>
</tr>
<tr>
<td>6.8.3 Culturally Feasible and Systemically Desirable Actions to Improve the Situation in Cape Town</td>
<td>194</td>
</tr>
<tr>
<td>6.9 Conclusion</td>
<td>194</td>
</tr>
<tr>
<td>Chapter Seven: Conclusion</td>
<td>196</td>
</tr>
<tr>
<td>7.1 Introduction</td>
<td>196</td>
</tr>
<tr>
<td>7.2 Findings</td>
<td>196</td>
</tr>
<tr>
<td>7.2.1 Research Question Revisited</td>
<td>197</td>
</tr>
<tr>
<td>7.2.2 Research Objectives Revisited</td>
<td>198</td>
</tr>
<tr>
<td>7.2.3 Summary of Findings</td>
<td>201</td>
</tr>
<tr>
<td>7.3 Theoretical Implications</td>
<td>202</td>
</tr>
<tr>
<td>7.4 Policy Implications</td>
<td>203</td>
</tr>
<tr>
<td>7.5 Reliability and Validity of the Research</td>
<td>204</td>
</tr>
</tbody>
</table>
7.5.1 Reliability.................................................................................................................. 204
7.5.2 Validity ..................................................................................................................... 205
7.6 Recommendations for Further Research ................................................................... 207
7.7 Parting Comments ...................................................................................................... 207
References.......................................................................................................................... 208
Appendix A: Development of Systems Thinking ............................................................... 226
  Introduction....................................................................................................................... 226
  The Development of Systems Thinking ........................................................................... 226
    a) Mechanistic (Mindless) View .................................................................................. 229
    b) Biological (Uni-minded) View .................................................................................. 230
    c) Social (Multi-minded) View ..................................................................................... 231
  Towards Complexity ....................................................................................................... 233
    Characteristics of a Complex System ........................................................................... 234
  Systemic and Complexity Theories and Sustainable Development .............................. 235
Appendix B: Interview Outline ......................................................................................... 237
Appendix C: Informed Consent Form .............................................................................. 239
Appendix D: Sample of Interview Transcripts ................................................................... 242
  Randomly Selected South African Interview ................................................................ 242
  Randomly Selected North American Interview ............................................................. 253
Appendix E: Emergent Themes ......................................................................................... 272
  North American Emergent Themes ............................................................................. 272
  South African Emergent Themes .................................................................................. 273
Appendix F: Ethics Form .................................................................................................... 274
List of Figures

Figure 4.1- LEED-ND Criteria and Weighting (Source: leadinggreen.ca)................................. 67
Figure 4.2- BREEAM-C Category, Aims, and Weightings (Source: BREEAM-C Technical Manual)....69
Figure 4.3- Green Star Communities List of Credits (Source: gbca.org.au) ............................... 72
Figure 4.4- Pearl Sections and Weightings (Source: Pearl Technical Manual).......................... 74
Figure 4.5- Living Community Challenge Petals and Imperatives (Source: Living Community Challenge Manual) ................................................................................................................................................. 75
Figure 5.1- EcoDistricts Protocol (Source: EcoDistricts.org) ....................................................... 91
Figure 5.2- VPUU Strategy Matrix (Krause et al., 2014: p. 15) .................................................. 94
Figure 5.3- VPUU Methodology (Krause et al., 2014: p. 21) ...................................................... 95
Figure 5.4- SymbioCity Conceptual Framework (Source: SKLInternational.se) ....................... 97
Figure 6.1- Adaptation of SSM’s Cycle of Learning for Action (Checkland & Poulter, 2010, p. 194) 107
Figure 6.2- Typical Pattern of Activity during an SSM Investigation (Checkland & Poulter, 2010, p. 208) ..................................................................................................................................................... 108
Figure 6.3- Initial Rich Picture ..................................................................................................... 113
Figure 6.4- Conceptual Model Participant 1 .............................................................................. 116
Figure 6.5- Conceptual Model Participant 2 ............................................................................. 118
Figure 6.6- Conceptual Model Participant 3 ............................................................................. 119
Figure 6.7- Conceptual Model Participant 4 ............................................................................. 121
Figure 6.8- Conceptual Model Participant 5 ............................................................................. 122
Figure 6.9- Conceptual Model Participant 11 .......................................................................... 124
Figure 6.10- Conceptual Model South Africa ........................................................................ 125
Figure 6.11- Conceptual Model Participant 6 ........................................................................ 127
Figure 6.12- Conceptual Model Participant 7 ........................................................................ 129
Figure 6.13- Conceptual Model Participant 8 ........................................................................ 131
Figure 6.14- Conceptual Model Participant 9 ........................................................................ 132
Figure 6.15- Conceptual Model Participant 10 ....................................................................... 134
Figure 6.16- Conceptual Model North America .................................................................... 136
Figure 6.17- North American Rich Picture ............................................................................ 190
Figure 6.18- South African Rich Picture ................................................................................ 192
## List of Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIFM-</td>
<td>British Institute for Facilities Management</td>
</tr>
<tr>
<td>BREEAM-</td>
<td>Building Research Establishment Environmental Assessment Methodology</td>
</tr>
<tr>
<td>BREEAM-C-</td>
<td>Building Research Establishment Environmental Assessment Methodology for Communities</td>
</tr>
<tr>
<td>CaGBC-</td>
<td>Canadian Green Building Council</td>
</tr>
<tr>
<td>CASBEE-</td>
<td>Comprehensive Assessment System for Building Environmental Efficiency</td>
</tr>
<tr>
<td>CASBEE-UD-</td>
<td>Comprehensive Assessment System for Building Environmental Efficiency for Urban Development</td>
</tr>
<tr>
<td>CID-</td>
<td>City Improvement District</td>
</tr>
<tr>
<td>CoCT-</td>
<td>The City of Cape Town Government</td>
</tr>
<tr>
<td>CM-</td>
<td>Conceptual Model</td>
</tr>
<tr>
<td>CSR-</td>
<td>Corporate Social Responsibility</td>
</tr>
<tr>
<td>DNV-</td>
<td>District of North Vancouver</td>
</tr>
<tr>
<td>FM-</td>
<td>Facilities Management</td>
</tr>
<tr>
<td>GBCA-</td>
<td>Green Building Council of Australia</td>
</tr>
<tr>
<td>GBCSA-</td>
<td>Green Building Council of South Africa</td>
</tr>
<tr>
<td>GSC-</td>
<td>Green Star Communities</td>
</tr>
<tr>
<td>ICT-</td>
<td>Information and Communication Technology</td>
</tr>
<tr>
<td>IDP-</td>
<td>Integrated Development Plan</td>
</tr>
<tr>
<td>ILFI-</td>
<td>International Living Future Institute</td>
</tr>
<tr>
<td>KfW-</td>
<td>German Development Bank</td>
</tr>
<tr>
<td>LA21-</td>
<td>Local Agenda 21</td>
</tr>
<tr>
<td>LCC-</td>
<td>Living Community Challenge</td>
</tr>
<tr>
<td>LEED-</td>
<td>Leadership in Engineering and Environmental Design</td>
</tr>
<tr>
<td>LEEN-ND-</td>
<td>Leadership in Engineering and Environmental Design for Neighbourhood Development</td>
</tr>
<tr>
<td>Acronym</td>
<td>Full Form</td>
</tr>
<tr>
<td>---------</td>
<td>-----------</td>
</tr>
<tr>
<td>MFMA</td>
<td>Municipal Finance Management Act</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-governmental Organisation</td>
</tr>
<tr>
<td>PCR</td>
<td>Pearl Community Rating System</td>
</tr>
<tr>
<td>RD</td>
<td>Root Definition</td>
</tr>
<tr>
<td>RDP</td>
<td>Reconstruction and Development Programme</td>
</tr>
<tr>
<td>SCRTs</td>
<td>Sustainable Community Rating Tools</td>
</tr>
<tr>
<td>SDF</td>
<td>Spatial Development Framework</td>
</tr>
<tr>
<td>SSM</td>
<td>Soft Systems Methodology</td>
</tr>
<tr>
<td>UFM</td>
<td>Urban Facilities Management</td>
</tr>
<tr>
<td>UAE</td>
<td>United Arab Emirates</td>
</tr>
<tr>
<td>UK</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>UN</td>
<td>United Nations</td>
</tr>
<tr>
<td>UCT</td>
<td>University of Cape Town</td>
</tr>
<tr>
<td>US(A)</td>
<td>United States (Of America)</td>
</tr>
<tr>
<td>USGBC</td>
<td>United States Green Building Council</td>
</tr>
<tr>
<td>VPUU</td>
<td>Violence Protection through Urban Upgrade</td>
</tr>
<tr>
<td>WCED</td>
<td>World Commission on Environment and Development</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organisation</td>
</tr>
</tbody>
</table>
Chapter One: Introduction

1.1 Introduction

Facilities management (FM) is a profession and field of research that emerged during the 1970’s with the introduction of computers to the workplace and the desire for organisations to establish cost-saving mechanisms to help cope with the energy crisis that affected that period (Alexander, 1996; Cloete, 2002; Shah, 2007; BIFM, 2014). Since then, FM has evolved into a global industry that is heavily embroiled in the strategic decisions of an organisation. The future direction for the field of FM is still uncertain. A recent development within FM involves transplanting the principles of FM at a singular, building level, to an expanded, urban level. This is known as UFM. It is believed that the application of UFM could be vital in the attainment of sustainable cities (Michell, 2013).

Increased urbanisation and environmental degradation caused by human activity has highlighted the necessity for sustainable development. With nearly 70% of the world’s human population set to reside in urban environments by the year 2050 (United Nations, 2014), it becomes clear that cities are at the forefront of the challenge that is sustainable development. As a result, there have been many attempts to institutionalise sustainable practices in society. This has most notably been set out by the Brundtland Commission’s report: “Our Common Future”. One such initiative that will be examined in this study is the application of assessment tools by various green building councils, or similar organisations, around the world that verifies the sustainability of urban or community development. Since these tools have predominantly been designed in, and for “developed countries”, the review will assess the applicability of such tools within the “developing country” context of South Africa.

Whilst there is a plethora of initiatives to drive urban sustainability, it is generally believed that the objectives set out by sustainable policy have not been achieved (Baumgartner & Korhonen, 2010). This is due to current sustainability models’ inability to consider the issues surrounding sustainable urban development in a way that recognises the inter-dependencies between various aspects of sustainability. To this end, a systemic and holistic approach to the sustainable development of urban environments could accomplish greater results than current methods. This study will examine and determine whether a systems-based approach to the management of urban precincts can represent a more effective means in which to drive sustainable community development in South Africa.
The following chapter introduces the reader to the concept of FM. The development of FM is discussed as well as its evolution to the profession that it is today. The various definitions of FM are presented in addition to the potential paths the profession is likely to assume in the years to come. Subsequently, the concept of UFM is established in addition to its role within the context of today’s global issues. This provides a point of departure for a discussion of the concept of sustainable development and FM’s role within it. Sustainable development and its practical applications are briefly deliberated before the notion of systems thinking is presented within the context of sustainable urban development. It is proposed that systemic approaches will yield improved results towards the operationalisation of urban sustainability. Following this, the problem statement of this report will be established. This is accompanied by the research questions, aims, premise, and objectives. Additionally, the methodology stating the research strategies and techniques will be presented and discussed.

1.2 Background to the Study

1.2.1 The Development of the Field of Facilities Management

FM is centred on the economics of owning a facility, and the role that a facility can play within the corporation. Therefore, how to get the most out of a facility. In essence, it is the practice of maximising the value a facility offers an organisation. FM has come a long way since its genesis some 40 years ago and there are a variety of contributors to its evolution (Payne, 2000). The origin of this development stems from concerns of cost mitigation and the view that facilities have a direct effect on worker satisfaction and productivity (Alexander, 1996; Shah, 2007). Building on this, Duffy et al. (1976) attributed the emergence of the FM profession to the “demand-side” thinking regarding the deficiencies of buildings observed by its occupants, and the supply-side “property orientated” organisations catering to the changing needs of the building users (Duffy et al., 1976; Cloete, 2002: p. 2). This is linked to another motive for its development, namely: the need for firms to be able to manage and adapt to the change brought about by advances in information and communication technology (ICT). ICT has had a significant impact on the structure of organisations and the facilities they manage. Nutt (2000) validates this notion when describing how the workplace has become more responsive and the work itself has become globally dispersed.
Becker (1990: p. 9) summarises the various sources of development that promoted the evolution of FM as:

- The increasingly high cost of space,
- Rising employee expectations regarding acceptable working conditions,
- The impact of ICT on business functions,
- The high cost of mistakes, and
- Global competition and the increasing demands of organisational efficiency.

Today, the traditional view of FM is incomplete. This is because the scope of FM is an ever-widening sphere and the profession continues to develop creating the multi-faceted field that it is today (Drion et al., 2012; BIFM, 2014). As such, what is formally defined as FM is constantly evolving. Consequently, a variety of different descriptions for FM have come into existence. The result is a lack of clarity on a universal definition. Grimshaw (2003) provides an overview of the definitional development of the term FM:

"Facilities management is a technical function concerned with maintaining the practical utility of the physical infrastructure to ensure it supports the core activity of an organisation"

(Grimshaw, 2003: p. 50).

This represents an elementary classification of FM which offers a more complete description of the field in its infancy. Grimshaw further articulates a developing definition for FM:

"Facilities management is a strategic function concerned with the forward planning of physical infrastructure resources to support organisational development and reduce risk"

(Grimshaw, 2003: p. 51).

This definition highlights FM’s transition away from being purely a technically based practice designed to cut costs. Here, the motivation is to integrate and coordinate a variety of services with the aim of achieving strategic objectives and cost efficiency for an organisation (De Toni et al., 2006; Tobi et al., 2013). The British Institute for Facilities Management (BIFM) attempt to provide a more comprehensive definition that recognises the multitude of disciplines inherent to the sphere of FM:

"Facilities management is the integration of processes within an organisation to maintain and develop the agreed services which support and improve the effectiveness of its primary activities"

The multitude of definitions demonstrate that the field of FM is diverse and interdisciplinary (Grimshaw, 2003; BIFM, 2014). Drion et al. (2012) give depth to this “complexity of development” (Grimshaw, 2003: p. 50) when addressing the challenge that facilities managers face in integrating principles originating from fields such as business administration, architecture, engineering and social and behavioural sciences. The definition proposed by the BIFM represents an over-arching description that attempts to cover the field in its current state. This definition is deliberately indistinct in order to adequately represent the multi-dimensionality of the field. Whilst these definitions are contradictory on some level, these representations for FM are all valid and could even be considered complementary. Moreover, the nature of FM and the number of differing professions involved in the field means that the definition will continue to expand and develop to adapt to the environments it seeks to support (Nutt & McLennan, 2000). Therefore, a coherent definition for FM is likely to be in dispute for the foreseeable future.

Despite the contested definitions of FM, there is agreement regarding the significant role FM plays in the achievement of an organisation’s core business processes and goals (Barrett, 2000; Langston & Lauge-Kristensen, 2002; Drion et al., 2012; BIFM, 2014). The core business of an organisation refers to the activities in which an organisation will focus on in its operations. FM empowers an organisation to accomplish those core goals through the maximisation of its properties. As such, the importance of FM’s role in an organisation’s success is becoming increasingly clear. Sweeney (1996) attributes FM’s rapid integration into an organisation’s strategic decisions to increased competition. However, this is an incomplete account of FM’s ascension to the boardroom. Nevertheless, it is true that increased competition has forced corporations to embrace quality, re-engineer, and re-evaluate processes and management in order to out-perform their rivals (Sweeney, 1996). Grimshaw (2003) articulates that a greater return on an investment (a facility) can be achieved through maximising the performance of that investment. This is achieved through maximising the facility as a strategic resource and a working environment. Thus, viewing the facility as more than just an asset. From this it is clear that the correct management of facilities has never been more vital to the success of an organisation. Subsequently, the FM profession has grown into a globally recognised industry. According to the BIFM (2014); the sector is worth close to £100 billion in the United Kingdom (UK) alone.

It can be concluded that whilst FM owes its origin to the technical-based field of operating a building, it has now expanded to a strategic management discipline vital for the fulfilment of an organisation’s core objectives, and subsequent success. Fundamentally, FM pertains to the economics of owning and managing a building in order to leverage the best outcome for an
organisation. This relies on the principles of a variety of diverse disciplines. As a consequence, there are various tenets and levels of FM which researchers have considered and proposed. Of these, operational and strategic FM has been identified as the main features of FM (Barrett, 2000).

1.2.2 The Division within Facilities Management

a) Operational Facilities Management

Operational FM involves the day-to-day management and operation of a building. Its fundamental priority is to support the daily business functions of an organisation through managing the various services of the facility (Joudah, 1996). Langston and Lauge-Kristensen (2002) describe activities relating to operational FM as ones that do not involve investigation and decision-making but are of importance to the infrastructure, which relates to business output. Alexander (1996) states that an effectively planned facility with quality support services can create substantial returns for a business. The emphasis of operational FM is on technical issues at an operational level (Joudah, 1996). Therefore, the effects that operational FM has on an organisation are limited to a technical and supportive capacity and represent the lower level of the FM hierarchy. Barrett (2000: p. 426) further explains this by categorising operational FM as “reactive” in the sense that it reacts to the operational requirements of the facility’s occupants to provide a comfortable, productive working environment. A large facet of this “reactive” FM is associated with cost efficiency. It is this cost-cutting view that makes the principles of operational FM easier to understand and implement than its strategic counterpart (Duffy, 2000).

b) Strategic Facilities Management

Strategic FM operates at a higher level than its operational counterpart and forge a strong connection between core business goals and the facility. This tenet of FM looks beyond merely supplying an organisation with a functioning workspace; it amalgamates the facility and workplace objectives with the corporate strategic plans of an organisation. This is achieved by determining the purpose and objectives of an organisation, then formulating integrated plans and actions to achieve those goals with the use of the facility (Langston & Lauge-Kristensen, 2002). As such, effective utilisation of strategic FM requires an in-depth understanding of the organisation and its role within industry.

Duffy (2000) found operational links to FM are more active than strategic links in the corporate world. A possible source of operational FM’s prevalence is the incomplete understanding many
businesses have of their core business. Consequently, many organisations do not recognise the depth of opportunities that their facilities can offer their business. Despite this, many organisations are currently seeing the value of incorporating FM strategies at a boardroom level (Alexander, 1996). More work is required to appreciate the interactions and inter-dependencies at the strategic level of FM. The fundamental difference between strategic and operational FM is the “proactive” vs “reactive” approach which they adopt. This “proactive” component inherent to strategic FM affords it the ability to identify and exploit opportunities for further development. Thus, it is the essence of implementing effective and comprehensive FM solutions.

1.2.3 Facilities Management Moving Forward

The field of FM has begun to be recognised as essential to the core business processes of the modern corporate organisation (Drion et al., 2012). However, with the downfall of traditional organisational hierarchies, and the resultant increase in the decentralisation of companies, it is unclear what the future holds for FM. Subsequently, speculation regarding its future is ever-present throughout academia and many theories exist as to its likely direction. Despite this uncertainty, there is a consensus amongst the FM community that the fate of the profession rests with its ability to adapt to changing environments (Price & Akhlaghi, 1999; Duffy, 2000; Nutt, 2000; Price, 2000; Grimshaw, 2003; BIFM, 2014).

Change is an ever-present feature of organisational life (Burnes, 2004; Todnem, 2007). Therefore, organisations have to be able to adapt to environments that are susceptible to rapid change in order to survive in today’s corporate setting (Otley, 1994; Treux et al., 1999; Grimshaw, 2003; Todnem, 2007). Similarly, if FM is to secure a future as a management discipline, it too must adapt to accommodate change. Treux et al. (1999) identified the major forces driving change within the corporate landscape as rapid development of commercial technology, global markets and shifting organisation structures. Emerging concepts within organisational management theory contradict traditional management practice, and establish that organisations are not underpinned by stable structures (Treux et al., 1999). As a result, recent years have seen a shift away from traditional hierarchies towards open network organisations where rigid structures of traditional workplaces are replaced by flexible ones that are better suited to the organisational theory of today (Larsen et al., 2011). In other words, a modern organisation needs to be emergent, with no pre-defined path, in order to accommodate vast uncertainty and change (Treux et al., 1999). This has fundamentally changed the relationship between a business, its people, and its physical assets (Grimshaw, 2003).
Resultantly, the arena for the development of FM has fundamentally changed and will have a significant impact on the future of the profession.

Nutt (2000: p. 124) put forward the most valued speculation regarding the future development of FM by proposing a forecast that involved four competing “trails”: business, people, property and information. The business trail focuses on operational and life-cycle imperatives of a facility. The people trail considers the human resource aspect of managing a facility which is “people-based” rather than “property-based” (Nutt, 2000: p. 127). The property trail involves creating facilities that are responsive to change and can be easily reconfigured to suit different user requirements. Lastly, the information trail pertains to the use of technology to share information about numerous facets of a building to facilitate the effective design of facilities that allow for decreased life-cycle costs, increased management efficiency and occupant productivity. Nutt (2000) concluded by suggesting that the four trails may merge and create a new trail. Following this logic it is proposed that FM at the urban scale could synthesise aspects from all four trails. The efficiencies and cost saving techniques deployed by cities represents the “business” trail; social services and managing the interactions between state and citizens could be viewed as the “people” trail; “property” refers to maintaining the infrastructure and its uses; and the “information” trail can referred to the way decisions regarding urban facilities are made, and how that information is shared with members of the public. This notion is corroborated by Larsen et al. (2011) who advocated that FM should extend beyond individual organisations, or buildings, to fully recognise the contribution facilities can have on an urban community and economy.

**The Emergence of Urban Facilities Management (UFM)**

Recent growth in academic literature and research has facilitated the implementation of innovative FM strategies. The result is an expansion of the interdisciplinary and organisational boundaries of FM (Weerasinghe & Sandanayake, 2015). At the building level, integrated FM has shown to be an effective function for organisations by combining these disciplines into a unified support service (Kincaid, 1994). A further expansion of FM’s roles has been witnessed through the emergence of UFM. UFM is a concept that has evolved out of FM which operates at a larger scale than its conventional predecessor. Michell (2013) maintains that taking the principles of FM at a “micro”, singular building, scale and applying it to a “macro”, urban, scale can create an effective standard in which to manage an urban precinct. The foundation of FM is based upon the relationship between place, space, and people. To this end it is possible to broaden these foundations to the urban context. This is exemplified by using the BIFM definition of FM (page 3) and applying it to an urban
scale: *integrating the services and processes* within an urban precinct (transport, waste management, ICT infrastructure) *to develop and maintain services that support and improve its primary function or activity*. This illustrates the applicability of FM principles at the urban scale (Michell et al., 2008). The primary function or activity for an urban precinct can be different for each urban precinct, just as it is for organisations. However, keeping in line with the challenges currently facing urban environments, and for the purpose of this investigation, the primary objective of urban precincts will be assumed to be sustainable development. Michell (2013) contends that using FM’s understanding of the relationships between space, place, and people puts the concept of UFM in a position to deliver results in the attainment of sustainable cities. To this end, UFM can be seen as a framework for promoting sustainable development.

### 1.2.4 Sustainable Development

The concept of sustainable development has become the largest global political challenge of the past couple of decades. Sustainable development stems from the belief that mankind has a responsibility for the well-being of future generations (van den Bergh & Nijkamp, 1991). This notion was formally established by the Brundtland Commission’s report “Our Common Future” in 1987 which set the conceptual underpinnings for sustainable development. The document set to bridge the gap between environmental concerns regarding ecological consequences of human activities and socio-political concerns about human development (Robinson, 2004). The major ideology behind the notion was for development of economic systems that respects the limits of natural systems (Bithas & Christofakis, 2006). This highlighted the necessity for a drastic change in the current modes of production, consumption and decision-making (van den Bergh & Nijkamp, 1991). Since the publication of the Brundtland Report sustainable development has become the world’s political objective to combat environmental degradation (Bithas & Christofakis, 2006).

Essentially, sustainable development brings into focus a range of demands and attempts to consolidate social, economic and environmental issues (Robinson, 2004). Pieterse (2010) further defines the premise of sustainable development as growth that balances economic, social and ecological imperatives. This brings to fruition the concept of sustainable development as a transdisciplinary field of research that draws upon many different skill sets (Robinson, 2004; Baker, 2006; Jabareen, 2008; Metzger & Olsson, 2013). The most suitable level at which these skill sets come together in the same space is where human life and activity is concentrated: namely, urban areas. This is exemplified through urban systems’ role in pioneering the pursuit of economic and social objectives. However, the dominant feature of urban systems: humans, have evolved through
innovation, largely at the cost of the natural environment (Bithas & Christofakis, 2006). Consequently, the notion of sustainable development needs to be directed towards the relationships between nature and society (Littig & Grießler, 2005). Whilst sustainability is seen as a global issue; global challenges such as climate change, over-population, and environmental degradation are just as significant to urban environments. Over 50% of the world’s population resides in urban areas and this figure is set to rise steadily over the following decades (United Nations, 2011). Urban areas are the hub of anthropogenic systems. Since anthropogenic systems are responsible for the vast majority of looming ecological concerns, logically, it stands that the main focus of sustainable efforts needs to be addressed within an urban context. Devuyst (2001a: p. 20) corroborates this notion when stating that: “The economic, social, political, and environmental futures of the planet will most certainly depend on how urban issues are addressed.” Moreover, in a globalised world, it is important to understand that cities are inherently linked and urban systems influence the sustainability of, not just the surrounding ecosystems, but other cities and ecosystems around the world (Bithas & Christofakis, 2006; Metzger & Olsson, 2013). Whilst cities are key perpetrators of negative global ecological change, they are also integral to the goal of global sustainability (Devuyst, 2001a).

Building on this, it is reasoned that an effective way to establish more sustainable human systems, and thus cities, is at the community scale. Here, issues concerning sustainability can be addressed at the source of human activity. The past two decades have seen a large increase in research relating to the implementation of sustainable community development. A recent example of this has been witnessed through the introduction of sustainable community rating tools (SCRTs).

1.2.5 Sustainable Community Rating Tools (SCRTs)

The study will focus on a particular attempt to operationalise sustainable development; SCRTs. SCRTs are a framework intended to promote urban sustainability through the verification of communities according to an assessment criteria. These tools, also known as community assessment tools or neighbourhood assessment tools, have seen growing global interest over the past decade. A clear reason for the tools’ popularity is that they can greatly assist policy makers in clarifying whether initiatives towards sustainable development are making progress (Devuyst, 2001a). Accordingly, various SCRTs have been developed for this purpose with the most recognised being: BREEAM, LEED-ND, and CASBEE. These tools, in particular, have received mainstream international recognition over the past decade.
Although the tools support a common goal; the application, scope, and terminology differ vastly. To this end it is important to point out that the terms community, district, urban precinct, and neighbourhood; whilst may have different connotations in different contexts and locations, are used interchangeably throughout this study. This is to accommodate the differing terminology used by the SCRTs in different contexts around the world. The above terms are defined by the following conditions:

- A geographical area, generally falling within the jurisdiction of some form of city or regional authority,
- Where a population of humans share a physical space and interact with one another and the surrounding environment,
- Where people move in and out of this physical area,
- Where there are economic actors, and
- Some form of infrastructure to support human activity. (Unicef, n.d)

A number of SCRTs have been selected for the purpose of this investigation. The selection pool represents the tools that have received the most attention and international applications. These tools are as follows:

- Leadership in Engineering and Environmental Design for Neighbourhood Development (LEED-ND), North America.
- Building Research Establishment Environmental Assessment Methodology- Communities (BR EEAM-C), UK.
- Comprehensive Assessment System for Building Environmental Efficiency for Urban Development (CASBEE-UD), Japan.
- Green Star Communities (GSC), Australia.
- Estidama Pearl Community Rating System (PCR), United Arab Emirates (UAE).
- Living Community Challenge (LCC), North America.

SCRTs are fast becoming the favoured sustainability framework for local governments and large-scale developers in the “developed world”. However, many questions have arisen surrounding this methods efficacy in operation. The most significant of which surround the issues of location and context. The above list highlights the difference of the tools’ origins. As a consequence of their origins, each tool assigns a certain level of importance to the varying sustainable factors based on stakeholders and the pressing environmental concerns within that locality (Karol & Brunner, 2009). For example, the tool from the UAE has a greater focus on water scarcity than the tool from the UK.
As such, the number and variety of criteria addressed is not consistent across the tools (Sharifi & Murayama, 2013). This brings into question their suitability as a globally applied intervention.

Furthermore, the criteria set out by the tools are seen in isolation of one another and represent a reductionist approach to sustainable development. This largely ignores the necessity for sustainability frameworks to look holistically at an urban area. Consequently, management of the inner processes of transitioning towards urban sustainability are poorly addressed by the tools. It is argued that a more systemic approach needs to be incorporated into the application of SCRTs. (Meadows, 1998; Karol & Brunner, 2009) suggests that the tool’s criteria are assigned as a result of their compatibility with government processes, directives, and funding which varies from one jurisdiction to another. Consequently, there are problems surrounding the subjectivity and ambiguity of the weighting of these tools that cannot be mitigated by developing a standardised framework (Sharifi & Murayama, 2013). Despite this, SCRTs are applied generally across the globe, often in areas with contrasting natural, political and economic environments.

Although initiatives such as SCRTs are a definite step in the right direction towards urban sustainability, it is clear that this framework needs to adapt its approach to realise this. De Graaf et al. (1996) argue that sustainable development can only be achieved if socio-economic, cultural and environmental processes are regarded as connected within one system. It is argued that systems thinking can expand this framework to accomplish this. Chapter four will include an in-depth review of the selected tools in addition to a discussion surrounding their strengths and weaknesses. This serves to assess their applicability within the “developing country” context of South Africa.

1.2.6 The Inefficiencies of the Execution of Sustainable Development

There have been many attempts to place the concept of sustainable development into action, with little real signs of success (Baumgartner & Korhonen, 2010). Presently, much of the policy direction regarding sustainable development uses the Brundtland Commission as a point of reference (Ness et al. 2007). The issue with using the Brundtland report to support policy is that it was designed to describe a concept and not specifically guide policy. As a result, it is vague and provides little guidance for implementing the concept in a real-world scenario. Jabareen (2008) highlights the lack of operative definitions for sustainable development that accurately translate the ideals set out by the report. Moreover, Hardi and Zdan (1997), and Devuyst (2001a) suggest that the design of a
sustainable world is reliant upon an operating set of values. In spite of this, there is still an absence of a proven set of operative guidelines for sustainable development.

Bithas and Christofakis (2006) ascribe the lack of consensus regarding the operational content of environmentally sustainable development to the inability of practitioners to formally define the conditions of, and requirements for sustainable development. Lélé (1991) attributes this to the ever-changing and evolving world priorities regarding the achievement of sustainable development. Furthermore, sustainable development is not a fixed harmony and the concept is value-based. Initiatives to implement sustainable development need to acknowledge that (De Vuyst, 2001a).

Innes and Booher (2010) attribute ineffective sustainable development policy decisions to policy’s failure to account for unexpected or random events, such as: technology, economic events, and natural disasters. Moreover, the complexity of the urban environment is such that formal policy cannot effectively plan for sustainability, particularly from a “top-down” strategy (Innes & Booher, 2010). Building on this, Baumgartner and Korhonen (2010) criticise the reductionist approach that sustainable policy makers employ which leads to problem displacement and shifting. This also leads to a “one-pillar” model for sustainability that extends priority to ecological dimensions. Whilst the “three-pillars” of sustainability (social, economic, and environmental) are the basis for wide reaching policy, the dimensions are placed roughly next to one another without being integrated into a whole (Littig & Grießer, 2005). It is widely recognised that environmental, social, and economic dimensions need to be brought together to address issues of environment and development, which are interconnected (Blackmore, 1997). However, reductionist approaches commonly rely on the empirical data to measure a single aspect of sustainability in isolation. Many of the metrics used do not demonstrate a causal link between human activity and the concept of sustainability. Empirical outcomes are then used to measure progress and inform policy relating to sustainability. Not only are these measurements loosely associated to sustainability, they fail to measure many aspects of sustainability which are poorly defined by metrics, and do not consider the connections and inter-relations between these aspects. Additionally, and perhaps most importantly, these figures provide information at such macro levels they convey little meaning to people at the urban or sub-urban level.

Bithas and Christofakis (2006) propose that an evaluation of a city’s sustainability requires a specific framework that can take into account the environmental and socio-economic context of each particular urban system. Although recent times have demonstrated a deepening emphasis on public participation, problems and solutions are typically predefined by a controlling agency. This means that public participation can only comment on an issue where the boundaries have been predefined.
and the agenda set (Hutchinson, 1997). This means that sustainability efforts are often prescribed to a given area by an agency unfamiliar with that area. Innes and Booher (2010) suggest that it is essential for each city or region to design its own strategy in a view that serves its own shared goals for sustainable urban development. Lélé (1991) and de Graaf et al. (1996) stress the necessity for a more flexible, diverse and location sensitive approach to developing strategies for sustainable development. Furthermore, de Graaf et al. (1996) propose that a complete strategy for the achievement of sustainable urban development should consider all activities, the relations they have with each other and their side effects. Hence, in order to develop a comprehensive strategy for sustainable development it is necessary to look at the systems central to the urban environment. This requires deeper investigation into urban systems so that frameworks can emerge and be defined at this level.

This raises the question: If sustainable urban development depends on many factors relating to an areas context, how can an effective global rating tool acknowledge this? Furthermore, regional and local context is intricately linked to sustainable variables; thus there cannot be a universal rating system that can provide an appropriate evaluation of the sustainability of any given community. Conceivably, an emergent approach that looks holistically at sustainability and urban systems can create frameworks for sustainable urban development that can adapt to best suit the particular urban area requirements of an urban system. It is proposed that the principles of systems thinking can bridge the gap between sustainability goals and their methods of implementation.

1.2.7 The Implementation of a Systemic Approach to Sustainable Development

Factors affecting the sustainability of a city do not exist in isolation. They are inter-dependent and constantly interacting with one another. Therefore, it is logical to incorporate the relevant dynamic factors into a framework that supports urban sustainability. This requires a shift in thinking away from viewing issues in isolation towards a holistic view that accounts for the myriad of interactions that exist within the urban system. This shift forms the fundamental premise of systems thinking.

The emergence of systems thinking stems from the inability of empirical techniques to account for complex phenomenon. This necessitated a shift in thinking away from “single machines” to those of “systems” (von Bertalanffy, 1968). Systemic views support holism and thus contrast the ontology of reductionism. Hutchinson (1997) stresses the need to introduce systemic solutions to environmental issues rather than those which reflect contemporary power structures. In a rudimentary sense, a
system can be defined as a group of related parts that move or work together (Merriam Webster, 2014). Systems theory uses this definition to create theoretical models that attempt to understand the ever increasing intricacies of the world we live in (Boulding, 1956; Mesarović, 1964; Checkland, 1999). This became necessary because there were certain phenomena, particularly within the realm of social sciences that could not be explained using traditional empirical/mechanistic approaches (Boulding, 1956; Platt, 1964; Checkland, 1999). The fact that anthropogenic elements are the dominant features of cities (Bithas & Christofakis, 2006), means that any attempt to institute change within a city requires mechanisms that help comprehend human/social systems. Additionally, understanding these systems is a powerful tool in facilitating the design and creation of a desired future for that system (Gharajedaghi & Ackoff, 1984). Therefore, it follows that urban sustainability needs to viewed and addressed as an integrated web of systems.

Boulding (1985) introduces the viewpoint of Earth as a general system with a complex, evolving structure of many different systems. The “system” is an artificial device based on human perception which is imposed upon a discrete part of reality (Bell & Morse, 1997). Therefore, every issue is perceived differently by each observer or actor according to their values and experiences (Drinnan, 1997). Thus, it follows that environmental issues are affected by powerful and frequently antagonistic participants. Finding solutions which are effective and inclusive can be challenging (Hutchinson, 1997). A systemic view of the world is one that examines issues from multiple perspectives and concentrates on the interactions between the different components of the problem to consider the long-term consequences and side effects decisions; including but not limited to: environmental, cultural, and moral implications (Sterman, 1994; Checkland, 1999). Hence, systems thinking can provide a systems-based framework for tackling real-world problems (Checkland, 1999). Moreover, systems thinking provides an increasingly holistic orientation to complexity that aids the attainment of a comprehensive understanding of the complexities of our world (Buckley, 1967; Boschetti et al., 2011).

Complexity science is a growing body of transdisciplinary knowledge about the structure, behaviour and dynamics of complex systems (Sanders, 2003). A complex system is one that has a vast number of dynamic elements that are strongly inter-related, with non-linear interactions (Haken, 1983; Sanders, 2003; Zhang, 2009). At any level, environmental problems can be viewed as complex (Hutchinson, 1997). Despite this, environmental conflicts are still seen as a linear “zero-sum game”. Overcoming this is where systems methodologies can make their greatest contribution (Hutchinson, 1997).
Complexity theory allows the exploration of common structures between different systems. This offers an advanced tool for modeling the complexity of social and natural systems. The concept is particularly valuable in the study of social systems as there are many immeasurable and unidentifiable changes in complex social systems that may have a significant effect on the state of the system (Boulding, 1985). These notions highlight an integral view towards sustainable issues which can promote the framing, understanding and guidance of economics, science, technology, ethics, politics, and policy. Resultantly, complexity theories have opened windows into a different worldview of a highly dynamic world which is being embraced by many of the world’s leading activists working towards global sustainability (Wells, 2013).

The capabilities and technology to achieve increasingly sustainable development currently exists (White, 2001). What is needed is a more complete understanding of the complex issues that surround sustainability in order to appropriately employ those technologies and capabilities. Contemporary systemic thinking has provided an effective means of describing environmental and development issues. The next stage is to use these techniques to provide mechanisms for producing solutions to these complex dilemmas (Hutchinson, 1997). To this end it is argued that a systemic methodology that draws upon the concept of complexity for the management of urban precincts has the potential to realise a sustainable urban future.

A more fulsome discussion of systems thinking and complexity is provided in Appendix A.

1.2.8 A Synthesis of Urban Facilities Management and Sustainable Development: A Systems-based Approach to Sustainable Urban Development and Management

Transitioning towards urban sustainability and instituting climate protection requires planned change to the way in which cities are spatially configured and serviced (UN Habitat, 2009). Rigid structures of governance and policy-making means that cities are currently incapable of evolving to accommodate the demands of these global challenges (Melvin, 1992; Harter et al., 2010). Urban systems require further specification of the concept of sustainable development which can account for the unique natural and social systems of these urban landscapes (Bithas & Christofakis, 2006). The achievement of sustainable urban development requires a collaborative approach that relies on the efforts of various actors with different skillsets and views. This suggests that the concept of sustainable urban development is an ongoing process. An inability to manage collaboration at this scale has meant that many attempts to operationalise sustainable urban development have failed.
To this end, it is logical to suggest that the process needs to be managed to ensure its achievement towards sustainability. Building on this it is reasoned that sustainable urban development is essentially the same as sustainable urban management and little distinction between the two is made throughout this investigation. Management at the urban scale requires understanding relationships between stakeholders and the environment (Michell, 2013). Hence, the interactions and inter-dependencies of these relationships need to be explored and managed. Moreover, issues and relationships that affect urban sustainability are linked, and therefore need to be tackled in a holistic manner (Devuyyst, 2001b). An integrated approach exhibited within the field of FM can be applied to the urban setting to drive solutions for sustainability in the built environment (Weerasinghe & Sandanayake, 2015).

Michell (2013) describes UFM as the basis for a coordinated, cross-sectoral process to manage and promote sustainability within the built environment. It is believe that this embryonic orientation of FM can revitalise the conventional approaches to addressing sustainability in the urban environment which have seen growing stagnation in recent years. The concept of UFM opens up the already broad sphere of FM to disciplines that include: urban development, urban planning and policy, and sustainability (Michell 2013). A holistic FM model like UFM can integrate governance with urban planning, IT concepts, public participation, as well as the management of various urban sub-systems, to promote sustainable urbanisation (Metzger & Olsson, 2013). Michell (2013) suggests that a deeper understanding of UFM regarding the relationships between the public, private, and participant stakeholders can assist in the achievement of urban sustainability (Michell, 2013). Furthermore, such principles have the potential to install and uphold urban governance platforms which are often absent in modern cities. This highlights the added benefits UFM affords urban sustainability by illuminating broader social imperatives of sustainability which are largely ignored in mankind’s quest for sustainability.

Concepts such as systems thinking maintain that organisations and communities are like living systems that grow, learn, and adapt to their environment (Innes & Booher, 2010). This aligns with a major benefit of applying the principles of FM; enabling organisations to adapt to changing environments (Tobi et al., 2013). This is the defining requirement for sustainability. By applying the principles of FM at the city-scale, it provides a flexible and holistic platform that can facilitate the changes required to sustain life in cities. Furthermore, by incorporating the viewpoints of a multitude of stakeholders and actors, UFM can assist individual and organisational learning in order to implement system-wide solutions to issues relating to urban sustainability. These solutions can better reflect the interactions and inter-dependencies between various stakeholders. From this it is
clear that the principles of UFM and systems thinking can be viewed together as a complementary approach to catalyse urban sustainability.

1.3 Problem Area

The focal point of this research is as follows:

Since there is a necessity for sustainable development at an urban level, it follows that the management of urban precincts need to prioritise sustainability. However, there is little understanding of how to manage a sustainable urban precinct. Whilst there are a variety of assessment models that promote sustainable urban planning these models are yet to prove themselves in practice. Presently there is an absence of an assessment system that offers a holistic approach to sustainable urban development that is appropriate to the context of Cape Town, South Africa.

1.4 Research Question

The research question posed is:

Can a systems-based approach to the management of urban precincts offer a more comprehensive, and context specific, means to delivering sustainable urban precincts or communities?

1.5 Research Aim

The intended aim of this investigation is to:

Establish whether a systems-based approach to urban management can promote sustainable community development in South Africa.

1.6 Research Objectives

The research objectives of this report are as follows:

1 Develop an understanding of the potential role UFM plays in sustainable urban development.
Identify and review current models that promote sustainable development in urban environments.

Determine the applicability of community-scale assessment tools within the “developing country” context of South Africa.

Determine the appropriateness of a systemically aligned process-oriented approach towards sustainable urban development.

1.7 Research Premise

The initial premise for this research is that:

The development of a process-oriented, and systemically aligned, framework for creating and managing sustainable urban precincts in Cape Town is possible.

1.8 Research Methodology

Achieving sustainable development is reliant on the collaborative efforts of a multitude of different people and organisations. This makes sustainability an inherently social endeavour. This means that any research attempting to examine this concept as it plays out in the real-world would need to accommodate the different understandings, beliefs, and values that people assign to the world as they experience it. Additionally, the research must be able to reflect the complexity and context of different social systems. These factors are best incorporated into a research strategy when adopting a qualitative research methodology. Qualitative research is a naturalistic and interpretive approach which aims to provide an in-depth understanding of the social world of the research subjects. This is achieved by learning about their social and material circumstances, their experiences, perspectives, and histories (Snape & Spencer, 2003).

The background to this study has established a need to move away from reductionist approaches of problem-solving to a more holistic and flexible approach. Reductionist instruments of research are often typified by quantitative research where outcomes are expressed empirically. It is argued that empirical outcomes do not account for the richness and complexity of social systems. Quantitative research is largely based upon the notion of positivism (Bryman, 1988). The positivist approach is founded on the idea that facts and values are distinct, making it possible to conduct objective and value-free inquiry. It also purports that the methods of the natural sciences; such as experimenting, modelling and hypothesis testing, are appropriate for the study of social phenomenon as human behaviour is ruled by law-like regularities (Snape & Spencer, 2003). This contradicts the principles of
systems theory and complexity which forms the centrepiece for the theoretical approach to this investigation. Thus, the intellectual underpinnings associated with quantitative research are not consistent with the research aims and strategies of this study.

In contrast, qualitative research supports an interpretivist epistemological belief which asserts that natural sciences are not appropriate for the study of social systems because society is not governed by law-like regularities but mediated through meaning and human agency. Furthermore, findings of qualitative research are inevitably influenced by the researcher’s perspectives and values, making it impossible to conduct objective, value-free research (Snape & Spencer, 2003). Further intellectual underpinnings of qualitative research are phenomenology, symbolic interactionism, constructivism, naturalism, and ethogenics (Bryman, 1988). Amongst these, constructivism is the most applicable to this research. Constructivism is the idea that knowledge is generated through human interaction and experiences with their thoughts, and the thoughts of others. It directs attention to the role of humans, as social actors, in creating scientific knowledge (Golinski, 1998). Its aim as a research strategy is to display multiple constructed realities through the shared investigation of meanings and explanations (Snape & Spencer, 2003). Because the issue of sustainable development engages with issues such as ethics, social justice, community, and a belief that all knowledge is relative to some specific context, it also reflects an epistemology of “contextual relativism” (Bawden, 1997). Thus it follows that any meaningful inquiry into matters regarding sustainable development need to align with such philosophies.

Since sustainability is driven by adaptive change, what is proposed is a shift of focus away from a sustainable quest for individual structures (buildings, transport networks etc.), to the sustainable quest for systems of inquiry (Bawden, 1997). It is reasoned that a deeper understanding of the issues at hand will better inform adaptive change. Therefore it is vital to recognise differences, understand their limitations and think critically about them to introduce a meaningful pattern of learning from which better actions can be made. Hutchinson (1997) asserts that the major aim of investigating systems is to produce useful outcomes, and individual and organisational learning. To this end, it is proposed that creating systems of inquiry, or systems of learning, is a feasible way to institute better paradigms of action to advance sustainability. Based on the above, the systemic instrument from which an inquiry of learning is based for the purposes of this investigation is known as Soft Systems Methodology (SSM).

Given the social nature of the research, and the systemic underpinnings of the investigation, it is important to adopt a qualitative research methodology that is consistent with the aforementioned factors. To this end, SSM was seen as the most appropriate means of providing research outcomes.
that are aligned with the theoretical foundations of this study. SSM is a qualitative methodology whose techniques can be applied to propose improvement to a problematic situation whilst accommodating the various perceptions of the individuals in that situation (Barnden & Lo, 1997). In this case, the problematic situation is sustainable urban development, and the mechanisms employed to promote it. The perceptions of the individuals used for this investigation are stakeholders actively involved in the promotion of sustainable urban development. SSM is an application of systems thinking that develops a set of guidelines for problematic situations (Patching, 1990). Thus, it is based on a particular body of ideas which are aligned with systems thinking (Checkland & Poulter, 2010). SSM provides a structured approach to making explicit, and various, meanings through the development and use of human activity system models (Ledington & Ledington, 1997). These models are then used as an intellectual construct that can inform a deeper understanding of the situation so that meaningful action to improve the situation can be initiated. The use of the framework is flexible and dependent on the situation (Barnden & Lo, 1997). The following section will outline the research techniques that form part of the SSM process.

1.8.1 Research Techniques

In SSM, the approach to data collection is determined by the analyst’s perception of the problem (Hutchinson, 1997). The research objectives of this study will be achieved through the use of the following techniques:

- A critical review of the existing literature surrounding SCRTs, holistic approaches to sustainable urban development, and urban FM and its role in urban sustainability. This relates to Stage 1 of the SSM cycle.
- The review of the literature will inform a deeper insight into the major stakeholders involved in sustainable urban development and management. From this insight, key participants are selected for the purpose of taking part in semi-structured interviews.
- Data collection for the study is generated in the form documentary evidence, mostly in the form of SCRTs, and semi-structured interviews with various key stakeholders. Additionally two distinct geographical locations were selected for the purposes of data collection. Cape Town is the primary research area as it is within this context that the research question is framed. The second location is North America. This region is selected because it is a nucleus for research and development for SCRTs. Moreover, having an area that represents a “developing country” context and a “developed country” context is valuable as it will offer a greater insight into the sustainability imperatives of different contexts. Hence, providing common imperatives from which to base a comprehensive urban sustainability framework.
The two distinct geographical locations are not used as a direct comparison but more as a mechanism to inform deeper insight into the issues of urban sustainability as a concept. Nevertheless, drawing comparisons plays an important role in providing that insight.

- Data collected from the interviews will be analysed and incorporated into the SSM process. This process is outlined in more detail in chapter six.
- The outcome of the SSM process is to define a list of culturally feasible, and systemically viable actions to improve the situation of managing urban sustainability in Cape Town. The intended outcome of the list is to support the notion of UFM as a means to provide a platform for urban sustainability. The list will then be used to determine whether the research question, aim, and objectives are achieved.
- Finally, various conclusions will be drawn followed by opportunities for further research.

## 1.9 Structure of the Thesis

*Chapter one* provides a brief introduction to the various concepts involved in the research; namely FM, UFM, sustainable development, and systems thinking. This presents the main focus of the research area. This is followed by the identification of the research problem area along with the research question, aim, premise, and objectives. The chapter is concluded with a brief discussion surrounding the details of the research methodology.

*Chapter two* through to *chapter five* forms part of what is more formally known as the literature review. Here, the various publications regarding the concepts surrounding the research will be discussed in detail. This has been divided into four separate chapters to provide an adequate background to the issues central to this study.

*Chapter two* introduces urban sustainability. The concept of sustainable development is explored in addition to its practical implications. Furthermore, the case is made for the promotion of global sustainability at the urban and community level.

*Chapter three* focuses on the unique urban landscape of South Africa. South Africa’s history is discussed and its subsequent effect on the form of its cities. This provides the point of departure for a discussion into the challenges South African cities face in the achievement of urban sustainability.

*Chapter four* provides an in-depth discussion on urban sustainability assessment. The use of indicators and their shortcomings are illustrated. Following this, SCRTs are brought forward. A brief introduction into the six SCRT frameworks selected for this study is presented. Thereafter, a critical review of these tools is brought forward followed by a brief discussion regarding the applicability of the tools within a “developing” context like South Africa.
Chapter five introduces the benefits of applying a process-centric approach to the promotion of urban sustainability. This approach challenges conventional approaches to promoting sustainability. The application of UFM as a mechanism to drive such an approach is subsequently established.

Chapter six will document the research methodology utilised in this study. Here, the SSM procedure is discussed and applied to the research. This chapter will present the data collected and deliberate the emergent themes.

Finally, chapter seven concludes the study. The research questions are revisited and the significant findings are re-established. The theoretical and policy implications of the study are established, and the reliability and validity of the investigation is asserted. Lastly, opportunities for further research are identified and presented.
Chapter Two: Urban Sustainability

2.1 Introduction

This chapter introduces the concept of sustainable development and its significance for continued survival of life on Earth. The concept and its ambiguity are discussed in addition to the repercussions this has on the practical application of the concept in the real-world. Many issues regarding the implementation of sustainability as a concept have been witnessed since its inception in the late 1980’s. These issues still persist today. It is argued that a major source of the roadblocks to delivering sustainability is the lack of acknowledgement of the interactions and inter-dependencies that govern effective decision-making for sustainability. To this end, it is stressed that the conventional scope and concept of sustainable development needs to be expanded. This introduces a fourth dimension to sustainability, institutional sustainability.

Following this, the notion that the urban environment is at the forefront of issues relating to global sustainability is established. Thus, it is proposed that effective interventions for global sustainability need to be instituted at the building blocks of human systems; the community.

2.2 Current State of the Planet

Inefficient use of resources, high levels of pollution and numerous social disruptions resulting from industrialisation have resulted in a grossly unsustainable existence for mankind (Dixon, 2004). Unabated population growth coupled with rapid urbanisation, and the social struggles that thrive in over-populated cities, have created many threats to mankind’s continued existence on planet Earth. The growing concerns about a range of environment and socio-economic issues need to be addressed to ensure the future prosperity of the human race (Hopwood et al., 2005). This requires a rethinking of the way human beings interact with one another, and nature (Dixon, 2004).

Technological developments stemming from the past two centuries have resulted in considerable advancements in food production and the treatment of medical issues. This, in turn, decreased infant mortality rates and increased average life expectancy, particularly in the world’s poorest countries (Kinder, 1998), giving rise to an explosion in Earth’s human population. In 1920, the world’s population was less than 1.9 billion (United States Census Bureau, 2013). Currently, Earth has a population of over 7 billion people. This figure is set to grow by another billion by 2025 (United Nations, 2013). This unabated growth has resulted in significant challenges for the survival of the planet’s inhabitants.
The most vital challenges facing humans’ continued existence are: producing enough food to feed the growing population, availability of liveable land for humans, and maintaining the ecological integrity of what is left (Roseland, 2012). Current rates of human consumption require three times the carrying capacity of Earth (Rees & Wackernagel, 2008). Furthermore, the life supporting systems that produce carrying capacity can only thrive under a unique set of circumstances which is provided by Earth’s environment. If these already weakened environments had to fail then continued life on Earth would be impossible. This illustrates mankind’s “obligate dependence” to the productivity and life support systems of the ecosphere (Rees, 1990). Crucial to this intricate environmental balancing act is the world’s climate. Relatively minute changes in climatic conditions can initiate the collapse of entire ecosystems (Environmental Defense Fund, 2014). Since most natural systems are interconnected and inter-dependent, the knock-on effect of the collapse of one ecosystem could have devastating consequences for Earth’s ecology. Accordingly, another significant challenge for humanity is to attempt to curb the effects of climate change.

The most publicised symbol of widespread ecological dysfunction is accelerated climate change (Rees & Wackernagel, 2008). This has the potential to intensify all of the previously established challenges facing human survival. Climate change is caused by the release of greenhouse gases into the atmosphere as a result of both natural and human activity (Government of Canada, 2013). The following activities are responsible for the majority of human related greenhouse gas emissions: burning fossil fuels for energy, livestock farming, creating landfill sites for human waste, and agriculture (World Meteorological Organisation, 2015). The unfortunate, and perhaps ironic, reality is that human life is dependent on those activities which most threaten its survival. Lobell et al. (2008) describe adaptation as the determining factor shaping the severity of impacts associated with climate change. Nevertheless, there are alternatives to the damaging, oil-based, activities on which the world economic system is based. Unfortunately, many influential corporate institutions have vested interests in oil and rely on its extraction to further their corporate agenda. Furthermore, underlying ideologies of economic practise prioritise the increase of production and profits with little concern for the negative externalities of achieving this (Dixon, 2004; Hopwood et al., 2005). The scale of this economic activity is capable of altering global biophysical systems and processes in a way that jeopardises global ecological stability (Rees & Wackernagel, 2008). Whilst the economic system has provided significant improvements in medicine, technology, and goods provision in the last two centuries, it does not incorporate limits to growth and negative externalities into its ideology (Dixon, 2004). Munasinghe (2011) stresses that mankind faces an environmental and resource crisis due to the myopic economic activities that severely degrade natural assets that human well-being depends on.
In spite of a successive increase in awareness about the threats to environmental sustainability (Metzger & Olsson, 2013), many warning signs of catastrophe have been disregarded by powerful institutions of the “developed world” in favour of an increased accumulation of wealth. A current and relevant example of this is the United States Senate’s refusal to accept humanity’s involvement in global climate change (Goldenberg, 2015). This highlights the degree of influence economic powerhouse’s have over political institutions (Dixon, 2004). Caldwell (1990) indicates that the prospect of worldwide cooperation to avoid a global disaster seems far less likely where deeply entrenched economic and political interests are involved. The reality is that political systems often play a role in reinforcing the interests of the economic elite rather than the public and global good, largely at the expense of the planet’s ecological integrity.

The consequences of such an inequitable system are that a small portion of the population enjoys the immediate gains of environmental degradation whilst the vast majority shoulder the huge costs (Munasinghe, 2011). Environmental problems are endured disproportionately more by the world’s poor (Agyeman et al., 2002). Furthermore, the extraction of resources is predominantly outsourced to poorer areas of the globe (Roseland, 2012). Subsequently, 80% of the world’s resources are consumed by the richest 20% of its inhabitants (Munasinghe, 2011). Essentially the people responsible for the vast majority of the world’s pollution pass on the negative consequences of their consumption to the people who are responsible for considerably less pollution. Such consumption habits are commonplace in “developed countries”. However, there is a growing share of the “consumer class” in “developing countries” around the world (Worldwatch Institute, 2015). This results in an incredible strain on Earth’s already precarious supply of resources. As a result, the ecological health of Earth (i.e. forests, oceans, freshwater, and other natural systems) has seen a 35% decline since 1970 (Worldwatch Institute, 2015).

Despite the negative externalities associated with consumerism and economic activity, the benefits in technological advancements cannot be denied. Mass production means that the world’s poor have access to the same technology as the rich. More people have access to health care and financial protection than before (Marten, 2015). Moreover, this has led to an increase in the global standard of living. Yet human well-being is on the decline. The costs associated with maintaining a high-consumption lifestyle has caused many people to be crippled by financial debt (Worldwatch Institute, 2015). Furthermore, there is a strong correlation between household debt and health, both mental and physical (Sweet et al., 2013). Social distress is evident in prosperous and poor nations, where over-population and growing inequality have caused social turmoil (Dixon, 2004). Further issues of inequality are seen in cities around the world where discriminatory planning
practices support spatial and social exclusion (UN Habitat, 2009). Here, impoverished people are forced to live in increasingly dense and unfavourable conditions with less access to public infrastructure and services. Accordingly, these people are less able to avoid the consequences of contaminated water and land, polluting industry, and poor distribution of essential facilities (Agyeman et al., 2002). This fundamentally links socio-economic issues to environmental issues (Hopwood et al., 2005). It is this link that has been largely ignored by sustainability practitioners over the past few decades, instead choosing to divert their attention to the seemingly more pressing matters surrounding ecological sustainability. However, it is argued that social issues, particularly in the less industrialised world, are as immediate a concern for sustainability as the worsening state of Earth’s environment. There is a growing recognition of the inter-relations between ecological threats and a region’s underlying socio-economic structures (Hopwood et al., 2005).

The above highlights the complexity and severity of the current challenges facing humanity. All of these challenges, to some degree, are linked and therefore need to be seen as one, inter-connected concern. Dixon (2004) describes the relevant perspective for human health is at the whole body level since a cell cannot survive apart from the body. Following this it is argued that the relevant perspective for human survival and prosperity is at the global level (Dixon, 2004). Integral to this perspective is knowledge of how the global environment works and how human development interacts with it (Alberti & Susskind, 1996). This requires a systemic approach which re-imagines the way humans interact with one another and the planet. This re-imagination is commonly referred to as sustainable development.

2.3 Sustainable Development: An Ambiguous Concept

The Brundtland Commission (1987) established what is commonly accepted today as the concept of sustainable development:

“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their needs”

(World Commission on Environment and Development [WCED], 1987: p. 43).

Whilst the Brundtland report set the conceptual framework to which the world agrees on to this day, there are countless competing definitions for sustainable development. The ambiguous nature of the report’s definition means that it represents so many different things to numerous different people and organisations (Robinson, 2004). The ambiguity and the various interpretations indicate that the concept is fundamentally infused with multiple objectives and complex inter-dependencies.
(Williams, 1985). Therefore any attempts to articulate sustainable development in a way that most can agree on can only be ambiguous in nature. As such, there are often incompatible interpretations of the concept; this has led to increased debate surrounding the precise meaning of the concept and how to put it into operation (Metzger & Olsson, 2013).

Robinson (2004) argues that the concept's ambiguity makes it unable to be used as a political reference point. Whilst others praise its indistinctness as politically advantageous by assisting organisations with conflicting interests to agree on common goals that otherwise would not have been achieved (Lélé, 1991; Robinson, 2004; Baker, 2006). However, there is also a growing concern amongst academics that the differing manifestations of the concept may represent political positions rather than a scientific view (Andrews, 1997; Mebratu, 1998; Robinson, 2004; Jabareen, 2008). For this reason it is argued that sustainable development should remain ambiguous at a global level and serve to inspire a vision and commitment for humanity rather than alienating support by over-specifying the concept. Robinson (2004) advises that definitions should emerge from various situations that will actively engage relevant interest groups, rather than having one imposed from the outset. It is these interest groups, and not policy makers, who will have the most significant impact in shaping the future for mankind on Earth. Therefore it is vital that they understand the concept in terms they can apply to their contextual setting. Nevertheless, despite the concept's various definitions, it cannot be denied that a dramatic shift in the way human activity is managed and structured is required.

2.3.1 A Shift in Thinking

In the midst of increased global economic insecurity and rapid urbanisation, sustainable development has become the defining challenge of our generation. Transitioning towards sustainability requires fundamental changes in lifestyles, consumption patterns, resource use, and economic systems (Dahl, 2012). Arguably the most crucial factor is encouraging “responsible lifestyles”. Some schools of thought deem human behaviour to be the most significant source of environmental degradation (Ehrlich & Ehrlich, 1991). Although advances in technology can help provide solutions to environmental issues, these practices only serve to treat the symptoms and not the illness. McCool and Stankey (2004) claim that scientific and technical issues have supplanted attention to the moral and ethical objectives of sustainable development.

In line with moral and ethical objectives of sustainable development is human behaviour. Metzger and Olsson (2013) assert that stimulating a change in people’s behaviour towards a more sustainable way of living will accelerate sustainability (Metzger & Olsson, 2013). Baker (2006) asserts that social
systems’ goals need to better incorporate environmental considerations in steering change through structural amendments of economic functions. This places emphasis on humans to be more aware of the consequences of their actions, and to be more aware of the unsustainable systems that are dominant in our world. However, the values required to move society towards sustainability such as justice; moderation; solidarity; and respect for the environment, contradict the dominant materialistic and self-centred values of the economic system and consumer society (Dahl, 2012). It is suggested that the human race will continue to exist under this cycle of destruction, as it has done for centuries, unless reparations are made within the human systems themselves. This requires a structural change to the way human/social systems function. Unfortunately, the extent to which interest in sustainability has translated into fundamental structural shifts in the processes and institutions that govern the relationship between society and the environment remains problematic (McCool & Stankey, 2004). Social dimensions of sustainability have received far less consideration in both policy debate and building practice (Robinson & Cole, 2015).

Ultimately sustainable development is about realising the common benefits of meeting everyone’s needs by working together (Alberti & Susskind, 1996). This can be achieved by aligning sustainability with human development; development of people, for people, and by people (Sachs-Jeantet, 1996). Therefore, economic sustainability should be considered within the limitation that it serves to develop human development and not the other way around.

2.4 Operationalising Sustainable Development

2.4.1 Breaking Down the Concept

To help better understand the concept and how to apply it within a certain situation, it may be necessary to split the term into its two constituent terms: sustainability and development.

The term sustainability originates from the field of ecology and is described as the ability of ecosystems to maintain their essential functions and biodiversity over an indefinite period of time (Baker, 2006; Jabareen, 2008). An ecological system is one which has numerous populations of different species continually interacting and changing; this causes constant adaptation and evolution (Boulding, 1985). Holling (2004) applies this to a human situation by describing sustainability as the capacity to create, test, and maintain adaptive capability. This introduces another ecological term intricately linked to sustainability: resilience. Resilience is described as the capacity of a system to accommodate distress without losing functionality. Adaptive capacity is a central attribute of resilience (Perrings, 2006).
Development is the process in which an individual or group of individuals increase their abilities and desires to satisfy their own needs and legitimate desires, and those of others (Gharajedaghi & Ackoff, 1984). Ackoff and Emery (1972) describe the process of development as progress towards an ideal state; a state that is effectively unattainable since objectives continually evolve to encourage the attainment of more desirable goals. Development involves increasing ability and learning; a developed system can learn, adapt, create, and efficiently employ more resources from its environment (Gharajedaghi & Ackoff, 1984). Therefore development is a process of continuously adapting to changing conditions. Adaptive flexibility is a central theme to development, where systems have the ability to address changing conditions through a process of continuous adaptive learning, and initiate new development trajectories (Rammel, 2003; Bagheri & Hjorth, 2007). Based on this breakdown it is evident that the fundamental premise of sustainable development is centred on adaptive learning and resilience.

Whilst this technical definition provided by systems theorists offers the ideal concept of development, development discourse as it appears in reality paints a contrasting picture. This is particularly the case for much of the “developing world” where attempts to be by “developed” by industrialised nations has often done more to decrease countries’ abilities than it has to build their capacities. Such development discourse has been witnessed across Africa and Asia where western market forces exploit the natural resources of less industrialised nations for increased profits. This highlights a major flaw in the manner in which development discourse is enacted across the globe. Another important consideration is to illustrate the fundamental difference between development and growth. The environment creates limits and constraints to a social system’s growth but the only limitations and constraints towards development lie within the system itself; the inability of a system to learn and adapt to the environment to better satisfy their needs (Gharajedaghi & Ackoff, 1984). Therefore the term development and growth are not complementary as growth has limits whilst development does not.

The inclusion of development within the concept of sustainability shifts the focus from ecology to society (Baker, 2006). Thus, the notion of sustainable development is essentially anthropocentric and directed towards human well-being (Metzger & Olsson, 2013). Hence, it is argued that the scope of ecological well-being is only recognised insofar as its contribution to human well-being (Robinson, 2004; Baker, 2006). Whilst many have criticised the focus of the concept, there is no denying that mankind has the greatest influence on the future of the planet, for better or worse. Unlike animals and plants, human beings have an unprecedented understanding of how the planet works and how they affect it (Devuyst, 2001a; White, 2001). Moreover, it is societal systems that have created an
unsustainable planet. Accordingly sustainable transformations need to be instituted at a human level. Therefore, the primary focus of sustainable development ought to be the centred around the relationship between society and nature (Littig & Grießler, 2005).

Whilst breaking down sustainable development into its component concepts does not serve to dismiss the ambiguity surrounding its meaning, it does however provide enough insight to formulate an idea of how it could be implemented. Combining the two separate concepts of sustainability and development creates a new dynamic concept; sustainable development (Baker, 2006). After gaining a deeper understanding of the concepts in isolation a clearer picture emerges of the complex task at hand in putting into practice sustainable development.

**2.4.2 Issues with Operationalisation**

Since the publication of the Brundtland Report, sustainable development has become the world’s political objective to combat environmental degradation (Bithas & Christofakis, 2006). Whilst this sentiment has reached a level of consensus worldwide, progression of the concept relies on a greater attention to transformation and operationalisation (Gladwin *et al.*, 1995; Villanueva, 1997; Robinson, 2004; Jabareen, 2008). Thus, the debate surrounding the meaning of the concept has naturally been transplanted into the operationalisation of sustainable development (Alberti & Susskind, 1996). And whilst the idea of *three-pillars* of sustainability is not disputed, the same cannot be said for the key objectives, indicators and operationalisation within the three pillars (Littig & Grießler, 2005). As such, issues of implementation are rooted in the ambiguous definition of the concept which has been articulated for a global audience.

Creating a narrative for a global audience is vital as it presents a name and an idea to the issue of sustainability. However, in many cases it has become meaningless to people it requires such levels of abstraction that they are not relevant to daily life. Furthermore, at such macro levels, the scale of required change is so vast that problems of coordination and cooperation across political units are enormous (Bridger & Luloff, 1999). Hence, the main challenge in the decades that have followed the publication of the Brundtland report has been devising ways to implement the concept in everyday terms (Bagheri & Hjorth, 2007). Moreover, the distinct development trajectories in various countries underline the notion that no single strategy will apply equally in different countries (Alberti & Susskind, 1996). Littig and Grießler (2005) go so far as to say that it would be fatal to define a single way to attain sustainability as the complexity and dynamics of social change create too much uncertainty to make a single approach applicable. Subsequently, policies relating to sustainable development will differ vastly depending on the needs of a given population. This creates difficulties
when attempting to put the concept of sustainability into operation (Metzger & Olsson, 2013). As a result, many sustainability practitioners resort to what they know and can apply to broader global issues. Thus, sustainability is largely understood fundamentally as a scientific endeavour, amenable to a scientific solution (McCool & Stankey, 2004).

Commoner (1991) suggests that the main efforts of tackling environmental degradation should be focused on technologically based solutions. However, the ideology that innovation and efficient management alone will create a sustainable future is inherently flawed. Socio-economic structures play a crucial role in sustainability. It is no longer sufficient to meet the standards set by the natural sciences; social processes that shape society’s interactions with nature also need to be evaluated (Littig & Grießler, 2005). A failure to do so has resulted in an over-emphasis on ecological imperatives for sustainability at the expense of social, and to a lesser extent, economic dimensions. As such, implementation of sustainability focuses on the impact of human activity on the environment rather than the interactions and shifting relationship between the two. Social aspects of sustainability should be guided by an analytical concept that provides a sound theory regarding the relationship between society and nature. A lack of such theory has meant that it has hitherto been impossible to assign priorities to social process control mechanisms (Littig & Grießler, 2005). Resultantly, there is a significant degree of disagreement regarding the definition of social objectives and indicators for sustainable development (Omann & Spangenberg, 2002).

In addition to the effect technocratic solutions have on social sustainability, they are problematic in the sense that procedural relations of dominance are left in place. This dismisses any attempt to address much larger structural problems (Bridger & Luloff, 1999). Caldwell (1990) suggests that avoiding global disaster is far less likely where deeply entrenched economic and political structures are involved. For the most part, it is these structures that are responsible for many of the decisions that have caused considerable environmental damage (Yanarealla & Levine, 1992). In this vein it is reasonable to imagine how sustainability could serve to strengthen economic and social conditions which support unsustainable practices (Bridger & Luloff, 1999). Thus there is a fundamental need to address the structures of human interaction and activity in conjunction with technological innovation.

Another issue regarding traditional views and its linear-thinking is the notion that sustainability is an “end-state” or a “static goal” which social systems need to work towards. In reality it is an ongoing process and an “end-state” does not exist as the values and outcomes promoting sustainability will develop over time. Thus sustainability is a moving target, which is continuously evolving as we understand more about social systems and how they interact with the environment (Bagheri &
Hjorth, 2007). However, development planning discourse has remained positivist; believing in objective quantitative measurement (Khakee, 2003). Planning does not attempt to understand a situation, instead planning seeks to set goals and measure the progress towards those goals. In contrast, sustainable development should be considered as evolutionary efforts oriented towards processes and structural change (Bagheri & Hjorth, 2007).

Traditional planning techniques attempt to identify optimal outcomes based on predictions, analyses of options, and vital decisions about the future of a system (Brueck, 2005; Bagheri & Hjorth, 2007). This paradigm is ineffective in a complex world where there is too much uncertainty to make reliable predictions. Brugmann (1996: p. 365) argues that traditionally applied planning does not serve as an effective vehicle for decision-making as it is not suffice to: “steer a complex, long-term process of negotiation and partnership-building, which simultaneously addresses social, economic, and environmental issues...”. Bagheri & Hjorth (2007) imply that there is a much needed shift away from traditional thinking; which externalises uncertainty and views the world as an extended laboratory, to developing strategies that can deal with environmental issues with high levels of uncertainty. In order to combat uncertainty, policy makers and planners must recognise that adaptability and flexibility is key to the success of investments in infrastructure (Metzger & Olsson, 2013).

“Modern urban systems are characterized by complex patterns of inter-dependencies between actors, institutions, functional activities and spatial organisations”

(UN Habitat, 2009: 24)

Now it is understood that urban areas are highly complex, rapidly changing entities which are moulded by a range of factors most of which are beyond the control of planners. Therefore, attempts to implement sustainable development need to accommodate a broad range of issues and responses. Furthermore, relevant trade-offs between these responses, issues and implementers need to be made. Traditional, reductionist, and technocratic approaches cannot achieve this. The above establishes that the conventional approach to implementing sustainability, which is reliant on an abstract concept and technocratic ideologies, is ineffective. There is growing agreement amongst academics that the established scope of sustainable development (social, economic, and environmental) is insufficient to deal with the complexities of urban development (Ameen et al., 2015). To this end, an inclusion of a fourth, “institutional” dimension, is necessary to best achieve urban sustainability (Valentin & Spangenberg, 2000; Spangenberg, 2002; Irurah & Boshoff, 2003; Komeily & Srinivasam, 2015).
2.4.3 A Fourth Dimension of Sustainability

Operationalising sustainable development requires people to work together under a common goal and strategy to achieve it (Alberti & Susskind, 1996). Mechanisms for creating a meaningful common goal, relevant to a city or local level, have been ineffective. Additionally, mechanisms that effectively manage the collaborative process have been missing. The lack of concrete progress in operationalising sustainability has led to a growing desire to include an “institutional” dimension to sustainability. Simply put, the notion of institutional sustainability revolves around linking knowledge to effective action (Cash et al., 2003). This relates to the policies, governing principles and structures, and regulations involved in implementing sustainability (Valentin & Spangenberg, 2000; Wijngaarden, 2001; Spangenberg, 2002; Komeily & Srinivasam, 2015). This is achieved by evaluating how societies can regulate and change their processes to deliver better outcomes towards sustainability (Littig & Grießler, 2005). Institutional acknowledgement within sustainability will also help drive previously disregarded aspects of sustainability: namely, social aspects. This is because it enables an examination of social structures and processes which influence the metabolic exchange between society and nature (Fischer-Kowalski & Haberl, 1993).

The institutional dimension does not view sustainability as an end-state; but an ongoing input-output process (Brinkerhoff & Goldsmith, 1992). This entails participatory processes in decision-making, and democratic and transparent governance (Irurah & Boshoff, 2003). Thus, a significant part of this underpinning is participatory practices which enhance the democratic nature of the way society promotes sustainable objectives (Baker, 2006). Institutional sustainability also has the ability to facilitate linkages between other dimensions and complement them (Spangenberg, 2002). This is vital as discovering mechanisms to reconcile the inter-dependent dimensions of urban sustainability is essential in implementing a unified strategy for sustainability (Ameen et al., 2015).

In the urban context, where various forces and entities influence the decision-making process, it is crucial to add the institutional dimension to the three pillars of sustainability (Sharifi & Murayama, 2013). An effective urban system applies a variety of institutional mechanisms that facilitate communication, translation, and mediation across various boundaries (Cash et al., 2003). These institutional mechanisms usually manifest themselves as intermediary agencies within the urban context. These institutions act as conduits for action between different actors at different scales. Brugmann (1996) argues that sustainable urban development requires management systems for monitoring, evaluation, and controlling institutional behaviours. Thus there is an important link between intermediary organisations and institutional sustainability as these actors can develop rules, norms, and procedures to influence a number of stakeholders (Cash et al., 2003).
Since sustainability is a socially instituted process of adaptive change in which innovation is a necessary element (Kemp et al., 2005), a critical requirement for institutional sustainability is continuity and evolution of policy frameworks that facilitate these initiatives (Irurah & Boshoff, 2003). Given the pluralistic nature of sustainability, planners and policy-makers should give the various stakeholders a more important role in decision-making processes (Sharifi & Murayama, 2015). This process requires trade-offs amongst contending groups with different interests, priorities, and perceptions (Alberti & Susskind, 1996). The process of choice is rich; it can be infinitely varied, and each step can feed back to every other (Ackoff & Emery, 1972). This essentially highlights the fact that the decision-making process is a complex system of learning, where the learning process itself is one that results in adaptive responses to uncertainties (Bagheri & Hjorth, 2007). Building on this, and the notion that the ability to achieve sustainability rests on human systems’ ability to adapt to uncertain environments, an approach to sustainability based on a process of learning could fundamentally aid in sustainable decision-making. Alberti and Susskind (1996) call for an improvement in the way information feeds back into urban decision-making regarding sustainable development.

Thus the essence of what the institutional sustainability can offer operationalisation is acknowledging the context of discussion and decision-making, recognising the need to draw upon multiple perspectives of an issue so that a system can be defined together within a relatable context, versus in objective isolation (Blackmore, 1997).

### 2.5 The Urban Environment’s Role in Sustainable Development

Mass migration of humans to cities means that urban areas are nodes of intense consumption (Rees & Wackernagel, 2008). A nation’s level of energy consumption and greenhouse emissions are positively linked to its level of urbanisation (Jones, 1991; Hosier et al., 1993; Pariakh & Shukla, 1995; Alberti & Susskind, 1996). Furthermore, urban growth is often associated with social imbalances, pollution and undesirable living conditions (Metzger & Olsson, 2013). The predominant picture of the urban landscape is that of dual cities which are characterised by social exclusion, spatial segregation, and mounting urban violence (Sachs-Jeantet, 1996).

In addition to social issues, the majority of global, and regional, environmental concerns originate in cities (Alberti & Susskind, 1996). In a globalised world where production is often outsourced to developing countries, the ecological cost of the producing goods overseas must be factored into
sustainability at a local level. This facilitates a more comprehensive portrayal of a city’s sustainability (Metzger & Olsson, 2013). Hence, there is a causal link between urban areas and global ecological decline (Rees & Wackernagel, 2008). This highlights the fact that cities are systemic in nature and are intricately linked to one another, as well as a global system. Thus, attempts to address global ecological challenges need to acknowledge the significance of cities. The pathway of urban development in the following decades will play a crucial role in issues such as climate change and natural resource depletion (Alusi et al., 2011). Globalisation has introduced the notion that cities are nodes for international economic and cultural systems. A consequence of this is that the urban space has never before been so influential in instituting global change.

The above highlights the crucial role that the urban environment plays in social, economic, and environmental sustainability (Mori & Christodoulou, 2012). Urban development is beginning to be seen as a solution to sustainability concerns rather than the cause of them (Metzger & Olsson, 2013). Urban design and development are viewed as an instrument to shape and determine the pattern of a city’s resource usage and resilience to change (Ameen et al., 2015). Cities no longer just the setting in which these global issues play out, they are actors in the process of transformation. Accordingly, it is necessary to assess how cities can play the role of economic, social, and cultural driving forces to create innovative solutions to these global issues (Sachs-Jeantet, 1996). Urban areas are the lowest level where integrative, holistic and sustainable solutions can be used to resolve global issues (Aalborg Charter, 1994 cited by Berardi, 2013). Since each city has a unique set of problems dealing with sustainable development, it is impossible to prescribe one standard solution for these issues and each city requires a specific vision and tailored responses to deal with them (Devuyst, 2001b). The challenge for urban sustainability is to find local solutions to the growing global crises we face (Sachs-Jeantet, 1996). To this end, it is argued that one needs to drill further down into the urban system to institute change at the essential building blocks of the urban, and social, system; the community.

### 2.5.1 Sustainable Community Development

Political and cultural differences regarding attempts to realise global sustainability provides a key justification for the development of sustainable communities (Bridger & Luloff, 1999). Urban sustainability is characterised by increasing mutual interactions between local and global processes (Munda, 2001; Ameen et al., 2015). The community is the fundamental building block of a city (Sharifi & Murayama, 2013), and is the basis of locality. Thus, Mehta (1996) argues that if sustainability is to be achieved at a global level it must be achieved at a local level. The community is the minimum scale to take into account social, economic, and institutional dimensions of
sustainability (Sharifi & Murayama, 2014). Hence; the needs, understanding, awareness, and aspirations of local people and authorities with regards to sustainability can be best considered and implemented at the community level (Yuan et al., 2003). The main aims of a process of sustainability at this level are establishing a common vision, assessing existing local conditions, developing shared strategies, and establishing a framework for the sustained implementation of these strategies (Brugmann, 1996). Sustainable community development is a participatory, holistic, and inclusive process that seeks to balance economic vitality, ecological integrity, social equity, and civil democracy.

In response to the growing recognition that community-based interventions can accelerate global sustainability, Local Agenda 21 (LA21) was published. This was a product of the 1992 Rio Earth Summit in Brazil. It was the first formal recognition of the significant role local authority’s play in development issues (Mehta, 1996). This document was instrumental in creating a wide ranging awareness of the importance of implementing sustainable policy at the local level (Brugmann, 1996). The document set to create concrete plans for action that local municipalities could use in operating sustainability at the community level. This sought to expand municipal mandates beyond traditional roles as service providers. The expansion included roles such as becoming catalysts for public-private partnerships, economic growth strategies, and improving public participation and governance (Goebel, 2007). Thus, the agenda places local authorities in a position to be able to play an instrumental part in global sustainable development through the direct intervention in service planning and provision functions (Mehta, 1996). LA21 is a short yet compelling guide to developing sustainability at a grassroots level and prescribes what needs to be done to achieve it. It requires a distinct method of service delivery which facilitates mediation between the competing issues of sustainability through creating a common platform of engagement between role-players (Mehta, 1996).

A major criticism directed at LA21 is its inability to assess any real measure of success. This is compounded by the lack of accurate and comprehensive databases relating to its assessment (Roberts & Diederichs, 2002). As a result, there is yet to be widespread dissemination of these principles in action, particularly in the “developing world”. In spite of the clear and pragmatic approach outlined in the Agenda, it provides with little insight into the vehicles that will drive and manage the complex process of sustainable community development. Furthermore, existing practice of sustainable communities focuses on the outcomes of planning, design, and construction (Xia et al., 2015). Brugmann (1996) stresses that a carefully crafted response from local institutions is required to manage the pressures of sustainable community development. Additionally, too much
responsibility rests on the shoulders of local government to drive the LA21 process. Consequently, the operational success of LA21’s implementation is ultimately dependant on the operational capacity, and political will of the local government implementing it. Many local government institutions lack the necessary organisational capacity, and political will to successfully implement LA21. This is particularly apparent within the “developing” context. This highlights the significant role local authorities play in the achievement of sustainable community development. Hence, it is reasoned that better mechanisms need to be in place to satisfy the fulfilment of Local Agenda 21 through a clear and broadly applicable process for action.

2.6 Conclusion

The ever worsening state of Earth’s environment has created significant challenges for the future of life on the planet. The idea of a just and equitable society is still far from realisation as the global elite continue to build wealth at the expense of the poor. In order to seek reparations for these considerable concerns it is necessary to reconsider the way in which human activity is structured and operated. This consideration was introduced as the concept of sustainable development following the publication of the Brundtland report. The concept has many interpretations and consequent issues regarding its implementation. Dominant reductionist approaches have had little effect on the state of Earth’s environment. More flexible approaches to sustainability need to be encouraged. Here, emphasis is placed on the process of adaptive learning. This will help facilitate meaningful and effective decisions to promote sustainability. The most effective mechanisms to ignite required change needs to emerge out of areas where human systems are most concentrated; urban areas. This builds the case for sustainable community development and its significance to global sustainability. At this level, people can articulate the ambiguous concept of sustainable development in a way that can relate to their reality and their values. It is at this scale that effective operative strategies for urban, and in turn global, sustainability need to be developed. The following chapter articulates the urban landscape of “developing” South Africa.
Chapter Three: The Urban Landscape of a “Developing” South Africa

3.1 Introduction

In this chapter the urban landscape of South Africa is described. This includes an historical overview of South Africa and the implications for the spatial layout of its urban environments. This provides a point of departure to explore the significant challenges affecting the dissemination of urban sustainability in South Africa. Building on this, the shortcomings of government in terms of structure, policy-making, and service delivery are also related to issues regarding sustainable urban development.

3.2 A Brief Historical Overview of South Africa

South Africa has a unique and tumultuous history which is commonly characterised by racial and territorial conflict. After a lengthy period of colonial rule, South Africa was subjected to several decades of institutionalised racial segregation and oppression during the apartheid regime (SAHO, 2015). Whilst democracy was finally established in 1994 when Nelson Mandela was elected as president, South Africa is still struggling to heal the lasting scar that colonisation and apartheid left behind. This legacy is reflected in vast inequality of wealth and land ownership (Swilling & Annecke, 2012). In the two decades that have passed since the apartheid regime was abolished, racial inequality is still rife and South Africa’s new democracy has been characterised by instability, civil unrest, political corruption, and poverty (Goebel, 2007). Thus democracy has done little to create a more just and equitable nation. The only obvious transition is that the elite are no longer exclusively represented by white South Africans as non-white South Africans have been allowed to ascend political ranks. (Dewar, 2000).

3.3 Urbanism in South Africa

South African cities have a unique and complex history (Goebel, 2007). The urban landscape of South Africa has predominantly been formed by two forces: apartheid, and the modernist planning techniques imported from Europe (Dewar, 2000). Planning and housing policies under the apartheid regime represented an extreme example of “modernist” or “Fordist” planning in action (Parnell, 1997), and buffer zones between defined social groups according to ethnicity led to low density
urban development (Mackay, 1999). Subsequently, the most outstanding characteristics of South African cities are their horizontal sprawl and segregation (Schoonraad, 2000). This has made them dysfunctional and unsustainable. A major challenge encountered by African cities is created by antiquated planning approaches instilled by colonial ideals (UN Habitat, 2009). As a result South Africa’s urban geography remains strongly defined by race (Goebel, 2007). South African cities typify high levels of racial, socio-economic, and functional segregation. This apartheid city form is still being perpetuated and reinforced by current land market forces and uncontrolled urbanisation processes (Schoonraad, 2000). This segregation has resulted in a unique challenge for sustainable urban development as certain neighbourhoods embody “developed” infrastructure, services and consumption. Conversely, outlying “informal” suburbs represent a “developing” context characterised by poor infrastructure, limited services, and severe poverty. The needs of these contrasting communities differ vastly. Correspondingly, their needs to achieve sustainability will also differ (Devuyst, 2001b). Hence, strategies for sustainability need to be flexible enough to accommodate a variety of different contexts and urban pressures within a single city.

Urbanisation in South Africa typically occurs as massive unplanned peri-urban growth (Mbiba & Huchzermeyer, 2002; Goebel, 2007). The result is that the majority of the urban poor population are forced to take up residence on the outskirts of cities in informal settlements whilst the wealthy live in sprawling suburbs close to good transit links. Informal settlements are areas where groups of dwellings have been constructed on land that the occupants have no legal claim to (United Nations, 1997). The houses are typically made of building refuse and there is little infrastructure and/or formal planning in these communities. The process of urban growth has also made a considerable contribution to the rapidly growing pool of urban poor (Dewar, 2000). Subsequently, homelessness and poverty are perceived to be the most glaring sustainability issues in Cape Town, and South Africa (Irurah & Boshoff, 2003).

The current pattern of urban development is entirely unsustainable and substantial urban restructuring is required to improve the sustainability of cities in South Africa (Dewar, 2000). The response is a growing recognition amongst policymakers in South Africa that sustainable interventions are required to improve current urban issues. The City of Cape Town (CoCT) drafted arguably the first systemic attempt to deal with the structural readjustment of urban areas with its Spatial Development Framework (SDF) (Dewar, 2000). The framework is a holistic attempt to manage urban growth in the city and sustainable development (City Space, 2012). Under this framework there are a number of NGOs who work to bring sustainability to South African cities. However, they drive extemporary sustainability initiatives across a variety of sectors which have not
converged into a coherent, systemic approach. What’s more is projects are implemented on a project-by-project basis without significant synergy or impact on the broader urban development agenda. There is also an absence of an explicit national strategy for sustainable development (Irurah & Boshoff, 2003).

Despite the encouraging signs of the SDF and the myriad of NGOs working towards urban sustainability in South Africa, institutional capacity and political will remain the critical, and often missing, variable in ensuring success (Dewar, 2000). Roberts & Diederichs (2002) indicate that urban sustainability initiatives in South Africa commonly lack political support. This could be ascribed to the state of continuous transformation local governments in South Africa have experienced since 1994. As a result, the emergence of a powerful political champion driving sustainability at both a local, or national level remains elusive (Dewar, 2000; Roberts & Diederichs, 2002).

### 3.4 Significant Issues Affecting Urban Sustainability in South Africa

Africa is the fastest urbanising continent, and subsequently the fastest growing continent in the world (Goven et al., 2012). A report compiled by the United Nations (2011) predicted that the urbanised population of South Africa would reach 63.8% by 2015; this is considerably higher than the global average of 53.9%. The speed at which urban populations have grown in the “developing world” have overtaken institutional capacities to manage them (Sachs-Jeantet, 1996). Rapid urbanisation is a recent phenomenon in South Africa (Dewar, 2000). The population of Cape Town grew by 46% between 1996 and 2011 (City of Cape Town, 2013). The sheer rate at which urbanisation is occurring creates a monumental challenge for the City of Cape Town government (CoCT).

#### 3.4.1 Informal Settlements

Many new immigrants have no choice but to live in under-serviced informal settlements on the periphery of urban centres. The proliferation of informal settlements is related to rapid urbanisation, rising unemployment, and the meagre wages offered to the unskilled labour force (Mackay, 1999). Informal settlements, or slums are characterised by high levels of pollution from: a lack of sanitation, poor waste management, and inadequate sources of energy (Goven et al., 2012). As a consequence, residents of these communities are most vulnerable to a range of health problems (Devuyyst, 2001b). Additionally, these areas are socially dysfunctional with high levels of crime, low levels of employment, and low levels of education. In Cape Town, the percentage of all households residing in
informal dwellings is over 20% (City of Cape Town, 2014). Social problems, such as crime, are a massive concern in informal settlements due to a lack of basic policing, services and infrastructure which increases the risk of victimisation (Shaw et al., 2001). What’s more is the quality of public space in these areas is poor, despite the fact that the urban poor spend considerable amounts of time in these spaces as their homes are overcrowded (Dewar, 2000). Goven et al. (2012) proclaim that for many South Africans, their presence in the urban environment is characterised by existence and not meaning.

The outlying locations of informal settlements mean that public transport is inefficient or non-existent. For those who cannot afford their own car, commuting is inconvenient and expensive. Many households are effectively trapped in remote areas (Dewar, 2000). Thus, there is an acute dislocation of people from areas of employment and infrastructure (Goven et al., 2012). Those more sensitive to the reality of poverty suggest that segregated informal settlements are themselves poverty traps (Huchzermeyer, 2001). As a result unemployment in these areas is rife. In these peripheral communities, race and class inequalities regarding the quality and provision of services persist (Goebel, 2007). A report compiled by the Department of Water Affairs in 2012 concluded that approximately 11% of households in South Africa are still awaiting sanitation services (Department of Water Affairs, 2012). The vast majority of dwellings in these areas are erected extemporaneously with whatever materials are available to the urban immigrants. This makes the introduction of formal services a significant challenge for authorities. It is evident that the government has not been able to meet the growing demand resulting from the increase in population. This is most notably seen in the provision of low-income housing and basic services.

### 3.4.2 Housing Policy

Extreme inequalities and urban fragmentation mean that municipalities are struggling to deliver basic housing and services to the growing impoverished population (Goebel, 2007). Main housing problems are derived from the historical legacies of apartheid, most notably in the educational and political structure (Mackay, 1999). Low-income housing delivery has become one of the key programmes of South Africa’s government since 1994 (Irurah & Boshoff, 2003). The Reconstruction and Development Programme (RDP) was a socio-economic policy framework set up by the ANC in 1994 aimed at the final eradication of apartheid and the building of a democratic, non-racial and non-sexist future (O’Malley, 1994). One of the main pillars of its delivery was centred on housing. The RDP was focussed on creating a vision and paid less attention to the design and development of institutional arrangements for the delivery of housing (Mackay, 1999). Resource limitations, and the current mechanisms of housing delivery, are such that the deficit in available housing for the poor
continually increases (Goven et al., 2012). This shortage forces delivery programmes to prioritise speed and affordability over socio-economic functionality. This ultimately means that peripheral locations are chosen for new housing projects, adjacent to existing ones (Schoonraad, 2000). As a result, housing delivery in recent years has failed to contribute to a spatial integration of the urban form, and has instead perpetuated spatial inequalities (Huchzermeyer, 2001). In Cape Town, the loss of agricultural land to urban development between 1985 and 1995 occurred at a rate of 1.8ha per day. Evidently, national housing policies promote diffuse, mono-functional mass housing projects (Dewar, 2000). This reinforces the sprawling patterns that characterise unsustainable South African cities.

Building on the inadequacies of housing policy are the myopic tendencies associated with its implementation. The capital subsidy is recognised as the cornerstone of South African housing policy. Core housing delivery was to be financed solely by the state through an enormous up front injection of state funds into the construction industry. There is growing acceptance that this overly simplistic market-oriented housing policy will not overcome race and class-based spatial inequalities such as those cemented in the apartheid urban form (Huchzermeyer, 2001). Approaches to low-cost housing need to prioritise health and livelihoods for the poor. This includes basic sanitation and affordable services (Goebel, 2007). In a further attempt to reconcile the housing crisis with the lack of available resources to address it, solutions do not go beyond the mere provision of the physical building and are devoid of the infrastructural requirements that enable the creation of a sustainable community (Goven et al., 2012). Thus stakeholders from a range of backgrounds need to be engaged when developing housing interventions. Furthermore, Goven et al. (2012) contend that government must ensure that new neighbourhoods serve as attractors for investment and trade, recreation, and the promotion of socio-cultural tradition. This will act as a catalyst for development on broader cultural and social levels; where the residents develop a sense of belonging and ownership to their community. This will fuel economic development as emotional and financial investment in a community offers an opportunity for local businesses to grow. Ultimately these issues are attributed to the lack of capacity of local and national government. This is a result of the lack of human and financial resources available to these institutions (Irurah & Boshoff, 2003).

3.4.3 Government

Though South Africa has adopted many international protocols and frameworks on environmental conservation and sustainable development, this has not been followed through in implementation in various sectors of the economy (Ross et al., 2010). Typically housing policies focus on quantity, instead of quality, and ignore the most basic sustainability guidelines (Du Plessis, 2002). This is
corroborated by Ross et al. (2010) when arguing that political agendas place more emphasis on the number of houses built than their sustainability, and not prioritising sustainable measures from the outset of projects which means that they are expensive or impossible to implement at a later stage. There is a crisis of human capital in South Africa. This is arguably the biggest obstacle in the implementation of better policies that will aid the development of the nation (Goebel, 2007). The subsequent translation from policy and legislation to implementation of programmes by national, provincial, and local governments has not been systematic or coherent (Irurah & Boshoff, 2003). Subsequently, there is yet to be a clear set of policies that drive urban sustainability in South Africa. This has become problematic at the local level where a lack of capacity compounded by complicated, multi-layered bureaucracies. Many municipal staff members have inadequate training, which leaves government departments over-stretched, under-skilled, and under-resourced (Goebel, 2007). An enormous educational and training programme will need to be initiated if local authorities are going to provide the level of service that is required, and avoid inefficiency and corruption (Mackay, 1999).

The lack of efficiency of local government is reinforced by a culture of lawlessness and political members’ focus on private gain (Schoonraad, 2000). Goven et al. (2012) contend that South African public’s perception of local government is of a corrupt, insensitive, and unresponsive bureaucracy. Sebugwawo (2011) attributes the lack of faith in local government to its inability to engage ordinary people in meaningful political processes. This is compounded by the power given to small groups of politicians in making decisions that critically shape urban development (Schoonraad, 2000).

This, in addition to the inability of the government to provide basic services to the millions of South Africa’s poor is a major source of civil unrest in the country, and there is a lack of legitimacy extended to democratic processes and institutions in South Africa (Gibson, 2003). Whilst South Africa’s long history of activism has brought down immoral regimes such as apartheid, Roberts and Diederichs (2002) highlight a considerable challenge for local governments is replacing that activism with a willingness to sit at the bargaining table to discuss difficult issues. This makes collaborative attempts to develop an area difficult. In Durban, sustainability efforts instituted under LA21 have had a limited impact due to the tensions that exist between local governments and local communities (Roberts & Diederichs, 2002). In some cases this has resulted in a breakdown of local government, administration and services, educational, and health services in impoverished communities (Devuyst, 2001b). A lack of effective governance in informal settlements has been identified as a key area needing improvement for government institutions (Richards et al., 2007). There is also a need for concerted efforts to include the poor in the policy-making process (Huchzermeyer, 2001). Civic associations and other community groups are often ignored throughout the development process and little meaningful attempts to promote people-driven development are
made (Bond & Tait, 1997). Additionally, cabinet portfolios, which are “fragmented along sectoral lines”, are considered to be the biggest stumbling block in devising effective responses to urban issues in South Africa (Dewar, 2003: p. 217). He proposes the creation of an integrated urban ministry to consider urban development holistically so that urban issues such as housing, transport, and the environment are not spread over a wide range of bureaucratic departments. Thus, the case is made to develop better mechanisms for local governments in South Africa to be more accountable and better equipped in creating integrated development processes.

3.5 The Role of NGOs in South Africa

Shrinking government budgets restrict the capacity of government to provide for all the needs of its citizens. It has become clear that the role that government can play in bringing urban sustainability to South Africa is severely hindered by its lack of institutional and operational capacity. Therefore, sustainable development in South Africa is reliant on the input of non-state actors. Accordingly, government needs to play an enabling role, and work together with a variety of stakeholders (Schoonraad, 2000). Significantly, the greatest impact on housing delivery has been made with various types of partnerships with the state and non-state actors (Huchzermeyer, 2001). Common features in South Africa are pilot projects for sustainability that involve partnerships between government and NGOs. This predominantly involves the work of NGOs, and to a lesser degree, private sector (Irurah & Boshoff, 2003). This role is increased particularly in low-income areas where there is a dearth of investment as private sector views these environments as a sterile, high-risk investment (Dewar, 2000). It is reasoned that NGOs in South Africa play a much larger role in driving sustainable programmes than they would in a “developed” context. Following this, institutional dimensions of sustainability in South Africa are crucial since sustainable outcomes are reliant on the partnerships between state and non-state actors.

Typically NGOs in “developed countries” prioritise creating awareness for certain issues or social movements. In the “developing world” NGOs play more of a supportive role to citizens by meeting the shortfall of government services. In countries such as South Africa the NGO sector has been seeking to find a new role to enable survival, and does not appear to be concerning itself with higher order questions (Mitlin et al., 2007). This highlights the distinct difference between the sustainability needs of South Africa when compared to industrialised countries. Due to the high resource consumption per capita in the global North, issues regarding sustainability are associated with ecological sustainability. In contrast, the “developing world” focuses on the provision of basic necessities; such as adequate shelter, clean drinking water, and safe sanitation (Devuyst, 2001b). This is exemplified by the implementation of Durban’s LA21 where communities within the city
prioritised issues regarding housing, sanitation and safety over broader environmental concerns. These issues highlight the significant role NGOs play in driving sustainability in the “developing” world.

3.6 Opportunities for a Sustainable South Africa

Despite the serious challenges facing South Africa’s quest for urban sustainability there are a number of positives that can be taken from South Africa. Firstly, recent years have seen a development of better-informed and flexible policies that are relevant and responsive to sustainability and the poor (Goebel, 2007). An example of this is the SDF administered by the CoCT. Secondly, low-income areas exhibit many qualities of a sustainable urban area. Here, resource consumption is considerably lower than in the global North. The low-cost housing sector, which makes up a substantial portion of South Africa’s housing sector, is populated by people with relatively inconsequential energy and water use. This makes the ecological footprint of low-income areas negligible (Goebel, 2007). Recycled material is used extensively for the construction of informal dwellings. It is rarely recognised that informal settlements represent a level of sustainable construction that many formal buildings and housing development projects will never be able to achieve (Du Plessis, 2002). Compaction is also well demonstrated in these areas as many residents cannot afford their own motor vehicles. This is becoming increasingly important for urban sustainability as compact communities maximise the investment in utility infrastructure and social facilities. This increases the levels of, and access to, services provided to residents (Dewar, 2000). There is also a high rate of public transport use in these areas. Whilst, this obviously does not depict a benchmark for a sustainable urban area, it highlights the myriad of opportunities that exist to transition to sustainable urbanism. The challenge is to take this opportunity to lever more liveable communities that comprehensively promote sustainability.

Despite this, most urban areas in South Africa would fare poorly in terms of an SCRT developed in the global North. This is because their interpretation of sustainable development pays little attention to many of the above opportunities within a “developed” worldview of sustainability. Western style development models and attitudes do not fully appreciate the opportunities in informal settlements (Du Plessis, 2002). The irony is that these communities are likely to be more sustainable than their industrialised counterparts as the consumption habits of the global North far outweighs that of their southern counterparts. This sheds light on the necessity to develop frameworks for sustainability in South Africa that focus on the concerns that threaten sustainability the most. Any other attempt will prove to be ineffective and meaningless to its actors.
3.7 Conclusion

It is evident from the discussion above that the spatial layout of South African cities has resulted in a unique set of challenges regarding sustainable development. This issue is compounded by ineffective governance, both at a policy and a local level. Government, particularly local government, in South Africa is facing considerable challenges that directly impact the quality of the urban environment and have a resultant effect on the sustainability of urban areas. Responses to these issues are limited by local governments’ lack of institutional and operational capacity. This has resulted in the proliferation of NGOs to help meet the shortfall of government performance. Despite the negative outlook for South African cities there is a wealth of opportunities to develop sustainable urban precincts. Furthermore, considerable interest to date has been demonstrated by community-based organisations to take control of urban precincts and to drive the sustainable agenda in South Africa. However these urban areas do not correspond with the industrialised model of sustainability.

Given the unique set of factors influencing the sustainability of South African cities, it is important to examine means of measuring urban sustainability within this unique context. Prior to embarking on the investigation of the research question for this study, it was necessary for the researcher to develop an understanding of urban sustainability as a broad field and the assessment thereof. To this end, the following chapter provides an overview of this literature.
Chapter Four: Urban Sustainability Assessment

4.1 Introduction

In order for sustainability to be achievable and not just a rhetorical ideal then it has to be measurable. And in order for it to be measurable one has to to know how and what to measure (Bell & Morse, 1997). The ongoing and growing body of sustainability research has enabled practitioners to identify the main aspects that threaten mankind’s continued existence on Earth. These threats are used as a reference point to shape policy direction. After preventative policies have been established and implemented, it follows that the progress and efficacy of these actions need to be measured in order to understand whether they have had a positive effect. Additionally, goals are set to make governments and businesses more accountable for their actions. The Millennium Development Goals (MDGs) are an example of this and were set up as an attempt to bring the concept of sustainable development into the global policy arena. This was done by creating a realistic set of quantitative targets which could hold governments responsible for their performance (Dahl, 2012). As such, the introduction of mechanisms to assess sustainability has helped facilitate the communication of progress across various actors which are key to mutual success in moving towards sustainability (Shriberg, 2002).

Globally, sustainability assessment has received a great deal of attention in the past two decades. Despite there being a number of international efforts for measuring sustainability, few adopt an integrated approach that account for more than one aspect of sustainability (Singh et al., 2009). Moreover, initiatives like the MDGs have paved the way for indicators that make governments more accountable for unsustainable practices at a national level. However, levels below this, such as local government and community-scale measurements, are largely ignored (Dahl, 2012). Brugmann (1996) suggests creating assessment processes that engage with inhabitants in the articulation and analysis of their daily lives. This will help define measurement in terms related to the values and perceptions of the people living in a particular area. Human activity is a cumulative result of over 7 billion autonomous individuals, and assessment mechanisms rarely provide information that is relevant to manage individual actions (Dahl, 2012). As a result, the human factor of sustainability is vastly under-represented by sustainability assessment. Sustainability assessment is required to be more adaptive and cater to the dynamics of the urban environment rather than a case of ticking off a checklist.
This chapter looks at urban sustainability assessment. Initially indicators, the building blocks of assessment, are introduced and discussed. Following that, SCRTs are brought forward. Six of these tools have been selected for the purpose of this investigation. The tools will be analysed and discussed to point out their virtues and shortcomings. Finally, the tools applicability within the “developing country” context of South Africa will be discussed.

4.2 Indicators

Sustainability assessment is instituted at many different scales and in many different forms; from global to local, sectoral to community. Indicators form the base unit of assessment at all scales. An indicator is generally a figure relating to an observable and measurable characteristic than can be used to measure progress of an action (UN Women, 2012). Indicators are then combined as a means to measure a broader topic, i.e. quality of life. Agenda 21 has had a significant role in making sustainability assessment a part of a global discourse by identifying a set of recommended indicators for sustainability at the Rio Earth Summit in 1992 (Dahl, 2012). Agenda 21 discusses the importance of information required for decision-making:

“In sustainable development, everyone is a user and provider of information in the broad sense. That includes data, information, appropriately packaged experience and knowledge”

(United Nations Division for Sustainable Development, 1992: Chapter 40)

Indicators form part of an information system that add value to data by converting it into information for the direct use of a decision-maker (World Health Organisation, n.d). Thus, they help policy makers gain an insight into whether or not they are achieving their goals in terms of sustainable development (Moffatt & Hanley, 2001). Governments around the world rely heavily on indicators to form a central part of shaping policy for a country or a region (Valentin & Spangenberg, 2000). Additionally, the common aspects of indicators are essential for monitoring the process of sustainable urbanisation so that it does not remain an ambiguous concept. This provides a means to compare urban development from different contexts, and allow cities to share a common goal (Ameen et al., 2015). Their application is incredibly diverse and can be used at the global, regional, national, local or neighbourhood levels. At the community level, indicators are a vehicle for guiding peoples’ understanding of their communities which empowers them to react to, shape, and evaluate decisions which are directly and indirectly linked to their lives and environment (Kline, 2001). As a result, indicators have been the most influential tool for measuring sustainability (Turcu, 2013).

Despite the value and necessity of indicators, concerns have been raised about their application. Brugmann (1996) is critical of the extent to which sustainability assessment is defined by “expert”
actors, giving preference to scientific standards. Consequently, the search for indicators is often guided by what can be measured as opposed to what should be measured (McCool & Stankey, 2004). A result is that indicators are not defined in accordance with local actors and their perceptions and values (Brugmann, 1996). This means that indicator information is often delivered in a manner which extends little meaning to the majority of the people they intend to inform. Singh et al. (2009) revealed that indicators exhibit a high degree of arbitrariness and fail to assess critical assumptions.

Additionally, most beliefs about indicators have been grounded in a mechanistic metaphor of the world where indicators measure different parts of a machine to help identify what parts of the machine are not working (Innes & Booher, 2010). As a result indicators typically measure a single dimension of economic, social or environmental unsustainability (Dahl, 2012). This means that inter-linkages and the dynamics between processes of the systems embodied within national indicators are not adequately considered (Singh et al., 2009; Dahl, 2012). The empirical nature of sustainability indicators also means that they are inept at providing information about long-term changes since the exogenous and endogenous factors influencing sustainability are always changing (Moffatt & Hanley, 2001). Hence, indicators fail to represent a clear depiction of the complex relationship our decisions have with their outcomes. This means that indicators will have a limited application on many dynamic factors associated with urban sustainability. There are many cases where the resultant indicators offer an unreliable perception of underlying systems. This means that the value an indicator as a means of guiding policy and individual action is unclear, and offers little in terms of clear direction. The commonly held notion that indicators can evaluate how a policy is affecting the world is misunderstood (Innes & Booher, 2010). In essence, indicators are only a tool, and many other factors influence a policy process (Dahl, 2012). Therefore, a re-evaluation of the use of indicators and how they inform policy is required in order to steer society toward sustainability.

This re-evaluation requires properly articulating global sustainability at a local level. Agreement is growing amongst academics that indicators need to be more representative of local conditions and more aligned with the values of that audience (Valentin & Spangenberg, 2000; Kline, 2001; Yuan et al., 2003; Innes & Booher, 2010; Dahl, 2012; Turcu, 2013). Moreover, if indicators were more responsive to the specific values held in a particular area then individuals at a community level could manage their behaviour with reference to a broader movement, global sustainability. This movement can then be defined in terms that are related and understandable to that community (Dahl, 2012). This will also nurture a deeper public understanding of the concept of sustainability.

Additionally, a more systemic approach to indicators is essential for more accurate monitoring of the complex systems at play at the local level (McCool & Stankey, 2004; Innes & Booher, 2010). Innes
and Booher (2010) describe a scenario where society is a complex adaptive system that responds and adapts through feedback mechanisms. Therefore, systemic and complexity theories could be used as a point of reference to develop assessment or feedback mechanisms.

The role of indicators is valuable and vital for the pursuit of sustainability. The next section of this chapter reviews SCRTs. This review can be seen as ascension to a higher level of the assessment system. Here, indicators are used to inform categories which form part of an assessment device to assign an urban area with a sustainability rating.

4.3 Sustainable Community Rating Tools (SCRTs)

4.3.1 Introduction

Since the Rio Earth Summit in 1992 there has been an increase in the size and number of programs intended to promote local sustainable development (Sharifi & Murayama, 2014). Similarly attempts to assess the progress of these programs have also increased. As a result, focus has shifted to assessment of cities and their environmental impact. A primary focus of urban sustainability assessment is buildings and their environment (Komeily & Srinivasam, 2015). Sustainability assessment of the built environment surfaced more than two decades ago with the building rating tools (Häkkinen, 2007). These tools have been successful in drawing attention to ecological issues associated with built environment. Although there is now a high demand for green-rated buildings, buildings alone do not suffice for delivering sustainability to the built environment (Häkkinen, 2007; Cole, 2010). The rating tools primarily aim at maximising efficiency, and minimising the impacts of buildings on the environment (Sharifi & Murayama, 2014). Consequently, green building rating tools are unable to meaningfully capture the systemic nature of the urban environment (Curwell & Cooper, 1998; Gil & Duarte, 2013). The interaction between buildings and their infrastructure is not considered. Significantly, they fail to consider and integrate the multiple dimensions of sustainability, particularly socio-economic elements (Komeily & Srinivasam, 2015). Ameen et al. (2015) point out that researchers are expressing the need for a more comprehensive and integrated framework for urban sustainability assessment, as opposed to the stand-alone considerations for the multitude of variables shaping urban sustainability in their constituent dimensions.

It has been increasingly recognised that sustainability needs to be implemented at the local level in order to accelerate the achievement of sustainable goals (Graymore et al., 2008; Xia et al., 2015). Komeily and Srinivasam (2015) propose reconsidering the spatial boundary of sustainability assessment by introducing communities as a viable scale of assessment. Here, all of the pillars of
sustainability can be evaluated. Xia et al. (2015) contend that the community is the basic unit for urban development, and the basic unit of urban sustainability assessment. There is growing agreement amongst scholars that enlarging the focus area from singular building units to communities or districts could create a rating tool that could better deliver sustainability to the built environment (Berardi, 2013). Sharifi and Murayama (2014: p. 244) articulate the importance of broadening the scope of assessment:

“Expanding the boundaries of assessment to the neighbourhood scale means that not only the single buildings, but also spaces between them, services that are provided, humans and other organisms that are living there, and the synergies between these broad range of elements and activities has to be considered in the assessment process”.

This represents a holistic view of community development that incorporates underlying systems into a process of evaluation. Assessment tools provide a vital element in facilitating urban change and guiding future development (Hurley & Horne, n.d.). Creating an appropriate assessment tool can effectively evaluate and facilitate decision-making for sustainable community development (Xia et al., 2015). SCRTs have contributed to increasing environmental awareness among the actors involved and have guided better practices (Komeily & Srinivasam, 2015). Furthermore they have also disseminated the idea of sustainability assessment at the neighbourhood level. As a result SCRTs are increasingly gaining ground among scholars and practitioners as a means to assess, and promote urban sustainability. However, there is still a limited understanding of their efficacy and application on real-world communities (Sharifi & Murayama, 2014).

Despite the benefits of assessment at this scale, it also provides certain challenges. Difficulties in creating effective mechanisms to drive community assessment are greater because the object of assessment is not a bounded entity (Berardi, 2013). A community can be identified in a variety of overlapping ways. Therefore the boundary of assessment becomes blurred (Berardi, 2013). The issue of capturing the context of the assessment area is also a significant challenge for these tools. Context is more influential in the assessment of urban development than the assessment of singular buildings. This is due to the increase of inter-relations with broader urban social, technical, and environmental factors (Ameen et al., 2015).

Another concern is the practicality of measuring sustainability. In order to do this various assumptions are made that create only tenuous links between cause and effect. Furthermore, the way in which social, economic, and ecological issues are integrated is often arbitrary (Zoeteman, 2012). Many arguments have emerged that challenge the ability of sustainability to be measured at
all. This is because the subject is complex and lacks a solid scientific foundation (Zoeteman, 2012). This is because many aspects relating to sustainability involve social actors, whose inputs and outputs are difficult to quantify. This issue is compounded by the fact that there is no unified definition for sustainable development that is detailed enough to guide meaningful measurement. Sumner (2004) argues that current sustainable development measurement approaches are limited by the lack of a workable definition to provide a conceptual launchpad. Nevertheless, measurement is an essential means of tracking the progress of an initiative. Thus more appropriate and effective ways to measure sustainability need to be developed to be able to better identify the links between cause and effect.

Over the past decade, a number of internationally recognised assessment tools have emerged that have expanded the scale of assessment from buildings to urban development. All have varying scope, resolution and application areas (Ameen et al., 2015). Although the mutual goal of urban sustainability is apparent in all the tools, they diverge vastly in the way they pursue it (Berardi, 2013; Gill & Duarte, 2013; Sharifi & Murayama, 2013; Komeily & Srinivasam, 2015).

### 4.3.2 Tools

A total of six assessment tools have been selected for review in this investigation. These include:

- LEED-ND,
- BREEAM-C,
- CASBEE-UD,
- Green Star Communities (GSC),
- Pearl Community Rating System (PRS), and
- Living Community Challenge (LCC).

The selection of LEED-ND, BREEAM-C, and CASBEE-UD assessment tools is based mainly on the recognition these tools have internationally, and the rate of adoption they have received by projects around the world. LEED and BREEAM are the basis for most assessment tools around the world (Reed et al., 2011; Ameen et al., 2015). Furthermore these tools have been subject to the most review by academics and they have the largest datasets for project implementation (Komeily & Srinivasam, 2015). Many assessment tools for urban sustainability are a result of the expansion from building assessment towards the planning and design elements of a city (Haapio, 2012). LEED-ND, BREEAM-C, and CASBEE-UD have already reached a significant diffusion for sustainability assessments of buildings, and they are now spreading to communities too (Berardi, 2013). BREEAM-C, CASBEE-UD, LEED-ND, LCC, and GSC have all been developed by organisations that have
previously developed building-scale rating tools. Out of the tools analysed for this investigation PRS is an exemption to this trend.

The inclusion of GSC in the research is based on its likely application in South Africa. Of the tools selected, Australia, the origin of GSC, has a similar contextual background to South Africa. The selection of LCC was based on its recent emergence into the community assessment tool sector. Furthermore, the underlying ideologies and ethos is unique from all of the other tools. Therefore its inclusion in the analysis is based on its potential to spearhead an evolution of current SCRTs. This evolution is perceived to be the tool’s unique strategy of strongly promoting a vision and philosophy to fundamentally challenge convention. The other tools do no offer this. LCC seeks to accelerate the improvement of benchmarks rather than focussing on gaining traction like many of the prominent rating tools have done. The addition of PRS was also due to its recent introduction as a community assessment tool. Furthermore, an inclusion of a rating tool from a vastly different context to South Africa in addition to the other tools adds a degree of diversity to the review.

Community assessment tools offer a voluntary means to evaluate the sustainability of a community against a set of themes, criteria, and indicators, in order to identify the level of progress the community has achieved in realising sustainability goals (Sharifi & Murayama, 2013; Ameen et al., 2015; Xia et al., 2015). Themes represent the key elements of the tools’ approach to achieving urban sustainability. These fundamentally define the tool developers’ interpretation of the key issues of urban sustainability. This differs amongst the various tools. The different criteria fall under the themes. The criteria are further broken down into indicators that determine the achievement of certain performance benchmarks. An overall rating is achieved through adding the points gained in the various criteria. This forms the basic structure of the community assessment tool. Indicators used to assess the criteria are assigned different weightings in accordance to the perceived importance of an issue, in a particular tool and region (Ameen et al., 2015).

Through an evaluation of the prominent tools it became noticeable that certain indicators commonly received higher weightings than others (Häkkinen, 2007). This is confirmed by Ameen et al. (2015) who point out that several indicators were repeated in LEED-ND, BREEAM-C, and CASBEE-UD. Having common indicators for sustainable urban developers is an encouraging prospect. These tools could form the basis of common standards between global sustainability assessment methods to develop a framework of local sustainability assessment. This could be complemented by local indicators that embrace the unique characteristics of a region (Ameen et al., 2015). Conversely, Sharifi and Murayama (2015) argue that the use of a global standard is undesirable and suggested the creation of a database of all relevant criteria and indicators and contextualising them based on the project.
Assessment tools provide important guidelines for sustainability. However, they do not offer clear operative instructions that maximise contributions toward sustainability (Roorda, 2002; Shriberg, 2002). In spite of this, they are gaining increasing recognition as a guide for urban sustainability because they are easily understood and allow a step implementation for each criterion (Berardi, 2012). This raises concern for two reasons: i) the process of urban development is complex by nature and any attempt to simplify the process could be misleading and result in a failure to implement any meaningful progress in urban sustainability; ii) they are mechanisms to assess urban sustainability by providing a series of benchmarks. Therefore, it should not be assumed that fulfilling all of the criteria will result in urban sustainability. Garde (2009) concludes that complying with tools such as LEED-ND alone cannot guarantee a sustainable community development. A comprehensive and reliable community rating tool alone is not sufficient to realise sustainable development (Sharifi & Murayama, 2013). Furthermore, there is no single, best method for assessing the sustainability of communities (Sharifi & Murayama, 2014). The complexities of urban environments, and the social systems that inhabit them, is such that no tool will ever be able to capture complexity in a manner which can provide a comprehensive guide for urban sustainability.

Other urban sustainability frameworks included in this investigation, such as: EcoDistricts, and the work of VPUU, could be broadly grouped with community assessment tools as they perform community-scale assessment of some form. Nevertheless the distinction is necessary as the tools embody a different structure and methodology. Furthermore, the assessment conducted by these tools complements a larger sustainable development framework and is not the framework itself. These methodologies will be examined in chapter five.

The following section will provide a brief introduction to the tools that have been evaluated for the purpose of the investigation before a discussion highlighting current shortcomings associated with SCRTs is presented.

**LEED-ND**

LEED-ND is the most internationally recognised community-scale rating tool. The tool was developed by a combination of organisations but driven by the United States Green Building Council (USGBC). It was released in 2009 as a rating system specification and a project checklist (Gil & Duarte, 2013). Many projects in the U.S. have adopted LEED-ND as a guiding framework for neighbourhood development (Sharifi & Murayama, 2015). LEED-ND is by far the most popular rating tool of its kind. It is suggested that this could be due to the simplicity of its use and uncomplicated framework for assessment (Sharifi & Murayama, 2014). It is also now applied in many countries across the world. The tool is a market-driven approach intended to surpass regulatory requirements with the purpose
of advancing sustainability at the neighbourhood scale (Garde, 2009). This rating system places emphasis on site selection, design and construction aspects that bring buildings and infrastructure together into a neighbourhood (Berardi, 2013).

Figure 4.1 demonstrates the assessment tool’s five main themes, their corresponding criteria and their allocated points.

![LEED-ND Criteria and Weighting](Source: leadinggreen.ca)

The first three themes have mandatory requirements for certification. The themes are divided into 51 criteria. These are spread out across the themes and are weighted based on their relative importance, as decided by a panel of experts involved in the tools development (Sharifi & Murayama, 2015). Therefore, the majority of available credits weighted in the criteria represent the factors in which LEED determines to be most pertinent to sustainable urban development. For LEED-ND’s case, it is “neighbourhood pattern and design”. The criteria have a number of allocated indicators that are used as the basic unit of measurement. There are 110 points available across the
The overall score is a composite index made up by aggregating the achieved credits of each criterion (Sharifi & Murayama, 2015). The “neighbourhood pattern and design” and “green infrastructure and buildings” receive a substantial portion of allocated points. 73 of the 110 available points (66%) are apportioned to just two of the five categories. Given the nature of these themes it is reasonable to deduce that LEED-ND is focussed on more technical aspects of sustainability that prioritise design of buildings and infrastructure. Additionally, smart location, connectivity and walkability account for 30% of the possible points for LEED-ND accreditation (Sharifi & Murayama, 2014). This places a heavy emphasis on a project’s location-related characteristics (Garde, 2009), making it difficult to achieve a good rating if the site is unfavourable. Ultimately, this can make this approach less applicable to existing communities. This issue is compounded by the tools preference towards planning, design, and construction interventions. These aspects are largely inapplicable within the setting of an existing community.

The certification process ranks projects into four categories depending on the number of points awarded: “platinum”, “gold”, “silver”, and “certified”. “Platinum” is the highest ranking and is awarded to projects that achieve between 80-100 points. “Gold” is the second highest rating (60-79 points) followed by “silver” (50-59). LEED-ND does not certify projects that achieve less than 40 points.

LEED-ND has been used to assess neighbourhood sustainability in many projects outside the United States (Ameen et al., 2015). However, LEED-ND has made little attempt to make the tool adaptable to differing contextual and regional conditions. Although there have been compliance paths made for a Canadian application of the tool by the USGBC. The tool is gaining popularity as a market-driven approach to promoting sustainability through design (Garde, 2009). As a consequence, LEED-ND is primarily aligned towards adoption by developers and focuses more on new developments rather than urban regeneration. It was further indicated by Garde (2009) that developers would choose LEED-ND knowing that their project would have certain characteristics that would be weighed favourably by the tool. This suggests that LEED-ND is more appropriate for specific types of development projects and not necessarily appropriate for a broad application for neighbourhood development.

**BREEAM-C**

BREEAM-C was developed in 2009 by BRE Global to help planners and developers take account of the full range of issues to be considered from the earliest stages of the development process, and to
measure and certify the sustainability of projects at the planning stage of the development process (BRE Global, 2015).

The rating benchmarks prescribed by BREEAM-C are separated into five main assessment categories as illustrated in Figure 4.2 below.

<table>
<thead>
<tr>
<th>Category</th>
<th>Aim</th>
<th>Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Governance</td>
<td>To ensure community involvement and leadership in running the development</td>
<td>9.3%</td>
</tr>
<tr>
<td>Social and economic well-being</td>
<td>Local economy: To create a healthy economy (employment opportunities and thriving business). Social wellbeing: To ensure a socially cohesive community. Environmental conditions: To minimise the impacts of environmental conditions on the health and wellbeing of occupants.</td>
<td>14.8% 17.1% 10.8%</td>
</tr>
<tr>
<td>Resource and energy</td>
<td>To reduce carbon emissions and ensure wise use of natural resources.</td>
<td>21.6%</td>
</tr>
<tr>
<td>Land use and ecology</td>
<td>To improve ecological biodiversity.</td>
<td>12.6%</td>
</tr>
<tr>
<td>Transport and movement</td>
<td>To create an efficient and safe system for movement.</td>
<td>13.8%</td>
</tr>
</tbody>
</table>

Figure 4.2- BREEAM-C Category, Aims, and Weightings (Source: BREEAM-C Technical Manual)

The categories are broken down into a series of assessment issues. BREEAM-C has 40 assessment issues spread out over the five categories. Each of the 40 assessment issues has an individual weighting and a variable number of credits. This means that the value of credits differs in each assessment issue depending on the weighting of the assessment issue (BRE Global, 2012). The various categories are weighted in accordance to the tools perception of their importance to the achievement of sustainable urban development. BREEAM-C has a reasonably good performance in balancing the distribution of social, economic, and environmental sustainability (Sharifi & Murayama, 2012). “Social and economic well-being” is the category that received the majority (42.7%) of the overall weighting. Further distribution of credit weighting includes: “governance” which receives 9.3% of apportioned points; “resources and energy” 21.6%; “land-use and ecology” 12.6%; and “transport and movement” 13.8% of available points. The overall result is calculated by adding the total score of each category. The category total is calculated by multiplying the credits
achieved in each assessment issue by the individual weighting assigned to that assessment issue. The resultant assessment issue score is then added to the other assessment issues within the category to achieve a category total. The certification is divided into six awards with the top being “outstanding” and is granted to projects that achieve 85% of the available credits; “excellent” is awarded to projects that attain between 70-84% of the credits; “very good” is presented to communities that have between 55-69% of the credits verified. The bottom three ratings are “good” (45-54%); “pass” (30-44%); and “unclassified” (below 30%).

Unlike LEED-ND, BREEAM-C is mainly focused on interventions of rehabilitation (Berardi, 2013). This accounts for its higher weighting on social well-being as opposed to building design. It also differs from many tools as it includes a theme for business and economy, a factor that is commonly overlooked by SCRTs (Sharifi & Murayama, 2014). Furthermore, BREEAM-C pays careful consideration to broader social issues of sustainability. This enables a broader application of the tool to include existing communities.

BREEAM-C has shown a willingness to continuously enhance their tool and use feedback from projects and research to better inform the assessment system. This is evident in their most recent version which shifts emphasis towards social well-being and local economy. Most likely in response to the criticisms levelled at the SCRTs for their lack of recognition of social dimensions of sustainability. Despite the fact that BREEAM emphasise that the tool is only appropriate for use within the UK (Sharifi & Murayama, 2015), the tool has recently introduced different regional weightings of criteria in differing regions (Berardi, 2013). This allows the tool to be more flexible and applicable to a broader range of areas. Additionally, BREEAM-C has developed a tool for application in Hong Kong and Canada, as well as an international tool (BREEAM Communities Bespoke certification) to correspond with the global context. This works by determining the characteristics of the project and making required adjustments in accordance with local conditions (Ameen et al., 2015). Naturally, this is a subjective proceeding and its reliability could be called into question. Nevertheless, it is a meaningful attempt to address the inadaptability of community-scale tools. This highlights the care needed when assessing the applicability of a tool outside of its contextual origin.

CASBEE-UD

CASBEE-UD was developed in 2007 and is the first rating tool to assess the community or neighbourhood scale. It is a third-party voluntary tool for guiding sustainable neighbourhood development (Sharifi & Murayama, 2015). It was developed by the Japanese Green Building Council in conjunction with the Japan Building Consortium. Hence, the dominant skills of the tools
developers fall within the building-level sustainability interventions. This is reflected throughout the tool.

The six themes utilised in CASBEE-UD’s approach to urban sustainability assessment are: “natural environment”; “service functions for the designated area”; “contribution to the local community”; “Environmental impact on microclimates, façade, and landscape”; “social infrastructure; and “management of the local environment”. Like the other tools, the six themes are distributed into criteria and sub-criteria then indicators. In CASBEE-UD, the sub-criteria are scored on a scale of 1-5 (Sharifi & Murayama, 2015). Unlike all of the other tools in this investigation, CASBEE-UD does not impose any mandatory requirements in its assessment criteria. CASBEE-UD offers a more balanced approach to sustainability assessment by applying weights to nested categories of criteria (Sharifi & Murayama, 2014). It applies a unique methodology for assessment where environmental efficiency is calculated by dividing environmental quality within the site boundary ($Q_{UD}$) by environmental load on the spaces beyond the site boundary ($L_{UD}$) (Sharifi & Murayama, 2014). This is measured against the existing level of performance in the area of application to get a rating. The final score is called Building Environment Efficiency (BEE) and is calculated by the following formula:

$$\text{Building Environment Efficiency (BEE)} = \frac{25 \times (Q_{UD} - 1)}{25 \times (5 - L_{UD})}$$

The final score is split into four award categories: “class S”, “class A”, “class B+”, “class B−”, and “class C”. The highest, “class S” is awarded for projects that receive a BEE upwards of 3. “Class A” is the second highest award which is presented to projects that achieve a BEE between 1.5 and 3. “Class B−” is given to projects that achieve between 1.5 and 1, and “class B+” is awarded to projects that attain a BEE between 1 and 0.5. “Class C”, which is lower than ordinary standards set by CASBEE, is the lowest award offered and is for projects with a BEE of less than 0.5. CASBEE-UD results are presented graphically as a measure of eco-efficiency with environmental quality on one axis, and environmental load on the other (Berardi, 2013). The rating process is by far the most technically driven and complicated out of the tools analysed. CASBEE-UD provides concrete measures regarding equal accessibility to resources and facilities. However, issues relating to social justice, affordability, and diversity are not well addressed. There is also no means for measuring economic sustainability (Sharifi & Murayama, 2012).

CASBEE-UD is one of the only tools that provide mechanisms to consider the impact of development on the surrounding environment. This accounts for the tools reasonably good performance on ecologically related issues. However, the surrounding impact is only viewed through an environmental perspective and other crucial factors are not considered (Sharifi & Murayama, 2012).
CASBEE-UD excludes interiors from its assessment remit and therefore does not account for the appliances within buildings and the materials used to produce the interiors of the buildings (Sharifi & Murayama, 2015). It is argued that better attempts to incorporate these aspects into the rating tool would help make it more comprehensive.

**Green Star Communities (GSC)**

Green Star Communities (GSC) was developed by the Green Building Council of Australia (GBCA). Released in 2012, GSC is one of the world’s first independent national schemes to evaluate and certify the sustainability of community development projects. The tool was developed in collaboration with the Australian government, public and private sector developers, professional services organisations, manufacturers, and academics (Xia et al., 2015). Figure 4.3 displays the five main themes of the tool alongside the 33 criteria and their weighting. Governance receives the most recognition in GSC than in any other tool analysed in this investigation. Out of the six tools reviewed for the purposes of this investigation, GSC extends significantly more recognition to matters of governance.

| LIST OF CREDITS |
|-----------------|-----------------|-----------------|
| INDEX | CREDIT | POINTS AVAILABLE |
| GOVERNANCE | | |
| 1 | Green Star Accredited Professional | 1 |
| 2 | Design Review | 8 |
| 3 | Engagement | 6 |
| 4 | Adaptation and Resilience | 4 |
| 5 | Corporate Responsibility | 3 |
| 6 | Sustainability Awareness | 2 |
| 7 | Community Participation and Governance | 2 |
| 8 | Environmental Management | 2 |
| LIVABILITY | | |
| 9 | Healthy and Active Living | 5 |
| 10 | Community Development | 4 |
| 11 | Sustainable Buildings | 4 |
| 12 | Culture, Heritage and Identity | 3 |
| 13 | Walkable Access to Amenities | 2 |
| 14 | Access to Fresh Food | 2 |
| 15 | Safe Places | 2 |
| ECONOMIC PROSPERITY | | |
| 16 | Community Investment | 4 |
| 17 | Affordability | 4 |
| 18 | Employment and Economic Resilience | 2 |
| 19 | Education and Skills Development | 3 |
| 20 | Return on Investment | 2 |
| 21 | Incentive Programs | 2 |
| 22 | Digital Infrastructure | 2 |
| 23 | Peak Electricity Demand Reduction | 2 |
| ENVIRONMENT | | |
| 24 | Integrated Water Cycle | 7 |
| 25 | Greenhouse Gas Strategy | 6 |
| 26 | Materials | 5 |
| 27 | Sustainable Transport and Movement | 3 |
| 28 | Sustainable Sites | 2 |
| 29 | Ecological Value | 2 |
| 30 | Waste Management | 2 |
| 31 | Heat Island Effect | 1 |
| 32 | Light Pollution | 1 |
| INNOVATION | | |
| 33 | Innovation | 10 |

Figure 4.3- Green Star Communities List of Credits (Source: gbca.org.au)
Each theme has a different amount of allocated credits awarded to them which add up to 110. The smallest theme; “innovation”, has ten credits allocated to it and is offered as bonus points. Therefore the final score is given out of 100. The biggest two categories are “environment” and “governance”, with 29 and 28 points allocated to them respectively. Environmental aspects only account for 26% of total available points (Zuo et al., 2014). This is considered to be a relatively small weighting in comparison to other SCRTs. Points for each category are added up to provide a final score. The overall rating is given in stars starting at “four star” or “best practice” certification which is awarded to projects that attain between 45-59 credits. A “five star” or “Australian excellence” rating is awarded to projects that receive between 60 and 74 credits. The “six star” or “world excellence” rating is the highest rating which is awarded to projects that achieve 75 credits or over. The tool imposes a re-certification process every five years to ensure the commitments made during the design and planning phases are delivered (Siew, 2014). Other than GSC only CASBEE-UD and LCC offer accreditation after project completion.

A feature of this tool which is not dominantly represented in other tools is its attempt to address locality. There are several indicators available for projects to acquire credits for addressing local needs and problems (Xia et al., 2015). These are present in a number of the tool’s major themes. GSC also pays a great deal of attention to social aspects of sustainability. The tool specifically addresses this through criteria such as: “affordability”; “culture, heritage and identity”; “education and skills development” to name a few. Another significant characteristic of the GSC rating tool is the inclusion of a “governance” category in the tool. BREEAM-C is the only other reviewed tool that has a “governance” category. This category accounts for institutional aspects of sustainability. No other tool places such importance on this aspect of sustainability, and GSC is seen as a forerunner in a transition towards rating tools that better incorporate management and urban governance dimensions into assessment tools (Sharifi & Murayama, 2013). Important criteria within the “governance” theme are: “engagement”, “community participation and governance”, and “design review”.

**Estidama Pearl Community Rating System (PCR)**

PRS was developed by Estidama, an organisation formed by the Abu Dhabi Planning Council to help develop large-scale sustainable urban development plans. The organisation has developed a number of assessment tools for a variety of different applications to support the vision of Plan 2030; ensuring a holistic approach to sustainability (Estidama, 2010). This means that the tool was developed exclusively by government organisations and there was no other engagement with outside stakeholders (Komeily & Srinivasam, 2015). The tool was launched in 2010 as a framework
for the sustainable design, construction, and operation of communities. Similar to LCC, PRS is attempting to develop a framework based on a vision for a sustainable future.

Figure 4.4 presents the seven key focus areas for PCR with their corresponding weightings.

<table>
<thead>
<tr>
<th>Credit Section</th>
<th>Maximum Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDP - Integrated Development Process</td>
<td>10</td>
</tr>
<tr>
<td>NS - Natural Systems</td>
<td>14</td>
</tr>
<tr>
<td>LC - Livable Communities</td>
<td>38</td>
</tr>
<tr>
<td>PW - Precious Water</td>
<td>37</td>
</tr>
<tr>
<td>RE - Resourceful Energy</td>
<td>42</td>
</tr>
<tr>
<td>SM - Stewarding Materials</td>
<td>18</td>
</tr>
<tr>
<td>IP - Innovating Practice</td>
<td>3</td>
</tr>
<tr>
<td>TOTAL</td>
<td>159*</td>
</tr>
</tbody>
</table>

* Total: Excludes Innovating Practice credit points which are offered as bonus credits.

The seven categories are broken up into 64 criteria which are distributed amongst the various categories. The “liveable communities” category occupies the most criteria (17), with “stewarding materials” the second biggest with 11 criteria. Despite this, the highest point weighting is in “resourceful energy” which has 42 (26%) potential credits available. The category “precious water” has the third highest credit weighting. This is clearly linked to the location of the tools development where available water is a significant consideration (Ameen et al., 2015; Komeily & Srinivasam, 2015).

Like all of the other tools except CASBEE-UD, PCR imposes mandatory requirements for certification. Mandatory requirements appear in all of the categories with the exception of “innovating practice”, which is essentially a bonus category. No credits are awarded for the achievement of the mandatory requirements. Thus, the tool offers more diversity in its application; since points are not assigned to compulsory activities, they become available for other interventions. There are five award classifications in the PCR verification process. The lowest is “1 Pearl” rating, which is awarded to projects that complete the mandatory requirements. The second rating, “2 Pearl” is given to projects that meet all the requirements and achieve 55 credits or more. The increments for “3 Pearl” and “4
Pearl” go up from 75 credits and 100 credits respectively. Finally, the highest rating, “5 Pearl” is awarded to projects that achieve 125 credits or more.

A unique characteristic of PCR is the inclusion of “culture” as a fourth pillar of sustainability (Ameen et al., 2015). However, aspects of sustainability such as: infrastructure, design, environment, ecology, and resource efficiency, are heavily featured at the expense of socio-economic aspects. Pearl grants the last stage of its certification after a minimum of two years after the completion of construction and when the buildings have reached a minimum of 80% occupancy (Komeily & Srinivasam, 2015).

**Living Community Challenge (LCC)**

The Living Community Challenge is one of the newest neighbourhood assessment tools to be developed. This rating system was launched in 2014 by the International Living Future Institute (ILFI); an NGO that emerged out of the Cascadia Green Building Council in the Pacific Northwest, which is a chapter of both the USGBC and CaGBC. The tool sets out to revolutionise the way cities and communities are designed and managed.

Figure 4.5 illustrates the tool’s seven key performance areas, or petals. The petals are then broken down into a total of 20 imperatives which have to be achieved in order to qualify for certification. The seven petals are: “place”, “water”, “energy”, “health and happiness”, “equity”, and “beauty and spirit”.

![Figure 4.5- Living Community Challenge Petals and Imperatives (Source: Living Community Challenge Manual)](image-url)
The tool imposes arguably the most challenging mandatory requirements out of the global rating tools, and is heavily aligned with a vision and philosophy based on regenerative sustainability. Additionally, the tool places emphasis on issues such as equity, and aspects relating to well-being. The suite of tools developed by ILFI has been successful in understanding and linking the interrelations between built projects, and the natural and human systems in which they are embedded (Eisenberg et al., 2009). Hence, the approach is based on a systemic view of the world. To this end, it is evident that ILFI tools go through various iterations and use feedback mechanisms to adapt and improve the tools (Kudryashova, 2015).

The tool is both very prescriptive in certain aspects yet simultaneously vague and offers very little guidance on how to meet its strict requirements. An example of this is the set of guidelines set out for the “human scale and humane places” imperative where the maximum width of permissible alleyways is prescribed, whilst the “Net Positive Energy” imperative; a difficult imperative for many projects to achieve, merely states that the community must create 105% of its energy and no combustion-based energy supply is allowed. Having such little guidance for such a revolutionary imperative could make compliance with the tools requirements incredibly challenging. The rigour of LCC means that project teams may incur significant costs in order to attain accreditation (Kudryashova, 2015). Furthermore, this stringency means that the scope of application is limited to wealthy developers or regions. There is evidence of the LCC attempting to adapt to locality by imposing different requirements for different types of developments. Very few tools attempt to do this and none have set this out as clearly as LCC have. The development, or settlement, types are organised based on their spatial characteristics, and range from rural areas to the urban core. Whilst this allows for a certain degree of flexibility with application it views locality in terms of density and urban layout which is a highly simplistic view of the contextual variations of different places.

4.3.3 Criticisms

Despite the notable progress that urban sustainability tools have made in recent years, they are still in their infancy and need refinement. Gil and Duarte (2013) suggest that no tool currently covers all the aspects required for sustainable urban design practice and there is scope for both the development of new tools and the improvement of existing ones. For the most part tools have been criticised for under-performing in social, economic, and institutional aspects of sustainability (Komeily & Srinivasam, 2015). However, the voluntary nature of the tools, the economic burden they impose, and their complexity and ambiguity are also major obstacles for community assessment tools. This has resulted in a number of challenges regarding the implementation of the tools (Sharifi
The following section discusses the various shortcomings of the first generation of SCRTs.

**Credit Weighting, Adaptability, and Robustness of Assessment**

Arguably the most prevalent criticisms, and controversial aspect, of SCRTs is the weighting of issues relating to urban sustainability in order to provide a final rating. This is also inherently linked to their applicability in differing contexts.

The first concern raised here is the aggregated level of assessment. This involves adding together different evaluations to get an overall result which reduces the ability to convey a robust and transparent output (Mori & Christodoulou, 2012; Xia et al., 2015). Ultimately this over-simplifies the process of sustainable development. Hence, it is proposed that tools need to be developed so that they are more robust and compatible in terms of sustainability principles (Gil & Duarte, 2013).

Although encouraging urban sustainability unifies all of the tools, they diverge vastly in the way they pursue it (Berardi, 2013; Gill & Duarte, 2013; Sharifi & Murayama, 2013; Komeily & Srinivasam, 2015). Research suggests that each tool emphasises different aspects in measuring sustainability (Komeily & Srinivasam, 2015; Xia et al., 2015). These variations are largely based on the contextual and locational differences of their respective regions of development (Sharifi & Murayama, 2013). This is most notably recognised through the criteria and their weighting in the accreditation process. This is a highly controversial aspect of the tools (Sharifi & Murayama, 2013) as it is extremely difficult to compare and rank different elements (Retzlaff, 2009). Consequently, it is argued that weighting criteria makes the assessment subjective, and ambiguous in its outcome (Garde, 2009; Kajikawa et al., 2011). Moreover, there is no standardised method to weight criteria and each tool has its own unique way of weighting the criteria (Sharifi & Murayama, 2013). Ameen et al. (2015) suggest a revision of the weighting of points is conducted to ensure that local requirements are met. An explicit example of the importance of weighting is visible in PCR where water related aspects account for 23% of the tools credit allocation. In most other tools this amount varies between 2-4% (Komeily & Srinivasam, 2015). Hence, the priorities of assessment tools are assigned according to spatial specificity (Ameen et al., 2015). Therefore, environmental, social, and economic conditions of different regions means that not all criteria and indicators included in a rating tool would be relevant to all contexts (Sharifi & Murayama, 2015). This highlights the fact that the tools are an assertion of a particular interpretation of sustainability and the results of evaluation of project sustainability is affected depending on the implicit vision of the tools (Komeily & Srinivasam, 2015). Furthermore, this assertion is grounded on the specific needs of the area where the tools are developed. Correspondingly, there are issues associated with the selection of criteria and the transferability of
the tools to different contexts (Sharifi & Murayama, 2013). This is reinforced by Sharifi and Murayama’s (2014) cross-evaluation that revealed that the same community developments received different ratings of sustainability with the application of different tools. Despite this, a number of tools are used in projects outside of their intended context. A further concern to the global dissemination of the tools is that a framework comprised of irrelevant and poorly defined indicators may misinform and mislead decision-making (Mitchell, 1996; Singh et al., 2012 cited Sharifi & Murayama, 2015). This is an important consideration as the efficacy of sustainability assessment is dependent on the robustness and rigour of the assessment methodology.

Nevertheless, universal community assessment tools offer clear benefits in terms of standardisation, comparisons, and the minimisation of assessment tool development. Sustainability assessment tools need to decipher directions and processes, while stressing prioritised opportunities for change (Shriberg, 2002). The reality is that no single tool will be able to achieve this at a universal level. This begs the question: what meaning would a universal tool have to a community, with their own specific visions and goals for sustainability? It is argued that the value of such a tool would be limited to that of a basic yardstick to check progress across communities. However, a basic yardstick does not meet the criteria of a comprehensive guide for transitioning towards sustainability. This raises concern about the ability of a single tool to effectively guide sustainable neighbourhood development in different regions. Thus, many critical opinions of SCRTs are directed at the local sensitivity of tools, and the importance of incorporating context into the assessment process. It is necessary to place greater emphasis on context by creating more regionally flexible assessment programmes (Komeily & Srinivasam, 2015). Presently, tools have pay little consideration to regional context. This ultimately limits their application in regions outside its context of origin (Haapio, 2012).

Berardi (2013) points out the link between rating tools and the context in which they have been developed. Context is the most influential element of assessment, and must be envisioned in a comprehensive way (Conte & Monno, 2012). Accordingly, context specific criteria and weighting should be assigned according to values of relevant specific communities and reflect local characteristics (Gibson et al., 2005; Xia et al., 2015). There is a general consensus amongst academics that it is necessary for SCRTs to provide better mechanisms to adapt to specific contexts and community types (Gil & Duarte, 2013; Sharifi & Murayama, 2013; Xia et al., 2015). SCRTs are still in their formative phase, and need more time to develop tools tailored to properly reflect local conditions (Bond et al., 2012). There have been a couple of attempts to adapt tools to different contexts. BREEAM-C is a notable example. The tool has attempted to confront this challenge by providing regionally sensitive weighting co-efficients (Sharifi & Murayama, 2013). Despite this, its
underlying perception of sustainability, and the corresponding priorities and approach remain the same. Conceivably, this has a greater influence on the efficacy of assessment than the adjustment of credit weightings. Hence, underlying perceptions and understandings of sustainability need to suit regional context, in addition to their corresponding credit weightings.

SCRTs have also shown an inability to adapt to dynamic urban environments. This issue is even present within the context that the tools were developed. Many tools offer a black-and-white approach to urban sustainability where it is either achieved or not. This does little to account for the dynamic nature of the urban environment, and the infinite pathways for transitioning towards urban sustainability. Evaluation methods and frameworks are appropriate for specific stages of the urban development process; for specific spatial and temporal scales of development, and often for specific sustainability issues (Gil & Duarte, 2013). Therefore they cannot account for the variety of possible situations that occur in urban development projects. Consequently, dynamism of urban space is a major issue that needs to be considered for assessment tools as the underlying conditions of a development may change over time (Briassoulis, 2001). Until this is adequately addressed SCRTs will continue to offer a limiting framework for urban sustainability.

Changes in demographics, climate, resources, and economy are important to the life of the community. Assessment tools must be able to consider these changes (Komeily & Srinivasam, 2015). Thus, paying attention to temporal changes offer a good indication of the effectiveness of the plans and lets planners gauge whether their actions are reaching their sustainability goals and visions (Sharifi & Murayama, 2013). Most tools do not pay enough attention to the dimension of time in their assessment (Komeily & Srinivasam, 2015), and the assessment process is completed at the beginning of urban community development (Berardi, 2013). Only half of the tools analysed (GSC, LCC, and PCR) provide accreditation in the years that follow the completion of construction. It has been reported that there is no quantitative evidence that a high-rated “sustainable” community emits less carbon than a low-rated one (Bourdic & Salat, 2012). Therefore, it is conceivable that a high-rated “sustainable” community could be occupied by the planet’s least sustainable inhabitants. It is necessary for tools to introduce mechanisms to have continuous assessment over the life of the project or community (Komeily & Srinivasam, 2015). Incorporating a broader scope of time for the assessment of projects will better address the sustainability of lifestyles and consumptions, an aspect rarely considered by the tools. Berardi (2013) suggests that continuous evaluations will sustainability assessment an interactive process that can better engage with a community and its changing needs. Komeily and Srinivasam (2015) describe this as a shift from static assessment to dynamic assessment.
The above highlights the need for customisation rather than standardisation. Complete standardisation of tools is not possible or desireable (Carmona, 2003). This is confirmed by Sharifi and Murayama (2014) when concluding that it would not be desireable to use a set of global standards for the assessment of neighbourhood sustainability. Standardisation of SCRTs makes them overly prescriptive and thus, limiting. There must be a level of customisation to address the complexities and specificities of urban design projects and the local context (Mitchell, 1996; Gil & Duarte, 2013). Better mechanisms of adaptability should be encouraged to disseminate the tools to a broader audience (Berardi, 2013). This is vital for the future of community-scale rating tools.

**Ecologically Dominant**

Numerous studies on SCRTs have indicated a fundamental emphasis on ecological aspects of sustainability (Shriberg, 2002; Berardi, 2013; Sharifi & Murayama, 2013; Ameen et al., 2015; Komeily & Srinivasam, 2015; Xia et al., 2015). This emphasis assigns great importance to sustainable use of land, ecological measures, and sustainable transportation (Berardi, 2013). Though the degree of ecological dominance observed in the tools varies, all of the six tools included in this investigation exhibited this shortcoming. This prevailing consideration has been attributed to current global concern and awareness of issues such as: energy efficiency, water, renewable resources, and the reduction of carbon emissions which are central to the world’s attention (Ameen et al., 2015). It is also argued that a significant factor attributing to the environmental dominance of tools is the ease in which ecological factors can be measured, versus less tangible socio-economic dimensions (Sharifi & Murayama, 2013). Additionally, since sustainability requires meaningful input from various stakeholders, assessment needs to correspond with that and include broader aspects of measurement. The tools must be comprehensible to a broad range of stakeholders (Shriberg, 2002). The consequence of ecologically-driven assessment models is that they diminish the ability of assessment to guide people that are not directly involved with ecological aspects of sustainability. Moreover, they cannot adequately measure the input of non-technical contributors to sustainable development. Komeily & Srinivasam (2015) stress that it is essential to consider all aspects of sustainability in an equitable manner. An integrated view of sustainability is not adequately addressed within the framework of SCRTs (Sharifi & Murayama, 2013).

Creating targets for developers to reach in criteria such as “energy efficiencies in building” and “reduced water use” can help create more sustainable urban environments, but they do not require a change in occupants behaviour (Garde, 2009). A major concern for sustainability, particularly in the “developed world”, is the over-consumption of resources. Attempts to promote urban sustainability have to tackle this issue. Moreover, Sharifi and Murayama (2014) claim that tools focus on
environmental issues at the expense of other important aspects of sustainability. These lack threads of social, cultural, and economic variables which represents an essential part of urban life (Ameen et al., 2015). The result is a large disregard for social and economic dimensions of sustainability.

Social and Economic Aspects Under-represented

Many studies on SCRTs conclude that they under-represent social and economic dimensions of urban sustainability. To this end, it is reasoned that SCRTs misrepresent the main reasons for urban life. The rating tools poorly express economic stability, and economic themes are scarcely considered in the analysed systems (Berardi, 2013). This is primarily ascribed to the lack of knowledge of how to measure social, economic, and institutional sustainability (Komeily & Srinivasam, 2015). Developing a clear conceptual framework for assessment is vital. With a conceptual framework, indicators emerge more naturally, and can be adjusted to the needs of a given context (Hodge & Hardi, 1997). There is still an absence of such a framework, and the result is that assessment tools evade the topic in favour of aspects with a grounded concept. Consequently, the importance of socio-economic aspects of urban sustainability are overlooked. The result is that SCRTs fail to address underlying human systems that have a considerable influence on the sustainability of the urban environment. Structures of human activity, and human interaction needs to be more effectively incorporated into SCRTs to challenge unsustainable human practices, at both the global and community scale. Local business and new economic activities are crucial for sustainable communities (Berardi, 2013). What's more is the social context of a community plays a critical role in resident interactions and mutual support. This is largely overlooked and more research into this topic is required (Xia et al., 2015). As a result, rating systems poorly assess the importance of social life and the sense of citizenship. Direct measures of social and economic dimensions should be explicitly considered in community sustainability assessment (Berardi, 2013).

One of the common themes in the literature regarding the scarce recognition of socio-economic aspects, was the absence of criteria for affordable housing in the assessment tools. Criteria such as: affordable housing, safe and inclusive community, integral policies, and local economy, are still not adequately considered by most of the tools (Sharifi & Murayama, 2013; Komeily & Srinivasam, 2015). Two studies conducted by Sharifi and Murayama (2013 & 2014) concluded that SCRTs failed to adequately consider factors such as affordable and social housing. Building on this, Garde (2009) found that LEED-ND offer minimal credits for the provision of affordable housing. A consequence of not addressing socio-economic aspects such as affordability could be the creation of enclaves of “sustainable” communities surrounded by many deprived, unsustainable neighbourhoods (Sharifi & Murayama, 2014). This essentially undermines the aims of the tools. However, there are some
meaningful attempts to address these issues by some of the tools. BREEAM-C and GSC are amongst the few tools that have attempted to tackle local economic and social aspects. Moreover, these two tools have also endeavoured to appropriately account for affordable housing. Nevertheless, well-being and quality of life is not well captured by the SCRTs (Haapio, 2011). The emphasis SCRTs place on physical aspects of built for is another attributor to the under-representation of social aspects of sustainability. This is a dominant paradigm throughout the tools (Berardi, 2013). It is argued that this stems from the building-centric origins of many of the community-scale tools. 

**Building-centric, Reductionist Approach**

Scaling-up sustainability assessment from the building scale to the neighbourhood is considered to be an effective way of forming synergies between various components of an urban system, and conducting a holistic assessment that addresses all sustainability dimensions (Sharifi & Murayama, 2013). Tools such as LEED-ND, BREEAM-C, PCR, and CASBEE-UD adopt an approach that almost exclusively considers the physical and material properties of built environment (Komeily & Srinivasam, 2015). A consequence of this is that the few socio-economic issues included in the tools are primarily viewed infrastructural and buildings terms, and not social and economic issues in their own right. A criticism levelled against building assessment methods for community assessment is that they are not particularly suitable for the assessment of an urban area (Carmen & Bruno, 2014). This is because they are unable to capture what makes the built environment sustainable for people (Rees & Wackernagel, 2008). The result of building-centric approaches is that tools have no robust methodology to capture the inter-relationships between the various dimensions of sustainability, and do not consider key relationships which connect the building to the complex functioning of the built environment (Sharifi & Murayama, 2012; Komeily & Srinivasam, 2015). Essentially, this makes SCRTs a mere extension of reductionist ideologies.

There is little evidence that suggests the adoption of systemic perspectives in many of the tools. The challenge for tool developers is to devise quantitative mechanisms to incorporate the evaluation of social factors of urban life that fit within the approaches of the tools. Many criteria do not consider their inherent inter-dependencies, and system-wide consequences of a tool’s prescribed benchmarks. This highlights the lack of depth and in which SCRTs evaluate complex phenomenon. This over-simplification is reductionist in nature and it is argued that systemic principles need to be better introduced into the assessment mechanisms.

**Market-Driven Approach of Tools**

The tools have had a significant impact in driving market recognition for urban areas with low environmental impact, through assessment and certification (Ameen et al., 2015). LEED-ND is most
notably recognised as articulating marketability to developers. Berardi (2013) suggests that sustainability assessments of communities are often promoted by developers alone. Much of this momentum has been gained through the successes of the green building movement. This is positive as it has helped to build much needed traction in the formative years of community-scale tools. However, it also raises a number of concerns.

Firstly, most tools are designed for, and promoted by developers. It is reasoned that a developer’s scope does not entirely correspond with the construction of sustainable communities (Berardi, 2013), and their motives are more aligned with profit-maximisation, rather than social conscience. Ultimately, the enthusiasm for developers to employ rating tools is grounded in the resultant marketability of attaining a green rating. Consequently, obtaining certification can become a solely marketing-driven decision where developers embark to chase points (Komeily & Srinivasam, 2015). Two separate studies conducted by Garde (2009) and Sharifi and Murayama (2014), concluded that developers of LEED-ND projects favour higher weighted criteria for their neighbourhood development. Under these circumstances, a development could receive a sustainability brand without adequately addressing the dimensions of sustainability (Sharifi & Murayama, 2013). The result may be that the tools are used to ensure the marketability of a community rather than its sustainability.

Secondly, an issue which is inherently linked to the previous concern is the exorbitant cost of accreditation. SCRTs prescribe a costly and specific form of development. This largely excludes many other avenues for transitioning to a more sustainable state. Additionally, the economic burdens of implementing tools is a major barrier because the compliance with the criteria, and carrying out the assessment is costly (Sharifi & Murayama, 2013). The result is that developers may effectively ignore the original intent of the tools in favour of targeting credits which are easy or inexpensive to implement (Sharifi & Murayama, 2013; Komeily & Srinivasam, 2015). Essentially this leads to “green-washing” a trend that, according to Sharifi and Murayama (2014), is gaining strength.

Lastly, there is an internal battle that exists between tools striking the right balance; gaining greater traction and compromising on the level of standard-setting, or setting standards that truly revolutionise the way community development is implemented and compromise on the tools accessibility to a broader audience. A likely explanation to low levels of uptake is the voluntary nature, and the high cost of implementing SCRTs (Sharifi & Murayama, 2014). As a result many could argue that building momentum and a base from which to encourage better standards is more important than encouraging further acceleration of urban sustainability.
**Expert-Driven and Non-participatory**

Whilst the tools’ development involve a broad range of stakeholders, none adequately engage with community stakeholders. The development of the tools was limited to experts only (Komeily & Srinivasam, 2015). Sharifi and Murayama (2013) indicate that SCRTs have expert-oriented weighting systems that do not consider the interests of all stakeholders. This is one of many issues regarding SCRTs’ inefficacy in driving participation within urban development. Ameen et al. (2015) contend that tools need to consider ways to increase public participation.

A communities’ perception of community spaces, services, and facilities has a significant impact on overall community environment satisfaction and sustainability (Cho & Lee, 2011). Moreover, the importance of community involvement during the various phases of development and implementation is well recognised (Sharifi & Murayama, 2013). Komeily and Srinivasam (2015) call for a greater inclusion of citizen’s opinion in the assessment process of current community rating systems. Citizen-based assessment systems are more successful in measuring community activity, individual happiness, satisfaction with local area, and community spirit (Berardi, 2013). As discussed, these factors play an important role in urban sustainability. Most tools do not promote community engagement adequately. Local context only becomes visible when assessment is viewed through the lens of local communities. This is essential in unpacking area-specific and hidden local conditions which shape local sustainability (Berardi, 2013). Therefore, tools cannot meaningfully adapt to different locations and contexts without appropriately incorporating civil-engagement.

It is reasoned that a community-guided approach for assessment should play an active role in sustainable community assessment. Enabling residents to identify and design measurement systems will lead to a greater investment into measurement, and improve the reliability and accuracy of data (Sharifi & Murayama, 2013). Furthermore, common indices that arise from this approach can be used to base comparisons of different communities. It could be argued that this move away from standardised marketable verification process could affect the uptake of sustainable communities. However, it is reasoned that there is enough traction within the SCRT field to start evolving to more effective participatory processes to deliver sustainable communities.

**Institutional Sustainability**

Recent studies have suggested that LEED-ND, BREEAM-C CASBEE-UD, and PCR emphasised institutional dimensions of sustainability less than any other aspect measured in their tools (AlQahtany et al., 2013; Komeily & Srinivasam, 2015). LCC also provides no framework to manage these interactions. GSC is the only tool to meaningfully include management and urban governance in their themes (Sharifi & Murayama, 2013). Institutional sustainability includes organisations, their
mechanisms and orientations, which ultimately refers to human interaction, and the rules by which they are guided (Valentin & Spangenberg, 2000). This is argued to be a significant aspect in operationalising sustainable development. Institutional sustainability involves the management and organisation of activities and role-players involved in the urban development process (AlQahtany et al., 2013). Very few tools recognise institutional aspects as a main category for sustainability assessment. This is because the tools are ultimately outcomes or performance-based, and thus focus on aspects of performance for which there is a clear method of measurement. Robinson and Cole (2015) stress the need to shift the focus of sustainability evaluation towards process outcomes rather than performance outcomes. This sentiment is shared by Dahl (2012) who posits that policy and management interventions will be more effective if they target the process rather than the result. None of the tools reviewed in this investigation show sufficient support for the processes essential for sustainable urban development.

4.3.4 Applicability of SCRTs in the “Developing Country” Context of South Africa

The inherent ambiguities involved in defining sustainability, and the complexities of applying the concept to diverse settings have made comprehensive measurement of sustainability a near impossible task (Shriberg, 2002). Efforts by the tools to present a balanced and reasoned representation of sustainability are impossible to precisely define, and tools cannot be regarded as a transparent representation of sustainability (Sharifi & Murayama, 2013). Nevertheless the success and plurality of community-scale sustainability assessment tools cannot be contested. It is suggested that there is a need for the development of strategies for diffusing SCRTs and sustainable community development in developing countries. The introduction of community sustainability assessment practices to urban areas of the “developing world” could have significant impacts on global sustainability (Sharifi & Murayama, 2014).

Devuyst (2001b) highlights the differences in priorities for transitioning towards sustainability in “developed” and “developing” contexts. This notion was first introduced in Chapter three through the description of urbanity in South Africa. Since the sustainability needs vary greatly, it is asserted that a system that assesses sustainable development in the “developed world” will be ill-equipped to assess sustainability in the “developing world”. The evaluation of the six selected SCRTs confirms this. The most pertinent reasons for this are as follows:

i) the performance-oriented nature of tools mean that many of the people living in the “developed world” will be effectively “priced-out” as tools rely on technically-driven interventions which many in the “developing world” will not have access to. Moreover, SCRTs prescribe a specific type of
development which is not likely to be supported by the social, economic, and political structures in “developing countries”;

ii) the biggest threats to urban sustainability in many “developing world” communities are socio-economic. It has been established that most SCRTs perform poorly on these aspects;

iii) the tools assume a certain level of governance in order for these tools to work as they do not properly consider institutional aspects of sustainability. Many “developing countries” do not have functioning democratic processes which can support the underlying processes set out by the performance benchmarks of SCRTs;

iv) the tools are costly and require vast amounts of data and documentation, this may not be available in “developing countries” or may be too costly to compile;

v) the tools rely heavily on standards and requirement equivalency which have been proven to be difficult to translate across borders in the global North, this challenge will be more severe in the “developing world”.

Thus it is concluded that accreditation using the selected SCRTs would be unattainable for the majority of “developing” communities in South Africa. Does this mean that the “developing world” cannot be sustainable? In contrary, the “developing world” context can be seen as an opportunity to leapfrog the “developed world” as there are many aspects of “developing” societies that are more sustainable than “developed” societies. The level of development in urban areas influences the way in which the concept of sustainable development is understood and operated (Devuyst, 2001b). Thus, it follows that cities should develop their own interpretation or vision for sustainability based on the needs of its residents. Following this, appropriate assessment can be made based on a clear and specific vision. This makes it necessary for the tools to evolve in order for greater diffusion into the “developing world”. This evolution needs to focus on the institutional dimensions, as well as the process of collaborative efforts to develop systemic solutions for urban areas.

4.4 Conclusion

Measuring the progress of sustainable development is a vital and valuable practice. Indicators form the base unit of sustainability measurement. Indicators are a valuable aid to decision-making. However, there are a number of concerns with the manner in which they are applied to measure sustainability. In many ways their current application reinforces reductionist approaches to sustainability. This has proven to be ineffective. A more systemic approach to indicators is proposed.

A discussion surrounding SCRTs followed the critique of indicators. This section introduced the tools, and provided a brief overview of the six tools selected for the study. A critical review of the tools
revealed that the most significant and common shortcoming of the tools is that they focus primarily on environmental aspects of sustainable urban development. The result is that social factors are under-represented by the tools. Significantly, the tools do not adequately accommodate the varying contextual environments experienced across different regions and assume that sustainable imperatives are consistent across the globe. It is for these reasons, amongst others, that the tools were found to be inappropriate for application within a “developing country”, and more specifically, South Africa. To this end, it is suggested that alternative approaches need to be developed in South Africa to facilitate unified collaboration between policymakers, city officials, NGOs, private sector, and citizens. The next chapter builds the case for a process-oriented approach to deliver cooperative instruments to catalyse urban sustainability.
5.1 Introduction

The shortcomings of conventional attempts to deliver and monitor sustainability assessment have been established throughout the previous chapters. This chapter presents the notion of developing a process-oriented methodology for urban sustainability to help overcome the deficiencies in conventional approaches to develop sustainable cities. This section begins with a brief discussion describing a process-oriented approach and its benefits towards urban sustainability. This is accompanied by two examples of process-oriented methodologies for urban sustainability; EcoDistricts and VPUU.

Building on this, UFM is discussed in addition to the benefits of applying the principles of UFM within a process-oriented framework. The use of intermediaries is a further addition to this emerging concept. The effective use of intermediary organisations as a form of urban management has been demonstrated in South Africa. Thus, it is argued that intermediaries can complement a process-oriented framework to develop and manage sustainable urban environments.

5.2 A Process-orientated Methodology for Urban Sustainability

“...there is an urgent need for a very profound reconceptualization of the intellectual and empirical tools for the study of urban social facts and processes because many of the established intellectual tools used to depict the urban phenomenon were built on radically different urban morphology, and are strained by the new patterns of social relations emerging in time and space”  

(Sachs-Jeantet, 1996: p. 9)

When Sachs-Jeantet (1996) discusses the issues of urban transformation she unintendedly highlights the shortcomings of community-scale assessment tools. There are certain disadvantages associated with the empirical principles that many of the tools adopt. Though tools provide a valuable insight into essential attributes of sustainability through their structure and their content (Shriberg, 2002), they offer few mechanisms to manage the complex reality of sustainable urban development. An over-emphasis on technical aspects of the built form misses fundamental aspects of the urban space. It is argued that more guidance is required to assist in the implementation and execution of
such strategies. Hence, it follows that sustainability assessment tools need to delve deeper into decision-making by exploring the strategies, motivations, and capacities of role-players (Shriberg, 2002).

A procedural view of sustainability is argued to be a solution to the aforementioned limitations. An approach such as this views planning mechanisms as a co-operative learning process that involves a multiplicity of actors, representing a comprehensive cross-section of society that seeks to attain increasing levels of shared objectives and goals (Segasti, 1988; Sachs-Jeantet, 1996). From this, it is clear to see the link between a process-oriented approach and institutional sustainability. However, an issue regarding common perceptions of institutional sustainability is the implicit assumption that effective institutional performance is a target that, once reached, became an integral, irreversible part of the institution (Brinkerhoff & Goldsmith, 1992). This is simply not the case as the ever-changing dynamics of issues regarding sustainability have illustrated how sustainability needs to be viewed as an ongoing, adaptive learning process. This shift away from the rigour of techno-centric, goal-seeking ideas of sustainability to a more socially collaborative approach is seen as a promising alternative to conventional development discourse. The success of sustainable efforts is ultimately dependent on the collaborative inputs of a myriad different stakeholders acting in social systems. Hence, it is reasoned that developing a better process to facilitate and enable those inputs will accelerate urban sustainability.

Robinson and Cole (2015: p. 137) argue that sustainability should be viewed in procedural terms which is an emergent property of a: “conversation about desired futures” informed by an “understanding of the ecological, social and economic consequences of different courses of action” which requires the: “integration of different perspectives, and the recognition that sustainability is a process, not an end state”. This is the essence of a process-oriented approach to sustainability. Furthermore, an emergent approach such as this is argued to be the most effective response to the complexity and unpredictability of the urban environment, and its principles are firmly aligned with soft systems thinking; a methodology for creating action to improve complex situations.

Building on this it is reasoned that sustainability ought to be an empirical process of societal discussion and negotiation, in which both goals and outcomes must emerge from that process (Robinson & Cole, 2015). Adding to this, Reed (2007) emphasises that stakeholder engagement must be a conscious process of learning and participation through action and reflection. Hence, a procedural approach to sustainability can bridge the gap between theory and practice by fostering reflection in action (Schön, 1983; Sachs-Jeantet, 1996). Involving all the stakeholders in this process will result in social learning that makes a system capable of perceiving and adapting to change, and
evolving its values (Bagheri & Hjorth, 2007). The critical component here is the importance placed on learning about the situation, the decisions, and the stakeholders; versus the evaluation of the achievement of specific quantifiable features (Robinson & Cole, 2015). Moreover, Bagheri and Hjorth (2007) assert that the process of learning with participation of stakeholders is an essential strategy for sustainable development. Thus, the emphasis of learning, rather than control is suggested to be a shift in paradigm that will enhance sustainable outcomes (Cox et al., 1997).

What is proposed is a re-orientation of the underlying ideologies into something that focusses on the process involved in achieving the empirical outcome. Essentially, this entails asking “why” and “how” stakeholders intend to achieve sustainability (Shriberg, 2002) instead of prescribing “what” needs to be achieved. Thus, the author suggests these different approaches have the potential to create a complementary framework which synthetises empirical measurability with an operational process. Here, goals and outcomes emerge out of a process of inclusive negotiation rather than predefined standards (Robinson & Cole, 2015). It is believed that an approach such as this will offer more effective interventions for the development and management of urban areas that are representative of the views and values of a given community.

There is a limited amount of literature that focusses on process-oriented paradigms for sustainability at the community-scale, particularly within the “developing” context of South Africa. However, there are various examples of process-oriented approaches to urban sustainability that exist. For the purposes of this investigation the following methodologies will be discussed: EcoDistricts and Violence Protection through Urban Upgrading (VPUU).

5.2.1 EcoDistricts

EcoDistricts is a sustainable neighbourhood movement that originated in Portland, Oregon. It offers a comprehensive strategy to accelerate sustainable development at the neighbourhood scale. They intend to achieve this through integrating building and infrastructure projects with community and individual action (EcoDistricts, 2013). It emphasises sustainable urban development from the neighbourhood up and can be implemented at any scale, from large organisation to a street-level initiative. It embodies a more holistic approach to sustainable community development that can be employed on any type of development site and is flexible enough to be used in whatever stage of maturity a community occurs in. The protocol is directed at three main stakeholder groups: government institutions, civic-led organisations, and the private sector. The framework creates a platform for these stakeholders to come together to drive collaborative exchange and learning (EcoDistricts, 2015b).
The EcoDistricts vision is centred on the creation of just, resilient, and sustainable cities. This is achieved through neighbourhood scale development founded on genuine collaboration and social, economic, and environmental collaboration (EcoDistricts, 2015a). This is important as decision-making processes in planning and urban design for cities is vital to urban sustainability (Bond et al., 2012). To best achieve this collaborative decision-making, the framework is geared towards grassroots development. The idea here is to empower and build capacities of communities so that they become drivers for sustainable urban development. As such it is less expert-driven and more process driven than conventional community sustainability frameworks. This translates into its assessment methods, which involves rigorous, consistent and transparent reporting in the areas of governance and social performance (EcoDistricts, 2015a). Whilst there is evidence of environmental aspects of development embedded into the main themes of the EcoDistricts protocol, it is first and foremost a procedural framework.

Figure 5.1- EcoDistricts Protocol (Source: EcoDistricts.org)

Figure 5.1 illustrates the structure of the protocol which is set out according to three imperatives: equity, climate protection, and resilience. These are used to give the framework a clear direction.
towards sustainability. Hence, they are non-negotiable, and aim to seek a clear commitment from organisations involved, and their decisions will be informed by a clear set of equity, climate, and resilience outcomes (EcoDistricts, 2015b). There are then six priority areas which provide further direction to organisations applying the protocol. These are: liveability, prosperity, health and wellness, connectivity, ecosystem stewardship, and climate and resource protection. The Priority Areas help structure the district assessment process, inform a project’s baseline assessment, and provide a basis for establishing targets (EcoDistricts, 2015b). Accordingly, the goals are not pre-defined but assigned by the stakeholders, which address the various sustainability imperatives informed by the protocol. Consequently, there is no universal set of goals and indicators for the EcoDistricts protocol. The implementation model is what informs the process and essentially forms the backbone of the EcoDistricts protocol. There are four phases of the cyclical implementation process as depicted in Figure 5.1. These are:

- Phase 1: Formation,
- Phase 2: Roadmap,
- Phase 3: Action, and
- Phase 4: Stewardship.

The initial phase involves the assignment of commitments with the various stakeholders where the roles of all the stakeholders are defined. The challenges and opportunities of the project, and its stakeholders are also established in phase 1. The second phase involves setting the context for the project, setting appropriate targets, and assembling a roadmap by bringing together the prioritised strategies and a summary of the stakeholders leading each one (EcoDistricts, 2015b). Phase three comprises the planning and design aspects of the project. This also consists of feasibility analysis and funding options. Additionally, it must include a clear path for strategy delivery (EcoDistricts, 2015b). Lastly, phase four involves monitoring and reporting where results are discussed and shared. Based on this the collective decision-making continues to respond to opportunity for continual improvement (EcoDistricts, 2015b). The cycle then returns to phase 1.

EcoDistricts has a number of projects running across the US and Canada. These range from university campus developments, to redevelopment of low-income areas. The typology and scope of the projects vary significantly as the protocol offers a flexible tool that can be tailored to the specific needs of a community. Accordingly, a community can decide to focus on one aspect of community development (such as transit links, or urban agriculture) as opposed to an all-encompassing approach. However, the protocol promotes a comprehensive and sustainable approach that is applied irrespective of scale or scope.
5.2.2 Violence Protection through Urban Upgrading (VPUU)

VPUU is a comprehensive, area-based, community development model used to improve quality of life of communities in low-income areas in the Cape Town region (Krause et al., 2014). The programme is a partnership between the CoCT, the German Development Bank (KfW), and the informal settlement community of Khayelitsha. The VPUU project has achieved considerable success and recognition for its integrative approach to urban development and interventive upgrade. This community action based model has demonstrated productive capacity in building community through public infrastructure delivery (Low, 2014).

The approach offered by VPUU is less comprehensive than EcoDistricts as it is designed to introduce interventions to a particular type of neighbourhood: a low-income “developing country” neighbourhood. Resultantly, the focus of the programme is to provide safety as a public good but the cornerstone of the approach is human development and sustainability (Krause et al., 2014). The methodology uses social engagement and town planning as tools in fighting crime, mainly to improve living conditions of residents. VPUU believes that getting communities to identify common problems and solutions could contribute to the reduction of crime in the community (Lefulebe et al., 2015). The framework provides a viable alternative to the conventional hierarchic and sector driven approach to community development. In establishing a horizon of inter-connectivity it has facilitated equitable networking between a variety of stakeholders who have previously been marginalised or excluded (Low, 2014).

Figure 5.2 presents the VPUU matrix strategy. This consists of four main themes: public health or life-cycle approach; community-based social capital; situational community-based policing; and knowledge management, monitoring and evaluation.
This represents a holistic and systemic approach to dealing with the issues threatening the sustainability of these communities. This is evident by their deployment of their strategic approach to prevent crime and improve public health by devising interventions within early childhood interventions development. Another example is the linkage between urban management and social cohesion. Such depth of reviewing these inter-dependencies has not been exhibited by any of the other tools analysed for this investigation. Additionally, these systemic linkages are likely to be specific to the context of Khayelitsha and may not be transferable to other communities.

The VPUU methodology complements this strategy. This is similar to EcoDistricts in the sense that it provides a supporting process framework within which to base the strategies. Figure 5.3 illustrates the five steps of the methodology.
Figure 5.3 illustrates how sustainable neighbourhoods are the ultimate goal despite the focus being public safety. Like with EcoDistricts, the implementation process has assessment mechanisms that develop out of the process and is not the basis of the process itself. The importance of not being defined by an assessment process means that the form of urban development can be as typomorphologic; its form transcends the type/structure divide, effecting hybrid innovations that are highly situated and specific to a particular space-time conjunction (Low, 2014). It is believed that this shift is community-scale tools are the first step in the necessary evolution to provide better outcomes towards urban sustainability.
5.3 Urban Facilities Management as a Process-oriented Approach to Urban Sustainability

UFM is considered to be a “new alignment” of FM. This emergent concept presents the idea of adapting FM principles from a “micro”, building level, to a “macro” level, where the city itself is seen as the facility. This can create an effective standard in which to manage an urban precinct (Michell, 2013). Urban FM is a broader concept than FM, for it refers to an integrated management service for the operation and sustainability of the urban environment (Lee et al., 2013). As identified in chapter one, a major benefit of applying FM principles is that it allows an organisation to adapt and change to better suit its environment. Michell et al. (2008) establish that the operational and strategic principles of FM can be applied at the urban scale. Thus, the same benefits are visible when the sphere of operation is expanded to the urban context. Correspondingly, being able to adapt and respond to changing environments is essential to the transition to sustainability. Conceivably, UFM can form a link between the concept of sustainable urban development and its operative imperatives.

The United Nations report on human settlements (2009) identify the following as crucial to the development of sustainable cities: government’s role in planning; creating a policy-making platform that promotes participation; and integrating stakeholders to find ways to combine their skills, knowledge and authority to meet the needs of complex urban environments. To this end it is suggested that UFM can facilitate the propagation of these imperatives through the holistic platform it creates. Implementing holistic and multi-sectoral approaches are the essential building blocks to urban transformation (Sachs-Jeantet, 1996). Additionally, integrated management which considers the connectivity among diverse facilities can unify the management process, and reduce the cost of developing and operating urban areas (Lee et al., 2013). UFM can achieve this is through its ability to forge symbiotic partnerships with public and private sector organisations (Alexander & Brown, 2006).

A useful example of these principles in action is illustrated by SymbioCity in the Hammarby Sjöstad district of Stockholm, Sweden. Figure 5.4 below illustrates the holistic/systemic nature of UFM principles at the urban scale, and how it can be used to promote urban sustainability.
The application of systemic logic to urban development and management has linked many urban functions. This resulted in improved energy efficiency, increased social integration, enhanced accessibility and a better development of values. This holistic model integrates governance with urban planning, IT concepts, public participation, as well as the management of various urban sub-systems to promote sustainable urbanisation (Metzger & Olsson, 2013). The formation of networks and strategic partnering enables the improved delivery of services (Weerasinghe & Sandanayake, 2015). The creation of a sustainable urban environment requires the collaborative efforts of many stakeholders with different roles and values, sharing meaningful information and learning; through innovative response to feedback (Innes & Booher, 2010). An inability to manage collaboration and stakeholder expectations at the urban level has meant many attempts to put sustainable development initiatives into practice have failed. Creating collaborative partnerships seek to optimise the results of the coordinating systems within a city, building on each other’s strengths to bring to fruition people-focused, climate-neutral, and sustainable society that recognises the trade-offs that forms part of the innate nature of urban planning (Metzger & Olsson, 2013).

The operational benefits of UFM for local governments and cities are obvious. Nevertheless, the strategic implications are less clear. In many ways the operational aspects described above represent
a further assertion of the status quo in operationalising sustainability where technical aspects of environmental sustainability take priority. However, UFM also provides the means to better direct attention to the inherent socio-economic issues of cities. Roberts (2004: p. 350) asserts that:

“Urban FM is simply a logical extension of the need to reinvest in community facilities and systems, and provide a flexible “platform” in which agencies and the private sector can come together in new and innovative settings for the benefit of the community”

This provides a broader lens to view how people interact with the city and its space rather than solely considering the detrimental impacts of urban activity. Alexander and Brown (2006) coin the term community-based FM to describe the re-orientation of FM principles from the organisation to the community, and the advocacy of the citizens of that community. It is described as:

“the processes by which all the stakeholders in a community work together, to plan, deliver and maintain an enabling environment, within which the local economy can prosper, quality services can be delivered and natural resources protected, in order that citizens can enjoy a quality of life”

(Alexander & Brown, 2006: p. 264)

It is argued that the idea of community-based FM represents the strategic aspect of FM at the urban scale as it best incorporates the strategic relationships necessary to promote urban sustainability. Larsen et al. (2011) suggest that FM is key towards opening up broader social issues surrounding cities and is likely to be the driving force behind the creation of a new, inclusive and creative urbanity that places a priority on sustainability. Roberts (2004) speaks extensively of the benefits pertaining to broadened engagement between the public and private sectors at the urban scale. Sachs-Jeantet (1996) proposes that participatory approaches will become the driving force for urban management where the cities are involved in the process of expanding people’s capabilities. To this end, the most important resources for the future of a city are the knowledge, ingenuity, and organisational capacity of its citizens (Devuyst, 2001b). To nurture this there needs to be mechanisms of governance that can facilitate it. UFM can help amplify the voice of the community by bridging the gap of communication and engagement between citizens and government. In doing so enabling a community to be more autonomous through the building of capacities.

Melvin (1992) suggests that UFM could fill the gap left by the decline of urban governance. UFM can set a standard for urban governance through the creation of a holistic platform that integrates and empowers stakeholders to take reflective action. Ultimately it is believed that UFM holds the potential to facilitate systemic solutions to the issues of institutional sustainability that have plagued the implementation of sustainable development for the past three decades. This is of great
significance in South Africa where the operational aptitude and legitimacy extended to local
government actors, the most influential actors for urban sustainability, is a source of concern.

Michell (2013) conceptualises FM’s role in the urban context as a flexible platform that enables new,
innovative integration of private and public sector services in order to benefit society at the precinct
scale. Accordingly, strategies which are flexible, process-oriented, and which assess the needs and
capacity of the community for change, are most likely to succeed (Choguill, 1996). Embracing the
underlying concepts around “space, place and people” that underpin FM (Michell, 2013: p. 1), it is
posited that UFM can form the basis for a process-oriented approach to urban sustainability that can
complement existing sustainability assessment methods whilst providing concrete mechanisms to
achieve assessment goals. Furthermore, the principles of UFM are aligned to support a process-
oriented approach to urban management and development as it has the flexibility to provide a
meaningful framework for both low-income and affluent communities whilst incorporating the goal-
setting and assessment aspects that feature heavily in SCRTs.

Michell et al. (2008) conclude that the adoption of the principles of FM by cities’ and their
authorities is essential to the delivery of public services in South Africa. Despite this, these holistic
models rely heavily on functioning institutions; both public and private, as they need to be able to
coordinate with each other in order to initiate the symbiotic interactions between various systems
within a city (Metzger & Olsson, 2013). Cities in South Africa may need some additional help in
managing the boundaries and operational abilities of the various cities engaging at the urban level.

5.3.1 Intermediaries: Holistic Urban Management and
Sustainability in South Africa

It has been established that the lack of functionality of government in South Africa is such that non-
state actors play a significant role in urban development. These organisations are required to meet
the shortfall of government capabilities. However, issues regarding the union of stakeholder-based
plans and the local government’s planning and resources allocation procedures have been identified
as a challenge when developing sustainable urban development initiatives (Brugmann, 1996).
Accordingly, inadequate financial and skills capacity of local authorities has meant an extremely slow
start to the process of formulation and implementation of integrated urban development projects
(Irurah & Boshoff, 2003). This is particularly the case in South Africa and it is clear that mechanisms
driving integrated projects at this scale need to be advanced, for “developed” and “developing”
contexts. Cash et al. (2003) argue that having an intermediary organisation can develop procedures
and norms of accountability. In turn, this can help shape perceptions of relevance to a community,
and credibility and legitimacy of actors so that effectively balanced trade-offs can be made. Additionally, these procedures and norms can be locally specific and relevant to providing credibility and legitimacy to community stakeholders. In South Africa there is evidence of such organisations in the field of urban management and sustainability.

One such intermediate institution in South Africa has been established through the implementation of the City Improvement Districts (CIDs). CIDs were introduced as a necessity due to concerns over crime, accelerated economic decline in cities, deregulation, and failures of public authorities in providing appropriate services to private sector (Peyroux, 2006). The CID is a non-profit organisation operating within a defined geographical area where property owners agree to pay a levy for “supplementary and complimentary” services set to enhance the physical and social environment of the area (City Improvement, 2009). They are seen as an appropriate instrument for urban management by fostering partnerships with authorities and building social cohesion. CIDs foster local participation and community empowerment (Peyroux, 2006). This is something that political institutions in South Africa have failed to introduce when considering community development.

There are currently 21 CIDs operating in the Cape Town metropolitan area. These areas range from industrial areas, to retail, suburban, and low-income areas. CID’s main goal is to enhance a city’s economic value through the strengthening of the property market. Accordingly, their work mostly involves security, cleaning and maintenance of public spaces, marketing, and programmes that address transportation and parking (Peyroux, 2006). Although there are also environmental and social aspects of the CIDs, the driving force of these initiatives is economic. The CIDs are managed by partnerships between local government, property owners, and businesses (Miraftab, 2007). Although there is a growing popularity of CIDs with property and business owners, they have been criticised for exemplifying entrepreneurial governance. Here, the city is made more marketable and attractive for investment at the expense of urban integration and social cohesion (Peyroux, 2006; Miraftab, 2007). In essence the CIDs are active drivers of gentrification where segregation of people based on wealth is reinforced. Despite the suspected social consequences of CIDs, they demonstrate increasing involvement of non-state actors in the management of the city (Peyroux, 2006). Moreover, it illustrates the benefits of having a more holistic, or UFM aligned, urban management framework that acts as a collaborative intermediary platform for various stakeholders involved in urban development. What is proposed is an expansion of this framework to accommodate pressing social and environmental issues that urban areas in South Africa struggle to manage. In this vein, strategies adopted VPUU could broaden the operational realm of the CIDs to promote more comprehensive urban development.
VPUU is also considered to be an intermediary as they help manage relations between communities, NGOs, and local government. Their main focus is community development, with the specific aim of preventing crime through upgrading public space. Although there are parallels between the two approaches, it is reasoned that VPUU represents the opposite side of the urban management spectrum, with CIDs representing an essentially economic worldview. The efficacy of these organisations makes a compelling argument for their adoption on a broader basis for sustainable urban development and management. A further benefit of this expansion is that they can unify disordered sustainability initiatives into a broader, more systemic programme that provides wide-reaching solutions. This can serve to help fill the void of human resource which is a particular issue in South Africa.

5.4 Conclusion

Inefficiencies in the response to implement sustainability highlight the need to re-examine the technocratic approaches that dominate the urban sustainability space. This requires a shift away from a model that prioritises assessment towards a system that recognises the relationships and trade-offs required to create inclusive and effective decision-making. A process-oriented approach to urban sustainability can best respond to the institutional challenges of operationalising urban sustainability. Furthermore, a management platform such as UFM can complement this notion by providing the operational parameters to drive a procedural approach at the city and community level. In many ways this has been demonstrated by the use of intermediary organisations in South Africa that provide supplementary urban management services. By enlarging the intermediary body’s responsibilities to include broader aspects of sustainable community development could hold the key to unlocking issues of addressing urban sustainability in South Africa.
Chapter Six: Soft Systems Methodology

6.1 Introduction

This chapter provides a detailed account of the SSM research methodology and its application within this study. The SSM framework consists of the following seven phases:

1. Identifying the perceived problematic situation,
2. Expressing the problematic situation,
3. Formulating root definitions of relevant systems of purposeful activity,
4. Building conceptual models of the systems named in the root definitions,
5. Comparing the conceptual models with the real-world problematic situation,
6. Defining possible changes which are both systemically viable and culturally feasible,
7. Taking action to improve the problem situation.

These phases form part of a cyclical process of inquiry that can consist of numerous iterations. Given the time constraint of this study and the inability to receive feedback on the action to improve, it is only possible to complete one iteration of the SSM process. The seven stages are set out in this chapter along with an explanation, and its application to this specific study.

Emergent themes are developed through the comparison of the real-world problematic situation and the conceptual models of human activity. Therefore, emergent themes are presented in stage five of the SSM process. The subsequent discussion deliberates the data collected in both North America and South Africa. Following that findings will be established which, in turn, inform action to improve the problematic situation described in chapter one.

6.2 Soft Systems Methodology (SSM)

SSM a systemic technique developed for tackling complex problems in real-world situations. This approach uses knowledge of systems theory to create an intellectual structure from which to base an analytical approach to exploring our complex world (Stowell, 2009). Thus, it provides an “organised, flexible process for dealing with situations which someone sees as problematic, situations which call for action to be taken to improve them, to make them more acceptable, less full of tensions and unanswered questions” (Checkland & Poulter, 2010: p. 200). This description is vague and can be applied to almost any situation. Such is the nature of SSM. This is a necessity for a
methodology that seeks to explore systems that offer as much complexity and variety as human systems. Furthermore, SSM contends that the world appears differently to each observer and thus no single observation is definitive (Stowell, 2009).

In this vein it follows that the approaches adopted by SSM are agnostic to the situation and the outcomes are dictated by the learning process (Stowell, 2009). Thus, soft systems thinking is not solution-orientated but rather positioned towards clarifying the problems that exist within our world (Patching, 1990). Having that clarity will then pave the way to implement other strategies that are more effective at mitigating the negativities of a particular problem. This is encapsulated by Checkland and Poulter (2010: p.193) when describing a key notion behind SSM which is creating a process of “learning your way through problematic situations” in order to take “action to improve”. In other words, SSM is about striving for understanding through an iterative process of experience and learning. Thus, the methodology offers a framework of how to stimulate an intellectual process about a problematic situation (Wilson, 2001). Essentially, SSM provides a continuous inquest into complex human situations through an organised framework of analysis and debate to enable effective action to improve the situation (Checkland & Poulter, 2006). This enables the researcher to achieve research objectives and practical outcomes for that situation (Stowell, 2009).

SSM was most notably developed by British management scientist Peter Checkland at the University of Lancaster through an extensive research project that spanned over decades. SSM, as it is understood today, evolved from systems engineering (SE). SE is a methodology used to address hard problems; a problem that can be assigned an agreeable description by the people it effects (Wilson, 2001). Thus, systems engineering adopts a more positivistic approach to problem-solving (Rodríguez-Ulloa, 2003). This framework was found to be ineffective when faced with the complexity of human situations as it was not rich enough to deal with social complexity (Checkland & Poulter, 2010). With soft problems defining what the problem is, is itself a problematic situation because its definition is usually subject to the person who defines it (Wilson, 2001). Since there are usually many people engaging with soft problems this means that there could be a multitude of differing, and even contrasting (yet valid) descriptions of a problem.

SSM is an enrichment of SE which introduced the notion of “Weltanschauungen” or “worldview”. Checkland and Poulter (2006) attribute the complexity of social situations to the multiple interacting perceptions of reality (“Weltanschauungen”) which change and evolve over time. A worldview is a system of generalised views of the world that form a basic position for a person’s beliefs, socio-political and moral ideals (Spirkin, 1983). Therefore a way to better understand the complexity of reality would be to develop an organised way to manage these perceptions. One of the ways in
which SSM attempts to achieve this is by explicitly articulating the worldviews of various stakeholders involved in the research. As the analysis carried out by a methodology is based on a value judgement of the analyst, the specifics of the methodology need to be explicit; showing a logical flow of thought (Wilson, 2001). This is known as an audit trail of defensibility and performs an important part in providing validity to the research.

The second significant component of SSM is action. The world is filled with infinite variety and every individual and organisation is unique. What unifies these entities is the common aim of pursuing purposeful activity (Wilson, 2001). The essential premise that supports this is that humans and their activities’ are inherently connected (Checkland, 1999). Therefore, any attempt to understand and remedy issues related to human activity needs to acknowledge systems of human activity. Through the SSM process models of human activity are made as a basis for asking questions of a real-world situation (Checkland & Poulter, 2010). Any approach that tackles problematic situations encountered in the real-world need to be flexible enough to cope with the constant flux inherent to complex systems (Checkland & Poulter, 2006). Therefore, there must be considerable flexibility in the concepts and structures utilised by analysts (Wilson, 2001). Checkland is explicit throughout his work that SSM is a methodology, and not a method. A methodology is a set of guidelines that stimulates an intellectual process of analysis otherwise described as “thinking about the real-world” (Wilson, 2001). Put simply, SSM is a set of tools that enable one to tackle a complex problematic situation, the manner in which the tools are used will depend on the situation in which they are required.

Throughout this chapter the seven stages of the methodological process will be explained. This will be accompanied by an explanation as to how the methodology has been moulded to fit the specific problematic situation central to this investigation. This is carried out in order to provide clarity to the tailoring process, in addition to presenting a audit trail of defensibility. The tools for this methodology are set out in the seven stages that comprise SSM.

6.3 Outline of Data Collection

Before further discussion regarding the application of SSM within the investigation can take place, it is necessary to provide some contextual background to the data collection to help clarify the process. The primary research aim of this investigation was to establish whether a systems-based approach to urban management can promote sustainable community development in South Africa. Furthermore, as community-scale assessment tools are considered to play a large role in promoting sustainable communities; determine the applicability of such tools within the context of South
Africa. Initial research has been conducted through a critical review of literature surrounding urban sustainability, and community assessment tools. Furthermore, a review of a number of community-scale assessment tools was conducted. Government documents specific to South Africa were also examined to gain a greater insight into the implementation of urban sustainability within South Africa.

It has been identified that there are a number of community-scale assessment tools currently being implemented in North America. Thus, it is reasoned that conducting research in an environment where SCRTs are actively designed and promoted could lend a profound insight into the values and imperatives of assessment tools at this scale. Moreover, there is a potential for these imperatives for urban sustainability to be applied appropriately within the context of South Africa. As such, data will be collected in South Africa to determine the contextual environment for promoting urban sustainability at the community/precinct scale. Following this, data shall be collected in North America in order to establish the goals of tool developers and urban sustainability practitioners.

Data was collected via a series of semi-structured interviews. See Appendix B for the standard outline utilised for the semi-structured interviews. Collection involved questioning key stakeholders involved in sustainable community development in both South Africa, and North America. Relevant documentation related to the stakeholders was also utilised for the analysis. The sampling strategy utilised for this research is judgement sampling. Judgement sampling draws upon the researcher’s knowledge to select the most relevant sample to answer the research question (Marshall, 1996). In the case of this investigation the selection of the participants was based on an in-depth review of the literature surrounding the research topic. Another factor that guided the decision to deploy a judgemental sampling strategy is the limited number of participants who possess knowledge and experience of the subject matter. This was particularly evident in South Africa where the fields of UFM and SCRTs are still in their infancy. SSM is a method which requires the researcher to have a thorough understanding of each participant and their worldview in order to create conceptual models of human activity. It should be further noted that Searle (1999) asserts that in-depth field work may still be conducted with a limited number of key informants. Hence, taking cognisance of this, coupled with the different geographical areas of study, it was decided to restrict the data collection to a few key informants within each context. This was viewed as preferable to studying more participants in less depth. Increasing the sample size would also intensify the issues of finding equivalent participants in the different contexts. Despite the small sample of participants, meaningful inferences can be made from this approach that can lead to a qualified response to the research question.
All participants signed a consent form prior to the interview (refer to Appendix C for a copy of the informed consent form). This explained the interview protocol and the ethics code adhered to by this research and the University of Cape Town (UCT). This protocol was also explained verbally to each participant before commencement of the interview. All interviews were recorded with the consent of the participants. Recordings of the interviews were made for transcription and analysis purposes only. The participants names have been omitted from the publication of this thesis and their views are independent of the organisation they represent. A sample of a transcript from each research area (South Africa and North America) is provided in Appendix D.

Since the intended outcome from each data set is different it is put forward that the data sets are not meant to serve as a direct comparison. Conversely, they are intended to complement the other in gaining a comprehensive understanding of sustainable community development. As a result of this, the respective participants are not intended to directly mirror one another, and the questions will develop throughout the data collection process to better focus on pertinent topics. Appendix B provides an outline of the template used to direct the semis-structured interviews. Below is a list of the participants used for data collection throughout the investigation:

**South Africa:**

- **Participant 1**: President of the Green Building Council of South Africa (GBCSA).
- **Participant 2**: Principal Urban Planner for the City of Cape Town (CoCT).
- **Participant 3**: Deputy Director of the African Centre for Cities at the UCT.
- **Participant 4**: Operations Executive at the Victoria and Alfred Waterfront, Cape Town.
- **Participant 5**: Local Economic Development Manager at (VPUU).
- **Participant 11**: Community member and community facilitator for VPUU in Khayelitsha, Cape Town.

**North America:**

- **Participant 6**: President of the Canadian Green Building Council (CaGBC)
- **Participant 7**: Manager of the Living Community Challenge (LCC) rating tool developed in Seattle, USA.
- **Participant 8**: Director for Innovation at EcoDistricts in Portland, USA.
- **Participant 9**: Section Manager of Environmental Sustainability for North Vancouver, Canada.
- **Participant 10**: LEED-ND Consultant at Dialog Design in Vancouver, Canada.
The Seven Stages of Soft Systems Methodology

Figure 6.1 provides an outline of the seven stages that make up SSM’s cycle of learning for action. This fundamentally sets out the process for SSM in a simplified manner, and provides the structure for the methodology (Checkland & Poulter, 2006). Elements 1 to 4 characterise the learning cycle. As action to improve a problematic situation begins, it will change that situation, creating a new situation, and the process can begin again, offering a never-ending cycle of learning (Checkland & Poulter, 2010). The flexibility of use and idea of continual iteration are essential to the SSM approach (Patching, 1990).

Figure 6.1- Adaption of SSM’s Cycle of Learning for Action (Checkland & Poulter, 2010, p. 194)

Figure 6.1 illustrates a division of concepts between the real-world and systems-world. This represents the point where the analyst must withdraw from the examination of the real-world situation and objectively apply relevant systems models to the real-world situation (Patching, 1990). This separation is necessary because “the real-world” is complex, messy and contains people, whereas the intellectual process of “thinking about the real-world” can be simple, precise and defensible (Wilson, 2001). These intellectual processes are used to apply action to “real-world
Therefore it is important to note that whilst there is a division of concepts, there is not a complete separation between the analyst and the real-world.

The analyst needs to incorporate the participation of the people involved in the problematic situation whilst thinking systemically in order to reflect their views in a conceptual model for the system being investigated (Patching, 1990). Figure 6.1 clearly shows the moments of entry and exit into the real-world situation are centred on the development of models to apply in the real-world situation. The flexibility of the SSM approach allows for the analyst to re-enter the real-world and test the model and retreat into the systems-world again. This enables the analyst to make necessary changes to tailor the model to more effectively engage with the real-world situation. Whilst there is a sequence of stages represented in the diagram, in reality there is iteration within the cycle as learning occurs (Checkland & Poulter, 2010). This means that more than one stage can be addressed at the same time and in practice there is no specific order (Patching, 1990). Iteration plays a significant role in the continual process of SSM. In reality the pattern of activity of the SSM process is likely to resemble what is depicted in Figure 6.2. Figure 6.2 describes the four activities that are conceived by the seven stages.

As stated in the previous section of this chapter, these stages will be tailored into an approach that relates to the sustainable development of urban areas and the assessment tools that seek to promote such development. For the purpose of explaining the process of the methodology, the stages will be discussed in the order set out by figure 6.1.
6.5 Stages 1 and 2- Identifying and Expressing the Problematic Situation

6.5.1 Background Theory

In SSM, an investigator is often confronted with a degree of ambiguity regarding the structure of problems and the necessary actions to remedy the problematic situation (Patching, 1990). Similarly, the literature has identified that sustainable urban development presents a similar measure of ambiguity when considering the issues affecting it. As such, it is necessary to clearly define the situation that needs to be investigated and why it is problematic. This enables the investigator to explore options to address that problematic situation. Checkland conceived the term “problematic situation” as: “any situation in which there is perceived to be a mismatch between what is, and what might, could or should be” (Checkland, 1972 cited by Patching, 1990: p. 44). This allows SSM to be applied to an incredibly diverse range of situations. Checkland intentionally avoids using the word ‘problem’ in SSM literature as it implies that the situation is one that has a solution. The first stage of the SSM process is intended to express the problematic situation in a way that provides an understanding of the complex relationships at play within the situation (Checkland & Scholes, 1990).

It is argued that a situation is defined by human perception of the flux of activities that make up reality (Checkland & Poulter, 2006). Building on this, Checkland contends that “problems” do not exist in the real-world but only events which are interpreted by the perceptions of observers (Rodríguez-Ulloa, 2003). Consequently, it is perception that creates the situation, not the activity. Acknowledging that situations differ depending on the standpoint (or worldview) of the individual forms an integral part of SSM, and understanding the complexity of human situations (Checkland & Poulter, 2006). As previously established, SSM attempts to ascertain a comprehensive understanding of a problematic situation from which the proposal of systemic solutions can be based (Rodríguez-Ulloa, 2003). Moreover, human activity is intricately dependent on a variety of other systems. Thus, it follows that problematic situations can be interrelated, and can’t be isolated or clearly defined (Patching, 1990). In systems terminology this is described as a “mess”. As such, there may never be a single, complete solution to a complex problem. This supports Checkland’s idea for a methodology that is centred on learning and understanding, rather than creating solutions.

In order to obtain a clearer idea of what needs to be improved, it is crucial to incorporate a multitude of perceptions (worldviews) into the process of defining the real-world situation. Consequently, these determine the course of action to remedy a problematic situation. It follows
that the starting point for SSM involves engaging with these differing views to develop a clearer picture of what is going on and the factors that influence the problematic situation (Patching, 1990). Subsequently, the investigator can express the problematic situation in a way which reveals the relationships and dependencies that make up the situation (Patching, 1990). In other words, the systems within the real-world need to be identified in a manner which best represent that real-world situation. This is done in order to make the point of reference explicit, and therefore defensible (Wilson, 2001). The best way to achieve this is by presenting the problematic situation and its underlying structure visually, as a “rich picture”.

A rich picture is a sketch or a diagram that depicts certain important aspects of a situation (Patching, 1990). Pictures are used as they are more competent at illustrating relationships between certain factors than in writing (Patching, 1990; Wilson, 2001; Checkland & Poulter, 2010). This method of interpreting a situation takes a systemic approach which facilitates a holistic understanding of the situation that concisely illustrates the situation’s depth and the relationships between factors within the system. Rich pictures generally illustrate elements such as: structures at play within the situation, processes carried out within the system, how the factors interact to form the climate, and the issues expressed by the various persons involved (Patching, 1990). The picture also highlights particular viewpoints of the situation (Checkland & Poulter, 2010) which can be selected as the basis for further study (Patching, 1990).

6.5.2 Application to the Investigation

In terms of this investigation the process has been adapted in the sense that an initial rich picture of the proposed action to improve the problematic situation is presented before the commencement of official data collection. This picture is based on the preliminary background information gathered as discussed earlier in the thesis. This initial rich picture was used as a means for the analyst to consolidate the various literature and documentation to represent their worldview. Based on the nature of the data collection from which the initial rich picture is founded, it is worth noting that this rich picture represents a worldview influenced predominantly by theoretical approaches. Furthermore, the research process supporting the articulation of this theoretical worldview is driven by the worldview of the researcher, which is based on problem area discussed in chapter one. In essence, this rich picture represents the research aim and objectives and serves as a foundation from which to base further inquiry into the problematic situation. The pictorial depiction of the issue is a valuable aid in understanding and a basis for dialogue (Patching, 1990). Thus the initial rich picture was used for the analyst to create a dialogue of thoughts where the process of thinking intellectually about the real-world is encouraged. This is a key feature of SSM and it is important for
the analyst to develop iterative practices early on in the methodological process. Through the process of iteration the problematic situation will be further developed and articulated based on collected data. Further rich pictures will be developed, offering a more comprehensive understanding of the problematic situation regarding sustainable community development in the respective regions. This forms part of the analytic aspect of the research and will be revisited in section of 6.7 this chapter.

6.5.3 Initial Rich Picture

Figure 6.3 represents the initial rich picture. What follows is a brief explanation of this graphic, and in turn, the proposed action to improve the situation of urban sustainability and management as guided by the initial research. Similar to the pertinent case put forward in chapter five, UFM is central to this rich picture. The primary focus of managing an urban precinct would be providing services to the community. Furthermore, UFM is proposed as the foundation to build a framework for urban sustainability which can align the imperatives associated with the various aspects of sustainable development at a level that can engage both government and local community members. This introduces the notion of UFM as providing a management framework that combines communities with public and private sectors, and manages the expectations of the respective stakeholders of various agencies. The necessity of having some form of management framework for the realisation of sustainable urban development is a notion developed by Allen (2002) when expanding the conventional dimensions of sustainable development to include political or institutional dimensions. The management framework relates to the political/institutional dimension of sustainable urban development as it facilitates the inter-connectedness and inter-dependencies of operationalising sustainable development. As discussed in chapter five, UFM is also considered to be strongly link this dimension, in addition to the more commonly considered, three pillars of sustainable development. It follows then that UFM is seen as central to this proposed action to improve the problematic situation. Service provision is essential to the management of an urban precinct and is represented as the link between a management framework (institutional dimension) and the physical dimensions in the rich picture.

The spatial planning of an urban precinct has an important impact on the effective management of an urban precinct and is also strongly related to the community assessment tools that will be examined in this investigation. The social dimension is linked to planning in the sense that spatial planning can have an influence on a community’s accessibility to public goods. A precinct needs to be managed in a way that prioritises poverty elimination, public security, equality, and cultural
values. The economic dimension relating to UFM surrounds private sectors increased role in sustainability in the form of public-private partnerships (PPP’s) and CSR. Naturally, this dimension also represents the economic feasibility of initiatives within the management of urban precincts. This is a vital, yet often overlooked, aspect of sustainability. The economic dimension is also strongly linked to the community assessment tool as corporate entities leverage a comparative advantage through marketing a development as “green”.

The environmental dimension surrounds UFM’s role in providing a precinct that’s output does not exceed the carrying capacity of the environment. This refers to pollution and climate change, as well as the effect human activity has on surrounding ecosystems.

Within the encircled area defined as the urban precinct, is complexity. This represents the relationships between all the elements associated with the urban precinct. The sheer number of interactions and inter-dependencies between the various factors and their systems means that any issue relating to the urban precinct, in particular sustainable development, will be a complex one.

Outside the urban system is context. Context is illustrated to represent an external environment that acts upon the urban system. Context here can embody many different meanings from environmental constraints to cultural attitudes towards sustainable development. This ultimately guides how the processes will take place within the urban system.
Figure 6.3 - Initial Rich Picture
6.6 Stages 3 and 4- Root Definitions and Conceptual Modelling

6.6.1 Background Theory

The next two phases of the SSM process require the analyst to withdraw from the real-world and enter the ‘systems-world’ in order to develop models of human activity.

Since worldviews dictate how people perceive a situation, it follows that the response to a particular situation is governed by how that situation is perceived. Therefore purposeful activity tends to act in accordance with a particular worldview. To this end, attempts to model activity need to be explicitly linked to a worldview in order for the analyst to ask meaningful questions of the problematic situation. Deriving models of purposeful activity based on worldviews is a key part of managing complex situations (Wilson, 2001). Checkland and Poulter (2010) state that this ensures the learning process is not random, but organised and defensible. In this investigation, each interview participant represents a particular worldview, as such, a conceptual model will be developed for each participant.

The first step is to develop a root definition (RD) for a each particular worldview as it serves as a foundation for a conceptual model (CM). A root definition is a statement that defines what the human activity system is, what it does, and why (Wilson, 2001). The mnemonic CATWOE is a useful tool for developing a root definition. It comprises of six elements, namely:

C: Customer (the recipient of the output of the system, either a victim or beneficiary).
A: Actors (the individuals that perform the activities of the system).
T: Transformation Process (the change that takes place within, or due to the system).
W: Weltanschauung/worldview (the statement of belief within the RD).
O: Owner(s) (a wider decision taker with authority over the system).
E: Environmental constraints (factors external to the system that influence it).

Essentially, the CATWOE serves as a test of the structure and words of the RD (Wilson, 2001). Once the RD sufficiently describes what the system is, the analyst can now develop models of activity for the system. Just as the RD describes what the system is, the CM describes what that system has to
do to be defined by the RD (Wilson, 2001). Accordingly, CM’s put together the flow of activities required to perform the transformation process of the RD (Checkland & Poulter, 2010). It is important to note that CM’s are an intellectual construct and therefore are not descriptions of the real-world but a way of thinking about it (Wilson, 2001). They cannot be descriptions of the real-world as they represent a pure worldview; humans are characterised by multiple, conflicting worldviews which change over time (Checkland & Poulter, 2010).

6.6.2 Application to the Investigation

As previously discussed the research for the investigation has been conducted in South Africa and North America. Six interview participants have been chosen for South Africa, and five participants were selected in North America. The additional participant in South Africa was a community member. This decision was made to remain consistent with the arguments put forward in this investigation. To this end, it was highlighted that the worldview of a community member should be included in research process in order to incorporate local values and ideas. This helps form a more representative opinion surrounding sustainable community development. Each participant has a worldview which is represented in RDs and CMs. Here the participants’ roles will be introduced in addition to their corresponding RDs and CMs. Thereafter, a regional RD and CM will be developed exhibiting the “developing world” and “developed world” worldviews. This will extend an insight into practices behind sustainable community development.

6.6.2.1 South Africa (A “Systems-World” Focus)

Participant 1 (P 1):

P 1 is the CEO of GBCSA. The organisation’s role is to further sustainability by raising the standards of green buildings in South Africa, and verifying them. They achieve this through creating awareness for the tools by promoting them and educating people about sustainability. They produce case studies and provide consulting services to project teams looking to build a green building. They also collaborate with various other NGOs and local governments to promote sustainability. The GBCSA requires resources which are funded through donors and membership. A verification process is set up to verify the members’ projects. Challenges that this organisation faces are: creating awareness for a green building market, dealing with limited resources, and the technical limitations of the tools that are restricted to technical aspects of a building’s design and construction.

C: Designers and clients of buildings.
A: Staff of GBCSA.
Creating and upholding a set of benchmarks, verify that projects have achieved these benchmarks.

Using a set of standards will lead to transformation in the South African property industry and reduce the negative ecological effects of the built environment.

World Green Building Council.

National Scope, not legislative (Voluntary Adherence), excludes things below building scale (Consumption habits of occupants, appliances, etc.).

**Root Definition**

A system owned by the World Green Building Council which sets voluntary standards for the South African built environment, and verifies the achievement of these standards for designers and construction clients, in order to reduce the ecological impacts of the built environment.

**Conceptual Model**

The CM above (see Figure 6.4) shows the perceived systemic process P 1’s organisation employs to achieve their objectives. By assessing ways to promote the upliftment of green building standards they must identify the methods most appropriate for the context of South Africa and the limitations
of the organisation (activity 1). Assessment tools are the most available and popular means of achieving this (activity 2). The organisation will then need to decide how to administer the chosen tools and provide supporting processes and information for the tools (activities 3, 4 & 5). Once they have a product they must market it to the property industry and educate developers of the benefits of the tools (activity 6). The next step would be to apply the assessment tools to the projects and verify them based on their performance against the assessment criteria (activities 7 and 8). The process as a whole is monitored, and then changed if necessary (activities 9, 10 & 11).

Participant 2 (P 2):

P 2 is one of the principal urban planners for CoCT. This participant is actively involved in community development in Cape Town and is a key driver for sustainability within local government. The role of the City of Cape Town is to implement an Integrated Development Plan (IDP) for the city whilst fulfilling its administrative roles. They achieve this by engaging with residents, assessing and monitoring various initiatives to meet the needs of the residents. CoCT also creates supports and amends policy to help govern the city. Furthermore, they provide services to the city’s residents. They require resources to be able to enforce policy and identify strategies that best serve their plan. Challenges that the CoCT faces are lack of resources, unwillingness for residents to comply with policies and difficulties building consensus amongst a diverse population.

C: City of Cape Town residents.
A: Municipality.
T: Implement IDP for Cape Town,
Service delivery.
W: The implementation of the IDP will address the main development strategies for CoCT.
O: CoCT.
E: Limited scope (Cape Town),
For the next 5 years,
Compliance is often difficult to encourage and could be resisted,
Building consensus amongst the stakeholders.

Root Definition

A system owned by CoCT which fulfils a service delivery role for the area and implements a 5-year IDP for the city which it must enforce and monitor.
The above CM (see figure 6.5) represents the local government in Cape Town and their perceived systemic process. Their plans generally need to be planned within an electoral cycle to ensure completion. The city must assess what needs to be done, which informs what can be done with the given time (activity 1). From that, a process of engagement begins to determine the most pressing issues, and the best means to address those (activities 2, 3 & 4). This forms the basis of an IDP which is developed and then implemented, and administered by the city (activities 5 & 6). The progress is assessed through another process of public participation, and the necessary amendments are made (activity 7). The process as a whole is monitored, and then changed if necessary (activities 8, 9 & 10).

Participant 3 (P 3):

P 3 is a leading academic at the University of Cape Town (UCT). P 3 is deputy director of the university’s African Centre for Cities; a department that aims to facilitate critical urban research and policy discourses for the promotion of vibrant, democratic and sustainable urban development in the global South, from an African perspective. The department facilitates and publishes research in line with these goals. The department also provides policy assistance to government in addition to assisting and promoting the work of development organisations. In order to achieve this, the department needs students, sponsors, and research projects. Challenges facing the department are
that the scope is limited to UCT students and it falls within the broader jurisdiction of UCT and thus must adhere to UCTs rules.

C: Students of UCT, Society.
A: African Centre for Cities staff.
T: Facilitate research on African-specific urban solutions,
Partner with policy-making centres in South Africa.
W: Alternative solutions to African urban issues need to be researched to create sustainable urban development in Africa.
O: UCT.
E: Scope limited to UCT students and not broader public,
Falls under jurisdiction of UCT.

Root Definition

A system owned by the African Centre for Cities whose staff provides an African perspective for the facilitation of student research and policy advice on urban issues in Africa in order to promote sustainable urban development in the global South, within the operational scope of the UCT.

Conceptual Model

![Conceptual Model Participant 2](Figure 6.6- Conceptual Model Participant 2)
Figure 6.6 reveals the CM of the African Centre for Cities. P 3’s organisation’s aim is to review development discourse and find alternatives more specific to the African context. In order to do this a thorough analysis of development discourse in Africa must be completed (activity 1). Issues are then identified and the resultant crises that emerge in Africa are described (activities 2 & 3). Based on this description a systemic response is developed based on research (activity 4). A feedback loop exists at this stage of the systemic process where the research could inform further failures or the research itself could lead to failures and crises in Africa (loop from activity 5 to 2/3). The research is then used to assist development organisations and policymakers (activities 5 & 6). Partnerships are then forged to further facilitate and disseminate research (activity 7). At this stage, another feedback loop is present. The process in its entirety is monitored and necessary adjustments are made. The process as a whole is monitored, and then changed if necessary (activities 8, 9 & 10).

Participant 4 (P 4):

P 4 is Operations Executive at the Victoria and Alfred (V & A) Waterfront. The waterfront is 300 acre, mixed-use development in addition to being one of Cape Town’s most popular tourist destinations. The P 4 is head of operations which manages the services to the precinct. This includes: parking, security, traffic, electricity, water, etc. The team provide services to the precinct and monitor outputs. They leverage the best possible use for the services by assessing and implementing various strategies of management. The Waterfront has been a pioneer for environmentally conscious management techniques in Cape Town, and has created a large amount of awareness for sustainability. A challenge for the operations team is that they are governed by profit-driven board members. As such, any sustainable intervention must be approved by the board.

C: Patrons of the V & A Waterfront.
A: Operations team.
T: Manage services,
Manage facilities.
W: A well managed precinct will provide a greater economic return to investors.
O: V & A Waterfront.
E: Profit-driven company.

*Root Definition*

A system owned by the V & A Waterfront, carried out by the operations team, which effectively manage both the operational and strategic implementation of facilities and services to help ensure the precinct is profitable.
**Conceptual Model**

**Figure 6.7- Conceptual Model Participant 4**

**P 4** is required to manage the services and facilities of an urban precinct. In order to do this he/she must know the scope of what it is he/she is managing (activity 1). Based on the scope management strategies are devised that are most effective from an economic perspective (activities 2 & 3). These strategies are carried out and measured (Activities 4 & 5). A feedback loop exists where strategies are reconsidered based on their performance and are replaced or improved with more effective strategies. The results are shown to board members who assess the performance of the precincts management with regards to a return on investment (activity 6). The process as a whole is monitored, and then changed if necessary (activities 7, 8 & 9).

**Participant 5 (P 5):**

**P 5** is the Local Economic Development Manager at VPUU. VPUU apply a methodology to provide a comprehensive development strategy to improve the socio-economic state of impoverished communities in Cape Town through capacity building and participation. They achieve this through area-based management of communities and engaging with the residents. The organisation also acts as an intermediary and collaborates with local government and other NGOs to improve service delivery to poor areas. VPUU set goals with the communities, and monitor the achievement of these goals. The most significant challenges that they face is developing a working relationship with local government and local communities.
C: Residents within VPUU remit.
A: VPUU staff, volunteers and community.
T: Provide strategy to improve socio-economic state of community, Implement strategy.
W: A comprehensive strategy for socio-economic development founded on collaboration and civic engagement which focuses on improving safety in impoverished communities, can promote the creation of sustainable neighbourhood in impoverished South African communities.
O: VPUU.
E: Willingness of residents to engage, Working with government.

Root Definition

A system owned by VPUU, and run by staff and volunteers, which provides a comprehensive strategy for community development for impoverished communities which focuses on building civic capacities, mobilisation, and participation, both civic and public, to improve socio-economic conditions in order to create sustainable neighbourhoods in South Africa.

Conceptual Model

Figure 6.8- Conceptual Model Participant 5
The CM above relates to the perceived systemic activity of a development organisation. Their first task is to enter a community and assess the conditions in the community (activity 1). Unlike other development organisations, VPUU partner with the community. Community involvement is evident in every step of the process, including initial assessment (activity 1-6). With the help engagement a set of priorities for the community is defined out of which a community action or development plan is created (activities 2, 3 & 4). A feedback loop is created where the partnership operate the action plan and reassess the conditions to further develop the plan (activities 5 & 6). This iterative process forms a significant part of the development methodology endorsed by the organisation. The process as a whole is monitored, and then changed if necessary (activities 7, 8 & 9).

Participant 11 (P 11):

P 11 is a community facilitator for VPUU in Khayelitsha; one of the largest, and fastest growing informal townships in Africa. P 11 is a community member who is a representative of Momwabisi Park (in Khayelitsha) community for VPUU. The participant’s community in Khayelitsha are attempting to improve the socio-economic conditions of the community primarily through the installation of basic services and infrastructure. The community engage with VPUU and local government to cultivate plans for the community’s development. The community rely on willingness of the residents to take ownership of their neighbourhood and take an active role in its development.

| C: | Community. |
| A: | Community/VPUU. |
| T: | Provide basic services to the area, |
|   | Improve the socio-economic conditions of the area. |
| W: | Civic mobilisation and participation with NGOs and local governments can create concrete plans for developing impoverished communities. |
| O: | Community. |
| E: | Willingness for people to participate and engage, |
|   | Legislation. |

Root Definition

A system that is owned and operated by the community to improve the conditions of a neighbourhood by ensuring that the residents receive basic services and mobilising residents to take ownership of their community and play an active role in its development. Actions must be in accordance with regional and national legislation.
P 11’s CM represents the perceived systemic process of a community trying to improve the quality of life in an informal settlement in Cape Town. Firstly, they are required to assess the major issues affecting their quality of life (activity 1). Once the community identifies the major issues, they devise means of addressing those issues within the limitations of their environment (activity 2). It is clear that government cannot provide the improvements that they need so they are forced to make partnerships with NGOs in addition to local government (activity 3). These partnerships form the basis for a plan of action to improve the quality of life which is subsequently implemented (activities 4 & 5). A feedback loop exists (between 6 & 4) where the progress of implementation is assessed and necessary adjustments are made to the implementation plan (activity 6). The process as a whole is monitored, and then changed if necessary (activities 7, 8 & 9).

South African Worldview
After creating RD’s and CM’s for each South African participant, a combined worldview of the South African participants representing a “developing country” context is created. This is intended to depict the perceived “systems-world” associated with sustainable community development in South Africa. This is then later compared to the real-world situation that emerges from the interviews and
The South African CM is illustrated in Figure 6.10. This practice facilitates an intellectual process of thinking about the problematic situation in South Africa. The challenge here is to combine the worldviews of organisations that have differing aims and views into a unified model. The CATWOE presentation below refers in general to the situation in South Africa and aggregates the worldviews of the participants.

C: Community.
A: Government, citizens, NGOs & private sector (community stakeholders).
W: The development of sustainable cities in South Africa requires the improvement of socio-economic which is driven by communities.
O: Community.
E: Policy limitations, Requires buy-in from public, government & businesses, Resource limitations.

South African Root Definition
A system owned and run by a community and its stakeholders to improve the urban sustainability of a city by addressing socio-economic issues of communities within the limitations of resources and operational capacities of local government.

South African Conceptual Model

Figure 6.10- Conceptual Model South Africa
From an examination of the main imperatives of the individual participants in South Africa it is clear that in South Africa systems are encouraged to focus on the most pressing issues as resources are limited, and the consequences of these issues are severe. This is exhibited by activities 1, 2 and 3. These activities were exhibited by participants: 2, 3, 5, and 11. Based on the on the review of sustainability in South Africa, it became apparent that these prioritised issues are centred on socio-economic issues (hence activity 2), this was also apparent in the CMs of participants: 3, 5, and 11. Coupled with assessing what was achievable with available resources (activities 4 & 5), another necessity is forming partnerships (activity 6). This was demonstrated by participants: 2, 5, and 11, and participants: 1, 2, 3, 5, and 11 respectively. Partnerships are important in order to meet the skills and finance shortfall required to shift to a more sustainable state. These partnerships are then used to develop a plan to improve the most pressing issues (activity 7). Most participants had a development plan that was integral to their CM. The applicability of this plan is then assessed (activity 8) all the participants had some form of assessment whether formal or otherwise, and further solutions are identified if necessary. Thus a feedback loop exists between activity 8 and 5. The last stage of this systemic process is to implement the plan (activity 9). The process in its entirety is monitored and relevant actions to improve are instituted (activities 10, 11 & 12).

### 6.6.2.2 North America (A “Systems-World” Focus)

**Participant 6 (P 6):**

P 6 is the founding Director and President CaGBC. The participant is a well-known advocate of green buildings and sustainable community development. His organisation aims to further sustainability in the built environment by raising the standard and number of green buildings in Canada. This is achieved through promoting and providing accreditation for a number of rating tools, some of which are community-scale tools. The green building council also engage in research, awareness and educational campaigns to show the benefits sustainability. Furthermore, the organisation provides consultation on matters of urban sustainability for its members, as well as local governments and NGOs. Resources are acquired through donors, members, and the verification of projects. Constraints that the CaGBC face are related to a general resistance to change by developers and the fact that many tools are restricted to technical aspects of building design and construction.

- **C:** Designers and clients of buildings.
- **A:** Staff of CaGBC.
- **T:** Creating and upholding a set of benchmarks,
  Verify that projects achieve these benchmarks.
- **W:** Using a set of standards to encourage more environmentally friendly design
and construction techniques you can reduce the negative ecological effects of the built environment.

**O:** World Green Building Council.

**E:** National scope, not legislative (voluntary adherence), excludes things below building scale (i.e. consumption habits of occupants, appliances...).

**Root Definition**

A system owned by the World Green Building Council which sets voluntary standards for the Canadian built environment, and verifies the achievement of these standards for designers and construction clients, in order to reduce the ecological impacts of the built environment.

**Conceptual Model**

![Conceptual Model](image)

Figure 6.11- Conceptual Model Participant 6

Figure 6.11 illustrates the CM of the CaGBC. The first activity requires that the organisation assess the options available to them for improving the standards of the built environment towards sustainability (activity 1). Like in South Africa, assessment tools are the most available and popular means of achieving this. From the available tools, the most applicable tools for the Canadian context are selected (activities 2 & 3). Activity 4 reviews how the selected tools are administered. A feedback loop exists at this stage of the model as if a selected tool does not work within the operational scope.
of the organisation it will not be applicable and another tool may have to be identified. The organisation then begins to develop mechanisms to support the tool through building case studies and gathering other information (activity 5). The selected tools are then applied to various projects and the organisation act as consultants to the project team (activity 6). Finally, the projects are verified and given a rating depending on how the project scored (activity 7). The process as a whole is monitored, and then changed if necessary (activities 8, 9 & 10).

**Participant 7 (P 7):**

P 7 is Manager of the LCC rating tool. LCC is an assessment model offered by the ILFI. It is a visionary community-scale rating tool that challenges traditional approaches to community development through an application of a stringent verification process. The developers of the tools consult and collaborate with developers, local governments, and other NGOs by providing case studies and other tools to help meet the requirements of the tools. The development of the tool is iterative in nature and involves a constant conversation with various stakeholders involved in sustainable community development. The tools rely on advocacy from “champions” and project teams to promote the tool and its ideologies. Perceived challenges facing the organisation are a resistance to change traditional planning and development patterns. This is exacerbated by the difficulty involved in achieving accreditation through the LCC.

- **C:** Planners and Developers.
- **A:** LCC staff.
- **T:** Challenge traditional thought about district-scale development,
  Creating and upholding a set of benchmarks,
  Verify projects achieve these benchmarks.
- **W:** Setting a revolutionary rating system will force planners and developers to rethink how to plan and develop district-scale projects.
- **O:** ILFI.
- **E:** Not legislative (Voluntary Adherence),
  The difficulty in achieving accreditation.

**Root Definition**

A system owned by the ILFI, and operated by the LCC staff, which intends to revolutionise district-scale development by setting a challenging set of voluntary standards and verifying the achievements of these standards for planners and developers.
The CM for P 7 (see Figure 6.12) displays the systemic activity process for an organisation developing a SCRT. The initial activity of this particular system is to assess the deficiencies within sustainable community development and planning within a given context (activity 1). This requires research, as does identifying appropriate responses to these deficiencies (activities 2 & 3). Hence, a feedback loop is created. After identifying appropriate responses, it becomes necessary to identify the key players in the identified deficiencies, and the key players of appropriate responses (activity 4). A tool is then developed that links the stakeholders to appropriate responses (activity 5). Thereafter, the organisation must create supporting information and other mechanisms that allow the tool to be implemented (activity 6). Subsequently, the tool is applied to projects, and the organisation act as consultants to the project team (activity 7). Finally, the projects are verified (activity 8). The process as a whole is monitored, and then changed if necessary (activities 9, 10 & 11).

Participant 8 (P 8):

P 8 is Director for Innovation at EcoDistricts. EcoDistricts is a protocol for community-scale development. The participant also helped develop the Green Star Communities rating tool at the GBCA. EcoDistricts has created a comprehensive strategy to accelerate district-scale sustainable development.
development from the neighbourhood up through collaborative and innovative approaches. The organisation provides a protocol and implementation strategy (as well as other resources and tools) for its methodology to help organise a community to take action. The organisation engages in marketing and promotion of the tools yet also relies on “champions” to further advocate the tool. Challenges that this organisation face is a resistance for people to adopt this kind of approach, and a lack of willingness or ability for people to collaborate at the community scale.

**C:** Neighbourhoods.

**A:** EcoDistricts staff.

**T:** Provide a comprehensive implementation strategy for neighbourhood development,
Assess achievements of strategy,
Bring together various stakeholders.

**W:** Providing a comprehensive strategy for district-scale development, which is collaborative in nature, will accelerate urban sustainability.

**O:** EcoDistricts.

**E:** Not Legislative,
Relies on willingness and ability of stakeholders to collaborate.

*Roo Dictionary*

A system owned and operated by EcoDistricts to provide a comprehensive implementation and assessment strategy based on voluntary collaboration between stakeholders to accelerate district-scale sustainable development.
Like with P 7, P 8’s CM (see Figure 6.13) starts with extensive research (activity 1). The research forms a basis to assess ways in which the organisation can achieve its main objective; accelerating urban renewal and sustainability (activity 2). Subsequently, the stakeholders involved in achieving this objective must be identified, and ways to facilitate collaboration with these stakeholders must be devised (activities 3 & 4). Based on this, strategies to accelerate urban renewal and sustainability are developed and collated into a coherent protocol (activities 5 & 6). The protocol is applied to community-scale projects and support for the tools is provided to the project teams to assist with the application of the protocol (activity 7 & 8). A feedback loop exists at activity 7 where the application of the protocol can serve to inform the development of new strategies or the adjustment of existing ones. The process as a whole is monitored, and then changed if necessary (activities 9, 10 & 11).

Participant 9 (P 9):

P 9 is Section Manager of Environmental Sustainability for the District of North Vancouver (DNV) municipality. The participant has a variety of roles that improve and maintain sustainability for communities in North Vancouver. The District of North Vancouver’s (DNV) aim is to implement an integrated and sustainable community plan for the district in addition to providing services to the area. The community plan is the result of a lengthy public participation process and is said to be very inclusive. The way DNV implement this plan is through collaboration with developers, communities, regional government, and private sector. The local government organisation also creates and amends policy in line with the plan. The local government then monitors and measures the progress.
of the plan and aligns strategies to best achieve the realisation of the plan. Charrettes, workshops, and committee meetings ensure the inclusivity of the plan throughout the design and implementation phases. Challenges DNV face is the difficulty in building consensus amongst a large populous and ensuring compliance to policy.

C: DNV.
A: District municipality.
T: Implement integrated and sustainable plan for the community, Fulfil administrative duties.
W: The implementation of an integrated community plan will lead to a sustainable district in North Vancouver.
O: Greater Vancouver Regional District.
E: Limited scope (North Vancouver District), Compliance is often difficult to encourage and could be resisted, Building consensus amongst the stakeholders.

Root Definition

A system owned and operated by the district of North Vancouver municipality which fulfils an administrative role for the area and implements an integrated, collaborative and sustainable community plan for the area, under the legislative jurisdiction of the Greater Vancouver Regional District.

Conceptual Model

![Figure 6.14- Conceptual Model Participant 9](image-url)
Figure 6.14 reveals the systemic process of activity of a local government in North America. The first activity (activity 1) requires that the local government assess the various options for governing the community. From these options, the most effective means to govern the particular community are identified (activity 2). This governing model relies heavily on civic engagement, and a series of charrettes and meetings take place (activity 3) preceding the development of a plan for the community (activity 4). This is carried out with constant engagement with the citizens. This is shown by the feedback loop between activity 3 and 4, and later between activity 3 and 6. Activity 5 illustrates the implementation of the plan, and activity 6 shows the assessment of the plans progress. Here, a feedback loop appears as the assessment of the plan’s implementation may lead to further development of the integrated community plan. The process as a whole is monitored, and then changed if necessary (activities 7, 8 & 9).

Participant 10 (P 10):

P 10 works for an interdisciplinary design firm that provides a variety of services for community-scale development projects. P 10 offers consultation and provides certification for LEED-ND projects for clients implementing district-scale developments. The participant consults with design teams and developers, and provides evaluation and accreditation to projects. Additionally, the participant collaborates with NGOs promoting SCRTs in North America. Challenges the participant may face are that there are a limited number of projects of this scale where developers are willing to fully embrace the imperatives of the LEED rating tool, and the tool requires a large degree of data that may be difficult to acquire.

C: Clients of Dialog.
A: Participant 10.
T: Provide consultancy services to clients regarding LEED,
Verify client projects for the purpose of LEED certification.
W: District-scale developments can create sustainable communities via the use of SCRTs such as LEED-ND.
O: Dialog Design.
E: Profit-driven clients,
Market conditions,
Limited by rating tool objectives.
Root Definition

A system owned by Dialog that provides consulting and accreditation for LEED-ND (sustainable community rating tool) for clients who develop district-scale projects in order to make a profit.

Conceptual Model

![Conceptual Model Diagram]

Figure 6.15- Conceptual Model Participant 10

Figure 6.15 illustrates the systemic process of activity for P 10. Activity 1 consists of an evaluation of the appropriate scale and scope of assessment for the company and its clients. It was decided that community-scale assessment was appropriate for these purposes, and the various options for assessing projects of this scale are determined (activity 2). From these options, a tool or suite of tools is selected based on their relevance to the company’s scope and the needs of their clients (activity 3). The selected tool(s) are presented to clients and a consultation process begins where the firm offers services to process certification by assisting decision-making and collecting the relevant information required for certification (activities 4 & 5). A feedback loop exists here (activity 5) where the relevant tool may be shown to be inappropriate for the client’s or capabilities needs once the project commences. Finally, the organisation facilitates the final verification of the project. The process as a whole is monitored, and then changed if necessary (activities 7, 8 & 9).
North American Worldview

This section has revealed an intellectual construction of the process of activities for each participant’s worldview. This is exhibited through the CATWOE, RD’s, and CM’s. Thereafter a combined CATWOE, RD, and CM is developed to depict the worldview of North America’s approach to sustainable community development as a whole. Therefore representing the worldview of the “developed country” context. This is intended to depict the perceived “systems-world” associated with sustainable community development in North America. This is then later compared to the real-world situation that emerges from the interviews and the subsequent data analysis. Whilst it is possible to develop a CM for the “developed” context it is important to note that the CATWOE and CM for North America is an amalgamation of the various systemic worldviews of the North American participants and will not accurately describe one or all of the participants as they have different objectives and values. Common processes and activities are thus included and will be explained in the description of the CM for North America.

C: Community.
A: Local government, NGOs & private sector (developers).
T: Urban sustainability.
W: The marketing of sustainability to developers through a third-party verification process will drive sustainable community development in North America.
O: Local government.
E: Verification is voluntary,
Limited by profit-making models.

North American Root Definition

A system driven by local government and administered by built environment professionals in the public and NGO sector to promote and endorse urban sustainability through marketing sustainable community development to developers via a third-party verification process within a profit-making model.
The North American CM (see Figure 6.16) alluded to a more sophisticated and better supported network to promote urban sustainability. This is based on the level of sophistication demonstrated by the various participants and their organisations. This allows for practitioners to better identify and define the type of application to employ, and find a corresponding application to best meet the sustainable needs of that environment. This was demonstrated by all participants and appears on all of their CMs. The approach was centred on a market-driven approach to urban sustainability where developers are encouraged by local government to make sustainability a part of a business model.

Participants 6, 7, and 10 clearly endorsed this approach, as is seen in their CMs. The activity process for North America begins with the identification of the best scope for application of a tool to promote urban sustainability (activity 1). From this a rating system marketed at developers was identified as the most practical response activity one within the context of North America (activities 2 & 3). Participants: 6, 7, 8, and 10 carried out these activities. The tool(s) is then developed and the supporting resources to manage implementation of the tool(s) (activities 5 & 6). The process shows a clear and deliberate process of gathering information to inform the verification process as the third-party accreditation plays an important role in sustainable community development in North America (activity 7), as shown by participants 6, 7, 8, and 10. The last stage of the activity system is to assess
and accredit the tool(s) in practice. The process as a whole is monitored, and then changed if necessary (activities 9, 10 & 11).

6.7 Stage 5- Comparing the “Systems-World” with the “Real-World”

By developing CMs and RDs of participants, a simplified, “systems-world” perspective of the human, and aggregated, actors within the problematic situation is developed. As previously established, this is used to ask questions of the real-world situation. Thus, a systemic understandings were used as a base to conduct further inquiry with the interview participants. The questions that participants were asked was based on the analysts’ systemic understanding of the role they fulfil in the promotion of urban sustainability.

The bulk of questions asked in the interviews remained constant to maintain a level of consistency (as illustrated in Appendix B). However, questions were removed, amended, and added as the process of data collection continued. Thus questions deviate slightly from participant to participant. This was in order to optimally align the questioning to each stakeholder’s worldview. This is also in keeping with the iterative nature of the data collection; where the process of learning was used to help guide the questions presented to interviewees. Consequently, the interviews enabled the investigation to adequately examine the differences of the assumptions made in the “systems-world” and the reality of urban sustainability in North America and South Africa. This process was achieved through thematic analysis of the collected data. Thematic analysis is a method for identifying, analysing, and reporting patterns within data (Braun & Clarke, 2006). These patterns are known as themes. A theme is described as: “...a coherent integration of pieces of data that constitute findings” (Sandelowki & Leeman, 2012, p. 1407). Therefore, themes capture important data related to the research question, and represent a degree of meaning within the dataset (Braun & Clarke, 2006). In the case of this study, common threads are identified based on their relationship to sustainable urban development, UFM, and SCRTs. The literature presented earlier in the study was used as a point of reference for these themes. Subsequently, the collected data was read multiple times and recurrent experiences, ideas, attitudes, and beliefs regarding the research subject matter were noted. Thereafter, the patterns were catalogued into sub-themes. A thematic map is then created which presents the themes, their relations, and the coding (Vaismoradi et al., 2013). This, in addition to the coding completed for this investigation, was completed using NVivo qualitative data analysis software. An outline of the thematic map is provided in Appendix E. The themes and sub-themes are then used to inform a collective experience for each research area (South Africa and...
North America). This essentially describes the real-world situation which is compared against the “systems-world” CM’s revealed in section 6.6.2 of this chapter.

The following section exhibits the themes that developed out of the data analysis process using NVivo. Note that emergent themes observed in North America are presented first. This is because North America as a region is considered to be at the forefront in sustainable community development and SCRTs. Thus by presenting these themes first it will better serve to illustrate the real-world problematic situation in South Africa without directly comparing the two regions.

6.7.1 Emergent Themes for North America (A “Real-World” Focus)

Data collection which consisted primarily of semi-structured interviews shaped the description of the real-world situation in North America. This is set out by the emergent themes. The following section presents these themes with corresponding literature and anecdotes from the transcribed interviews. The first major theme is support for sustainable community development. This is followed by an outline of the challenges facing sustainable community development in North America. Thereafter a description of the main ideas around the implementation of sustainable community development in North America is disclosed.

Subsequently, a discussion of, and reflection on, the two sets of emergent themes is provided later in the chapter. This further helps provide a description of the real-world situation. Thereafter, the rich pictures for North America and South Africa are presented.

6.7.1.1 Support for Sustainable Community Development

Four sub-themes were identified under support for sustainable community development, namely: political support, economic support, NGO support, and public/community support. Each is presented and discussed below.

It was suggested by a number of participants in North America that a functioning and stable political and socio-economic environment plays a large role in facilitating the implementation of SCRTs:

P 7: “...so I think it is probably very dependent on a functioning economic and political environment...”

P 10: “…many of the measures of LEED-ND, there is perhaps more of an investment upfront that is reliant on various things happening in the future and if you are in a very unstable political and economic environment can you really plan in that way for so long in the future?
What follows is a breakdown of how the political and socio-economic environment in North America supports the implementation of sustainable community development.

A) Political Support

The significance of local government’s role in supporting sustainable community development in North America is unrivalled.

P 8: “...we see government as an obvious leader in this space...So it is absolutely critical for those city leaders to step-up and government leaders to step-up and embrace it so it is fundamental to the success”

A large degree of support for sustainable community development in North America comes from local government. Here, they are seen as a key leader in promoting widespread sustainability in cities (P 8). In order to do this, local governments use their legislative influence at the city level to bring developers into sustainable community development:

P 6: “So I think that the municipality can play a really important role in terms of- they have so much influence around infrastructure and land-use that that is where they play an important role”

P 10: “…typically the local government is very supportive and makes special allowances. And typically they are quite knowledgeable of why and understanding of what the reason is behind that and supportive of what that particular project is trying to do”

Above, P 6 highlights how local governments in North America also play a supportive role by forging more collaborative relationships with developers. This sentiment was echoed by other participants:

P 7: “Seattle, there is now an incentive programme if developers meet certain petals and imperatives of the LBC they will hit density bonuses so I think we are moving away from a confrontational to a more collaborative working model with the government, which is great”

P 6: “…there are some of these projects around and I would say they are developer driven but also the municipal collaboration... With the municipality, they have to provide certain pieces before they can really ask the developer to really hit those targets”

Essentially local governments in North America are actively involved in creating open lines of communication for collaboration. Local governments help facilitate the sustainability visions of NGOs through engagement and support. Local governments have also shown to incorporate the ideals promoted by NGOs into their political mandate:
“we are starting to work with local governments and we are starting to see local governments using our standard to actually use it for codes which we think is awesome and it is great and we encourage them to do that”

Thus, the rating tools are used as means for the city to guide policy development around sustainability. Through analysis of the data it becomes apparent that a particular set of arrangements are in place between various stakeholders in order to drive sustainable development in North America. Whilst their individual interests are different they identify with a shared goal and work to manage their differences into ways where they can achieve this goal whilst serving their individual interests. Further evidence of such an arrangement is the EcoDistricts pilot project called Target Cities. Here, they have partnered with local governments, as well as other collaborators, in eight cities across North America to build public-private-civic partnerships in order to drive urban regeneration:

“Well we are doing that with the Target Cities projects...What we are trying to do is provide some light coaching or give them the tools so that they can do that. We are getting on the ground on a couple of these projects...”

Local government’s approach to supporting sustainable community development requires a deep understanding of the various stakeholders. The data suggests that they are well equipped at fulfilling this catalytic role in North America.

B) Economic Support

Many development firms in North America have experience with SCRTs. The business case for sustainability at the community scale is well understood and articulated by developers, especially for LEED-ND certified developments:

“I think for developers there is definitely a marketing piece, LEED has a brand name so they can say: ‘OK, well yes, maybe we will be investing in these particular items of the development or around certification of [unintelligible passage] and we think there will be a pay-off from a marketing perspective’”

Furthermore, developers are well aware of the role that they play in the development of communities. There is an acute recognition of the city’s role in leading development in a more sustainable direction. Thus developers understand that they have an increased influence to negotiate with local governments, on matters regarding zoning and permits, when they develop more sustainable communities:
P 6: “...when the developer goes to the municipality for approval, they say: 'I am going to build this building to LEED and hope to get a faster approval and maybe get some concessions around density and so on...unless you have the developer financing to change neighbourhoods, it is not going to happen. They are the ones that carry most of the risk, they are the ones who have to provide the finance, they are the ones who have to invest”

The above illuminates the measure of influence developers have in supporting sustainable community development in North America. Moreover, there are a number of developers in North America that have the sophistication and resources to be able to take the financial risk on a large, integrated, community-scale project. This is evident by the existence of multi-disciplinary design firms that offer a wide array of consultancy services (ranging from urban planning, architecture, and engineering) designed to assist projects of this scale (P 10). This suggests that there is a market for providing consultancy work for large developers looking to develop community-scale projects that meet certain sustainability benchmarks.

C) NGO Support

There are a number of NGOs in North America that are promoting sustainable community development through the creation of SCRTs. These NGOs are well organised and demonstrate a sensitive understanding of sustainability. Furthermore, they incorporate systemic thinking to their methods and effectively link sustainability to the development of urban environments:

P 7: “...there are no sustainable objects, there are only sustainable systems”

P 8: “...the rating tool world, the rating tool builders, and the rating tool administrators are pretty sophisticated these days...we have designed these basic templates that allow project teams to understand how broad a scope this inter-dependent systems idea of sustainability is. So that forces them to think broadly, and connect dots, and understand that is a very broad lens and not just a narrow environmental focus”

P 6: “So I like the tools in terms of that they are very comprehensive, they link buildings, infrastructure, urban design, transportation, and food and a whole bunch of things...”

The biggest and most detectable impact of NGOs is that they have been hugely influential in driving awareness for sustainable urban development. Subsequently, this implores local government to change policy, and encourages developers to strive for higher standards of sustainability. They have also continued, and facilitated, the development of the discussion around urban sustainability:

P 9: “I think the values of them [SCRTs] for a large part is taking a whole bunch of different components related to sustainability and actually make people talk about them”
...we in the green building world have done a pretty good job at furthering the conversation on environmental and ecological goals..."

"The green building world has been hugely successful, it has been one of the most successful movements globally, I believe. It started with a checklist and 22 years later we have absolutely transformed the way that we build, and design, and fund, and operate buildings..."

Furthermore, refining a general understanding of sustainability by creating a common language via rating tools has had a considerable impact on the development of urban sustainability:

"People were talking about it but it wasn’t organised and the concept of green building was not really understood...With the GBC’s and LEED we really brought it together. So we created the rating tool which created this common language...”

"...we have had, certainly some success in terms of increasing the understanding...the understanding of what that means and a literacy and a common language. And metrics that we can look to try and measure how we are doing...So I think is valuable because at least we can have- it is hugely complex, so at least now we can have more sophisticated conversations about it and have more people being able to participate in that conversation, and there are so many players involved so that is really valuable”

The NGOs have also been sensitive to the fact that they need to bring people along with them and sustain support from developers and local governments. To achieve this they need to monitor the pace, to some degree, in which they push the urban sustainability movement:

"I think the USGBC is very good at being sensitive to not losing the community they have built up, to try and pull them along without losing them along the way because if we lose them along the way perhaps we will end up accomplishing nothing..."

"there are plenty of folks within the community that have no idea what it means and that is hard and that highlights the need to bring people along. You cannot go too quickly. As much as we would like to accelerate we have still got to bring people on”

Building on this, the data suggests that the developers of the tools are aware that the SCRTs are not perfect but feel, in recent years, it has been critical to build traction and to create a broad base of awareness and willingness to engage with the tools, before mainstreaming more comprehensive and rigorous rating tools. This is corroborated by the participants:

"...I think LEED-ND, the current iteration of LEED-ND, is a necessary first step because what LEED is trying to do is pull the development community along... I see its deficiencies all
the time and I think it can be way better but that said I wouldn’t get rid of it. It is better than nothing. I think for a lot of places, it is a good starting point just to getting something on the table and say: ‘OK, this is where we are starting from, what do we need to add in? What is lacking here?”

Nevertheless, there is evidence of NGOs bringing tools to the market that challenge convention. ILFI impose a set of particularly challenging requirements for their LCC tool. Furthermore, EcoDistricts are challenging the way rating tools are viewed altogether by developing a methodology that focuses on the process of collaboration and leadership to provide an integrated framework to deliver sustainable communities. The EcoDistricts methodology also seeks to empower grassroots organisations to become catalysts for urban regeneration. EcoDistricts is not alone in engaging with grassroots organisations and it became apparent that NGOs play an important part in facilitating sustainable community development at a grassroots level. This is achieved by providing communities with tools that build their capacities and enable them to be autonomous in their attempts to inspire sustainability in their own neighbourhoods:

P 10: “the national resource defence council put out a free guide for local, grassroots community groups of how they can use LEED-ND to help further sustainable community development in their neighbourhood. So this guide is designed for people who do not have any background or experience with working with this technical material”

In this sense, NGOs in North America have also been a key driver towards creating sustainable communities in North America. This has been achieved by developing their vision and creating something measurable and tangible and presenting it to local governments to help implement. Much of the groundwork is performed by such organisations, and local governments’ strategies rely on the research and development carried out by NGOs:

P 6: “...we have become a movement, a global movement that can drive that forward. So in a way we are an intermediary and we work with cities, and we work with the private sector and we do try to connect the two all the time...”

D) Public/Community Support

Support from the community is evident in the sense that sustainable imperatives are incorporated into political mandates. Politicians understand that they can leverage greater support at the voting polls by incorporating sustainability into their objectives. Whilst public support for sustainability has more notably been witnessed through consumer responses to produce and goods, it has also been
demonstrated by the developers who now see a market for sustainable communities. These developers are responding to a community’s desires to live in sustainable neighbourhoods:

P 6: “On the consumer side I do see that consumer behaviour is really changing and that it is more driven by the new media, the social media- people have more information on how to make decisions”

In this vein, communities are also driving sustainable community development as they are leveraging their influence as consumers to create a market for more sustainable alternatives to development. Additionally communities are more engaged in the policy environment and often push for certain initiatives in their neighbourhoods:

P 6: “I think that local communities can set a lot of the- I do not want to say regulations, but directions and policies to city councils and to other community organisations and so on to push this forward...There are so many different ways in how they can push it forward. So it is both the city and also strong community groups/community organisations, they get involved and become engaged citizenry”

There is also a clear understanding of the necessity to engage and support community involvement in sustainable development:

P 10: “But at the end of the day there are folks that have a vested interest are responsible for what will ultimately happen in the neighbourhood and so there has to be an agreement and buy-in there. That cannot be an outside organisation telling them to do that. It can be guiding them, supporting them”

It follows that in North America participants revealed there was, in most cases, strong relationships between communities, NGOs and local governments. Engagement with communities in addition to working with communities to help them achieve their specific goals was evident throughout the interviews:

P 8: “I think focussing on a neighbourhood and a community, focussing them on getting some action happening so that they can really see the benefits. I think that is absolutely critical”

P 6: “I think that will be the crucial part in getting good communities; community engagement. So the community can help shape, particular in existing neighbourhoods…”

P 7: “…the way that we are trying to figure that out is by working with communities and projects in an open-handed and open-minded manner... What we’re really trying to do is we
are trying to collectively build a vision...have them own and come up with the vision themselves”

Building on this, the interviewee’s suggested that garnering interest and buy-in from communities was a significant contributor to the achievement of sustainable community development. Central to achieving such buy-in was being able to demonstrate to communities the benefits that come living more sustainably. Demonstrability is important because it helps communities understand how the notion of sustainability plays out in their lives:

P 8: “We play out our lives in a neighbourhood scale so it is the only scale to really advance sustainable urban development because that is the scale that people are going to relate to; their daily lives, how they spend their money, how their kids grow up”

P 10: “…if we are ever going to get there as a society we have to start seeing good examples, we have to start seeing them have success, and then people learn from each other and say: ‘Well they did this over here. Can we do a similar process over here?’”

An effective means of articulating sustainability in a demonstrable way at a community level is through linking quality of life to sustainability. By demonstrating to communities that their quality of life is intricately linked to comprehensive sustainability in their neighbourhood, support for sustainability will undoubtedly increase:

P 9: “The other thing that I think is good is if you can tie in sustainable development to quality of life and integrate the two of them and have people thinking that it is not a sacrifice but rather a benefit to have it”

P 6: “…the big must, is the liveability...I think as an environmental organisation, we need to step back and not always think about energy and carbon because most people find that quite boring...They just want the service, they do not care about the other stuff...So, they care more about the liveability aspect...we need to look at that: affordability, nature, food and all the things that people enjoy”

For most communities that drive sustainability, their willingness is often catalysed by being able to express what sustainability means within their own environment or community. Helping communities understand this, and subsequently assisting the cultivation of a shared vision to for a community, was considered by the participants to be a necessary part of developing a sustainable community:

P 7: “…having people own the vision rather than have the vision given to them is the way to move forward effectively”
P 8: “I think there should be a very clear goal to deliver and implement so that you can look, and learn and improve...I think focussing on a neighbourhood and a community, focussing them on getting some action happening so that they can really see the benefits”

Conclusion

It is clear from the above discussion regarding support for sustainable community development in North America that this environment can facilitate the development of sustainable communities. Leadership is most influentially apparent in local government. However, there is ample leadership from other role players with vested interests. In addition, there is a clear understanding of the roles in which each stakeholder plays. This helps facilitate a collaborative platform to implement sustainability at this scale. Finally, there is a collaborative dialogue that exists between NGOs, local government, communities, and developers. However, there is still plenty of room for improvement as there is little evidence of that alluded to meaningful inclusion of all stakeholders in the development process.

6.7.1.2 Challenges Implementing Sustainable Community Development

Three sub-themes were identified under challenges implementing sustainable community development, namely: resistance to change, incomplete understanding of sustainability, and the complexities present at the community scale. Each is presented and discussed below.

A) Resistance to Change

The literature has suggested that the sustainable development of urban areas requires a shift in thinking. This shift must consider the broader implications of human activity. Whilst the participants agree with this notion, the sustainable community development world has experienced resistance to shifting people’s mind-sets towards thinking more sustainably:

P 8: “Our nature as human beings as being, we fear change, we don’t want to let go, we have entrenched mind-sets and that is just part of being human”

P 6: “Also, people tend to not welcome change, or like change. So the biggest barrier in sustainability is actually human nature of lacking change because those who embrace change they can move and change very quickly”

P 7: “The last 100 years we have had to assume these big centralised, technological government-lead systems were going to keep us safe and they were going to make us happy
and profitable et cetera. So I think there is a lot of cultural baggage around cities that we are bumping up against a lot”

P 9 builds on this by highlighting that entire economic systems are based on consumerism and fossil fuels. Resultantly, there are “many forces” against the advancement of sustainable ideologies. This is something that is also experienced by developers in North America. Here it is common for a developer to prioritise rate of return over sustainable interventions:

P 6: “These are big investments and the development industry typically tends to be very profit-driven and they don’t change easily...many developers still don’t see what the point is for sustainable development... They say it, and they pay lip service to it, but it is dusted away basically because it requires us to think differently”

P 7: “I think another part of it is what we are valuing, so when you look at time and cost premiums I think it is based on a model of development that is more extractive of value than additive of value”

This profit-driven approach to development is still a dominant theme within the built environment. Ultimately, these sentiments are based on the reality that people living in North America typically do not directly experience the negative effects of environmental degradation in the places that they live. Thus sustainable development is not treated with the urgency that it should.

B) Incomplete Understanding of Sustainable Development

An issue related to resistance to change is the lack of a concrete understanding of the concept of sustainable development. This is seen as a challenge on many levels:

P 8: “They are really tough to break in because we are going to experience just that; people that are not interested, do not want to do it, do not understand it...there are plenty of folks within the community that have no idea what it means and that is hard and that highlights the need to bring people along”

The significant contributions that NGOs have made in creating awareness have been noted, however, this has translated into an understanding of sustainability that is focuses on energy efficient appliances and ethical produce:

P 7: “...we in the US, we are really gung ho about changing all of our light bulbs to compact fluorescent lights but we do not really- you know, we all want a Tesla and we want an energy efficient MacBook Pro, but we do not actually consider deeper roots of what we are doing”
P 9: “I would say that people may say: 'Yes, sustainability is good' but how does that translate into what they actually do? ...I think the general recognition that your behaviour impacts on the environment is still not understood”

Therefore, it becomes apparent that there is a clear awareness of issues relating to sustainability. What is lacking is a comprehensive understanding broader implication of human activity. Despite evidence that people are beginning to see the wider consequences of their actions and their lifestyles, it is yet to permeate broader consciousness of society. Typical sentiments towards sustainability lack systemic depth and are short-sighted. Alarmingly, this flawed understanding is not held exclusively by the general public but is shared by governments, developers, and even the way SCRTs are implemented. P 6 asserts how local governments often adopt myopic approaches to urban management:

P 6: “...the urban planners; the municipal planners, when it comes to green buildings, they have been a big wash out...what they care about is land use and transportation, how people get around and so on...”

Short-sighted developers are also known to evade sustainable interventions due to their additional requirements for initial capital:

P 10: “Trying to make the case, finance that- you know, up-front that may add significant costs. Maybe they will have substantial pay-offs in the long-run but there is still that up-front affordability question that is really challenging”

It is suggested that the profit-driven worldview adopted by the “typical developer” is one that’s understanding of sustainability is extended only to what can be described in built aspects of an urban environment.

C) Complexity of the Neighbourhood/Community Scale

Dealing with community-scale development, by definition, requires dealing with complex social systems. Such systems are impossible to accurately capture by a signal framework or rating tool. Consequently, the implementation of sustainable community development is significantly hindered by the complexity of managing the infinite inter-dependencies that exist at the community-scale:

P 8: “…we have a long way to go because district scale and neighbourhood scale is just hard, it is complex. Once you get outside of four walls and a roof of a building the issues and the complications grow exponentially”
P 10: “...the amount of complexity simply increases as you go to a broader scale...Now you are dealing with all sorts of public infrastructure and inter-dependent systems between buildings. It is a huge increase in complexity...”

The essence of what makes these systems complex is human interaction. Since sustainable community development is put into effect by different stakeholders; with differing views and interests, working together; it stands to reason that managing these relationships is a complex task. When probed on this topic participants offered more questions than answers:

P 8: “How the hell do we deal with people? How do we align interests and mind-sets?”

P 9: “I think with redevelopment the challenges is that they have different property owners. How do they integrate together? How do they affect each other?”

Central to these complex relationships regarding sustainable community development in North America is the relations between the developer and local government. Trying to manage trade-offs between these stakeholders and align their interests and objectives in such a way that everybody benefits is a significant challenge:

P 6: “I think the relationship has to change between the city, the developer and the community. The developer wants to develop, the denser the better, the community does not want any development, and the city of course wants development too, and it is a strained relationship in most causes. For me, that is the main reason why we are not implementing sustainable development...So there is always a trade-off and we just have to keep in mind that they [developers] are profit-driven and so that relationship has to change and the city is limited in what they can ask developers to do...”

This is a significant finding as sustainable development throughout the world is implemented at a local level. Thus, it highlights the necessity of stakeholders to gain an understanding of one another and focus on the processes that can lead to them effectively collaborating at this scale.

Conclusion

The most significant barriers to sustainable community development in North America stem from an incomplete understanding of sustainable development. This is proliferated across the various sectors of society, government, business, and NGOs. Resultantly, a true appreciation of the urgency for sustainable development does not permeate the consciousness of most people. It is argued that this reinforces entrenched resistance to change exhibited by humans. Consequently, attempts to move towards more sustainable lifestyles and practices are often ignored or seen as secondary to profits or affordability. These competing forces of ethics, human nature, and awareness partially allude to
the complexity of the world we live in. The complexity of combining this with community or
neighbourhood development only serves to amplify the complexity of urban sustainability. This
creates a formidable challenge for stakeholders, their inter-dependencies and dynamics, when
formulating an appropriate action plan for a community. A more systemic, and comprehensive,
understanding of sustainable development is required to better link actions to their consequences.

6.7.1.3 Implementation of Sustainable Community Development

Three sub-themes were identified under the implementation of sustainable community
development, namely: dominant rating tools, collaboration between stakeholders, and a process-
oriented approach for urban sustainability. Each is presented and discussed below.

A) Dominant Rating Tools

In North America SCRTs have been employed for a number of years. The most established and
prominent being LEED-ND. Whilst there are a plethora of other rating tools available in North
America, it is LEED-ND that has gained the most traction with developers and all the participants
were well versed in this rating tool and how it worked. Until recently, LEED-ND was seen as the
default tool used for development in North America.

i) Technically-based Rating Tool

LEED, inspired by its success at the green building scale, sought to build on the same formula for a
rating tool and apply it to the neighbourhood scale. Many community-scale rating tool developers
from around the world have followed a similar route. This approach ultimately led to it being well
received by built environment experts as it followed a familiar formula that had been tried and
tested in green buildings:

P 6: “We are using LEED in Canada and it is becoming the de-facto global standard as well
because of its presence in many other countries”

Consequently, LEED has offered a major contribution to the green building movement:

P 10: “LEED, as a rating tool, has had some really positive impacts. I think it has been really
valuable in terms of the overall advancement of the green building movement globally. Over
time we have seen it evolve from a rating system for commercial office space to a rating
system that addresses all of these different building types”

Whilst this is undeniably a positive observation, the implications of adopting such an approach for
the purposes of community-scale development have been less positive. Some scepticism associated
with expanding the objectives set out by LEED’s building tool for community-scale application (P 7) was noted:

P 8: “I think that is the case and a little bit of what LEED-ND suffers, you know, the idea that we can just take the building rating tool and just scale it up”

P 6: “...was that people think: ‘Well it worked really well in buildings, so why not apply it to a community scale?’ and I am not sure it is working out so well. I think that the boundaries we draw on building need to be bigger”

Given the complexity of community development, it is suggested that this is an over-simplified approach to community-scale development. Like green building tools, the community-scale tools rely on a discourse that sets performance targets for various aspects of the community without considering their practical implications in a real-world setting. Thus, this approach to community development places emphasis on structural aspects of development and does not consider the many other systems at play:

P 7: “...when you start scaling-up to city or community or neighbourhood context, it quickly becomes that you are running into social systems, you are running into economic systems and truthfully I have not seen- and that is not to say it doesn’t exist, but I have not really seen projects, that in a really meaningful way, starts to tie those things together”

ii) Development-orientated Rating Tool and Social aspects of Sustainability

LEED’s strategy for building momentum for more sustainable practices in the built environment was to design a tool that would be well suited for use by developers. By having a third-party that can independently verify certain sustainability benchmarks has a huge potential to act as a marketing tool for new developments. This has been successful in driving the green building movement. Nevertheless, there are a number of technical deficiencies associated with employing such a tactic when designing a rating tool. Firstly, LEED-ND projects are directed towards new developments. Given the size of community-scale projects, and the reality that LEED-ND only serves to minimise the environmental damage of community development, it questions how sustainable LEED-ND, and similar tools, are in practice:

P 10: "If you are building an entirely new neighbourhood, even if it has this great LEED-ND certification, the fact that it is a huge new development has huge environmental costs and implications...It leaves us with these huge redevelopment projects, basically that is all it is applicable to"
Additionally, it can be argued that there is an opportunity lost by not considering ways to redevelop the existing stock of communities which currently accommodate over 50% of Earth’s population.

Another shortcoming associated with LEED-ND’s strategy to bring along the development community is that it has not accelerated change at the fast enough pace:

**P 8:** "...tools like LEED-ND have been around for a good seven years now and we are seeing change, not enough and not as quick as we would like, so we need to seriously think about how we accelerate the outcomes that we want..."

**P 7:** "...I also think that LEED, in particular, does not necessarily challenge regulatory structures..."

This has been vital in upholding the substantial traction LEED gained in the marketplace. Relatedly, this ties into the motives behind the tools technically dominant framework. Subsequently developer-oriented tools like LEED-ND do not adequately represent the significant social factors of a community (consumption habits of occupants, social justice, well-being and affordability) as this is difficult to capture in a tool that places emphasis on technical outcomes. Moreover, such an approach tends to be mechanistic in its view of the issues regarding sustainable community development. Given the nature of consumption in North America, the ironic consequence of technically dominant tools could be that a community with a high sustainable rating could house the world’s least sustainable occupants.

**P 10:** “So I think, yes, it is certainly very lacking in terms of addressing social aspects of sustainability but at least it is trying to move in that direction and carry folks along...”

**P 8:** “...we are still yet to really bring in the planners, the social scientists into the rating tools around neighbourhoods and communities. So there is still a tendency for it to be dominated by mechanical, electrical, you know, the engineering space. So I think we have got some course correction to do there”

A prescriptive model like this offers an increasingly specific route to achieve sustainability. In reality there is an infinite arrangement of pathways that could create a sustainable community. Consequently the applications of tools like LEED-ND are limited to a very specific type of community development, and therefore a very specific type of community. The tools are unable to accommodate the varying needs of different communities or contexts. This inflexibility is considered to be a fundamental flaw of SCRTs.

**P 10:** “LEED-ND was developed and it was like LEED for building in its infancy: one rating tool that is best at addressing a certain type of neighbourhood development...it depends on a
particular context of what their sustainability objectives are and whether LEED-ND happens to match up with those...So it is completely dependent on context”

P 7: “I think every specific local level will have its own unique challenges and unique opportunities. I think to the extent that a framework or programme needs to be flexible and help inspire those”

It was also highlighted that social factors cannot be comprehensively measured in a variety of different communities using a single rating tool. This compounds the argument against SCRTs being a comprehensive pathway to urban sustainability.

P 6: “...liveability aspects and the rating systems do not necessarily capture that because they are too technically based...anything that adds to the liveability cannot necessarily be captured in a rating tool... I think we need to look at that: affordability, nature, food and all the things that people enjoy”

This brought up an important point about SCRTs which highlighted the fact that the end users are unlikely to choose to live in a community solely because it has a certain sustainability rating. The factors that help formulate these decisions often involve variables which are not directly linked to sustainability. Moreover, these factors which are based on personal preference cannot be defined in a rating tool:

P 6: “I am coming back to that liveability aspect that would really complete the picture for people, and if you ask where people they want to live, they will want to live in Kitsilano [a suburb of Vancouver]. I have always said: 'Why is that?' Because it is park-like, there are lots of trees, you have the beach and so on. They do not think about that if you live there you have to drive everywhere because they don't have a fixed rail service”

Hence, being able to appropriately link demonstrable benefits to the liveability of a community and sustainability, is an important aspect which SCRTs have failed to complete.

Rating tools are heavily reliant on experts to facilitate verification. As discussed, the matter of developing a community is complex and thus requires the input of experienced professionals within built environment. Nevertheless, there is little attempt to incorporate communities into this process by tools like LEED-ND. Even tools that offer more collaborative approaches to achieve sustainable community development still require a large amount of input from experts.

P 7: “For it to stick there has to be people or communities that buy into it and I think the question is, that you already specifically asked is: 'Does your average community have the resources, not just financial and skills, to make this happen?"
P 8: “...a lot of the time you get trapped into speaking technically and we need to be very conscious, we need to adjust our language. It is our job to be understood, not their job to understand us...”

Moreover, as infrastructure has such a profound effect on the community and how it functions it is logical to ensure that the community is fully engaged and involved with decisions that surround said infrastructure. P 10 emphasises the importance of engaging with community stakeholders:

P 10: “The earlier that they are brought into the process and the more integral they are to the process, the more chance of success”

P 6: “We are trying, in the rating tools, to have this integration and we see some of it and people think about it. On the community side, in terms of integration, I am not so sure. I am not so sure that it is happening”

B) Collaboration between Stakeholders

The North America participants advocated a more holistic approach to urban sustainability where a variety of stakeholders are actively engaged in the development process. Moreover, there was agreement that integrated/systemic mechanisms can accelerate a number of different aspects relating to urban sustainability. Collaboration between stakeholders is an integral part of achieving this. However, there was evidence that in some cases these collaborative relationships were not being forged and thus the implementation of community-scale projects has been negatively affected:

P 6: “...and it is a strained relationship in most causes. For me that is the main reason why we are not implementing sustainable development ...”

However, there was also evidence that the nature of the relationships was improving:

P 7: “…I think we are moving away from a confrontational to a more collaborative working model with the government, which is great”

Central to a holistic approach to community development is the delicate interplay that exists between local government, developers, NGOs, and communities. Complex relationships are characteristic of this interplay. In order to create the right balance of involvement and influence towards implementation it is important for stakeholders to understand each other’s skills, limits, and roles within the development process. Furthermore, the differing needs and objectives amongst stakeholders need to be articulated and prioritised to ensure a unified foundation to base sustainable development.
Whilst many of the participants talked about the need for tools to encourage deeper engagement with communities there was little evidence, with the exception if EcoDistricts, which suggests this sentiment is followed through in the development process of projects that deploy SCRTs.

P 8: “In terms of the spirit of the place, and the culture, and the identity, and those type of issues...You know, they are 'squishy' issues that you can only fully embrace and understand and advance them based on engagement and collaboration so the tools do a little bit on that but there is still a lot of opportunity to do more”

P 10: “…now we need our ability to work together and make these things happen to also increase in sophistication if we want to actually implement these things”

The key theme that came from this topic was that the framework set out by EcoDistricts was a promising way in which to go about complex collaborations:

P 8: “EcoDistricts has a number of strengths, one is that is trying to do something that really has not been done which is tackle some really hard challenges and barriers to successful change which is: How the hell do we deal with people? How do we align interests and mind-sets?”

P 6: “I think EcoDistricts has a leg up about how it thinks about community and community engagement. I think that will be the crucial part in getting good communities; community engagement”

The EcoDistricts protocol offers a process-orientated approach to sustainable community development that seeks to reconcile the efforts of the various stakeholders into a unified and effective method of addressing urban sustainability.

C) Process-oriented Approach

The green building movement has created a great deal of clarity around what can be done to promote sustainability within the built environment. There is now a recognised set of performance indicators for buildings and communities. These tools attempt to bring together stakeholders by setting targets for developers and local governments to achieve. Despite this, there is limited clarity and guidance regarding the process of integrating stakeholders to reach these targets:

P 6: “I would say, in the rating tools and so on, we do. The rating tools always look at integration and connectivity. I think in the development process, not too much”

The lack of procedural mechanisms offered by SCRTs has been identified as a significant barrier to the successful implementation of community-scale sustainability. EcoDistricts’ framework was
Integral to EcoDistricts’ methodology is their determination to suitably integrate communities and grassroots organisations into their approach. Essentially this is centred on building capacities of communities so that they can become catalysts for sustainability (P 8).

Conclusion

In North America, the dominant practice of developing sustainable community development is implemented via LEED-ND. It is worth noting that other globally recognised tools (BREEAM-C and CASBEE-UD) mirror many of LEED-ND’s notions to promote urban sustainability. LEED-ND has encouraged developers and local governments to be more integrated and collaborative in their approach to community development. Nevertheless, their success at garnering meaningful collaboration and engagement with a wide variety of stakeholders has been limited at best. LEED-ND, and tools of a similar nature, do not attempt to manage the complexity of sustainable community development. The tools lack the adaptability to be used on a variety of different community-types. Additionally, they only consider social aspects of sustainability are limited to the technical foundation of these tools which focuses on infrastructure, planning and buildings. The result is that the tools fail to link liveability and social factors into urban sustainability assessment.
The social aspects LEED-ND are only articulated within these fields (an infrastructural, planning and building).

Development of this nature is so complex that a rating tool alone will never be able to provide a clear guide for comprehensive community development. Nevertheless, SCRTs are useful in acquiring useable data to help paint a more accurate picture of the challenges that arise in community-scale sustainable development. They have also been successful in creating awareness for urban sustainability.

More collaborative approaches for sustainable community development were actively advocated by all participants. However, little evidence suggests collaborative efforts have been effectively implemented in practice. Thus other approaches need to be considered that can offer a means of managing the process of developing sustainable communities that can be complemented by the measurable aspects of a rating tool. EcoDistricts has been identified as an approach that matches these requirements.

6.7.2 Emergent Themes for South Africa (A “Real-World” Focus)

The following section reveals the themes with corresponding literature and anecdotes from the interviews conducted in South Africa. The structure of the major themes mirror that of North America in order to illustrate that both regions are attempting to achieve the same objective. However, it does not serve to draw a direct comparison between the two areas. Nevertheless the representation of the themes in this manner does illustrate the differing needs of “developed” and “developing” contexts.

6.7.2.1 Support for Sustainable Community Development

The contextual differences between North America and South Africa are vast. This has a significant impact on how sustainable community development is carried out in the respective areas. Four sub-themes were identified under support for sustainable community development, namely: support from local government, private sector support, NGO support, and public/community support. Each is presented and discussed below.

A) Support from Local Government

The leadership role that local government plays in South Africa in driving sustainability is limited. Whilst evidence can attest to various attempts to drive sustainability from within local government,
there is little cohesion between the various governmental departments to provide an adequate leadership role:

**P 5:** “The government wants to be more integrated but in practice it really struggles to do integrated service delivery beyond small pilot projects or big mega-projects…”

Nevertheless, both national and local government is beginning to support sustainable community development. This is most evident in the planning policy that CoCT is introducing. These policies encourage a more holistic technique for developing urban areas:

**P 2:** “We did the tall building policy and we said to developers, because they were only doing their site. We said: ‘No, we would like you to look at the precinct, the whole block and then your building so you understand how your building fits within the context’ because we [CoCT] are judging it according to context”

Whilst this does not directly address sustainability within this policy it illustrates the city’s intention to look more holistically at its precincts, and a willingness to integrate broader contextual issues into new developments. There is also evidence in some communities that local government is going into impoverished communities and initiating meaningful and participatory approaches to improve the socio-economic conditions within these communities. **P 2** describes a city-led project in the Dunoon informal settlement outside of Cape Town:

**P 2:** “The first phase is going in and first finding out what is going on rather than just coming in and doing something to it. So getting the community involved, finding out what the real issues are.”

These isolated projects, where local government shows a willingness to engage, have seen a large degree of success. However, it is suggested that local government lack the resources to be able to effectively accomplish meaningful community engagement on a larger scale than a couple of pilot communities. However, some initiatives have started as small pilot projects and ascended to become part of the political agenda. It relies on the efforts of individuals supporting these projects, and many of these initiatives do not get off the ground as politicians are often reluctant to induct these initiatives into a political agenda.

### B) Private Sector Support

There is a restricted measure of leadership for sustainability demonstrated by the private sector at the community-scale in South Africa. Private sector do play a small part in supporting community-scale initiatives but this usually falls under the remit of larger organisations that engage more heavily in corporate social responsibility (CSR). As such, leadership towards sustainability most commonly
takes place in the form of CSR. Remarkably, the relatively young green building movement in South Africa has gained significant impetus, especially with developers and large corporations. This exemplifies the willingness of private sector to engage and invest in sustainability. Despite this, the movement is yet to progress into community-scale development. There is evidence in the data that indicated the use of rating tools for community/precinct scale developments (P 4). However, these are most commonly applied by a small number of well-established precincts, most notably: the V & A Waterfront in Cape Town. Furthermore, these accreditations are yet to be articulated in measures broader than environmental sustainability.

Another means of leadership carried out by the private sector is through creating public awareness for sustainability by demonstrating the interventions they have used, and marketing their responsibilities to the environment:

**P 4:** “…publicising what they have done for the environment they are in effect teaching the general public what they can do and what they should do, thus helping to create action from communities to achieve sustainability and see what they can do to make changes and create a market for other businesses to follow suit. The competitive advantage comes when the public are educated about what choices to make”

C) NGO Support

In South Africa, NGOs have had the most significant impact in demonstrating support towards sustainable community development. It is argued that this is likely to be a result of the limited resources government has available to pursue this. GBCSA has played a significant role in promoting sustainability in the built environment and they continue to uphold and improve the standards they have introduced. Though the GBCSA are currently not actively involved in promoting sustainable community development, they are involved in aspects of community-scale sustainability projects. They are currently reviewing a number of SCRTs for potential implementation in South Africa. Furthermore, they exhibit an understanding of holistic approaches and their benefits in an urban environment:

**P 1:** "...we toyed with the idea of starting a small-scale enterprise to recycle waste. So, you know, you now have this community of sixty or so people and there was a job waiting there, somebody within that community, they had the scale then, somebody to recycle waste, and they can resell it and make money out of it”

The data revealed that the most significant impact on sustainable community development was driven by VPUU. This organisation has broken traditional paradigms of development. They attempt to develop communities through engaging with communities and integrating them into the process
of regeneration. Essentially, they install a more effective model of governance than what trickles down to these communities from government institutions (P 5). This empowers people to take ownership of their community. The above was described by a community member of Momwabisi Park, an informal settlement in Khayelitsha, Cape Town:

P 11: "There is a lot of things that VPUU is doing because it is working closely with the community...through VPUU's methodology we have now a special reconfiguration plan; a plan for the development of this area, for the permanent development of this area. That plan was created, was done by the community itself... VPUU put all of their resources in terms of community participation because it is key"

VPUU is an example of a development agency that takes a more comprehensive approach to tackle community development. It is centred on the biggest issues in these areas; which in the developing context of South Africa is socio-economic improvement. This approach has seen many successes in its short lifetime, and has created a significant improvement in the way communities and local governments interact:

P 11: "Before government was just coming in to the area and doing whatever they want. Through this system which is a methodology of VPUU; where the people have to take a decision about how they must be developed. So government is working closely with the communities now"

The efforts of VPUU have been well documented in recent years and they are seen as a prime example of how to effectively promote more sustainable outcomes in impoverished communities in South Africa. In spite of the success VPUU has received there are few other NGOs that operate at the same scale as them. As such the support for sustainable community development extended by NGOs lacks the scope and plurality when compared to North America.

D) Public/Community Support

The data revealed that the participants recognise and understand that community involvement is integral to sustainable community development:

P 2: “Without them there is no sustainability. If you don't start with your community and they are not empowered enough to understand why you are doing these things, you can't achieve it”

P 11: “So the people, I mean the community itself, the leadership are playing a very big role because they are participating in terms of trying to fix the problem that are in the community”
P 3: “…community must not be slighted because there must be buy-in, otherwise we are sunk”

Accordingly, there is willingness for communities to support these projects and get behind them but little evidence suggests that communities are driving sustainable community development:

P 11: “We have also to assist to change our lives. We don’t need, only government to come in and change our lives. We must play a part in order to change our lives”

P 2: “…we have the willingness of people and there are NGO’s that have the resources to make a real difference”

Although there is willingness for communities to get behind interventions to improve their neighbourhoods, there is little evidence that illustrates this willingness has been successfully being converted into a vehicle that can execute projects within the framework of government administration:

P 5: “Khayelitsha community trust, which was a whole lot of very bright elders of Khayelitsha, then it was registered as a municipal entity and the plan was they would take over a whole lot of the buildings being built and become act of the city and they, themselves, de-registered as a municipal entity because of all the financial reporting requirements for owners and the need to comply with the MFMA. So you realise…it often falls to vocal leaders, political leaders of all kinds of different levels of integrity and all different kinds of skill sets”

This highlights the necessity of collaboration, but also the difficulties associated with collaborating with different scales of government and trying to organise various interests into a cohesive, community-scale project. VPUU has demonstrated the successes of creating a meaningful dialogue of participation and engagement in impoverished communities. Their approach seeks to build the capacities of residents so they are empowered to take a guiding role in the process of making their communities more sustainable.

Conclusion

There is no uncertainty that there is growing support for sustainable community development in South Africa. The scope of the support, in comparison to North America, is less and South Africa is yet to see an all-embracing support for sustainable community development from local government, and their attempts to drive sustainability are limited and ineffective. It is clear that local government’s focus is primarily on socio-economic issues.

Support from non-state actors is mainly articulated through NGOs and community-based organisations. However, private sector do play a role but mostly through supporting established
initiatives and CSR. NGOs like VPUU have shown the greatest support for sustainable community development. They recognise the need for community involvement, and are effectively tapping into the willingness of communities to improve their neighbourhoods. This reiterates the necessity to fully engage with communities to achieve wide-ranging sustainable solutions for communities.

6.7.2.2 Challenges implementing Sustainable Community Development

Three sub-themes were identified under challenges implementing sustainable community development, namely: socio-economic challenges in Cape Town, political/administrative challenges, and a lack of awareness or understanding of sustainability. Each is presented and discussed below.

A) Socio-economic Challenges in “Developing” Cape Town

Social issues and economic instability in South Africa have long-reaching implications to a variety of aspects affecting sustainable community development. The issue most prevalent amongst participants when questioned about driving urban sustainability in a “developing country” context, was that it is difficult to get people on board with sustainable initiatives when they are living in adverse poverty:

P 3: “If we put ourselves in the shoes of really poor people and disadvantaged people, today is what they are obsessed with. If they get through to tomorrow then that’s the real prize”

P 2: “...if you are in a developing society it is more about survival. So it is a different space”

For many poor South Africans conditions have not changed, or have even worsened, since the abolition of apartheid, and inequality is still a significant issue. Consequently, there appears to be little legitimacy extended to democratic institutions. This makes it difficult to get sustainable development off the ground in impoverished communities. This creates difficulties when trying to get community buy-in for sustainable initiatives in impoverished areas:

P 3: “Inequalities in this country...Really really poor people are thinking: ‘Why the hell? Why us? Why should we buy into this?’...until we get inequality sorted out we are not going to go anywhere because there is this huge mistrust about motives and end-game”

From an urban planning perspective, the legacy of apartheid has also created challenges in the sense that a large portion of the population is decentralised from the city and public services:

P 2: “What we sit with, as much as we say in South Africa we would like to change apartheid, our cities are built. So to un-build that can take hundreds and hundreds of years”

Furthermore, the rate of urbanisation in these displaced communities is alarmingly high. This
presents further challenges for urban planners attempting to incorporate sustainability into community development:

P 2: “...Dunoon as an example, it was designed in 1995 for just under 3000 families. There are now around about 14000-18000 families living there. So the system was planned but it is not coping...the speed at which things are happening is just too fast, especially in Cape Town”

Financial challenges also act as a barrier but are seen as less substantial than what has been previously discussed. Issues here surround the economic system’s lack of capacity to articulate sustainability into a business model. Prevailing economic ideologies are still short-sighted. They measure success in short-term performance. Conversely, sustainable development is largely understood as a long-term goal:

P 5: “…in the financial world the outcome is measured by short-term results so that is your focus. So your investors are not interested in the long-term stuff”

P 1: “…your classic commercial scale developer has a fairly short-term focus. So as we understand in most features to include sustainability in any development scale, almost by definition, there is a payback period involved”

B) Political/Administrative Challenges

The central impediment to developing sustainable communities is government’s role, or lack thereof, in facilitating such processes. Although many of these obstacles are intricately linked to socio-economic climate of the region, government creates a distinct set of obstacles in the achievement of urban sustainability. In North America, it was clear that government was a driver for sustainable community development. In South Africa, there is a distinct lack of guidance in this regard.

i) Lack of Resources

Perhaps most significant in South Africa is the lack of available resources local government have available to promote sustainable community development. Local government is tasked with the challenge of providing safe shelter and basic sanitation for the ever-increasing amount of poor people establishing themselves in urban areas. Whilst there is a necessity to actively incorporate sustainable ideologies into service provision, local government is under tremendous pressure to make the most with the little they have. As such, community development is limited to concerns like housing provision, over a holistic view to improve a community comprehensively:

P 5: “People probably want houses more than they want these processes...”
P 1: “One understands the big picture, you know, we interact with the public sector a lot and there is incredible empathy but they are resource constrained and we have a sector of our community that literally have nothing. So again, any scale development that involves additional work and involves additional costs becomes that much more difficult”

Naturally, resource limitations are echoed across local government in its entirety. This has widespread implications for urban sustainability since development of this nature is inter-dependent on many other governmental functions and departments. An example of this was pointed out by an NGO in Khayelitsha who have far superior information regarding crime in the area than law enforcement has:

P 5: “I mean VPUU has better maps and documents than the city has in many ways and we do perceptions of crime hotspots every week and we’ll show shaded maps of where the crime is”

Despite the above issue being relatively trivial in the light of sustainability as a whole, it revealed a significant finding regarding the relationship between NGOs and local government. Local governments are heavily reliant on NGOs to perform functions that they simply do not have the resources to effectively execute.

ii) Administrative Structures, Leadership and Policies

A pivotal theme of this research posits that sustainable urban development is not possible without collaboration between various stakeholders. The following is an excerpt from a member of CoCT:

P 2: “It is about this inter-dependency as we have different departments within the city. We have people who focus on housing, people who focus on transport but in reality, in the context, they actually meet in the same place”

The issue with the organisational structure of local government in Cape Town is that it lacks coordination. Resultantly, efforts to internally combine different skills and pool limited resources often fail. COCT, at a higher level, has a clear vision and idea of how to manage and develop the city (P 2), yet this does not play out on the ground where these ideas meet implementation. Since local government has legislative authority over the area it has the most influence over how community development and management takes place. Logic suggests that the most influential stakeholders must work in such a way as to facilitate collaboration with other stakeholders. However, participants drew attention to the difficulties in working with local government:

P 5: “The government wants to be more integrated, but in practice it really struggles to do integrated service delivery beyond small pilot projects or big mega-projects...”
Moreover, the structure of government is fragmented and collaboration within the sphere of the institution is problematic:

**P 2:** “...who manages a facility that is utilised by different departments? So eventually no one does anything because it is not their full responsibility, they have a shared responsibility therefore nothing happens. It is especially because people do not understand how we act within the different spheres of government”

The structure of government at the community/ward scale is such that the councillor can hand pick their committee with little accountability (**P 5**). Thus, the government at this level could offer little representation of the community’s needs. The lack of government organisation at the community scale only serves to exacerbate this issue (**P 5**). Unsurprisingly, local government are not suited to execute integrated development projects:

**P 5:** “So, I am unclear after all of this time in working with the city, I am not in the city, who is responsible so for a sustainable urban environment? Is it the planning guys? Not really because they scheme it and plan it and they are thrilled if something goes into fruition but so many of their plans don’t. If you are in departmental silos then who leads the charge?”

This leads to another significant finding regarding the challenge local government pose to sustainable community development: the inherent lack of leadership behind urban sustainability.

**P 5:** “The government institutions I work with have strongly differing understandings internally of how facilities should be managed; their information systems are also not adequate to support data driven and informed decision-making”

**P 5** revealed that the nature of governmental structures has created inconsistent and contrasting understandings of sustainability. Subsequently, there is no coherent guidance within government regarding urban sustainability which helps explain the inefficiencies of implementing sustainable projects:

**P 5:** “There has got to be a concept of who would be responsible at what kind of scale and what kind of neighbourhood. So there isn’t a concept...I think that is part of the problem”

Conceptual leadership is vital in enforcing a sense of unity and cohesion across intra-governmental boundaries. Furthermore, the disorganised nature of local administration in Cape Town limits the engagement with community stakeholders:

**P 5:** “Look at your IDP’s you might have a community meeting, you might not have. It is not even meaningful and engaging”
P 11: “...the government is not close to people...what is needed is that government must come and speak to the people...”

Problems relating to policy were also uncovered by the data. This further impedes the capacity for government to collaborate with stakeholders:

P 2: “If a developer comes to me and says that he can do something tomorrow, we have the willingness of people and there are NGO’s that have the resources to make a real difference but the process is going to take six months to a year, and because of that the market does not allow for these organisations to wait that long, they need to do it now”

It was virtually unanimous amongst the participants that funding and procurement models often disrupt and delay projects. This essentially holds a vice grip on how the city can operate:

P 3: “A nice example in our country right now is the funding models that Cape Town labours under...it is how Cape Town is funded by central government and the way in which that practice is embedded and encoded in law and legislation and funding models, fundamentally determines how Cape Town can do things”

P 2: “Change in policies. Our MFMA [Municipal Finance Management Act] is blocking in terms of a lot of things...Figuring out how the MFMA works will open up the world for us because there is a lot of willingness but you have to look and them and say: ‘Sorry, I can’t use you. I have to go with this’ and it is frustrating”

P 1: “I would love to see the public sector, not necessarily financial, but I would love to see them use their processes and systems to be able to facilitate approval, faster processes”

In the following instance, a community-based organisation was willing to take ownership of the responsibilities of government but relinquished their duties due to the bureaucratic procedures set out by the administrative mandate:

P 5: “Khayelitsha community trust, which was a whole lot of very bright elders of Khayelitsha, then it was registered as a municipal entity and the plan was they would take over a whole lot of the buildings being built and become act of the city and they, themselves, de-registered as a municipal entity because of all the financial reporting requirements for owners and the need to comply with the MFMA”

This illustrates the severity of this issue as it leaves willing communities with a limited assortment of options to improve the situations in their communities. Government needs to provide a policy framework in facilitating and supporting this. Additionally, some policies are outdated and
impractical. Often this means that opportunities to be more effective, and better manage limited resources are lost:

**P 5:** “Every single city building there has their own security contract and some of those security guys can’t go outside the building or help the other building. So now you have this huge inefficiency in the costs of security and in the building”

**iii) Political Agendas and Interference**

A significant issue regarding the implementation of sustainability at the local level concerns interference at the community-level, and by political agendas higher up the decision-making chain:

**P 5:** “Political interference at local level is a major stumbling block...townships still don’t have formalised city systems yet...so local strongmen and local councillors and local political organisations have lots of sway and they can do all kinds of things under the radar”

In essence council members are given too much power over their constituency, and use their influence to advance their own interests over the greater good of the community. This creates a disruptive environment where implementing initiatives for sustainability becomes incredibly problematic:

**P 5:** “There’s a lot of asking for kick-backs: ‘If you want to come and work in my ward how do I benefit?’ Simple things like that, and ‘If I don’t benefit I can’t give jobs to the people who are going to vote for me...’”

Many NGOs or corporates will not tolerate such exploitation and will boycott communities that have corrupt officials. It was revealed that there is not enough accountability for inappropriate or illegal political interference at the community/ward level (P 5). These concerns further compound issues of trust that exist between impoverished communities and governments. VPUU combat this by installing broader channels of leadership in the communities they work with. This serves to decrease the amount of influence one person has, and makes them more accountable.

In addition to this, there were issues affecting sustainable community development that stemmed from higher up in government. Political agendas higher up in government often have little consideration for sustainable imperatives. An example of this is governmental discourse that is resolute in providing as many jobs as possible. However, this does not contemplate better management of resources to create jobs in other fields and simultaneously become more efficient:

**P 2:** “...the logical thing would be to have 10 staff and 5 printers and whatever air conditioning. The government’s initiative is to have 100 staff members because we need to provide more jobs for people”
Furthermore, these agendas often involve competing political factions, and can disrupt attempts to improve situations in impoverished communities (P 5):

P 5: “…it was part of the deal negotiated and the Mayor signed. The days they put the toilets in there is all this back and forth with different political leaders: ‘Don’t accept their proposal, it is not good enough and you have to have these kind of toilets because-’ and in the end the whole thing fell through on the toilets…’Well, what is this about because it is not about meeting needs it is about political control and who gets credit’”

Political parties generally operate in terms of election cycles and are not mindful of the life of development processes as new leadership may throw out. Moreover, in order to maintain power political parties need votes, this is achieved through providing results. Naturally these results need to be witnessed within an election cycle. Therefore establishing a comprehensive sustainable development programme for the city that may take a decade will not be favoured over a low-income housing project that will provide homes for 3000 of Cape Town’s poorest families. Once again this ties in to the socio-economic context of South Africa.

There are examples of bottom-up initiatives where small pilot projects build recognition and work their way into the political agenda. However political conditions in South Africa do not favour this (P 2). As such, there is a general trend that the people who have the most influence regarding many aspects of certain communities are completely disconnected from the communities, and are guided by other political endeavours and pressures:

P 2: “They have political pressures. The pressure is on them, and they have laws as well. Then we have what we have to do in terms of officials…”

P 5: “Even if communities and officials have good intentions, who can promise to deliver on stuff? I mean it’s the budget cycle, and it's your department head, and it's your… So who? And you start to realise there is a lot of ways that you can disappoint communities because of lack of control of budgets”

C) Lack of Awareness/Understanding

Basic aspects of sustainability, for example recycling, do not fall into the consciousness of most of Cape Town’s poor. Ultimately this is linked to aforementioned socio-economic issues that suggest that people living in these communities have short-term needs to meet. It would be unreasonable to expect someone to prioritise their efforts in ensuring a safe and healthy world for their grandchildren when they are struggling to feed their children today. This suggests that the lack of awareness is less a matter of ignorance but more a matter of irrelevance and inapplicability to these
communities. The issues they have to endure on a daily basis far outweigh any considerations they may have for the sustainability of Earth in the coming generations. It is also suggested that there is little evidence of government openly promoting, educating, and raising awareness about sustainability.

This stresses the importance of demonstrating how incorporating sustainable ideologies into these communities can improve the daily lives of its residents:

P 3: “So this big stuff that we do that is intangible and we don’t understand the numbers; there are too many noughts on the end, it is meaningless! ‘Here! Look what happened!’ ... Effort, scale, demonstrability, buy-in, effect, tangibility. All of those things”

P 4: “Eskom, in some cases is the best thing that has happened to South Africa as it has demonstrated how these issues can and will negatively affect our daily lives”

Thus, by articulating sustainability through tangible examples that are important and relatable to the life of someone living in an informal settlement in Cape Town is crucial in terms of harnessing community efforts towards sustainability. More importantly, this articulation needs to align with the priorities of these areas. In South Africa, this is will most likely refer to socio-economic factors.

Many of the participants had little or no knowledge of SCRTs. Although this is not a depiction of their understanding or awareness of sustainable community development, it could suggest that there is little consideration for sustainability at the community scale.

Conclusion

There are a number of serious challenges facing urban sustainability in South Africa. The most significant of these was revealed to be urbanisation and the socio-economic setting of South Africa. It became apparent that these issues need to be emphasised in any attempt to establish sustainable community development. Secondly, further challenges are propagated by political challenges. These challenges are numerous and varied but stem mostly from lack of resources, the lack of operational capacity, and the structures and policies that local government enforce which allow departments to be inefficient, and even corrupt, with little or no accountability. Lack of awareness and understanding was also present as a theme throughout the data collected in South Africa. This also corresponds to a resistance to change. Creating demonstrable links between improved socio-economic issues and sustainability is absent in sustainable community development in South Africa.
6.7.2.3 Implementation of Sustainable Community Development

Five sub-themes were identified for the implementation of sustainable community development, namely: holistic approaches to community development, the use of intermediaries, the importance of community mobilisation, the need for champions and innovation, and opportunities for sustainability in “developing countries”. Each is presented and discussed below.

A) Holistic Approaches to Community Development

A number of participants recognised the need to include more holistic principles, the likes of which are founded in UFM, in order to manage urban areas in a more sustainable manner:

P 1: “...urban-level facilities management is what it is all about. It is being able to get the scale benefits of managing these various aspects at a broader level”

P 4: “So I think more and more people need to consider the entire area and not just the building in isolation”

P 5: “There are so many efficiencies that you lose by not talking and integrating”

Additionally, holistic approaches need to be sensitive to the location in which a project occurs. This will help the community understand why certain things are being done, and will ultimately lead to more traction with that community:

P 2: “...there is actually an incredible opportunity here and the people here are amazing and the place is amazing. And we can't kill it by coming in and putting our sustainability stamp on it, thinking this is how it should be... We need to come up with visions and frameworks for those areas with the local community”

B) Intermediaries

It is established that there are a number of inter-dependent systems and interactions occurring at the precinct/community level. Therefore, it follows that a more holistic view for developing and managing communities/urban precincts needs to have the right mix and variety of skills to execute broad-scale interventions:

P 4: “Operationalisation can be enhanced by involving more stakeholders in the design, development and management of an urban precinct”

Once the stakeholders are actively engaged, it emerged that there needs to be a focus on the goals of the project and how to manage relationships between stakeholders to achieve that (P 2). The issue is that the collaborative efforts that support this logic are not executed. This is attributed to a
number of reasons, though it was suggested that it largely relates to a lack of a unified conceptual agreement on what sustainability is to various stakeholders:

**P 5**: “…what I mean by needing conceptual clarity but conceptual leadership on what does a sustainable urban community look like? What has it got in it? So you are working towards some kind of model”

SCRTs put forward a model where a number of stakeholders are tied into a framework that promotes a single vision; urban sustainability. Frameworks set out by government are more commonly designed to bring in partners to help achieve a governmental goal, and can be inapplicable to many stakeholders. This sheds light on the achievement of NGOs in North America, who have successfully brought in a variety of stakeholders, and encouraged collaboration. Thus, rating tools could be considered as a meaningful solution to build consensus and spur collaboration in South Africa. However, the reality of applying a rating tool designed for the contextual needs and setting of North America may be problematic. It was suggested that using such a rating tool would be inappropriate:

**P 1**: “What we have learnt in our game is this holy grail of a one-size fits all solution is an absolute myth”

Building on this, it was suggested that the contextual issues of an area are central to designing effective development solutions:

**P 2**: “We need to come up with visions and frameworks for those areas with the local community...you have to be on the ground and make it work there...If you do have these models you can use them as a guideline and you can see where we are if we rate ourselves now...But you can never use them as the ultimate...”

The challenge now becomes how to execute a locale-sensitive approach when there is a vast diversity of communities in Cape Town alone. It is argued that applying a template management framework, which excludes the prescriptive measures of conventional rating tools, can be applied to enable an overarching approach to sustainable community development in Cape Town. This template could be shaped and moulded to suit the specific needs of each particular community. By undressing the technical requirements of SCRTs, it enables stakeholders to focus on the process of collaborating to achieve goals that have been appointed by those stakeholders.

The data suggests that local government in Cape Town lack the operational capacity to effectively drive sustainable community development. Consequently, the government relies heavily on forging partnerships with NGO and private sectors:
P 2: “So resources are a key thing and for me that comes back to the fact that we need to be in partnerships. We can’t do everything ourselves.”

It is reasoned that managing these partnerships with local governments requires an intermediary body. Essentially, this is what NGOs in North America have done when introducing SCRTs. In South Africa, there was strong support for an intermediary body to facilitate collaboration between the various stakeholders, at various scales, to navigate towards sustainability:

P 5: “So VPUU is proposing that you need intermediaries between government and communities and these intermediaries then help build the trust and bridge...”

P 2: “…in the end it is managing these relationships...that management between all of these things. It is the management of feeding [information] up and feeding it down. That area is missing, which is the precinct planning level, area-based visions, area-based frameworks”

P 1: “…urban-level facilities management is what it is all about. It is being able to get the scale benefits of managing these various aspects at a broader level”

There is evidence of intermediaries being utilised in Cape Town to great effect. The CID initiative has set up partnerships between the city, businesses, and property owners in Cape Town to support the city’s service provision and preserve property prices:

P 5: “The CIDs are good because they get everyone in the room and it gets businesses and the community partnering so at least there is a little bigger thing that is saying: ‘Please help lead us and pull us together’”

P 4: “Why did they start with the CIDs? Exactly because property values were going down and it wasn’t safe. So they said: "How do we maintain the property value?" Get hold of the area, make it clean, make it secure, make it so that people want to be there”

What is profound about the CIDs is that they were the first body to take an area-based approach to coordinate stakeholders of a community to improve service provision to areas of Cape Town. They have since grown to incorporate broader social issues such as destitution. In spite of the successes of the CIDs in achieving its objectives, its operational remit is not comprehensive enough to institute sustainable community development in the broader sense. However, they are a good example, and a demonstrable foundation to mount more overarching initiatives that consider the broader implications of urban sustainability.

Another example of an organisation that acts as an intermediary, to some measure, is the NGO VPUU. Their approach to area-based management and development is more sustainable, and comprehensive than the CIDs. However, they are an organisation set to achieve their own goal. This
differs from CIDs in the sense that the body was formed to act as an intermediary to perform a certain task. VPUU fulfil an intermediary role as part of a broader vision they have for improving socio-economic development in impoverished communities. Nevertheless, the significance here is to illustrate the efficacy and success of intermediary bodies within the context of Cape Town.

C) Community Mobilisation

Due to the socio-economic issues apparent in South Africa, it is vital that communities become empowered and play an active role in furthering sustainability in urban areas. This notion was evident in the data:

P 5: “Development processes work best if all role players are involved”

P 2: “If you don’t start with your community and they are not empowered enough to understand why you are doing these things, you can’t achieve it [sustainable development]”

This brought up the issue of empowerment. Despite it being noted that there is a willingness of communities to get involved in sustainability projects, there is a concern that many community members do not feel empowered enough to do so. Therefore, building capacity so that communities can truly act as catalysts for sustainable development is an important concept to acknowledge:

P 3: “What we have got to do is to empower citizens to do things for themselves at a local scale. That is where the action is”

Empowerment is a big issue in these communities. Informal settlements in South Africa are typically associated with low levels of education, and high levels of unemployment and poverty. Consequently, there is little that people feel that they can do to change their individual situations, let alone that of their community. Built into the lack of empowerment is the lack of ownership people have in their communities, both literal and metaphorical. Many people living in informal settlements are squatting on land zoned for non-residential purposes. Thus, they have no legal right to live there. In addition, many live in temporary dwellings that are structurally unsound. It is easy to reason with someone who has no sentimental attachment to their living environment under such circumstances. The importance of community ownership and their role in the development process was echoed by the participants:

P 2: “The community and the government must work together. It is about them taking ownership of their space. Without the community we can’t go anywhere”

Some participants mentioned that there was little willingness, in impoverished communities, to take ownership of their neighbourhood:
P 5: “...it seems that there is a tendency for people to expect from government and not take ownership and responsibility of where they are living”

P 4: “...South Africa has become a nation of beggars and had-outs... The people sit back and say: ‘I want you to come and fix my school. I want you to-‘...So I think that is where there has got to be an involvement with the local community so that if one is giving something or doing something together with the local community it is on condition that they are getting involved and are doing something”

Ownership can be encouraged by creating a sense of agency within a neighbourhood. This is often catalysed by some form of leadership structure. It is argued that installing more structures for communities to organise and engage with each other, you can channel dissatisfaction into positive, community-scale change. It was revealed that in many cases there was widespread discontent regarding service delivery and the related quality of life afforded to people living in impoverished communities. This frustration is demonstrated through the vandalism of public property and a lack of a sense of belonging or ownership:

P 5: “...two thirds of maintenance budgets in townships is spent on vandalism related damages. That is the thing, people do not have the investment and the ownership [within their community] or the red herring buildings that are in the wrong place or you didn’t really have stuff that people want”

Whilst this highlights government’s deficiencies in engaging with communities, it also correlates to the degree of dissatisfaction within these communities. There is energy and a willingness to commit these acts because people feel helpless to affect any positive changes to their communities. This is due to a shortage of adequate channels for residents to institute positive change:

P 5: “One protests because change doesn’t happen without those things...”

P 11 attributes civil unrest to the exclusion of communities from the development process:

P 11: “Information is the very important thing which government sits at the office with it without bringing it to the community. That is why it creates riots and so on”

There is a lack of a consultation process that takes place to identify what a community wants or needs. In turn, the community members feel powerless and vent their frustration through vandalism and rioting. The crucial missing variables here are empowerment and vested interest:

P 3: “...we are not going to make any progress if we appeal to government to do things. What we have got to do is to empower citizens to do things for themselves at a local scale. That is where the action is”
When discussing UFM, one of the participants considered how intermediaries and UFM could help mobilise communities:

**P 1:** “But there’s a whole layer of anchors that is embedded in that from community engagement, a community rallying around something that is specific and very demonstrable, all the way through to community-level benefits”

A factor that further inspires empowerment is education. This was noted by the participants:

**P 4:** “One of the biggest challenges is addressing education of people. People aren’t always aware of the issues and what needs to be done...The processes of operationalising sustainable development can be enhanced by educating people about sustainable development so that they are empowered to make better choices”

Given the prevalent notion that the community is central to sustainable development in these areas, it follows that it is vital that local government demonstrate a willingness to engage with communities. This was noted by the participants:

**P 5:** “…for South Africa it is a key thing that is why so many things fail because you don’t have meaningful community participation”

The idea of participation is not well articulated at a local level in South Africa and the views of the community are rarely considered meaningfully:

**P 5:** “…you cannot just have council meetings and rules, and rents and leases, you have got to have a relationship with these people and they have got to understand and buy-in. So what is your relational model and who is it with? So I think that that is a part of the tension then; the dominant models are transactional”

**P 3:** “…but community must not be slighted because there must be buy-in, otherwise we are sunk”

Once the community are involved in a meaningful capacity, they can develop a sense of agency in the outcomes of their community. This will give them a vested interest into the plans for the community moving forward:

**P 5:** “People support what they help create…”

The data revealed that an essential way of building buy-in is by demonstrating the benefits of being more sustainable to the residents of a community. Additionally, this educates the community on how to make better changes to their lives. This, in turn, extends a greater degree of empowerment and ownership to these communities:
P 5: “…people take a heck of a lot of responsibility and they have a vested interest and we strongly promote volunteerism…it is there, but you have to tap into that and help unlock the positive possibilities”

Built into the idea of having a vested interest is being able to articulate a clear vision that relates to communities on the ground. Whilst having demonstrable examples is valuable in the sense that they help individuals see the benefit of being more sustainable, there needs to be something more. Demonstrability alone does not tie in a whole community behind an initiative. Using some form of tangibility that is embedded into a clear, and common vision will give the community a sense of agency and help create an environment where an entire community can rally behind a vision for sustainability:

P 2: “You need the buy-in from all to see that there is a vision…”

Whilst VPUU has been successful in introducing such a vision in the communities they work with, local government has shown little evidence of this. One of the reasons VPUU succeeded in this endeavour is by being able to take a conceptual vision and drive it on the ground in impoverished communities in Cape Town:

P 5: “…it is fine to have big pictures and concepts but you also have to drive it on the ground and make it happen and break it down and deliver”

Having a clear vision that is related and relevant to a community can tie in many other factors that feed into community mobilisation and it is crucial in order to institute community-scale mobilisation.

D) Need for Champions and Innovation

It has been highlighted that there is a lack of leadership regarding sustainable community development in South Africa. This is evident in the absence of cohesion and organisation to support sustainable community development. After analysing the data it was revealed that champions can play a considerable role in inspiring and driving awareness for sustainability:

P 2: “I also think there is a need for champions”

In this sense, a champion is generally understood as a person who strongly and defiantly acts to support something. Champions have the ability to lead and mobilise others by inspiring a vision.

P 5: “There is a particular skill set required for translating ideas, concepts and jargon into practice so effective leadership and management and delivery of tangible outcomes is important”
Champions can come from a range of different backgrounds and can serve a multitude of different purposes. A champion could help drive sustainable community development by acts that seem unrelated to sustainability. The importance of them is that they spark action and act as catalysts for others to follow suit:

**P 4:** “It often takes leadership or champions to give demonstrable examples to society so that they can see the effects and benefits of sustainable practices, then the society create a demand for it. So not necessarily comes from the community or society. It is often kick started by some form of leadership. This could be government, a champion within a community and a corporate entity with a strategic plan”

It is established that there are many perspectives and interests involved in executing sustainable community development. Therefore, the more people that are taking action, the better. **P 5** describes how champions at VPUU have been key to their success:

**P 5:** “One of the reasons it does hold down at VPUU is because [Team leader at VPUU] is a key champion who is both conceptual and incredibly rigorous at a practical level, and it is hard to get all of that in one package, and it can’t always be individuals. It has to be a whole lot of people in the system”

Expanding on this, if champions can learn to integrate their efforts into a unified vision or approach, community-scale solutions can be realised. This notion reinforces the proposal that collaborative relationships need to be forged between the various stakeholders involved in community development. What is more, collaborative approaches bring in a variety of different skillsets and worldviews. This can play a considerable role in driving innovative solutions at the community scale. One of the criticisms of local government in Cape Town is that the political structures and pressures inhibit champions and innovation:

**P 2:** “We think our politicians are champions but they are not. They have political pressures. The pressure is on them, and they have laws as well”

Thus creating an environment where innovation can occur is important.

**P 2:** “And if you really want to make a change then it is not just about compliance, it is about innovation and moving a system forward. So within this whole system, which is compliance driven, being an innovator, a systems thinker, and a chaos thinker is going against that system a lot of the time. So a safe space for those thinkers is always great”

**P 5:** “So how do you get out of that bureaucracy and just get innovative juices going?”
Here, participants highlighted the difficulty of being able to offer innovative solutions within the confines of a government institution. Furthermore, the participants highlight the need for an environment where people are encouraged to try new things.

Amongst the myriad issues involved with the complexities associated with community development, there is also a fantastic variety of opportunities available to create innovative solutions. By pooling different resources, interests and skillsets there is great potential to innovate and create new solutions. Thus, it is vital to be given the freedom to experiment. This was acknowledged by the participants:

P 5: “...we have got to do lots of different experiments and figure out where we get traction...”

P 3: “I like your phrase of trial and error that might be something to really think about. We need to be a bit more experimental”

P 2: “…we are starting to change the system slowly and the government is starting to see that you need this space to try things out”

Included into an innovative approach would be to develop iterative processes around community development. Many organisations do not have the flexibility to continually adapt and change a plan. This is problematic when dealing with the complexities of community development:

P 5: “I think the big institutions don’t move quickly and that is the nature of the big institutions”

Therefore, institutions need to be able to react to changing conditions without being structurally affected.

E) Opportunity for “Developing Countries”

Some participants felt that SCRTs would make many communities in South Africa appear hopeless and any attempt to make it more sustainable would be in vain. Perhaps this may actually be the case based on a “developed country” perspective. However, this does not mean that people living in impoverished communities are incapable of being sustainable:

P 1: “…one mustn’t just assume automatically that because people are poor they can’t live sustainably. In fact, they can teach us a lot about living sustainably”

P 2: “…here are people in informal settlements that are more sustainable because they recycle, they utilise their food production. So are they more sustainable than us living in our cars, getting our food from Japan or America, TV’s from wherever?”
The irony of many SCRTs is that the resultant communities are likely to be occupied by the planets least sustainable inhabitants. Furthermore, there is a great opportunity for “developing countries” to surpass “developed countries” as many poor communities in Cape Town have high density, lower consumption rates (when compared to North America), a high proportion of public or alternative transport use, and many houses are made from recycled and locally sourced materials. This is not to say that these communities are sustainable in a broader sense of the term. However, it serves to highlight a major inefficiency of the dominant model of SCRTs. This was revealed by one of the participants:

P 3: “What I am driving at here is to take care in thinking that transposing adopted categories and models onto a third world situation and somehow make us look less sustainable where paradoxically it might be that things in poor communities, where their carbon footprints are lower and in a sense we are more sustainable”

Conclusion

The participants recognised that collaborative approaches to urban sustainability are essential. This corresponds with their appreciation for a more integrated/holistic approach to urban sustainability. This is linked to the apparent desire and support for intermediary bodies to unify disjointed and inefficient organisations and/or departments of government. Furthermore, such intermediaries are capable of empowering communities to mobilise and engage more meaningfully with NGOs, and government through the development of a clear and relatable vision. Community mobilisation is seen as another vital ingredient to the successful implementation of sustainable community development. This involves building capacities of community members so that they feel empowered enough to take ownership of their neighbourhood and catalyse and buy into sustainable initiatives. This can be encouraged by facilitating leadership from the community-level upwards. Creating the space and support for champions to arise from communities is another meaningful way to catalyse empowerment and ownership. This forms an integral part of community mobilisation. Finally, it is worth mentioning that most of the participants felt that using “western” standards for urban sustainability in South Africa was inappropriate and misleading as there are many aspects of “developing countries” that supersede sustainability in “developed countries”, but would not be accurately depicted by these “western” models of sustainability.
6.7.3 Discussion

6.7.3.1 Similarities between Datasets

Although in many ways North America and South Africa represent opposing characteristics, there is some commonalities that they face in tackling urban sustainability. What follows are the most pertinent similarities identified in the data.

A) Lack of Understanding, Resistance to Change, and Demonstrability

A common thread between the two datasets is that the general understanding of sustainable development is restricted to representing ecological aspects. This was exhibited particularly by the North American rating tools and was identified in the literature by Shriberg (2002), Berardi (2013), Sharifi and Murayama (2013), Ameen et al. (2015), Komeily and Srinivasam (2015), and Xia et al. (2015). Moreover, the typical notion of development is flawed in the sense that it is understood as the attainment of certain criteria. This negates the need for there to be a concrete process to underpin development projects. The development process continues after construction as the human systems that remain are just as vital to sustainable development. Briassoulis (2001) states that assessment tools do not adequately account for the dynanism of the urban space and how it may change over time.

Social factors regarding sustainable development receive considerably less consideration and therefore people are yet to adopt broader issues of sustainability into their consciousness. Participants from both North America and South Africa voiced their frustration about the common perception of sustainability to involve purely ecological issues. Given the ambiguity the notion of sustainability offers, it is not surprising that this imperfect understanding exists. Furthermore, because concepts associated with social systems are far more complex, it is harder to translate these ideas into a working model for sustainable development. Thus, typical perceptions of sustainable development are restricted to concepts that are easier to understand and put into practice. Komeily and Srinivasam (2015) attribute the reliance on more technical aspects of measurement to the lack of knowledge of how to measure social, economic, and institutional sustainability. This is represented by many of the SCRTs.

Although the green building councils have created massive awareness, and gained significant traction regarding urban sustainability, they have also helped facilitate an incomplete understanding by focussing on technical and ecological aspects of buildings, and paying less attention to more complex issues surrounding social systems. This is present in many SCRTs which propose that the acquisition of certain outcomes will create sustainable communities. In reality, a sustainable
community is the result of an ongoing process which continues long after the last brick has been placed. Thus, it is the systems that exist within the community that determines whether it is sustainable or otherwise.

Resistance to change has also been revealed as a common issue facing both “developed” and “developing” contexts. This is strongly related to a lack of understanding, and a need to shift thinking. Much of this resistance is exhibited by the corporate world that prioritises short-term financial goals. Nearly all of the research participants shared a frustration regarding the economic-based resistance to sustainable development. Whilst there are a number of developers that express a wish to incorporate sustainability into their business practices, it is difficult to get shareholders on board with sustainable interventions. Dominant business paradigms do not seek to balance equity, ecology, and well-being, but rather seek only to maximise profits at the expense of the former (Hopwood et al., 2005).

An important factor recognised in both South Africa and North America is that central to breaking down the barrier created by incomplete understanding is providing demonstrable examples of how sustainability can introduce benefits to the daily lives of people. Thus, linking quality of life to sustainability is crucial and necessary to explain the broader implications of individual actions. Demonstrability of quality of life also helps bring high level concepts embedded into sustainable development to a relatable and relevant level. A number of key informants expressed a need for more demonstrable examples of sustainability within the urban and sub-urban context.

B) Collaborations between Various Stakeholders

Sustainability of natural and cultural resources cannot be viewed as isolated efforts and in terms of independent stakeholders (Jamal & Stronza, 2009). It was widely recognised amongst both datasets that pivotal to effectively implementing community-scale sustainability, was meaningful collaboration between the various stakeholders involved. Although it has been established that collaboration is particularly problematic in South Africa, it is an area of concern for both regions as North American participants expressed a concern when questioned about developing an integrated plan with various stakeholders. Subsequently, a need to introduce a framework that focuses on integrating skills and resources into a unified and coherent process has been identified. Here, the focus would be on managing relationships to enable and facilitate more effective collaboration between role-players. Rating tools, in the traditional sense, have failed to offer such a framework and focus on outcomes, as opposed to the means of achieving them. NGOs such as EcoDistricts from North America, and VPUU from South Africa, offer innovative methodologies to dealing with sustainable community development that best represent a process aligned framework. Though the
purposes that the two organisations serve are contrasting, there are many parallels in the ways in
which they operate, namely through their efforts to build capacities of communities to act as
catalysts for positive change.

C) Holistic, Neighbourhood-scale Approaches
The idea of developing holistic approaches to sustainable community development was observed by
both sets of participants. They also identified the importance of scaling-up from a building to a
community or precinct. Both groups of participants articulated that the neighbourhood/precinct
scale was an appropriate scale to accelerate urban sustainability. Participant 8 pertinently explained
that dealing with development at this scale is small enough to be relatable and manageable, yet
large enough to see widespread results. Whilst many rating tools look at the community scale and
how to integrate factors into a holistic framework, many tools fail to adequately achieve this. Many
North American participants highlighted the failures of SCRTs in operation. This is because they pay
little attention to the process of collaboration required to integrate skills and services at this scale.
This was identified by AlQahtany et al. (2013) and Komeily and Srinivasam (2015) who criticised
SCRTs for ignoring institutional dimensions of sustainable development. Furthermore, holistic
approaches are contextually dependent and may play out differently in different areas. The typical
rating tool is too prescriptive to offer enough flexibility to provide a meaningful holistic framework
for different areas And different socio-economic environments.

This leads to another commonality between the North American and South African participants; a
desire to make attempts to operationalise sustainable community development locally developed.
This was also highlighted in the literature by Mehta (1996). Although, this may seem to oppose the
idea of rating tools, in reality it sheds light on a promising opportunity to combine the technical
rigour and goal-setting techniques of a rating tool with the flexibility and procedural leadership of a
collaborative protocol. EcoDistricts offers a protocol for locally-driven urban regeneration which can
be combined with a rating tool such as LEED-ND, should a community decide that the requirements
set out by that particular tool are appropriate for their neighbourhood. In other words, providing a
network of support for collaboration and integration that can be measured by a tried and tested
method.

Thus, the argument is not about the right for SCRTs to exist, but rather to leverage them to best
serve their intended purpose within their intended setting. Although VPUU has shown a similar
approach to the communities they work in, it has never been their intention to bring a sustainable
community rating tool to the marketplace. Thus, their work is predominantly involved in best serving
a single community, or type of community.
D) Importance of Leadership, Champions, and Community Mobilisation

Any form of social change, like sustainable development, depends on the vision, dedication and leadership of key individuals (Jamal & Stronza, 2009). Unsurprisingly there was a general consensus amongst the participants that leadership was vital in driving sustainable community development. Given the lack of leadership ascertained through the South African interviews, it is not surprising that their need for leadership was expressed more than their North American counterparts. Nevertheless it was a common theme in both datasets. Members of communities, local government, and NGOs can act as champions; driving the collective learning process in which society needs to engage to transition towards sustainability (Isaak, 1998). The notion of champions driving sustainability was also highlighted by both participant groups. This was predominantly in reference to community members, developers, and NGO members. The idea behind the importance of champions is that they stimulate action and the more people who are taking action towards a certain goal, the better the chance of success.

It was identified how important the role of the community is in driving urban sustainability initiatives. Frameworks for sustainability need to be relevant and applicable to any given community. Understanding, awareness, and aspirations of local people and authorities with regards to sustainability can be best considered and implemented at the community level (Yuan et al., 2003). Thus, sustainable urban development frameworks need to be flexible enough so that their emergent imperatives are assigned by the community and not outside actors. It was found that the key implementers of sustainable initiatives are communities. Therefore, the initiatives need to be framed according to their ideals and aspirations for sustainability.

E) Complexity of Sustainable Community Development

As the literature suggests, sustainable development is a complex issue. This sentiment was mirrored by nearly all of the participants. Issues of complexity that surfaced from the data were most commonly referred to the following: complications in collaborating with a variety of different stakeholders, complexity of taking concepts and trying to make them work in unpredictable environments, and the intricacies of dealing with the neighbourhood scale with all of its interdependencies and stakeholders.

6.7.3.2 Differences between Datasets

The contextual differences between South Africa and North America are vast. Generally speaking, the differences that exist between these areas congregate around socio-economic lines. This has ultimately played a significant role in the approach each region has in developing sustainable
communities. These contextual differences also have an effect on other aspects of sustainable development which are discussed below.

A) Political, Economic, and Social Climate

As observed in the data, local government is a clear leader in driving sustainability in North America. South Africa does not have such leadership, and fragmented government departments are unable to offer cohesive concepts and implementation of sustainability. Since the role local government’s play at the community level is so influential, they are the pivotal cog in the machine of sustainable development. Resultantly, the local government’s inability to provide clear direction and support has created a massive challenge for the realisation of sustainable communities in South Africa. The supportive nature and leadership shown by local governments in North America has helped to illustrate this. In addition, disparities between available resources afforded to local government in Cape Town and North America are vast. The combination of these factors is assumed to be one of the most significant features determining each region’s ability to put into effect urban sustainability.

The differences between economic factors in the two regions are based on size and maturity. North America has the world’s biggest economy. Here, developers appear to be more sensitive to consumer’s desires and there is a wealth of developers that can execute a community-scale development project. The number of developers with the ability to deliver a LEED-ND community in South Africa would be considerably less. Moreover, a low-income housing project will not receive the required funding from government to achieve such an accreditation, and the emphasis of housing delivery is on quantity and not quality (Du Plessis, 2002). In a similar vein NGOs in South Africa also lack the maturity of their North America equivalents. There is a plethora of NGOs pushing SCRTs in North America. Many of these tools have grown out of green building councils and other similar organisations. Despite the success of the green building movement in South Africa, a community-scale rating tool is yet to be introduced and the conversation is still in its infancy. Furthermore, many NGOs in South Africa tend to gravitate towards social issues and roles that help provide services that the government struggles to distribute (Mitlin et al., 2007).

The most significant contextual difference has to do with socio-economic issues. South Africa has a unique and turbulent history that has shaped many of the societal struggles it experiences today (SAHO, 2015). Black people continue to receive an unequal share of the country’s wealth, and as a result a large portion of the population has little trust for democratic institutions, and the motives of corporations (Gibson, 2003). This makes it difficult to enter a community and implement a sustainable community initiative. Building on this, participants highlighted that many members of impoverished communities do not feel empowered enough to make their communities more
sustainable. In North America the rhetoric was less oriented towards empowerment but rather building capacities. In other words, providing the community with tools to become facilitators of sustainable community development. Perhaps the difference in terminology suggests that the feelings of oppression and struggle are still apparent in impoverished South Africa. This could affect ones desire to get involved with a development initiative. Nevertheless, there is evidence of communities that are willing and able to improve their communities. However, there is a dearth of avenues to unify this energy into an effective movement. Participant 5 explained that this is why community members get frustrated and vandalise public property. In North America there is a variety of channels available to its people to ensure that they feel supported and their interests’ valued. This was demonstrated by the official community plan administered by the District of North Vancouver. The distribution of income and wealth in South Africa is among the most unequal in the world. Many households still have unsatisfactory access to clean water, energy, health care, and education (May, 1998). Inequality and its associated problems is a major concern for South Africa. A significant amount of available government funding is used to address this issue. Whilst inequality is also an issue in North America, the population falling on the unfavourable side of the Gini coefficient are largely not subject to the same level of adverse poverty that their South African counterparts endure.

The social, economic, and political environments in North America are hugely different to South Africa. Naturally, tools developed within this region are based on that environment. As such, they will not consider issues many stakeholder organisations have to deal with in South Africa. An example that was noted during interviews with participants was the blatant misuse of political power that exists at a local level. This confirms the comments of Schoonraad (2000) who argues that local government in South Africa is reinforced by a culture of lawlessness and political members’ focus on private gain. This brings into question the applicability of SCRTs developed in isolation to the contextual issues of South Africa as they largely rely on a level of functionality and accountability of democratic institutions that may not be present in most South African local governments.

**B) Contrasting Priorities for Sustainability**

Social, economic and political issues in South Africa are such that the attainment of sustainability performance benchmarks for communities are low down on the list of priorities. Issues regarding stability and basic human needs are considered to be more important than carbon footprints. Subsequently, South African participants highlighted that sustainable community development in South Africa must have an emphasis on advancing socio-economic conditions of the poor. This is in line with the inferences made by Roberts and Diederichs (2002), when observing that Durban’s LA21
plan prioritised issues such as: housing, sanitation and safety, over broader environmental concerns. This is also evident in VPUU’s approach to sustainability in impoverished communities. Conversely, North American approaches to urban sustainability focus on environmental aspects, and less on social factors. Dominant tools such as LEED-ND are testament to this paradigm (Sharifi & Murayama, 2013). Although North America has socio-economic concerns of its own, it appears that responses to these issues are better coordinated and executed. However, they are not adequately integrated into urban sustainability frameworks.

C) Intermediaries

Intermediaries could provide an appropriate solution to the challenges affecting sustainability in South Africa. The efficacy of CIDs in Cape Town have, to some degree, highlighted the potential of intermediary organisations implementing holistic approaches to managing urban areas. To this end, such organisations have the potential to provide an effective management body that can direct an integrated process for sustainability between various stakeholders at various scales. The South African participants believed this to be an encouraging solution and the topic was broached many times throughout the interviews. The North American participants, whilst recognising the potential benefits of intermediaries, were less vocal regarding their support for intermediaries in the development process. It is contended that the lack of an immediate need for intermediaries was a result of the presence of a well-structured and functioning local government that can help support and collaborate to deliver integrated projects. This collaborative competency that local governments exhibit was a common topic in the North American interviews. Furthermore, many North American NGOs performed the tasks of intermediaries themselves, without being fully aware of it. Therefore, there are more concrete structures in place to facilitate collaboration between a variety of organisations. NGOs play less of an intermediary role in North America as there are better lines of collaboration and communication between the various interested parties. This allows green building councils and other similar organisations to negotiate with developers and local government to enhance their efforts. VPUU has played an intermediary role between local government and the community in Cape Town. However, this is argued to be based more on the success and support that they have gained in that community, rather than a willingness of local government to engage.

In North America there are also a number of experts with a wealth of experience that are continuously engaging with one another. This is evident in the sophistication displayed by many of the SCRTs evaluated in this study. It is believed these experts engage in a process of continual learning and refinement of their processes, and this is also evident in the evolution of the tools. Consequently, they are well aware of the processes involved with sustainable community
development, and the skills and limitations of the other experts. For the most part the acceptance of collaborative efforts is clear. The issues in North America become more visible upon implementation. It is argued that an intermediary body aligned with the process of seeing through the action on the ground could enhance this. The EcoDistricts’ framework advocates an approach like this. Here, the focus is on the process for creating meaningful action, and has received a large degree of support despite its recent creation.

6.7.4 Reflection

Given that government creates roadblocks for sustainable community development in Cape Town, it is suggested that an intermediary body could play a large role in dismantling those roadblocks. Intermediaries have the flexibility and freedom to work with different scales of organisations, and skillsets. In view of the political climate in Cape Town and South Africa, it is suggested that an intermediary body should not have any political affiliations, and hence, not be part of a government organisation. Its role is purely to facilitate the sustainable development of the community, and not serve a broader political agenda. Being unbound to government institutions affords an intermediary enough flexibility and freedom to be innovative and accommodate a variety of different initiatives. The effectiveness of this has been exhibited to some degree by the NGOs in North America that act as intermediaries between local government and developers in order to push a separate, and non-politicised, sustainable development agenda.

After reviewing the emergent themes many parallels between VPUU and EcoDistricts emerge. Naturally, the nature of how these methodologies play out on the ground is different as they face different issues in different areas. VPUU's approach to sustainability is centred on the improvement of socio-economic conditions of impoverished communities. This is less of an issue for EcoDistricts; plying their trade in North America. For them the focus is about building capacities, and forging synergies between the various actors. Whilst this is present in the work of VPUU, it is conveyed within the context of socio-economic improvements and introducing basic services to communities. It is believed that the approaches propagated by VPUU and EcoDistricts represent the likely future direction of sustainable community development frameworks. Here, the outcomes of achieving sustainability are defined, and incorporated into the development process, not the other way around. Furthermore, these methodologies spark action, and provide a meaningful plan for communities to take action. This creates a level of tangibility and demonstrability that can inspire communities to take the lead. Technically-dominant SCRTs do not facilitate this. They have demonstrated a poor link between sustainability and quality of life. This is vital as this demonstrability mobilises communities to act, and buy-in to local sustainability initiatives.
It has been established that the sustainable needs of communities in South Africa and North America are worlds apart. In South Africa, priorities address the vast issues regarding poverty, service delivery, and social issues. It is believed that more traction will be gained on the environmental front if these immediate concerns are addressed. However, this does not mean that ecological aspects cannot be integrated into these imperatives. If there is a common thread that links all the facets of this investigation it is that sustainable development needs to be operated in an integrated manner. Efforts need to incorporate all aspects of sustainability into any given initiative. Given the resource limitations and relative economic instability in South Africa, it is reasonable to deduce that impoverished areas in Cape Town are more likely to undergo redevelopment projects, or gradual upgrading, as opposed to new, large scale development. This is reinforced by the incredibly dense populous of these impoverished areas, and the lack of available land in the surrounding areas in Cape Town. Hence, an impoverished community in Cape Town would most likely be unable to achieve the requirements of LEED-ND. However, they are likely to live more sustainably, in terms of resource consumption and greenhouse gas emissions, than their North American counterparts. This brings into question the applicability of conventional rating tools for the development of sustainable communities. Many of the requirements set out by SCRTs designed for “developed countries” will likely be unattainable in many of Cape Town’s communities.

The next section will present the rich pictures that have emerged out of the data analysis. A picture has been developed for each research region, North America and South Africa. A brief discussion will also accompany the illustrations.

6.7.5 North American Rich Picture and Discussion

Figure 6.17 depicts the North American rich picture. Central to efforts to promote sustainable community development is local government. The picture depicts local government as the driving force behind sustainable community development, and most attempts to deliver urban sustainability are coordinated through local government. Despite the sophistication and maturity of actors and organisations promoting urban sustainability in North America, there are still issues when it comes to collaborating with the various stakeholders involved in urban sustainability. This is illustrated by the spanner in the cogs. Issues such as: fragmented planning techniques, prescriptive development plans, lack of engagement, and complexity account for this issue. In addition, communities and their input are largely excluded from this endeavour as built environment experts tend to dominate. This is why the community icon is represented outside of the collaborative system in Figure 6.17. The reliance of developer oriented rating tools is depicted in the picture to promote technical aspects of sustainability which are not necessarily the prescript for sustainable communities. The rich picture
highlights the need to focus on the process and collaborative efforts to accelerate sustainable community development. Here, systemic ideologies can be incorporated to better engage with communities, local governments, developers, and other actors. A flexible framework with these principles could provide a better standard for transitioning towards urban sustainability in North America.
Figure 6.17. North American Rich Picture

Outcomes-based & Technically Oriented Rating Tools

Sustainable Communities

Lead by Local Gov

Developers

Policy Regulation

Incomplete understanding of Sust Dev

Profit-driven

Sophisticated enough to deliver comm-scale developments

Lack of integratd approaches

Contrasting views & interests

Entrenched mindsets

Loc Gov, a clear leader of Sust Com Dev

Engage with various stakeholders

Use policy to influence Sust Dev

Complexity

Inflexible planning mechanisms

Lack of community engagement

Rating Tools

Community

NGOs

Combination of rating tool & process-oriented approach

Focus on the collaborative process

-Systemic approach

-Iterative & flexible in nature

-Inspire a relevant shared vision

-Collaborative & inclusive

-Complemented by measurement (Rating tool)

Developer tools focus on technical aspects of Development

Stuck in Green Building Mindset

Development too prescriptive

-DVlp & Adminstr rating tools

-Collab with developers & Loc Gov

-Create public & market awareness

-Sophisticated understanding of Sust Dev

-Needs only articulated through Loc Gov
6.7.6 South African Rich Picture and Discussion

Figure 6.18 represents the rich picture for South Africa. Throughout the investigation in South Africa it became evident that the community is seen as central to the achievement of urban sustainability. Correspondingly, the community is occupies a central location in the picture. Without their knowledge, commitment and well-being sustainable community development cannot succeed. The spanner in the cogs represents the failure of various organisation to come together to deliver urban sustainability. This is shown on the boundary of the system in order to purvey that at this boundary the various actors come together to promote sustainability. The intention of this is to highlight that these actors are mostly coming from outside the sustainable community development space.

Local government is in the circle with the community at the centre as it is the most influential organisation in driving sustainable community development. However, local government creates systemic roadblocks to sustainable community development. This is because they are largely unable to collaborate within their departments, and with outside organisations. On the outskirt of this are NGOs which seek to meet the shortfall of local government service delivery. Outside the system, which is depicted as the large central circle, is private sector, the GBCSA, and SCRTs. These aspects are quite disconnected from sustainable community development and are hence, placed outside this inner circle. The three aspects also interact in relative isolation to development NGOs and local government. In the inner circle, linked to development NGOs and urban management, are intermediaries. Development NGOs like VPUU play a large role in promoting sustainable community development and are placed within the central system. They are not placed as centrally as local government as they do not have the same level of influence that local government has. The picture highlights that intermediary organisations are exemplified by the CID and VPUU. Furthermore, better cooperation with local government and other actors through the deployment of intermediaries could form an integral part of developing an urban management platform that can accelerate inclusive and participatory urban sustainability in South Africa.
Figure 6.18: South African Rich Picture

Sustainable Communities

Low-income Communities

Intermediaries

Local Government

What is needed?
- Engagement
- Institutional Unity
- Leadership
- Flexibility
- Accountability

Implements IDP
- Political Agenda
- Resource Ltd
- Large fragmented org
- Policy creation & Enforcement

- Roadblocks to co-opetn
  - Obstructive Policy
  - Min support from Gov

- Fragmented depts
  - Unable to collab

- Resource Ltds
  - Lack of Leadership
  - Lack org strctrs
  - Obstructive relationships
  - Inability to think holistically

- Political Interference
  - Gaining comm trust

- Not erg at comm-scale
  - Lack org

Min influence at comm-scale
- Min undrsng of CRTs
- Build economic case
  - Provides data for private sector

Rating Tools

Private Sector

GBCSA

Profit-driven
Sensitive to consumer demand

Service Delivery

Management
Urban Platform

Socio-economic Development

CID's

VPUU

Area-based mgmt
Improve socio-economic state of community
Systemic & Comprehensive Empowerment

NGOs
6.8 Stages 6 and 7 - Defining Action to Improve

The CM’s and the rich picture enable the investigator to build a detailed interpretation of a real-world situation. This provides a platform for a structured discussion about the situation, and how it could be changed. Subsequently leading to action to improve a problematic situation (Checkland & Poulter, 2006). This section represents the final two steps of the SSM cycle.

Throughout the application of SSM it was reasoned that it is necessary to separate the real-world situations of the two research areas. Whilst both regions (South Africa and North America) help contribute to a single research outcome, it is necessary to not confuse the two as a single problematic situation. This is because they both exhibit unique and contrasting characteristics. This alludes to the selection of these areas of research which represent differing scenarios. In order to combine the research into a single, meaningful research outcome, defining action to improve will consist of three parts:

1. Lessons learnt from North America,
2. Action to improve in South Africa, and
3. Culturally feasible, and systemically desirable actions.

The culturally feasible action is an incorporation of the lessons learned in North America and how they can complement actions for improvement in South Africa under the unique situation that exists in Cape Town. Naturally many actions defined to improve the unique situations in North America and South Africa may overlap. Conversely, many circumstances unique to North America cannot be easily translated to the context of South Africa. An example of this is the role of local government. With regards to sustainable community development, it is not culturally feasible for local government in South Africa to mirror the role of their North American. Nevertheless, certain practices employed in North America can be culturally feasible in South Africa. An example of this is the way local government leverage their influence over policy to encourage greater uptake of urban sustainability initiatives. Below is a breakdown of the three sub-sections for defining action to improve:

6.8.1 Action to improve in Cape Town

- Ensure sustainable community development is centred on improving quality of life and socio-economic issues.
- Improve operational and institutional capacity of local government.
- Remove political affiliation and interference from community development initiatives.
• Build capacities of communities by creating an environment where champions receive the necessary support and skills.
• Turn civil unrest into community action by empowering communities.
• Provide better mechanisms of communication between communities and local government.
• Create more support for sustainable community development.

6.8.2 Lessons learnt from North America

The data collected from North America suggested the following actions for improvement:

• Directing focus to the process of sustainable community development as opposed to sustainable outcomes.
• Directing focus on human or community aspects of sustainable urban development.
• Develop better mechanisms to foster collaboration and inclusion of communities.
• Creating demonstrable examples of the link between sustainability and a community’s quality of life.
• Develop a greater public understanding of the multi-dimensional, and systemic aspects of sustainable development.

6.8.3 Culturally Feasible and Systemically Desirable Actions to Improve the Situation in Cape Town

• Develop a platform that harnesses meaningful collaboration.
• Develop a structure to promote sustainable community development that operates independent of government structures, which can incorporate and integrate corporate or civic organisations.
• Develop a structure that can support the operations of local government.
• Develop better mechanisms to communicate with communities and include them in development plans.

6.9 Conclusion

This conclusion will provide a brief synopsis of the SSM process. This process commenced with the identification of the problematic situation that the investigation intends to improve. Primarily this was identified as the challenges of sustainable community development in Cape Town, and the applicability of using SCRTs to achieve it. Following a critical review of the relevant literature, a rich picture was developed that introduced the concept of UFM. This management concept was
considered as an effective intervention to improve the perceived problematic situation. This provided the base to launch, and inform, deeper inquiry. This directed the selection of interviewees and interview questions, in addition to the selection of the research areas: North America and South Africa.

From the interviews, deeper insights into the various human systems acting within this situation were exposed. The interviews provided the knowledge to define RDs of the various systems acting within the field of sustainable community development. Subsequently, these RDs informed a CM, a “systems-world” interpretation of the actors involved in sustainable community development. The data provided in the interviews, and the CMs guided a comparison between the “systems-world” and the real-world. This was presented as emergent themes. This comparison, and a reflection on the emergent themes lead to the presentation of a further rich picture representing the real-world situation in both North America and South Africa. Built into this rich picture were emergent themes, and a comparison of the “systems world” and real-world. This differs from more recognised applications of SSM in the sense that the rich picture is produced in the latter stages of the process. This approach was used because the rich picture is a valuable intellectual construct and the initial rich picture is based on theory, and not real life. Thus the rich picture serves the purpose of describing the problematic situation in combination with the emergent themes, and views of the human systems within that situation. This proved to be a useful mechanism to help define actions to improve. Finally, these actions were defined in the last step of the cyclical process.
Chapter Seven: Conclusion

7.1 Introduction

It is well understood that communities are the building blocks of cities. It is here where efforts to battle ongoing issues of sustainability are most relevant and important. This investigation set out to determine whether the principles of UFM provide a more holistic and systemically aligned approach to urban sustainability than conventional methods. It is argued that holistic/systemic methods offer a better means of managing the complex and multi-disciplinary concept of sustainable development. Whilst there is a large body of academic evidence that supports this claim, there is little discussion of how these ideals translate into an operational tool to provide sustainable urban development and management. In addition the concept of UFM is still in its infancy and there is a limited body of literature relating to its application for the purpose of sustainability, particularly within the context of South Africa.

Based on the primary intention of the study, it became necessary to explore the applicability of SCRTs in South Africa, and their role in accelerating sustainable urban development. Whilst there are a growing number of community-scale assessment tools in operation around the world there is yet to be a tool developed in a “developing country” context like South Africa. Despite the growing global consensus in favour of the application of these tools as an effective means of delivering sustainable cities, they are yet to provide definitive evidence that they do indeed achieve this. The investigation sought out to determine whether the imperatives endorsed by the tools represent a meaningful articulation of sustainable urban development.

The investigation sought to answer the following question:

*Can a systems-based approach to the management of urban precincts offer a more comprehensive, and context specific, means to delivering sustainable urban precincts or communities?*

7.2 Findings

The study’s findings have been presented, discussed, and summarised in *chapter six*. Below is a synthesis of the findings in reference to the research question and objectives.
7.2.1 Research Question Revisited

*Can a systems-based approach to the management of urban precincts offer a more comprehensive, and context specific, means to delivering sustainable urban precincts or communities?*

- **Strong support for integrated approaches to urban sustainability:**
  Devuyst (2001b) asserts that issues and relationships affecting urban sustainability are linked and must be tackled in a holistic manner. Weerasinghe and Sandanayake (2015) advocated integrated approaches to FM in order to drive sustainable solutions for cities. The research participants agreed with these sentiments. Komeily and Srinivasam (2015) stress the need to address all factors of sustainability in an equitable manner. It is evident that the SCRTs have failed to do this, instead focusing on certain aspects of urban sustainability at the expense of others. This was strongly supported in the literature by Shriberg (2002), Berardi (2013), Sharifi and Murayama (2013), Ameen *et al.* (2015), Komeily and Srinivasam (2015), and Xia *et al.* (2015) who confirm that SCRTs pay particular emphasis on ecological aspects of urban sustainability.

- **Social aspects of sustainability are largely ignored by conventional approaches to urban sustainability**
  The implementation of “sustainable” policy often ignores the broader social concerns. Haapio (2011) claims that SCRTs do not adequately capture well-being and quality of life. This sentiment is largely mirrored by the participants. Littig and Grießler (2005) stress that sustainability ought to be extended to make it possible to examine social and economic processes, and define objectives that go beyond purely ecological aspects. It was found that focusing on the processes of collaboration and human interaction and learning is a better method of incorporating broader facets of sustainability.

- **The efficacy of intermediaries in the promotion and management of sustainable urban development:**
  Cash *et al.* (2003) assert that intermediary organisations support institutional sustainability as they develop rules, norms, and procedures to influence a number of stakeholders. This also relates to the institutional dimension of sustainability which is vital within the urban context (Sharifi & Murayama, 2013). In both North America and South Africa many NGOs fulfill intermediary roles in the development of urban sustainability. Additionally, it was found that intermediary organisations are particularly effective in South Africa where government institutions lack operational capacity to deliver integrated projects. What’s more is that the most notable intermediary organisations in Cape Town are fulfilling holistic urban management roles.
within the communities they operate. This confirms Michell’s (2013) sentiments that a holistic urban management platform can better serve to integrate stakeholders that are more representative of the urban precinct/community.

- **Systems-based approach can better manage the “institutional” dimension of sustainability:**

  A systemic view examines issues holistically and concentrates on the interactions between the different components (Sterman, 1994; Checkland, 1999). Ameen et al. (2015) claim that institutional sustainability is crucial in discovering mechanisms to reconcile the inter-dependent dimensions of urban sustainability. From this it can be seen that systemic thinking and institutional sustainability can be combined to provide a complementary approach to sustainability. Institutional sustainability also has the ability to facilitate linkages between other dimensions and complement them (Spangenberg, 2002). This further aligns with systemic thinking. Participants confirmed the need for a more holistic approach to the development of sustainable cities which provided better mechanisms for interaction and collaboration.

### 7.2.2 Research Objectives Revisited

The research objectives for this study are as follows:

1. **Develop an understanding of the potential role that urban FM plays in sustainable urban development.**
2. **Identify and review current models that promote sustainable urban development in urban environments.**
3. **Determine the applicability of community-scale assessment tools within the “developing country” context of South Africa.**
4. **Determine the appropriateness of a systemically aligned process-oriented approach towards sustainable urban development.**

The first two research objectives were achieved in the earlier stages of this investigation and form part of what is more formally known as the literature review. Objective one was achieved by determining that UFM has the potential to play a significant role in sustainable urban development. This has been documented in *chapter five*. Tools and methodologies used to promote sustainable urban development have been identified in *chapter four*. Here, a selection of relevant models was selected and the selected tools were reviewed. The latter two objectives were obtained through the application of SSM and are presented below:

3) **Determine the applicability of community-scale assessment tools within the “developing country” context of South Africa.**
• **Market-driven approach inappropriate for South Africa:**
  Most the tools are viewed as marketing tools for developers. This aligns with the sentiments of Garde (2009) who reviewed LEED-ND pilot projects in North America. Berardi (2013) asserts that SCRTs are almost solely promoted by developers and the tools do not entirely correspond with the development of a sustainable community. Data collected from North America confirmed this. There are few organisations in Cape Town that have the finances and expertise to deliver a project that meets the standards of the tools. Furthermore, developer-oriented tools favour ecological aspects of sustainability over social aspects. This was pointed out by many academics (Shriberg, 2002; Berardi, 2013; Sharifi & Murayama, 2013; Ameen *et al.*, 2015; Komeily & Srinivasam, 2015; Xia *et al.*, 2015). Acquiring the relevant data for these measurements in South Africa is difficult and costly. Moreover, ecological dominance is less of an immediate concern for sustainability in South Africa where urgent socio-economic needs overshadow ecological imperatives.

• **Reliance on technical interventions and their associated costs:**
  In addition to the ecologically dominant aspect of tools is their reliance on technical interventions which isolates many of the urban poor in South Africa. In most cases limited resources, both human and financial, mean that meeting the requirements set out by the tools is unlikely in South Africa. A major theme in the tools is that they promote the development of technical solutions. Consequently, the verification and development process are dominated by experts. Built environment experts in South Africa may not have the specific skills to deliver a SCRT accredited community, and the costs associated with acquiring that level of consultation will be high. Furthermore, Sharifi and Murayama (2013) suggest the expert-oriented nature of SCRTs do not consider the interests of all stakeholders.

• **Tools do not foster meaningful participation or collaboration:**
  Collaborative efforts for sustainability are essential in taking the concept and putting it into practice (Alberti & Susskind, 1996). From the review of the tools and the accounts of the research participants, it was highlighted that the tools do not exhibit inclusivity in their frameworks to facilitate collaborative approaches to urban sustainability. Komeily and Srinivasam (2015) call for a greater inclusion of citizen’s opinion in current community rating systems. This is in line with the emergent themes presented in chapter six.

• **Implicit expectations regarding democratic processes and institutions:**
  The tools rely heavily on a functioning local government that can support, collaborate, and provide a leading role in sustainable community development. The tools implicitly assume that the governmental and institutional structures are functioning and democratic in nature. Whilst
this can be reasonably assumed for most “developed countries”, the same cannot be always be said in “developing countries”. Given the lack of published research regarding the applicability of SCRTs in “developing countries”, there is currently no literature that confirms this finding. However, it is argued that this is implied to some extent in the literature. This is apparent in the work of Sharifi and Murayama (2013) who illustrate that most of the tools provide little or no consideration for governance in the verification process. In addition, AlQahtany et al. (2013) and Komeily and Srinivasam (2015) criticise the lack of recognition of institutional dimensions of sustainability. From this, it could be assumed that the tools are developed in regions where collaborative and integrated plans involving public and private sector are not seen as overly problematic. The data revealed that democratic institutions in South Africa often present roadblocks to the implementation of integrated development projects as well as other projects due to corruption, political interference, and fragmented nature of government organisations.

Based on the above findings it has been determined that the SCRTs selected for review in this study are largely inappropriate for application in South Africa.

4) **Determine the appropriateness of a systemically aligned process-oriented approach towards sustainable urban development.**

- **A move away from the outcomes-based narrative of development:**
  The tools, and many other approaches to sustainable development, are primarily concerned with reaching certain targets that indicate the “attainment” of sustainability. Robinson and Cole (2015) stress the need to move away from performance-based outcomes towards process-based outcomes for promoting sustainability. Tools like EcoDistricts, and to a lesser extent the work of VPUU, have already shown the value of a procedural sustainability. However, other approaches have paid little attention to the processes involved in achieving those targets, and the interactions and inter-dependencies of the underlying systems. Sustainability is not an end-state but a process, thus it should be viewed as one. This also highlights the greater need to adopt an institutional dimension into the concept of sustainable development.

- **Over-dependence on measurable aspects of sustainability:**
  Rees and Wackernagel (1996) argue that tools are unable to capture what makes the built environment sustainable for people. Instead an emphasis is placed on what can be easily defined and measured. This dismisses attempts to resolve larger structural issues of unsustainability (Bridger & Luloff, 1999). There are many aspects of social systems that simply cannot be measured. An over-reliance on empirical outcomes largely disconnects human actors from the
sustainability process. This was present in almost all of the SCRTs reviewed and translated into an ecological dominance of the tools, as mentioned above.

- **Limited flexibility and contextual consideration of standardised target-setting:**

  Ameen *et al.* (2015) state that having a single set of metrics can compare urban development from different contexts, and allow cities to share a common goal. This is a valuable exercise. However, it means that indicators are not defined in accordance with local actors and their perceptions and values (Brugmann, 1996). Sharifi and Murayama (2013) highlighted the problems associated the transferability of the tools to different contexts. This view was also expressed by many of the participants who called for greater flexibility of urban sustainability initiatives. It also emerged from the data that context is one of the key factors influencing the implementation of sustainability. Thus, it stands to reason that it is more important that sustainability assessment or guidance metrics express the values and interests of the people they affect. They should not be used as a basis to achieve sustainability but emerge from an inclusive and collaborative process.

  The findings infer that the adoption of a more procedural approach to urban sustainability that pays greater attention to systemic factors within the urban landscape will offer a more appropriate means to promote sustainable community development in South Africa.

### 7.2.3 Summary of Findings

Globally, there is a need to develop better mechanisms to implement and assess urban sustainability. Moreover, it is becoming increasingly clear that attention needs to be paid to manage the interactions and processes involved in implementation and assessment. Thus, a process-oriented approach that facilitates the collaboration between the myriad of different actors at the community scale has been identified as key to accelerating the urban sustainability agenda.

Applying the principles of UFM to create an intermediary management platform can integrate the above issues into a comprehensive framework for managing and developing sustainable urban environments. This sort of intervention will be particularly effective in South Africa. Here, resource limitations and service delivery inefficiencies mean that it is necessary for government to forge synergies with private sector, NGOs, and community-based organisations. Up until now they have been unsuccessful at forming these partnerships. The principles of UFM have shown to be a valuable means to provide such an integrated and holistic approach to urban development and management. What’s more is that urban FM can set a standard for urban governance that can better incorporate aspects of social sustainability into a broader framework.
Lastly, the prescriptive nature of community assessment tools have been found to be inappropriate for application in a “developing country” context like South Africa. Whilst measuring efforts promoting a transition towards sustainability must be measured, the setting of targets should not define the process but rather be one of the processes outcomes.

The findings presented and the synthesis of these findings with the research question and objectives are sufficient to accomplish the research aim of this study. Furthermore, this aim supports and endorses the initial premise for the study which states that:

*The development of a process-oriented, and systemically aligned, framework for creating and managing sustainable urban precincts in Cape Town is possible.*

### 7.3 Theoretical Implications

Michell (2013) set out the embryonic principles of UFM as a platform to engage with the multitude of actors required to drive urban sustainability. The investigation’s findings supported the ideals founded by Michell (2013) and UFM. It suggests that the management framework promoted by UFM will be effective in bringing together the various disciplines and actors required to accelerate urban sustainability. This can better appreciate the institutional dimensions of sustainability which require an increasingly systemic worldview to unlock its potential. To this end, the theoretical framework proposed for the use of promoting sustainable urban development in South Africa exhibits similarities to the SSM approach utilised as the research methodology. This is consistent with the systemic underpinnings of this study.

Baumgartner and Korhonen (2010) attribute the insignificant progress towards sustainability to reductionism in policy and practice. Reductionist policies and strategies fail to adequately consider the socio-economic context in which all policies and strategies are embedded. To this end, the study found that SCRTs act as an extension to these reductionist ideologies in the way that they categorise and isolate issues regarding sustainability. A shift away from these approaches has been noted extensively throughout the literature and forms a central foundation to the investigation. Findings revealed that EcoDistricts most notably exhibited the values of an SCRT that exhibited this proposed shift. The work of VPUU in many ways demonstrates the same qualities though VPUU’s approach is not presented, or marketed, as a rating tool but rather as a methodology for community development. These frameworks can be loosely grouped as an evolution in the sustainable community development space. This evolution represents a procedural and systemic worldview as advocated by Robinson and Cole (2015).
Nevertheless, the value of measuring factors contributing to sustainability is recognised and appreciated. To this end it is suggested that measurable aspects of sustainability need to emerge out of a structured process that resembles a management platform demonstrated by UFM. This supports Mehta’s (1996) view that sustainable community development requires a unique method of service delivery, which mediates competing issues of sustainability through creating a common platform of engagement between stakeholders (Mehta, 1996). Brugman (1996) describes the importance of such a “common platform” at the urban level as necessary to establish a common vision, and shared strategies. Building on this, the investigation revealed that the importance of a shared vision and strategies lay in the pivotal role of the community and its mobilisation in the development of sustainable urban areas. It stands to reason that without a community to drive and sustain efforts towards sustainability, achieving it will be near impossible. It order to gain buy-in from a community, the common vision and strategies need to be aligned with their beliefs and values. Naturally, this will vary vastly depending on the location of the community. It follows that SCRTs, or any other mechanism to drive urban sustainability needs to be flexible. However, flexibility without supporting guidelines could render an intervention meaningless, and the framework must also be able to guide a functional process. This is exemplified by the limited success of LA21 that lacked a measurement framework as a point of reference. Building on the work of Michell (2013), the field of UFM can be leveraged to provide a framework to implement strategies in a manner which is representative of the desires, beliefs, and needs of a particular community.

7.4 Policy Implications

Expanding on the body of knowledge regarding intermediary organisations and their effectiveness in managing urban areas in South Africa, it is reasoned that the use of UFM and its principles can introduce broader and more comprehensive applications for such organisations in South Africa. The intermediaries have shown their ability to set up more holistic, locale specific, urban management frameworks which are free of the institutional deficiencies of government organisations in South Africa. It is believed that this is the likely space in which sustainable urban management practices will flourish. In South Africa, national treasury has acknowledged the efficacy of CIDs as intermediaries in their guideline for urban management. However, the extent to which they can influence the way that local government operates is limited. Based on the theoretical arguments, in addition to the study’s findings, it is suggested that the scope of intermediaries work within the different levels of government needs to be improved to help bridge the gap of funding, skills, and functionality that currently exists within the various levels of South African government.
Based on existing research conducted on SCRTs, the study confirms the sentiments of many academics in criticising the applicability of SCRTs across contextual boundaries. Until now, no study has been conducted assessing the applicability of SCRTs in South Africa. Following this, the study concludes that the problems associated with the transferability of rating tools (Sharifi & Murayama, 2013), can be extended to include the “developing country” context of South Africa. As such, the tools selected for this research are an ineffective means to deliver urban sustainability in South Africa. To this end, it would be considered wasteful to build urban sustainability policy with SCRTs as a point of reference. Instead policy should be used as a mechanism to drive collaborative partnerships, speedier induction of initiatives, and deeper attempts to foster public participation. Policies administered by the CoCT have a level of pragmatism when it comes to more holistic notions of urban sustainability. This is thwarted by the bureaucratic processes of planning that happens within government. Many respondents called for local government to prioritise the processing of applications that contribute to the sustainability of a city. Developing policy that favours NGOs or private sector entities that intend to incorporate sustainability into their organisational plan could help to incentivise organisations. This has been demonstrated in North America, but is lacking in South Africa.

Effective initiatives can only emerge when the community is fully engaged and heavily involved in driving the process. As such, it is vital for influential organisations such as local government and NGOs to partner with communities from the initial stages of a project. Whilst current policy reflects these sentiments, there is not enough done to ensure that these policies are translated into practice.

7.5 Reliability and Validity of the Research

7.5.1 Reliability

Reliability is typically understood as the replicability of research findings and whether or not they would be repeated, using the same or similar methods (Lewis & Ritchie, 2003). The repeatability of results in experiments carried out in the natural sciences makes the research process of natural science an easily defended system of knowledge acquisition. Thus the power of scientific method lies in the replicability of its results (Checkland & Holwell, 1998). The extent to which this repeatability occurs in the social sciences is far less defendable. Foster (1972) ascribes this to the fact that studying complex social events cannot be conducted in a laboratory and single behavioural elements cannot be singled out from an integrated social system. Unlike research in the natural sciences, social phenomena are not “homogenous through time” (Keynes, 1936 cited by Checkland & Holwell, 1998). This means they are constantly changing and reforming. In theory, it is possible that
one could apply the exact same experiment on the exact same social system in three consecutive years and realise three different sets of findings. This brings into question the applicability and replicability of scientific methods for the purpose of social inquiry. This was pointed out by Lincoln and Guba (1985) when asserting that the concept of replication in qualitative research is inane due to the complexity of the phenomena being studied, and the inevitable impact of context. This is corroborated by Checkland and Holwell (1998: p. 20) when accepting that social reality is “the changing product of continual intersubjective discourse” and thus will never be able to match the complete replicability of experimental happenings characterised by the natural sciences. For this reason the idea of seeking reliability in qualitative research is often avoided (Lewis & Ritchie, 2003). Nevertheless, scientific approaches for verifying knowledge still dominate the social sciences. With the above in mind, Checkland and Holwell (1998) promote the achievement of a situation where the research process is recoverable by interested outsiders. This is an attempt to provide qualitative research scientific credility whilst acknowledging its limitations within scientific practice. Essentially, this means providing a detailed account of the research process and its epistemology. To do this the researcher must clarify to interested observers, the thought processes and models which enabled the resultant interpretations and subsequent conclusions (Checkland & Holwell, 1998). This appreciation is clearly evident throughout the SSM process and is described in detail in chapter six.

7.5.2 Validity

There is no doubt that the reliability of a research methodology is linked to the validity of the achieved results. In light of the established limitation of replicability (and its obvious effects on reliability) within qualitative research, it is therefore necessary to assess the validity of the research within this context. Furthermore, reliability and validity must be justified within these limitations. Put broadly, the concept of validity refers to whether a method investigates what it purports to investigate, and the extent to which observations reflect the phenomena of interest (Pervin, 1984; Kvale, 1994). Validity in qualitative research is very difficult to establish because of the necessity to incorporate rigour, subjectivity, and creativity into the scientific process (Johnson, 1999). This challenge is transferred to qualitative action research methodologies such as SSM. Here validity, as a mode of inquiry, leads to findings whose defensibility and transferability are often challenged (Checkland & Holwell, 1998).

The reality is that there are no single scientific set of criteria and techniques that contribute to valid knowledge (Morgan, 1983). Furthermore, there is no infallible rules for establishing the validity of qualitative research (Miles & Huberman, 1984). As such, validity of qualitative research is still hotly contested. Lincoln (1995) asserts that qualitative research is defined by uncertainty, fluidity, and
emergent ideas. Following this, criteria of validity that give credence to these efforts must correspond with them. Attention to both process and product, science and art, uphold validity and subsequent quality of qualitative research (Whittemore et al., 2001). What is suggested is a move away from the scientific rigour of knowledge production in qualitative research to one that accommodates the dynamics and complexities of the real-world. Instead of attaining validity through a predefined set of criteria, it can be illustrated through an organised process of inquiry that includes the thought processes and actions of the researcher. Such a framework is provided by SSM. Here, verification is built into the process. This is done by critically presenting the research process in detail (Whittemore et al., 2001). This is supported by Kvale (1994) who suggests validity of qualitative research can be achieved through developing an intrinsic quality control during the production rather than an inspection of the final product. In essence what must be emphasised is a sense of explicit transparency of thought and action throughout the process.

SSM provides a practical procedural framework to achieve validity for inquiry into complex situations. Within this methodology, there is a distinct acknowledgement of the potential merging of the roles of researcher and participant as the constant flux of the research situation continues to evolve over time (Checkland & Holwell, 1998). Accordingly, a degree of flexibility is built into the framework which accommodates the changing ideas of the researcher as a participant and conductor of the research. Therefore, the framework of ideas, methodology, and area of concern could change as the researcher becomes more embedded in the real-world situation he/she intends to investigate (Checkland & Holwell, 1998). Providing the flexibility and the means of rationalising these interactions in an organised and understandable manner provides the research with a degree of validity.

Whilst research methods like SSM will never provide the same claim of validity of associated with the natural sciences (Campbell, 1988; Phillips, 1992; Checkland & Holwell, 1998), they can lead to results which can be generalised and transferred to other situations.

Within the context on this study the research protocol was followed and critically reviewed throughout the process. This was displayed in chapter six. The study set out to determine whether a systems-based approach to urban management provide a more comprehensive approach, and locale specific, means of delivering sustainable cities. This was confirmed through the application of SSM.

In addition, the applicability of SCRTs in South Africa was called into question. It was found that the selected tools for this investigation are not appropriate for use in South Africa. The logic and rational behind the decisions and interpretations was clearly illustrated and presented in an organised fashion which can be recoverable by an interested outsider and applied to a similar “developing
country” context. Additionally, the results can be generalised to the broader context of South Africa and transferable to other “developing country” contexts outside of South Africa.

### 7.6 Recommendations for Further Research

Further investigation is required to examine the exact form an urban management platform may take within a given city or the protocol that will result out of this study. Perhaps the direction of this further investigation could, in part, be guided by the work of intermediary organisations.

Another branch of further research could be directed at the policy that could support the embedding of intermediary organisations into local and regional government structures. This can also be extended to directing policy that seeks meaningful engagement and partnerships with local government, communities, NGOs, and private sector.

Finally, further research into whether further mediation of the meanings relating to sustainable development could yield further insight into mechanisms of catalysing social development, and may be another interesting point of departure for further research.

### 7.7 Parting Comments

With 83% (6.1 billion) of the world’s population living in the “developing world” (Population Reference Bureau, 2015), it is a necessary task for global sustainability to devise improved mechanisms to foster the implementation of sustainable community development for the “developing world”. SCRTs have been shown to be an inappropriate intervention to promote sustainable development in the “developing” urban context. The study has found that a process-based approach to the management and development of sustainable cities can deliver more favourable outcomes than prescriptive SCRTs. Such a process could be founded in the principles of UFM, and has the potential to provide a holistic platform to manage the three pillars, as well as institutional dimensions, of sustainability. Without such a consideration urban sustainability initiatives will continue to fall short of their objectives.
References


Gibson, J. (2003). The legacy of apartheid racial differences in the legitimacy of democratic institutions and processes in the new South Africa. *Comparative Political Studies, 36*(7), 772-800.


Hodge, R., & Hardi, P. (1997). The need for guidelines: the rationale underlying the bellagio principles for assessment. In P. Hardi, & T. Zdan (Eds.), *Assessing Sustainable Development:*
Principles in Practice (pp. 7-20). Winnipeg, Manitoba: International Institute for Sustainable Development.


Appendix A: Development of Systems Thinking

Introduction
In the beginning of this study the case is made for systemic approaches to deliver sustainability. It is argued that human systems are engaged in an interactive and inter-dependent relationship with the environment. Sustainability require the management of these relations in order to promote equitable and environmentally sensitive development of human systems. Gladwin et al. (1995) assert that sustainability demands a better acceptance of systemic connections. This entails a shift away from fragmentation towards holism. In order to achieve such a transition; linear, reductionist, and mechanistic thinking needs to be replaced with non-linear, organic thinking; systems thinking (Hjorth & Bagheri, 2006). What follows is a background to the development of systems thinking. Building on this, the concept of complexity is introduced and deliberated.

The Development of Systems Thinking

“Science has given us testable knowledge of the way the natural world works, and has provided us with at least the possibility of material well-being, even on a planet of finite resources; and it has also given us the means of destroying all life on our planet.”

(Checkland, 1999, p. 24)

Science is the basis on everything we know and understand about the world we live in. Mankind’s unappeasable desire to acquire knowledge has advanced us to the point where we have the power to change our environment (Weinberg, 2001). We now know more about the world than ever before. Whilst this power through knowledge has made man so successful at surviving and thriving, it could also be the force that sends us towards extinction (Weinberg, 2001). It has become vital for human survival to effectively manage and use this knowledge.

“The more you know, the more you know you don’t know.”

Aristotle (384-322BC)

Aristotle’s famous quote aptly sums up the challenges faced in this age of information. It seems that the first step to knowledge is the acceptance of ignorance (Weinberg, 2001). Nevertheless, what is known with certainty is that the world is constantly changing and evolving, and the future is unpredictable. Gharajedaghi (1985) expands this by recognising that along with change we also have to contend with increasing uncertainty and growing complexity. The information age has resulted in a world where there is more information and knowledge than there has ever been before. However, the human mind has a limited capacity for storing and processing information (Laszlo, 1996). So how
can the human brain manage this exponential growth in information whilst dealing with its limited ability to store knowledge? Moreover, how can this be achieved without losing the depth of knowledge? The response to this challenge was through specialisation (Laszlo, 1996). This is the practice of splitting up knowledge so that the information can be reduced to a manageable size which is easier to manage (Swilling & Annecke, 2012). In essence, the disciplinary nature of science has made a filing system out of knowledge (Ackoff & Emery, 1972). This approach to the sciences is known as reductionism and has facilitated massive advances in science and technology (Weinberg, 2001).

The issue with reductionist approaches is that it creates closed bubbles of knowledge which make it impossible for someone to view a bigger picture (Laszlo, 1996). Furthermore, the success of reductionism has revealed a complexity which it is not prepared to deal with (Weinberg, 2001). Resultantly, specialisation has created mass information and knowledge, without a corresponding understanding (Hjorth & Bagheri, 2006; Gharajedaghi, 1985; Laszlo, 1996). Whilst information and knowledge is useful, one cannot thrive without understanding (Gharajedaghi & Ackoff, 1984). Understanding allows us to be able respond to something that affects efficiency; when a change occurs in our environment that reduces efficiency, we can alter our behaviour in order to increase this efficiency (Ackoff & Emery, 1972). This requires understanding, and is therefore crucial in a world where the environment exhibits constant change and uncertainty.

Classical science focuses on reductionism and separating parts to observe them in isolation in order to understand the processes of the whole (von Bertalanffy, 1972). The general belief was that everything is known about the parts, an understanding of the whole can be achieved (Hjorth & Bagheri, 2006). This mechanistic approach views a system as completely equal to the sum of its parts; it will behave exactly the same no matter how many times the parts are disassembled and reassembled (Deutsch, 1951). Whilst this attempt to understand complicated phenomenon saw great successes in the physical sciences, it has been less successful in the biological and social sciences (Boulding, 1985). The classical worldview also views objects as entities that are not connected to their environment (Laszlo, 1996). It is clear from the current state of Earth that this is not the case. Biologists realised that this mechanistic view of the world could not explain phenomenon within their field. Extensive study of systems revealed a fundamental flaw in classical science’s analytical methods of understanding; it does not consider the inter-dependency and interactions between a system’s components (Cilliers, 1998). Boulding (1964) put forward the notion that the order of the empirical world itself has an order (named the order of the second degree) which cannot be explained in an empirical sense.
Understanding inter-dependency and the second degree requires a way of thinking that is not analytical in the classical sense; it requires systems thinking (Ackoff & Emery, 1972; Gharajedaghi, 2006). Boulding (1956) describes general systems thinking as a skeleton of systems which the flesh and blood of particular disciplines and subject matters can hang on to in an orderly and coherent corpus of knowledge. Building on this, systems thinking is a set of principles and ideas that try to understand the complexity of reality by focussing on the relationships between a system’s parts rather than the parts of the system itself (Checkland, 1999; Hjorth & Bagheri, 2006). Below is a definition of a system as described by Ackoff and Emery (1972: p. 18):

“System: a set of interrelated elements, each of which is related directly or indirectly to every other element, and no subset of which is unrelated to any other subset.”

Despite its relatively recent acknowledgement in the sciences, the basic principles surrounding systems thinking have been in existence since the classical era of ancient Greece. Evidence of this is apparent in the famous quote by Aristotle: “The whole is more than the sum of its parts”, a fundamental principle of systems thinking today (von Bertalanffy, 1972). Checkland (1999) builds on this when describing the properties of a system as properties of the whole, rather than properties of its component parts. The elements of a system form a completely connected set that is not decomposable into unrelated subsets (Ackoff & Emery, 1972). Having a clearer understanding of what a system is enables us to build a platform from which to base inquiry into the complex, systemic nature of our world.

To understand a system is to be able explains its properties and behaviour. In other words, its structure, processes, and functions (Gharajedaghi & Ackoff, 1984). Understanding a system cannot be achieved by simply studying the parts and processes in isolation (Hjorth & Bagheri, 2006). The structure of a system; the way the work is divided, and the relationships between its parts, can only be understood when it is observed in the functioning of a system (Gharajedaghi & Ackoff, 1984). The structure of the system is what gives rise to its behaviour (Sterman, 1994). One of the most important characteristics of a system is the relationship between its behaviour and its elements (Ackoff & Emery, 1972). Managing a system requires intervening, controlling and responding to events, in order to successfully it is necessary to be able to understand the system we intend to manage (Boscetti et al., 2011). Having this kind of understanding allows a better approach to managing problems that arise from these systems.
a) Mechanistic (Mindless) View

The mechanistic view of the world evolved in France after the renaissance (Gharajedaghi, 2006). During this time there was a rapid advance in physics, mechanics, and mathematics. These new methods were used to interpret man, his mind, and society (Buckley, 1967). Mechanists claimed that every phenomenon could be reduced to the primitives of physics or chemistry (Buckley, 1967; Weinberg, 2001). Since nature operated in accordance with these basic laws it was assumed that society could be seen to operate under a defined set of basic laws (Swilling & Annecke, 2012). Therefore, the model conceptualises the world as big machine, with many parts that operates with regularity dictated by its internal structure (Gharajedaghi & Ackoff, 1984). Man was regarded as a physical object that formed part of an elaborate machine whose actions and processes could be analysed in terms of the principles of mechanics with systems comprised of components which are simple in structure and not affected by being part of the system (Buckley, 1967). This worldview provided the foundation for the industrial revolution, as well as the development of the machine mode of an organisation (Gharajedaghi, 2006). The mechanisation of agriculture in the 1800’s created a huge amount of unemployment amongst unskilled farm workers. To combat this, the concept of an organisation was born; vast numbers of unskilled workers performing one, simple task like a cog in a large machine (Gharajedaghi & Ackoff, 1984). This notion of an organisation was so productive that in one generation the capacity to produce goods and services surpassed the previous cumulative capacity of mankind (Gharajedaghi & Ackoff, 1984).

This model was further used to help understand the world. The model breaks down complicated structures into their parts and attempts to understand them at a level where the parts are no longer divisible (Gharajedaghi & Ackoff, 1984). Once the parts are understood in isolation at this level, their explanations are aggregated into an understanding of the whole (Polkinghorne, 2002; Gharajedaghi, 2006). This is known as Reductionism. Whilst the system yields a description of the actions and interactions of the parts, it does not provide any understanding of the behaviour of the parts or the system as a whole (Gharajedaghi & Ackoff, 1984). The types of interrelations between components of mechanistic systems are narrowly restricted with very little degree of freedom in the behaviour of components (Buckley, 1967). Consequently, this model could not explain why a system may not perform as well as possible relative to its objective when each of its elements were performing as well as possible relative to their sub-objectives (Ackoff & Emery, 1972; Gharajedaghi & Ackoff, 1984).

Mechanistic systems are mindless systems in the sense that they have no purpose of their own, it is a tool with a function defined by the user; an instrument for the owner to achieve their purpose (Gharajedaghi, 2006). This is known as a goal-seeking system (Ackoff & Emery, 1972). Purpose refers
to an objects ability to pursue the same goal by changing its behaviour as conditions change (Ackoff & Emery, 1972). Its implications for an organisation are that the control is centralised and autonomous. It promotes a bureaucratic form of management with a rigid structure (Buckley, 1967; Gharajedaghi & Ackoff, 1984). Whilst the mechanistic view makes for an efficient and reliable form of management, it has no ability to restructure itself (Gharajedaghi, 2006). This makes the system inflexible and unable to adapt to its environment (Buckley, 1967). Furthermore, in an environment which experiences constant change a system with a mechanistic management view becomes increasing dysfunctional (Gharajedaghi & Ackoff, 1984).

b) Biological (Uni-minded) View

It is clear that the mechanistic view is flawed in its efforts to understand our world. As a result, philosophers and sociologists turned to living systems as models to gain some point of leverage on the complexity of the world (Weinberg, 2001). Mechanistic thinking was replaced by biological thinking.

Although organic analogising of society is something that dates back to the ancient world, it was advances in biology in the late 19th century that helped this model of society gain prevalence in modern sociology (Buckley, 1967). What followed saw the birth of the biological view which conceptualised the world as an organism with a purpose of its own: to survive; which cannot be achieved without growth (Gharajedaghi & Ackoff, 1984). In an organisational sense, this means to make a profit to be able to increase production and survive (Gharajedaghi, 2006). This differs from the mechanistic view where profit was the end in itself, in the biological view of an organisation profit is merely a means to providing the end; survival and growth (Gharajedaghi, 2006). However, the preoccupation with growth creates problems; firstly, systems can only grow at the expense of other systems or their environment. Secondly, exponential growth cannot be sustained forever (Gharajedaghi & Ackoff, 1984). Since living organisms need to be able to respond to changing environments, the parts need to be able to adjust their behaviour to maintain the properties of the whole (Gharajedaghi & Ackoff, 1984).

In biological systems the elements are seen as organs (and individuals as cells) that each has a function that serves the purpose (survival) of the whole (Gharajedaghi & Ackoff, 1984). The functioning of the elements are necessary but not sufficient for the achievement of the system’s purpose; organisms do not contain purposeful elements (Ackoff & Emery, 1972). The elements do not have a choice of whether they want to serve the purpose of the whole or not. The heart cannot decide that it wants to stop beating (Gharajedaghi, 2006). In the same vein, there is no consciousness between the parts, and thus there is no conflict (Gharajedaghi, 2006). This makes the
biological view inappropriate when it comes to viewing a social organisation. Real-life interactions between individuals in a social setting involves choice and individual purposes (Buckley, 1967). The operation of a biological system is controlled entirely by an executive function, the brain, and is responsible for receiving and transmitting information to all of the parts of the system (Gharajedaghi, 2006). However, some of the parts can interact directly with their environment without instruction from “the brain” and whilst the parts do not control the function they carry out they have some degree of control on how the function is performed (Gharajedaghi & Ackoff, 1984).

A significant factor of this type of system is that it has the ability to learn and adapt to its environment (Gharajedaghi & Ackoff, 1984). However, a biological system cannot change its given structure beyond narrow limits and remain viable (Buckley, 1967). The system can also only operate if its parts do not display choice (Gharajedaghi, 2006). This makes it an erroneous manner in which to view an organisation as a social system has almost complete control over its structure (Gharajedaghi & Ackoff, 1984). Whilst the biological view fits for many aspects of reality it failed because it did not recognise a fundamental difference between biology and sociology; organisms do not contain purposeful elements (Ackoff & Emery, 1972). Resultantly, it became clear that there is a need for a more comprehensive model that better recognises the dynamics between the interactions and choices of individuals.

c) Social (Multi-minded) View

A social system is an evolutionary development from biological systems. It involves organisms that have powers of communication, consciousness, and the ability to produce artefacts (Boulding, 1985). In this model organisations are seen as a voluntary association of purposeful members (Gharajedaghi, 2006). This definition is based on Buckley’s (1939: p.18) description of the process model of society: “...a complex, multifaceted, fluid interplay of widely varying degrees and intensities of association and disassociation”. Social organisations, or systems, are considered to be multi-minded systems.

Ackoff & Emery (1972) introduce the idea of a social system as a system whose elements are purposeful individuals. Boulding (1985) builds on this when identifying the vital variance between social and biological systems as the greater importance of decisions in determining a social system’s future. Here, the significant variable is choice. This means that the system can produce the same outcome in different ways in the same environment. In addition, they are able to produce different outcomes in the same, and different environments. This is known as a purposeful system (Gharajedaghi, 2006). Human choices are complex and often affected by random factors unlike
choices that biological organisms make which are simple (Boulding, 1985). Therefore, purpose becomes an objectively observable property of a social system’s behaviour (Gharajedaghi & Ackoff, 1984). Purposeful systems are able to display free will which is exemplified by their ability to change under constant conditions (Gharajedaghi & Ackoff, 1984). As a result, they have the ability to not only adapt and learn, but also create. It is important to illustrate that organisation is an important property of a social system and plays a crucial role in enabling the parts of a social system to perform particular functions (Ackoff & Emery, 1972).

The parts of a social system are also purposeful systems and they form part of a larger purposeful whole; society (Gharajedaghi & Ackoff, 1984). Therefore a key challenge of social systems is aligning interests of the different parts and the system as a whole (Gharajedaghi, 2006). Therefore managing a social organisation is to serve the purpose of its members, whilst serving the purpose of the system and its containing system or environment (Gharajedaghi & Ackoff, 1984). The twentieth century has seen the birth of a single, globally integrated social system where nearly all of the social sub-systems from around the world are unified into one “super-culture” (Boulding, 1985). This unified social system is viewed as a set of elements linked almost entirely by way of intercommunication and information (Buckley, 1967).

Members of a social system are information bonded and not energy bonded like mechanistic systems (Gharajedaghi, 2006). A noteworthy example of this exchange is illustrated by Gharajedaghi’s (2006) comparison of a car and a horse; a driver can get behind the wheel and drive a car straight into a wall without the car objecting. However, it matters to the horse who the rider is and a series of information exchanges between the horse and the rider takes place before the horse will oblige to the riders instructions. Social systems are held together by common objectives and finding ways to achieve common objectives (Ackoff & Emery, 1972). This has a great significance for the understanding and management of social systems.

This begs the question, what is the common objective or purpose of the system as a whole? Gharajedaghi & Ackoff (1984) answer this question when describing the principal function of a social system as encouraging and facilitating development. This is described as a comprehensive set of goals (attaining more desirable ends) that can be pursued without end, but can be continually approached (Ackoff & Emery, 1972). This bestows a development within the concept of a purposeful system; an Ideal-seeking system. Ideal-seeking systems form an important subclass of purposeful systems (Ackoff, 1971). It is clear that the current ideal set by human systems needs to be orientated around sustainability of the system. The greatest source of change in social systems is undeniably the complex process of human learning, the development of new knowledge and the distribution of
knowledge to new minds (Boulding, 1985). This gives us the ability to develop. This is a significant requirement for a complex adaptive social system.

**Towards Complexity**

*“The twenty-first century will be the century of complexity”* (Stephen Hawkins, 2000)

We are currently witnessing massive global change of infinite types that are evolving in ways that are networked, interacting and inter-dependent (Wells, 2013). Complexity theory is an emerging science that represents multi-disciplinary efforts to understand the nature of the world and how it has evolved in both natural and human systems (Kiel, 2009). This natural extension of systems thinking has a shared focus on anti-reductionism and a holistic appreciation of system interconnectedness (Manson, 2001).

It has been established that classical science has fallen short in attempting to understand and explain social systems since interactions between components are not considered. Deterministic approaches that are rule-based and assume linearity cannot yield an understanding of complex phenomena (Cilliers, 1998; Moobela & Price, 2008; Gharajedaghi & Ackoff, 1984). Put simply, a complex system is a collection of entities inter-connected by a complex net of relations which depend greatly on the transmission of information (Buckley, 1967). Complexity is a result of the interaction between these entities that classical analytical approaches have failed to explain; it is manifested at the level of the system itself (Cilliers, 1998). Unlike mechanistic components; components of a complex system are more intricate in their structure, more unstable, and more affected by the workings of the system of which they are a part (Buckley, 1967).

Like FM and sustainable development, there is no one identifiable definition for complexity theory, but rather a series of theories that exist under the umbrella of complexity research (Manson, 2001; Moobela & Price, 2008). There are however behavioural rules that can describe complex systems; non-linearity, emergence and self-organisation (Kiel, 2009). Kiel (2009) goes on to describe non-linearity as the capacity of human and natural systems to generate amplified effects as a result of the disproportionate relationship between cause and effect; seemingly small causes creating large effects. Non-linearity is not something that can be measured quantitatively. Emergence refers to a complex system’s ability to generate new and unique forms of behaviour and structure (Kiel, 2009; Goldstein, 1999). Finally, self-organisation is the ability of complex systems to disassemble in crisis or instability and re-organise themselves into a new structure or a previous one (Kiel, 2009). As a result of these behavioural rules for complex systems it is impossible to know what will result from a
certain action, where it will occur and what the environment will do in response to this (Kay et al., 1999). This creates a significant challenge for scientists attempting to understand and manage complex phenomena. Resultant interventions must be flexible and resilient enough to accommodate the high level of uncertainty inherent to complex systems. Another significant challenge regarding complexity is that it is incompressible; it cannot be reduced or simplified. Correspondingly, complex issues demand complex descriptions and models that attempt to represent complex systems end up being as complex as the system itself (Cilliers, 1998). What follows is a description of the characteristics of a complex system.

**Characteristics of a Complex System**

Complex systems form part of our everyday life. This makes it important to be able to identify whether a system is complex or just complicated. What follows is a framework for being able to identify whether a system is complex or not. Cilliers (1998) set out the ten properties of a complex system which is used as the standard benchmark for the classification of complex systems. The characteristics are as follows:

- A complex system has a large number of elements; the higher the number of elements, the harder the system is to understand.
- A large number of elements are necessary, but not sufficient for complexity; the number of grains of sand on a beach does not represent a complex system.
- The elements of the system must interact, and the interactions need to be dynamic and rich; in other words any element in the system is influences and is influenced by a number of other elements in the system and the degree of influence can change (Ackoff & Emery, 1972).
- The interactions are nonlinear; it is a precondition for complexity.
- The interactions have a short-range; information is received from nearby element.
- There are feedback loops in the interactions; the effect of any activity can feed back on itself.
- Complex systems are usually open-systems; they interact with their environment.
- They operate far from equilibrium.
- A complex system has a history; the past is responsible for present behaviour. This is necessary for a system to be able to learn and adapt to changing condition.
- Each element is ignorant to the behaviour of the whole. It responds to information that is available locally.
The ideas of systems thinking and complexity have come a long way to help social scientist develop a deeper understanding of the world. These principles can be usefully applied to contemporary concerns such as sustainable development. The next section provides a brief account of the importance of these notions when confronted with the challenges of sustainability.

**Systemic and Complexity Theories and Sustainable Development**

Issues about sustainable development are related to complex, self-organising systems (Hjorth & Bagheri, 2006). These are both human systems and the natural systems that make up Earth’s environment. Sustainable development is essentially concerned about the relationship human systems have with their environment. Therefore, management of these interactions are vital in mankind’s ability to develop in a sustained manner. In systems terms, a system’s environment is described as a set of elements and their properties which are not part of the system, but a change in any of which can cause a change in the state of the system (Ackoff & Emery, 1972). Therefore, the environment plays a crucial role in supporting life for humanity. As such, resources and stakeholders must be viewed as factors collectively interacting with people and environments, which in turn interact with each other (Hjorth & Bagheri, 2006). Conventional economics and science do not view the roles that sub-systems have on other sub-systems and the system as a whole; no feedback between the various sub-systems is assumed (van den Bergh & Nijkamp, 1991). Despite this, issues concerning sustainable development are often viewed in isolation. As a result, policies introduced to achieve sustainable development have failed to address the core problem. Progress in one aspect of sustainability is often counteracted by regression in another aspect. As such, these approaches cannot be used to devise robust strategies that can manage uncertainty and facilitate adaptation to the environment (Hjorth & Bagheri, 2006).

Hjorth & Bagheri (2006) assert that in order to deal with sustainable development acknowledgement of the following system properties are essential: bounded rationality, limited certainty, limited predictability, intermediate causality and evolutionary change. Complexity has the ability to cut across disciplinary boundaries to better address these issues (Moobela & Price, 2008). Furthermore, Gladwin et al. (1995) suggest that for a worldview to be congruent with sustainable development it must manifest inclusiveness, connectivity, equity, prudence and security. Inclusiveness refers to the need for humans to embrace environmental and human systems with social, political and economic beliefs as a driving force behind environmental change. Connectivity represents the need for there to be an understanding of systemically inter-connected and inter-dependent issues that make up
sustainability. Equity means the fair distribution of resources; this is a central feature of sustainable
development. Prudence is also a significant dimension of sustainability and systems need to be
resilient as there is so much uncertainty and unpredictability within the world we. Security refers to
the need to ensure a safe, healthy and high quality of life for current and future generations. Based
on these principles, it can be reasoned that the development of systems thinking is crucial for the
survival of mankind (Sterman, 1994).
Appendix B: Interview Outline

The following interview outline serves as a base for the semi-structured interviews. Note that additional questions emerged out of the data collection that did not form part of the original interview outline.

Interview Questions

1. What do you perceive to be the biggest challenges faced to developing a sustainable urban environment?
2. Are current sustainable community rating models achieving their sustainable objectives?
3. Are current sustainable community rating models positioned more towards developed societies as opposed to developing societies?
4. What role does context play in the achievement of sustainable urban development?
5. Do you feel that the current community rating tools adequately accommodate the varying degree of context of an area and the effect that context has on the achievement of sustainable cities?
6. Do current sustainable community rating models/initiatives accommodate the specific needs of urban precincts in South Africa?
7. Do you think society as a whole is currently meeting sustainable development objectives at a satisfactory rate?
8. Do you believe that current attempts to operationalise sustainable urban development are effective?
   If answers No:
   a. How do you think the processes can be enhanced to more effectively achieve sustainable urban development? What would you propose?
   b. What issues regarding the operationalisation of sustainable development do you feel are not adequately met?
9. Do attempts to operationalise sustainable urban development effectively account for the inter-dependencies and interactions between the vast numbers of factors related to sustainable development?
10. What would you consider to be the primary goals of an urban precinct in the achievement of sustainable development?
11. What management principles do you think could assist in the achievement of these sustainable goals in an urban precinct?
12. What benefits do you perceive would come from a more holistic approach to urban sustainability?

13. Do you think the principles founded in urban FM offer a systemic approach that facilitates the sustainable management of an urban precinct?

14. Based on the previous question, do you think that these systemic practices could be employed in the development of a formal framework to achieve sustainable urban development at a policy level?

15. Should initiatives surrounding sustainable urban development be developed at a local level and hence cater for the specific requirements of that particular urban precinct?

16. What role do you think the local community play in the achievement of sustainable urban development?
Appendix C: Informed Consent Form

CONSENT TO PARTICIPATE IN RESEARCH

Research Topic: Urban Facilities Management as a systemic process to achieve urban sustainability in South Africa

Consent Form

Dear potential participant,

You are invited to take part in a research study on the Management of Urban precincts to achieve Sustainable Cities. This research is conducted by Luke Boyle, an M.Phil. student at the University of Cape Town. The inquiry is supervised by Associate Professor Kathy Michell of the University of Cape Town and the results of the study will be presented to the Department of Construction Economics and Management in fulfilment of the requirements for the degree of Master of Philosophy in Construction Economics and Management.

If you have any questions or concerns relating to the research please do not hesitate to contact me, Luke Boyle or the research supervisor, Associate Professor Kathy Michell:

Luke Boyle  Lukeboyle2012@gmail.com  +27 (0)76 837 8867
Kathy Michell  Kathy.michell@uct.ac.za  +27 (021) 650 3444

Purpose of the Study:

The primary aim of the research is to establish whether a systems-based approach to the management of urban precincts assist in the development of an effective framework for developing
sustainable communities in South Africa. In doing this, the applicability of current sustainable community rating tools will be examined to determine whether they can be effectively imported into the “developing country” context of South Africa to achieve their sustainable objectives. To this end, the study will be conducted in both the “developed” and “developing” context.

The research will also examine systems theory in an attempt to develop a framework for sustainable urban development that considers the complexity and contextual significance related to sustainable development.

Procedures:

Participation in this study is voluntary. If you volunteer to participate in this study, we would determine a time and date that would be suitable for a semi-structured face-to-face interview. Pre-established queries in addition to emergent questions will be asked. The responses will be used to supplement data gathered from other sources of evidence available from the case study research setup.

Prior to the interview, the researcher will brief the participant on the topic and make sure the respondent is aware of the procedure to follow. Any questions regarding the procedure may be asked at this stage, or any other stage, throughout the interview.

Potential Benefits to the Participant:

Any of the research findings will be shared with the participant at their request.

Confidentiality:

The information obtained in this research will be utilised solely for the purposes for this study. Every effort will be made to ensure that subjects are anonymous and safeguard any proprietary information. The raw data of the interview will only be revealed to personnel directly related to the supervision and marking of this dissertation. The names of the participants and companies will not be included in the research and will be referred to as participant 1, 2, 3 etc. Additionally, any information recorded will be only be released to the supervisor upon request and will be destroyed upon submission of the document.
Rights of Participation:

Your consent may be withdrawn and at any time and your participation may be discontinued without any repercussions. The study has been reviewed by the University of Cape Town Research Ethics Board and has received ethics clearance and if you have any questions as to your rights as a participant please contact the Research Ethics Committee Chair Person:

Allan Cliff   alan.cliff@uct.ac.za   +27 (021) 650 5027

Signature of Research Participant:

I have read the information provided for this study for the study of:

“Urban Facilities Management as a systemic process to achieve urban sustainability in South Africa”

I have been provided with a copy of this form as a point of reference. My questions have been answered to my satisfaction and I fully consent to participate in this study.

__________________________________________

Full name of Participant

__________________________________________

Name of Participating Organisation

__________________________________________

Signature of Participant
Appendix D: Sample of Interview Transcripts

Randomly Selected South African Interview

Participant 1
Interviewee Organisation: Green Building Council of South Africa (GBCSA)

Interviewee’s Role in Organisation: Chief Executive Officer

Interviewer: Luke Boyle (Researcher)

Interview Date: Thursday 7th November 2014 [14h00-15h00]

Interview Location: GBCSA Head Offices, Cape Town

P1= Participant 1 (Brian Wilkinson)

LB= Luke Boyle

(Start of Interview)

[Recording starts with P1 signing consent of participation form required by the University of Cape Town for any research interview]

P1: I would love to, I know that there are protocols and I am more than happy to agree to those protocols, but once you have published, I would love to be able to get a copy.

LB: Yes, definitely. It is actually a part of the agreement that we have [written in the consent form].

[20 second silence while P1 reads and signs consent form]

LB: Okay, so this is the rich picture. I am using soft systems methodology (SSM) as my methodological approach [to the research], it stems from systems thinking, which is a management theory. So then with urban facilities management as the centre of this [research topic and rich picture] and then there are five dimensions, as opposed to the three dimensions [of sustainable development] is a theoretical approach to sustainable development. So there is the physical, which is the buildings, the infrastructure. So sustainability at a building level. Obviously the social dimension and the environmental dimension and then the political dimension which basically deals with the relationships between all the factors and the trade-offs of sustainability and an example of that would be a really green building may not be economically feasible. Therefore, it is not sustainable.
So the trade-offs and that kind of thing and the relationships. Most of these illustrations in the rich picture pertain to facilities management and having the goal of an urban area, an urban precinct, of sustainable development using the principles of facilities management. So through urban facilities management we can create a management framework that integrates certain services which also manages people’s expectations from a public, private and community level. Complexity is another management theory. A social system is a complex system, which is a system with a vast number of interacting elements that interact in a way that is non-linear and it is almost impossible to model it and to plan within these systems because there is so much uncertainty. Then within all of that there is the context. So South Africa for example, the African context, so the environmental, the fynbos biosphere, the, historical legacy from apartheid and obviously the economic and governmental structures, will they be able to facilitate a rating tool or the achievement of sustainable development. So in a nutshell, that is where it is and how the rating tool will fit in as means of measurement and planning and a decision-making aid. Which also ties in with the political dimension. I mean this is months of reading, of theory, so...

P1: I’ve seen a similar model, I am struggling to remember what the "T" was, which is called PEST: Political, Environmental, Social, I can’t remember what the "T" was. It wasn’t transport. You use PEST in a risk analysis. I have been exposed to something similar [referring to the rich picture].

LB: OK perfect. I mean we really have skimmed through a lot. I can send you my proposal, it may help. I should have probably done that before. I just thought that it might be a quick way of getting it through. So Ja, if there are any changes that you think, as I said this is purely a theoretical worldview of the issue. So the practical implications of this could be completely off. I mean you don’t have to do it today, but if there are any changes that you feel can be made or should be made, then it would be great if you could.

OK perfect. Are you happy to start [the structured interview]?

P1: Ja, go for it. Let’s rock and roll.

LB: OK, so the first one is:

1) What do you perceive to be the biggest challenges faced to developing a sustainable urban environment?

P1: What I would call "short-termism". I’m not sure that "termism" is a word but your classic commercial scale developer has a fairly short-term focus. So as we understand in most features to include sustainability in any development scale, almost by definition, there is a payback period involved. And if you are going to, in simple speak-if you’re primary focus is to flip the damned thing
as fast as possible you are going to be less inclined to invest using a total life-cycle model than [unintelligible passage]. So I think, I'm not sure that is the biggest, but I think it is a major factor. Sitting right alongside it, you know, the public sector is involved in scale development themselves. I suppose a really pragmatic situation right now in South Africa is one of there are other priorities. One understand the big picture, you know, we interact with the public sector a lot and there is incredible empathy but they are resource constrained and we have a sector of our community that literally have nothing. So again, any scale development that involves additional work and involves additional costs becomes that much more difficult. So I view those as being two fairly serious inhibitors.

**LB:** And I guess as you said that kind of neatly ties in with the context. The South African context, you know with sustainability in mind, people are not really going to be that concerned about how green the meat that they are eating is if they are struggling to find clean water to wash themselves with.

**P1:** Can we park that for a second because there is an interesting, there is some interesting work on being able to leapfrog this fairly carbon intensive pathway to wealth creation. Not to be affluent or anything. We are digressing now. [pause]. To you and I, or to your parents and myself, having an energy efficient home has become aspirational. Putting a solar water heater on your roof it is almost, it is right up there with parking the Merc (Mercedes-Benz) in the driveway; look how good I am. However, for a poor person living in a township, having a solar water heater means that they literally leapfrog to what has become aspirational for us because of economic realities. So, you know, they would have never been able to afford the electricity etc. So there's an interesting segue into there is an opportunity with poorer communities to sort of leapfrog. Community gardening, community food gardening, community schemes. We got involved in a, and you can go and google it, retrofitting some RDP (Reconstruction and Development Programme) houses in Durban, which was the so-called first "green street" in South Africa. It was kindly funded by the British High Commission, the Australian High Commission and there was a little bit of money left over at the end and we toyed with the idea of starting a small-scale enterprise to recycle waster. So, you know, you now have this community of sixty or so people and there was a job waiting there, somebody within that community, they had the scale then, somebody to recycle waste, and they can resell it and make money out of it. So there is, one mustn't just assume automatically that because people are poor they can't live sustainably. In fact, they can teach us a lot about living sustainably.

**LB:** OK.

2) **Are current sustainable community rating models achieving their sustainable objectives?**
P1: It is too early to call it. You know, and please understand a rating system within a context. A rating system per se is simply a score sheet. It is simply trying to introduce a universal language, trying to introduce a sort of a high integrity process that attests to the fact that the developer has done certain things. Otherwise you get that dreaded "green-washing" label. So this is a sustainable development, well who says so? Well I say so because I've got a roof garden so it's got to be. Well gee, it's cool that you've got a roof garden but there's a whole lot of other stuff.

**LB:** Do you think then that the results of these rating tools are meaningful in a measurable sense?

P1: They absolutely are meaningful. So, us in a small way, Australia because they are our cousins and they are a long way ahead of us, sort of five years further down the path than us, have both been able to look at buildings, you know we don't have a communities tool yet, so I am talking just at a building level, but we have been able to look back at certifications that have been done and say: well what is this telling us? What is the story that it tells? We have been able to do an assessment of new buildings that they have modelled and then you are able to measure once they have built and occupy and so forth and then you are able to do an analysis of the actual building performance and you assess the difference. So there is no doubt in my mind that rating systems are very important, if not the most important tool, in a sort of policy of sustainability.

**LB:** OK.

3) Are current sustainable community rating models positioned more towards developed societies as opposed to developing societies?

P1: Well absolutely. I am unaware of any community level rating system that has been designed specifically for a developing community. They always tend to leapfrog to more of the developed country status. You know, but taking South Africa as an example: we have both [developed and developing communities], and there is absolutely no reason why a township development of subsidised housing, or gap housing, could not apply urban-scale sustainability practices. There is absolutely no reason why. It gets embedded into the design principles. I don't think that sustainability is something, and we have just had this discussion, that is the preserve of the wealthy class. In fact, in so many instances people who don't have will gain so much more because of some of the economic benefits attached to sustainable practices.

**LB:** OK. I am just digressing slightly; do you think that they [community rating tools] are more prominent in developed societies because at the moment it is very much corporate driven, you know, the whole green movement, it seems?
P1: You know it's interesting, I am sure that I would agree that the green movement is corporate driven. In the South African example, if you consider the whole of the public sector, let your mind wonder a bit, consider the whole of the public sector to be one company; the public sector as a conglomerate. They would, in South Africa, have the most green buildings that have been properly certified because we have had national government do things, we have had state-owned entities do things, we have had provincial government do things, we have had cities do things and when you add them all up, that's pretty damned impressive. So it's certainly not in the preserve of the commercial sector. Why it seems though to have taken on that sort of mantle is simply because, I think of two things; I think the commercial sector has been quite savvy in identifying that there is a really strong economic fundamental that underpins this stuff. Whether it is the fact that I am going to be able to differentiate myself on that basis and I am going to get higher rent or better tenants or whatever.

LB: Which is ultimately driven by society?

P1: Correct, by perception. Or whether it is as a result of the big owners of capital, you know, the representatives of the pension funds and what have you. They invest under the principles of responsible investment, who actually build into their mandates that we want to see this and if it is not happening, then there's the so-called brown discounts, or if it is happening then there is the so-called green premiums.

LB: The reason why I ask that was because I am just struggling to see the necessity for a community to have a rating or an accreditation if it is not for some kind of financial advantage or economic advantage. For Cape Town to say that it is green or for Kenilworth to say that it is green...

P1: Ultimately, you are correct. But it is sort of how far away is that payback line? So last night I was at the Cape Town partnership's AGM and the new investment director for the city of Cape Town, [name], was doing a little introductory speech and he told one of the stories of pitching Cape Town to a major international scale IT company and in his pitch he went on and on about that Cape Town is this beautiful city and there is lifestyle benefits and all of those things and it came right down to the possible investor, who was polite and everything, but at the end they wanted to know: so what is the transport like? Will my people be able to get to work? Now transport is one of the big factors in any form of sustainable community development principle. So there is a city that is hearing very loud and clear that actually this stuff can talk to the long-term attractiveness of the economic development of the city as a whole by applying environmental sustainability principles.

LB: OK, that's actually something that I did not really consider.
P1: So absolutely at a micro-level, the commercial guys, when the boardroom door gets closed [P1 laughs] it is: what is the ROI (Return on Investment)? That's it. We'll say different things in the newspapers. But at a public sector level I think the guys are seeing that there is a bigger deal being played.

LB: OK.

4) What role does context play in the achievement of sustainable urban development?

P1: I will have to think about that question, it was complicated. Ja well obviously it plays a huge role. You know, that is meta-theory level stuff. Nothing can ever happen in isolation.

LB: I mean, it is a very vague question. I'm not really expecting a definite answer.

P1: It absolutely plays a role. I think that looking at it more from a commercial level, you get your timing right and if one refined that question more, or the context idea more, towards saying then, when will the environment be right? It is all about timing. That is what property developers do fairly well. They read the market and then they will [unintelligible passage] the market at a certain point in time. That goes all the way back to the first point that I was making: Why do they do it? They do it because they want to sell it.

LB: OK.

5) Do you feel that the current community rating tools adequately accommodate the varying degree of context of an area and the effect that context has on the achievement of sustainable cities?

P1: So Luke, you are going to be upset with this answer. I don’t know enough about it.

LB: No, that is fair enough. OK that’s fine.

6) Do current sustainable community rating models accommodate the specific needs of urban precincts in South Africa?

P1: So we don’t have any community rating systems yet other than us being able to borrow, in inverted commas, from the Australian system. We have had a number of teams look through it and they say it's fine, we can use it as is. So then I would add a cautious yes to that.

LB:

7) Do you think society as a whole is currently meeting sustainable development objectives at a satisfactory rate?
Again, it [the question] is also quite vague.

P1: So you are talking to a "Greenie-Beanie" and even if we have billions of green buildings and green precincts, I would say it wasn’t happening fast enough. So the more commercial part of me, coming from more of a commercial background, I think it is happening at the right pace. What you don’t want to do is to overcook something so that it goes off the boil and loses legs. So, I think it is happening at a satisfactory pace. Would I like to see it happening faster? Absolutely! I would love to see it happening faster. Have we got enough time? Well you know what the end game of climate change? The planet is going to survive, it is us that aren’t.

LB: We’ll make a plan.

P1: I’m not so sure that we are going to have the opportunity Luke.

LB: OK and then:

8) Do you believe that current attempts to operationalise sustainable urban development are effective?

P1: So speaking from a limited number precinct-scale developments that have happened in South Africa: Menlyn Main, Century City, Waterfall, the Umhlanga Ridge Precinct. I think they have. They have immediately identified themselves and differentiated. That differentiation has been acknowledged, whether it’s some sort of explicit connection or affinity with sustainability principles or it’s simple an affinity with the fact that it is slightly different. At the end of the day, it has been pretty damned effective.

LB: They are a first of their kind so they’re not going to be perfect to start off with anyway.

P1: Just drive past the Century City precinct, down the road, and you will see a ruddy great big sign board that says: The Greenest Community in South Africa. Which is interesting [laughs] because there is no system in place [to award that community that kind of accreditation]. They would not have put that up if they did not see it as a differentiator.

LB: Also, they would not have put that up if they didn’t think that they were confident that they were.

P1: Ja.
8a) Do you think the processes can be enhanced to more effectively achieve sustainable urban development? What would you propose?

P1: So again, my answer is going to go back right to the beginning, that concept of "short-termism". Economic reality will always be a major player when it comes to private sector development. We all love to look to the government: They should... Why don't they? But if there is a role where the public sector can facilitate in making it easier for these schemes to get approval, for opening a different door. So I would love to see a green-door policy that says: Look, I am building a new township out on the West Coast and I am really committed to deploying a suite of sustainability principles and practices in that development. Then the local authority says: Well that's absolutely fine, we love that idea and as a result we're going to fast-track the approval process. So I would love to see the public sector, not necessarily financial, but I would love to see them use their processes and systems to be able to facilitate approval, faster processes.

LB: That also touches on what I am talking about with the management framework that urban FM provides as a platform for integration and collaboration between private, public and communities, and so on... So yeah, that is interesting that you say that.

8b) What issues regarding the operationalisation of sustainable development do you feel are not adequately met?

P1: Really Luke, this is still a fairly new space and we are all hard-wired to resist any form of change so this is the way we have always done it. A powerful motivator for change is when one is able to kick the tyres and to show demonstrable results and they are still going to need to come. So in a local context it is going to be a while. We fall into the trap of saying: Well in America... In Australia... In the UK... and then the other says: Well South Africa is different. What is happening here, when the answer is: We don't have enough schemes yet. Then that is a really good excuse for saying: Well then we will do it the old way. So the sooner we get the economic case well-articulated and well demonstrated, the sooner we break down the barriers to change.

LB: So is that, almost, where you see rating tools as a real useful tool?

P1: Well I see a rating tool very simply as an attestation that you have achieved a certain benchmark. That's it. That you can legitimately say it is [green or sustainable]. Organisations like ours etc. they can play a very valuable role in collecting the economic case and articulating that case and making it available to people and that will come.
9) Do attempts to operationalise sustainable urban development effectively account for the interdependencies and interactions between the vast numbers of factors related to sustainable development?

P1: [participant laughs] Really glad I didn't have a beer at lunch [pause]. You see I am not aware of attempts to operationalise it so it is really difficult to say whether it has been successful or not.

LB: Ja, OK. Fair enough.

10) What would you consider to be the primary goals of an urban precinct in the achievement of sustainable development?

P1: Well from our point of view we absolutely want to say that they are playing a major role in militating against the impact of the built environment on climate change. That's the noble imperative. Let's not lose that for a second but the economic case sits there right alongside it. We are about to launch a rating system for residential homes. In doing our market analysis we spoke to some of the banks who are very interested in this space. Not only because of what their investors are asking them to do but they are in the long-term space of lending money. They are seeing that the operating costs, the utility costs of a green home are going to have a material effect on the disposable income of the borrower. The minute you have an effect on the affordability of something, the bank is interested because now either they are prepared to lend you more money or they are prepared to adjust the land to value ratio. So absolutely, there's the one hand of saving the planet but on the other hand the realisation of very significant economic benefits by the occupants of that community can't be underrated. I think you are going to increasingly see sectors that will align themselves with a different value system. My own children, it is not because their dad works at the GBCSA, are fairly particular about where they shop and who they want to work for and where they want to live. So I think there are a number of cases where there is a fairly strong argument that can be articulated.

LB: OK. Just on a broader, more societal look at that question, what primary goals as a society will people be looking for in a community other than the impact of buildings on climate change.

P1: It must go further than just, that is the ultimate goal. But there's a whole layer of anchors that is embedded in that from community engagement, a community rallying around something that is specific and very demonstrable, all the way through to community-level benefits. Let me try and illustrate that point in a rather obscure way in South Africa from somebody that has been privileged
and what have you: I live in a gated community. One of the beautiful things about being able to live in that community is that we no longer have that same security concern that perhaps others would. A net effect of security concerns is not the fact that I don’t have to spend money on burglar alarms, but that my children got to know who the neighbours were and you develop a community engagement that is completely different to where I grew up. Where you didn’t even know who your neighbour was because you have high walls. I think there is a host of societal-level benefits that kick in.

LB:

11) What management principles do you think could assist in the achievement of these sustainable goals in an urban precinct?

P1: I think the core of your graphic [rich picture] of looking at urban-level facilities management is what it is all about. It is being able to get the scale benefits of managing these various aspects at a broader level. About being able to measure the economic benefits at a broader level. Being able to measure the community and societal-type benefits properly.

LB: Don’t be alarmed if you don’t feel you can answer [the following question].

12) Do you think the principles founded in urban FM offer a systemic approach that facilitates the sustainable management of an urban precinct?

P1: So help me understand the term...

LB: [Interviewer explains FM and Urban FM]

P1: After thirty years plus in business and having a very privileged education and all of those good things I have figured out that there are only two businesses that will succeed long-term. Niche businesses and scale businesses. Urban facilities management, by exactly what you just talked about, is a scale organisation. Scale organisations bring an incredible layer of opportunity. You get the right level of skill, you get economies of scale, and you get real economies in terms of being able to afford things that you would traditionally not be able to. So absolutely, the principles apply.

LB: OK.

13) Do you think that these systemic practices could be employed in the development of a formal framework to achieve sustainable urban development at a policy level?

P1: That’s more complicated. When you say policy level, I assume you mean legislation?
LB: Ja.

P1: The game often becomes the policy and regulation level. It becomes one of either minimal levels of compliance or how to I avoid compliance. It is almost as if the game is wrong. I don’t know what else there is. So this is the proverbial carrot versus the stick. I have got no clue how you turn policy into a carrot approach. I don’t think it will work as a stick because all it is going to be is about how do I avoid compliance.

LB:

14) Should initiatives surrounding sustainable urban development be developed at a local level and hence cater for the specific requirements of that particular urban precinct?

P1: No question. What we have learnt in our game is this holy grail of a one-size fits all solution is an absolute myth. Every precinct is different, every building is different and that is why our rating system is a very flexible system. There are many pathways that you can take.

LB: OK.

End of Interview
Randomly Selected North American Interview

Participant 6
Interviewee Organisation: Green Building Council of Canada

Interviewee’s Role in Organisation: President and CEO

Interviewer: Luke Boyle (Researcher)

Interview Date: Thursday 7th May 2015 [11h00-12h00]

Interview Location: CaGBC Offices, Vancouver.

P6= Participant 6

LB= Luke Boyle

(Start of Interview)

LB: First off, could you just explain your role here at the Green Building Council.

P6: I am the president and CEO of the Canada Green Building Council (CaGBC). We are a national not-for-profit organisation. We are industry lead, so we can bring together leaders from the industry to transform the building market in Canada. We are using the LEED building rating system in Canada. This is the dominant rating system in Canada and North America and along with other programmes and tools we are a fairly integrated organisation. We provide LEED certification, education, training, a whole range of services to our members to get them to move towards green building practices, you know, new buildings, existing buildings and so on... My role as CEO is to, on a strategic side, develop strategies and execute those strategies throughout the organisation in Canada. Typical CEO role, being a chief executive of a sizeable national non-profit organisation.

LB: OK, great. So I am just going to start with the structured questions now. The first one would be-

1) What do you perceive to be the biggest challenges faced to developing a sustainable urban environment?

P6: That's a big question. The biggest challenges are is that, particularly in the built environment, if buildings and infrastructure are permanent, so they are very long lasting; so the decisions we have today will have a huge impact in 10, 20, 50- and when it comes to infrastructure- maybe even 100 years from now. I think that is an opportunity, if you get it right but we tend to be, in our decision-making when it comes to sustainable urban development, taking our time- because these are big
investments and the development industry typically tends to be very profit-driven and they are don't change easily. They are not an exception to other industrial or business sectors but change comes slowly and I think that is probably our biggest challenge. Also, people tend to not welcome change, or like change. So the biggest barrier in sustainability is actually human nature of lacking change because those who embrace change they can move and change very quickly. We don’t see that broad scale quite yet.

LB: That kind of ties into what I am arguing [in the research report] - being able to be flexible and traditional planning paradigms are not really enough, they are quite rigid and if you look at planned cities at the moment- they are not really sustainable and they are based on these grand plans that never really come into fruition the way we desired them to. So yeah, that was a great answer.

2) Do you think society as a whole is currently meeting sustainable development objectives at a satisfactory rate?

P6: No. I don't think they do. I think that when it comes to the challenges we have, if its climate change or population growth or global environmental degradation and of course all of these are linked in some way, I think we move way too slow. I think our societal institutional structures are not build for moving fast unless there is a big crisis where radical change is required, I do not think we change quickly enough to address those issues and I think that is really problematic.

LB: OK, perfect. So this is more towards the sustainable community rating tools now...

3) Which sustainable community rating tools do you currently offer as part of your mandate and which is the most popular?

P6: We are using LEED in Canada and it is becoming the de-facto global standard as well because of its presence in many other countries. We do have LEED for neighbourhood development (LEED-ND) which is a rating tool and we have a couple of thousand projects in Canada. Some have certified already and some are currently being developed and others are still in the process. We do not expect all of them to certify but I hope we do the majority. The other tool that we are working with is called EcoDistricts. This is not your typical rating tool, it is a protocol actually that really looks at the process and how municipalities and developers and the community can transform, particularly existing neighbourhoods, to meet sustainability targets. And this is a real weakness that cities are having is: planning, they are very good; implementation, not so much. There are counter-reasons for that and the EcoDistricts protocol as an initiative has been designed to help cities, and developers and neighbourhoods to make the right decisions and also have the right process to move towards sustainability.
LB: I am actually going to the EcoDistricts incubator in a couple of weeks time.

P6: Oh ja, good. My office will be there too. We are one of the founding sponsors.

LB: Oh really? I really love the tool, I think it is brilliant. As you say, it is not strictly a rating tool like LEED-ND but I think what I have noticed about the other tools is that they are a lot more outcomes-based and EcoDistricts is a lot more process-based.

P6: That's exactly right, and that is the big difference and that might be its strength.

LB: Yeah, and that is kind of what I am going for with creating a management framework that allows engagement with local government, organisations like CaGBC, and communities, and private sector. OK, so...

4) Are current sustainable community rating models achieving their sustainable objectives?

P6: You mean once they are certified are they meeting their objectives? Or do you ask if a rating tool for communities is the right thing?

LB: Umm, well both actually.

P6: I think- because what happened is building rating tools were, at the time, when they were still being developed, was that people think: 'Well it worked really well in buildings, so why not apply it to a community scale?' and I am not sure it is working out so well. I think that the boundaries we draw on buildings need to be bigger, and what I mean by that is because economically, you only hit a certain level of sustainability in a [single] building. Once you hit a larger scale you have 50, 60, 75% increase in energy efficiency. It is pretty pricey to get the other 25% to get net-zero or carbon neutral. I think it would be apply to pretty much everything, if you want 100% it becomes more expensive. So if you draw along bigger boundaries around your buildings and you think about neighbourhoods or districts, I think you are going to need that level in terms of infrastructure, renewable infrastructure, renewable energy infrastructure and just how to deal with somebody that looks at the outputs from the buildings and those types of things. So particularly energy, I think you need to draw bigger. I just don't know if a rating tool is the right thing because rating tools, as you say, you achieve it or you don't achieve it. So I am always a little bit- I look at the world of community rating tools: LEED-ND, BREEAM etc. I have not seen any of those tools be particularly successful. I don’t know about Green Star Communities, I have heard some good things about it but it does not seem to have really taken off. So I like the tools in terms of that they are very comprehensive, they link buildings, infrastructure, urban design, transportation, and food and a whole bunch of things. So conceptually, I think they are really good but in terms of the nature of the
development - how long it takes to develop these communities, when do you certify, what do you certify, I just do not think it has worked well. I do not see the evidence out there that it is working well.

**LB:** I completely agree with you. I think, as you say, it is a great idea in theory - and it's worked very well on a building scale and to expand that. And it has worked to a certain degree but I think where they come unstuck is when you go larger all those social factors and all those outside factors, you know, when you look at a building in isolation, you can really play around with that and to a certain degree you can do that with a larger scale but as soon as you bring people into it, there is that social factor and that is really where it gets complex.

**P6:** Yeah, exactly and I think that the other part for me is that sustainable neighbourhoods or communities - just a discussion about scale basically, but I really like the district scale because it is manageable - it is more than just about what we typically; as environmental organisations gravitate towards to reduction of water, energy, and waste, and those type of things. People are not going to live in those communities just because of that. I think the liveability factor is big. So what about things like, I always go back to the urban food movement, I do not know how big that is in South Africa but in North America it is pretty big now.

**LB:** You will have to explain that a little bit more.

**P6:** Urban food movement, so they grow food in the cities. So they have farmer's markets, food hubs; where people can get fresh local food, those kinds of things. In Vancouver it is pretty big. You see it in other cities as well.

**LB:** It is catching on in South Africa but we are generally a few years behind.

**P6:** Yeah, well that is fine. Just using that as an example. That is what people like to see now. They like to see, what I call, the liveability aspects and the rating systems do not necessarily capture that because they are too technically based. What about the liveability? Wanting to live in those communities, wanting to live in communities that are green with trees, and have naturalised parks, so anything that adds to the liveability cannot necessarily be captured in a rating tool. That is why I think EcoDistricts, being an open process, has a lot more opportunity to bring those elements into communities as they are being redeveloped and revitalised. And also new communities as well. So I think that is what is missing from the rating tools.

**LB:** OK, great. I think, to me anyway, you hit the nail on the head. I think a lot of people place a lot of impetus on the rating tools as a guide to comprehensive development but I think we should maybe
look at something which offers a complementary framework like EcoDistricts or something like that, rather than it [rating tools] being the “be all, and end all”.

P6: And I have to say too that the urban planners, the municipal planners, when it comes to green buildings they have been a big wash out. They do not care so much about the buildings, other than in terms of an urban design aspect but what they care about is land use and transportation, how people get around and so on... This is really important too, we do not discredit it at all and we address it at the building scale as much as we can but I think they do not have enough interest in the building itself. So, in terms of their contribution to the green building movement has been pretty small and they have not really been fully engaged as they are too focused on other things that they may, or may not achieve in that municipal policy and regulatory context.

LB: OK, great.

5) Who implements these tools the most? Municipalities or private developers or a combination of the two?

P6: Usually it would be developers. I think it is a combination of municipality, when the developer goes to the municipality for approval, they say: ‘I am going to build this building to LEED’ and hope to get a faster approval and maybe get some concessions around density and so on... That is the bonuses. I think that is what is driving them but typically, a LEED-ND project has to be, unless it is city owned land, it has to be driven by the developer.

LB: So is there any kind of local government or city developments that are using LEED-ND or using some kind of community rating tool?


LB: Is this False Creek?

P6: Yeah, False Creek. The athlete's village is a LEED-ND certified project. That was on city owned land, the city owned the land, so it was part of that sales bid.

LB: But it was still a private developer that-

P6: It was a private developer that came in. Then that development went bankrupt during the financial crisis, so the city had to pick up the slack and actually the city owns it again. Then there is Dockside Green and some other ones that are either city owned land or big developments where the city has some leverage to tell the developers what they want and the developers do use like an
Audubon engineering [*unintelligible passage*] near Lansdowne, they are developing it as a LEED-ND project. So there some of these projects around and I would say they are developer driven but also the municipal collaboration.

**LB:** So touching in that on that point, when I was interviewing [*participant 1*] in South Africa I got impression that the GBC is focused on demonstrating to private sector the economic case for sustainability. Would you say that is something that you focus on here?

**P6:** I do not think the government is demonstrating that.

**LB:** Sorry, I meant the GBC.

**P6:** Yeah, we do. We are very much driven by the business case because the regulations and policies in Canada, we have a regular profit-driven society or country that is very much business or market driven and it is then supported by policy from local, provincial and federal government.

**LB:** To me, that ties into what we were discussing earlier about the technical-based rating tools is demonstrating to the private sector, it speaks to a certain constituent that could maybe under-represent the community, rather than placing impetus on infrastructure and performance and that sort of stuff.

6) **What role do local/regional government play in facilitating the frameworks?**

**P6:** Well you have to look at it. Like if you build a new community or arrive at an existing one, the city has a lot of say because the infrastructure is owned by the city, typically. So when I think about the athlete’s village here, the city decided that they wanted to have a district energy system there regardless of who the developer is. Without the district energy system the development would not have gotten a LEED-ND platinum rating. So I think that the municipality can play a really important role in terms of- they have so much influence around infrastructure and land-use that that is where they play an important role. Then the developer comes and has to decide within those parameters: ‘Can we develop it and can we make a profit?’ As for the rest of the stuff that is in the LEED-ND is kind of layered on the developer and with LEED we have demonstrated that you can build those towers, at a premium, but with a manageable or small premium they can be recovered. So it is an interplay really. I would not say it is one or the other. With the municipality, they have to provide certain pieces before they can really ask the developer to really hit those targets. So there is a constant, I don’t want to call it a rivalry, but there is a constant negotiation.

**LB:** So, just to clarify; when you were referring to False Creek, did the local government hold them [*the developers*] back from achieving that platinum status.
P6: No, no. The city wanted the developers to hit LEED [ND] gold and then for gold every building is certified [LEED building rating] for LEED [ND] gold and a couple are LEED platinum. Then the community certification as well. But with communities that do not do the buildings, certify them individually- just do the community certification, the difference is quite big.

LB: Sorry, you mentioned the district power, you mentioned something about achieving platinum.

P6: Without that system, it is the energy system that is a renewable energy source- I do not think they would have achieved LEED [ND] platinum level.

LB: Oh, OK. So you are saying that the municipality facilitated that achievement.

P6: Yeah. Oh, yes they did. In this instance the city was very clear, they wanted to have at least LEED [ND] gold or better.

LB: OK, so it is almost like there is some kind of leadership role that the city plays in pushing these developments.

P6: Yeah, absolutely. Though I think that cities across Canada have a role in that. Some more than others but they are all the ones that do push those kind of developments on a building scale and a community scale. Absolutely.

LB: That is a stark contrast to Cape Town where, I feel, that there is not enough leadership in that regard. There is not really a conceptual leadership to push that agenda.

P6: Yeah, well Vancouver has a history [of environmentalism] so it makes it easier.

LB: So, you have already answered this question already but...

7) Is local government well-geared to partake in integrated development partnerships?

So public-private projects...

P6: I think municipalities in Canada only do it if they own the land. So I think they are different and I am probably not the right person to answer that question. But they are different on legal arrangements. So they have the land: 'Can I build these homes?' So it goes from ideas or they can sell it right and they can put certain stipulations on there and so on... So I think that the legal arrangements that the cities can use. I have always thought about that in terms of driving green buildings. If city owned land is being developed, then the city has a lot more leverage then you would have, on say, just the rezoning.
LB: OK. That is interesting because in a developing country we rely, a lot more, on public-private partnerships because of the resource constraints.

P6: We don’t have those public-private partnerships, I do not think. We do have, on big projects, like a province will build a hospital or bridges. Then we have, what we call PV’s which is basically when the company designs and build this and operates it and the government just sets the targets.

LB: So it is almost outsourced.

P6: Yeah, community development in Canada is all private sector.

LB: Say, for example, if downtown Eastside [Canada's poorest neighbourhood] they wanted to create a low-income or affordable housing community, how would the local government go about doing that? Would they just pay someone to do it?

P6: The local government, now I think they have a programme in place where any development in Vancouver has to have certain number of affordable housing units. But what developers do is that they do not have every building with affordable housing units. Then at some point they build something or transfer it to something where there is a whole bunch of units. But there are all sorts different arrangements now. We have BC [British Columbia] housing which is a provincial affordable housing agency that does a lot of building. The city of Vancouver too is involved and you will need to ask them how they do that that, and how they would do that in downtown Eastside. Obviously they would want to maintain an affordable housing stock there because it is the poorest postal code in Canada.

LB: OK, great. Thank you.

8) Do you feel that the current community rating tools adequately accommodate the varying degree of context of an area and the effect that context has on the achievement of sustainable cities?

Now, I have done a bit of research on LEED [ND] and I think over 40% of their applications of their applications actually originate outside of North America. So just to give a bit of background to that.

P6: I am not 100% sure what the question is.

LB: Oh, sorry. Do they accommodate the changing context of different areas?

P6: Oh, you mean can they work in different countries?

LB: Yeah, and are they applicable-
P6: LEED [ND] can. LEED has proven that it can because it is in 156 countries now. The rating systems have proven that they can do it. Whether the rating system is applied now, the communities, many of them are projects that are built almost like international standards, like office buildings. We have a different climate in Cape Town and Vancouver and Berlin but the way office buildings are built is similar and I think there it is quite successful. With the new version of LEED, the US is trying to have a rating tool that is globally consistent and locally relevant and we will see if that works because in Canada we have our council, we do the certification in Canada. So we have a LEED certification programme for the last 10 years. They have helped us a great deal with building the market here which is the second largest one for LEED in the world. So we are there to support the market on technical issues, we have Canadian standards, all these types of things, we have done a lot of work to make LEED work in Canada. How does this will work in other countries? I am not so sure. I think it will work for certain building types, it might not work for others. So once LEED is out on the global marketplace in full force we will know more about if you can really have a globally consistent and locally relevant tool. Typically, I would say that the principles of green rating tools can be transferred to any country and for the most part I think they are resilient enough, at least the good ones, like if you are using Green Star in South Africa and Australia or LEED [ND] and BREEAM too but the systems have different origins and different contexts. For example, BREEAM communities came out of an institutional context in the UK based on support by municipal government. So having that as a private sector driven tool is harder because LEED is always developed to be for the private sector and to be more market-driven and what investors and buildings and what public and private sector can do with those buildings. So they have differences. So I would say overall yes but the devil is in the detail.

LB: And do you think, for community-based tools, like LEED-ND takes into account...

P6: I think it is harder because I think development patterns and what cities want to get out of communities is so different. I am sure in South Africa, affordable housing or just getting people decent housing is a huge issue. While we have affordable housing issues here in Canada too, it is totally different. Our climate is totally different; we have bitter cold, and super hot in the summer, while you have a more temperate environment, or super hot in some parts. So this all needs to be taken into account and if a rating system wants to be successful with that they need to have the flexibility. The building side; I can see it. On the community side; I am not so sure.

LB: OK, great. That was a great answer, thanks. This is kind of related:
9) Is the participatory process involved in sustainable community development frameworks effective in instituting meaningful participation?

P6: What do you mean by that? It sounds very academic.

LB: Yeah, sorry about the wording of that. Do you feel that community rating tools adequately represent the community? Do they engage enough with the community?

P6: No, I do not think that they do because it is very much the developer. It is a relation between the city and the developer and the city does its consultation as part of any development. I think EcoDistricts has a leg up about how it thinks about community and community engagement. I think that will be the crucial part in getting good communities; community engagement. So the community can help shape, particular in existing neighbourhoods, densification; people moving back into cities rather than living in the suburbs. They would have that meaningful involvement without getting any into “not in my backyard” approach. But I think EcoDistricts thinks about that in a more critical and more proactive way than any other community rating tools.

LB: Yeah, perfect. Building on that:

10) Would you say that there sufficient 'buy-in' from the community on the projects that have implemented these community rating tools? What climate do you think helps encourage this?

So False Creek, etc.

P6: Yeah, that is a good question, I do not know because I am sure people are buying into these communities because they are sustainable and they have been marketed as such but I think it is also just people moving in there because that is where they want to live.

LB: So it doesn't help that it is in one of the most prime locations [False Creek in Vancouver].

P6: No, and it is not cheap. You are living across from downtown in one of the most desirable cities on the planet, it is not cheap. So not everybody can live there even though there is a percentage of affordable housing units.

LB: Oh really?

P6: Oh yeah, I think 10% or so. It must be at least 10%, I think they were planning for more but the economics just didn’t work out. But typically, I think, that is something in our minds is the people that might live in these communities might be the most unsustainable people on the planet because people have a choice where they want to live. We can design only so much into a building, we can
say- put in recycling containers but you need to use them. You can put in dual-flush toilets but it you
flush those toilets 50 million times then it defeats its original purpose so that human element on
how they live in those communities- how you live in those communities and how these communities
have been designed, how are they designed to change the people that live there? So if you live in
False Creek you are probably don't need your car as often because you have the skytrain, the bike
paths but there is nothing in terms of shopping. So there is this interplay of how you are going to do
that but I think it has been designed well to get people on the right track. It is this whole thing of:
would a community like that change you if you lived there? Or are you just carry on how you always
have? So that is the question that has not been answered. The other thing is, what would you need
to get people there? I think one-planet living have this concierge programme where they actually
help people with sustainable lifestyles and how successful that has been or not, I do not know.

LB: I think the key is being able to demonstrate the benefits to the individual life.

P6: Maybe.

LB: But it is interesting you say, talking about a sustainable community where the people living there
could be completely unsustainable because that fits in quite a lot with my research back home as we
are talking about people living in informal settlements or shanty towns and how we need to make
them more sustainable.

P6: Well maybe they are more sustainable.

LB: Well that’s it.

P6: If you look at them, they are building things from scraps, they have energy and water use.

LB: Exactly and it almost seems a little bit ironic that we are looking to developed countries for rating
tools to superimpose in these developing communities whereas in reality we may be living a lot
more sustainably.

P6: Yeah, and the one thing to keep in mind is that people living in these towns sustainability is a
little more than a blip [participant gesticulates with hands to illustrate how little sustainability is
considered in these settlements]. You always want people with good healthcare, you want people
with an education, and you want to have social cohesion, which in some of these favela's it is very
good because they need to stick together and some it is not so good because there is crime. There
are other aspects to sustainability too, so if you live in those favelas, your child could get all kinds of
respiratory diseases or infectious disease and all of these kinds of things and that is not sustainable
either. Maybe from the building level it is but quality of life- you could be very high [rating] on low resource consumption but very low on well-being.


11) Do you believe that current attempts to operationalise sustainable urban development are effective?

P6: No. No, I think the cities talk about it. They are both global, national, local organisations, I think with a few exceptions where cities are very focused and determined to have a more integrated approach to sustainability but I do not think it is very effective right now. There is just too much getting lost than actually being put on the ground.

LB: So,

11a) How do you think the processes can be enhanced to more effectively achieve sustainable urban development? What would you propose?

P6: I always find that there is this bi-consultation, I think that the city does on planning and planning districts and neighbourhoods and so on, I still find that there is a disconnect because at the end of the day it is the developer and people always have this universal dislike of and hate for developers because they feel like the developers are ruining the cities but the fact is unless you have the developer financing to change neighbourhoods, it is not going to happen. They are the ones that carry most of the risk, they are the ones who have to provide the finance, they are the ones who have to invest. They are also the ones that take the biggest financial profit.

LB: But with risk comes reward.

P6: Yeah, risk and reward. But I think developers are generally too vilified and I do not think that is fair. I am sure there are some developers that really should be vilified because they are just terrible but I would not generalise the development community. It is perceived that developers have too much influence at city hall because city hall wants to get the development fees and those kinds of things and it depends on the city how much influence they yield but they often do yield a lot of influence. So I think that in order to really get the [enhance implementation of urban sustainability] - I think the relationship has to change between the city, the developer and the community. The developer wants to develop, the denser the better, the community does not want any development and the city of course wants development too, and it is a strained relationship in most cases. For me that is the main reason why we are not implementing sustainable development aside from the fact that many developers still don't see what the point is for sustainable development because- 'We are
just building' and 'We are profit-driven organisations' and this stuff is just... They say it and they pay lip service to it but it is dusted away basically because it requires us to think differently, and some of them are doing really great stuff and incorporating parking spots for alternative fuelled vehicles, for co-op cars and so on but you only do it because the city gives them a relaxation on how many parking spaces they have to provide in a condo per unit. So there is always a trade-off and we just have to keep in mind that they are profit-driven and so that relationship has to change and the city is limited in what they can ask developers to do because otherwise they will say: 'I am not developing here because I cannot make any money'. So I think that is the biggest-

**LB:** Do you think that having some kind of intermediary that can liaise with government, and liaise with private sector and communities? Can't somebody that can manage the expectations and manage the relationships, do you think that would enhance the implementation?

**P6:** I think it is more the city has to rethink how it does its planning because an intermediary, the developer- nobody likes to be told what to do by the intermediary. The city has its planning authority, they are responsible for anything that happens in the city and they need to have a relationship with the developer in terms of what the developer can do. So I do not think an intermediary would help but I think it is more the planning process that needs to be adjusted in terms of this early consultation, and not just consultation because that is one-sided but community involvement. I am not talking so much about new communities but existing communities, like if you redevelop existing neighbourhoods, the communities have to be involved. I should not say that they are not involved but I don't really know if they have achieved the right result. Just because communities are on board it does not mean that the project will be more sustainable.

**LB:** It also doesn't mean that it is meaningful, the involvement.

**P6:** I think that is something that hasn't been solved yet because if it had been then cities would practice it. It is so difficult, it is a difficult one.

**LB:**

**12) Do attempts to operationalise sustainable urban development effectively account for the inter-dependencies and interactions between the vast numbers of factors related to sustainable development?**

So do they take into account, enough of the social factors, the repercussions and how certain things are connected to other-
P6: I would say, in the rating tools and so on, we do. The rating tools always look at integration and connectivity. I think in the development process, not too much. I don't think there is, on the building side we try to do integrated design for many years, it was one of the pillars of green building. But integrated development is practiced sometimes, fully involved, but a lot-not. It is still kind of this piece meal and I think the same will apply to communities. We are trying, in the rating tools, to have this integration and we see some of it and people think about it. On the community side, in terms of integration, I am not so sure. I am not so sure that it is happening.

LB: Do you reckon it is, what you spoke about earlier, that resistance, or is it something else do you think?

P6: In North America we have such a profit-driven development process. Once they purchase the land and they want to build something on it, the clock is ticking because they have spent the money. Then they want to go as fast as humanly possible to finish their project. Anything that gets in the way is considered to be a barrier, anything that helps it is welcome. I am just generalising here, but it is so profit-driven and I am not even saying that is wrong that it is profit-driven because it has to be but, you know, profit-driven to what extent? I think the developers also need to provide value to the community too and the value is, developers would argue that with you that they are providing value. I think, on a sustainability side, most often the sustainability value is not provided. The developers are saying: 'Well, we have always been sustainable. We are always doing these things that are considered to be sustainable". Well, not really. They just recycle stuff and say: 'Well, we have always been sustainable'- No you haven't! And providing parking spots for alternative fuel cars is nice, but that [alone] is not sustainable and people are saying: 'Well people live downtown now, which is here and that is why we are sustainable and we have dense buildings and we are sustainable'. That is part of it but it is not all of it. The building have excessive glazing, it is not sustainable.

LB: So they are cherry picking what-

P6: Yeah, they are. You know this old story with the planners- density, compact, complete communities, right? So you are dense; you live downtown- you can walk to work if you live here, if you live here and you work here you can walk to work potentially. It is that concept of smart growth, connected, complete, compact communities with public transit systems and it is good but it is not all of it. It is a part, built into the three C's but they have only slowly started to see that there is more to it. This big emphasis on renewable energy buildings that are 50% more energy efficient; buildings that bring in sufficient fresh air for well-being; use materials that are non-toxic; parks where people can go that live in high-rises need more parks and it doesn't have to only be grass, people want to be
out in nature. It is those kinds of things that I think have been solved at all. The density, yeah everybody builds dense now, it is great for them- they make lots of money, if they can put extra stories on, if it is connected to transit, great. Do people that live in that building all work in the vicinity? I do not think so. So I think there are still a lot of things that we haven't done and they need to be done and I think, in many cities, I don't think the development community is there yet.

**LB:** OK, perfect.

**13) What would you consider to be the primary goals of an urban precinct in the achievement of sustainable development?**

**P6:** Well I think that something that people in North America do not care much about is low energy communities. Low energy, low carbon communities. I call them low-impact communities; on energy, water, waste. I think that has to be a priority, no doubt about it. And that also has to link to transportation so people do not have to get into their cars and if they do get into a car, they get into a Prius or whatever. I think that is the big challenge but I think the other part, the big must, is the liveability. It is liveability because food has food miles, right? I am sure you are familiar with food miles? How much it takes to get food to your table. You have to come to a stage where people do not feel as if they have to drive anywhere for recreation, or work, or just to be outside. So people do not have to drive everywhere, people do not have to just accept that a low-energy building is going to cost a little bit more but it has huge benefits because people price carbon really, so it has huge benefits. So in my mind these are the priorities but the liveability aspect, I think as an environmental organisation, we need to step back and not always think about energy and carbon because most people find that quite boring. They find energy quite boring, they just want to be warm or cool and they want fresh water and flush a toilet when they have to and they want to par their car. They just want the service, they do not care about the other stuff. Unless you are a geek, you do not care about it too much. So, they care more about the liveability aspect. So I think our community has neglected that a little bit. We are getting into it now but we have neglected it a little bit and I think we need to look at that: affordability, nature, food and all the things that people enjoy.

**LB:** Ok, that's perfect. I kind of touched on this one before:

**14) Do you feel that there is a need for an intermediary body that manages the interactions between various stakeholders in implementing a sustainable development project at an urban level?**

**P6:** Well I think we, at the councils [Green Building Councils] have an important role to play in terms of bringing industry to the table and working with industry to think about sustainable development
in different ways. So, in a way we are intermediaries. We are working with developers, and designers, and owners, and so on around thinking differently about how they want to build or develop. So I the GBC actually play a really important role and I think the GBC's and green building, I think, is really the only organised global response - right now- to climate change and other environmental issues. When you look, we have a hundred councils, we are offering the councils and their members, we all must think all alike. So we are really the only organised response, globally that really focuses on that. With the other initiatives around renewable energy is fragmented and it is driven by other things but we have become a movement, a global movement that can drive that forward. So in a way we are an intermediary and we work with cities, and we work with the private sector and we do try to connect the two all the time but not necessarily at that granular level that we talked about before.

LB: OK, that’s great.

15) What benefits do you perceive would come from a more holistic approach to urban sustainability?

I suppose you did kind of touch on that with the liveability and social welfare.

P6: I think again if people were to be more holistic, which we are on the building side, I think people will have an easier time buying into it because energy and stuff is not very interesting to most people. I think they would probably have an easier time paying for it because initially it would have a higher cost. People do not make rational decisions when they buy, otherwise nobody would buy cars for $50,000. I think that is an important consideration; just getting people- I am coming back to that liveability aspect that would really complete the picture for people, and if you ask where people they want to live, they will want to live in Kitsilano [a suburb of Vancouver]. I have always said: 'Why is that?' Because it is park-like, there are lots of trees, you have the beach and so on. They do not think about that if you live there you have to drive everywhere because they don't have a fixed rail service. If you go to neighbourhoods, the people in Canada in the cities where they would want to live, they always tend to be the interesting neighbourhoods with restaurants, and bars and shopping, with green streets, which are not often close to transit but some of them are close to transit. So why do people want to live there? Why do they want to be there? I don’t think we have fully figure that out yet.

LB: Yeah, that is a really great response.

P6: Why do people live in certain neighbourhoods and prefer to live in certain neighbourhoods than others because people do not live in Surrey [a small city on the outskirts of Vancouver] because they
want to live in Surrey. Most of them want to live in Vancouver but they are forced to live in the suburbs because Vancouver is not big enough and it is not affordable enough. So what are the choices? Why do people want to live in North Vancouver? Because you are out in the wilderness with the mountain and these kinds of things. So it always links to their personal preference as to where they want to live.

**LB**: OK, great.

**16) Do you feel that there is an effective leadership from private, public and other stakeholders for creating sustainable community development?**

P6: I think there is more and more leadership by politicians, particular at the local level but provincial level as well. So I think there is leadership. I mean, when I look at most cities now, they have sustainability plans, they have sustainability frameworks, those kinds of things- some more, some less but they do. 10 years ago there was nothing. I look at commercial real estate; most big commercial real estate firms now have sustainability directors. Again, 5 years ago...Now everybody has one. You can see that the building industry is getting into green, which we can see in Canada is growing. So I think both on the policy side and the private sector side we do see that people are, companies and the government, getting more in to what it means and implementing it. On the consumer side I do see that consumer behaviour is really changing and that it is more driven by the new media, the social media- people have more information on how to make decisions. So I think my generation, we don't fully understand yet what that means. You probably understand way better- you should answer the question! But I do see that there is a huge change and I think- like the walk score; you could not have the walk score without an app, right? We couldn't have an Uber service without an app. We couldn't have Airbnb without... You know, so this is changing people's preferences and that sharing economy. Now, people in Europe, they are talking about the circular economy too, so that you actually don't own stuff anymore you just share it or own it for a period of time but it is really not yours, like you rent a refrigerator rather than owning it. Then if you do not own it then people who have to take it back; the companies will design it in a totally different way because at the end of the day they have to dispose of it. So I think that part is really- I think it is the younger generation, like your generation- is really glued into that in a major way that I appreciate but I am confused. But I think that is something that we look out for.

**LB**: And then from your side as a non-profit organisation, do you think that you have created some kind of influence within, and some leadership role, within green building?
P6: Oh yeah! I mean before- I do not want to be coming across as pretentious- but before the GBC showed up over 10 years ago; we were founded in 2002. So the discussion started in the late 1990's and early 2000's when there were no green buildings. Before there was LEED in North America, there was no green building. People were talking about it but it wasn’t organised and the concept of green building was not really understood; it was all about energy efficiency and water efficiency was kind of fragmented. With the GBC’s and LEED we really brought it together. So we created the rating tool which created this common language that people say: 'Ah! That is a green building!' Is it a perfect language? No, it isn't. Is it getting better? Yes, it is better, and how we think about it and our discussion today: environmental versus social, versus economic aspects. So the GBC’s had a huge impact because when I look back over the last 10 years all the things that we have done [Canadian GBC], and the US GBC, and GBC South Africa, Australia and so on. It is huge. It really put green building on the map and even people that do not do green buildings they feel compelled to pay lip service to it because it is just really, it has had its tipping point and people feel that they have to do it to a various degree. So we had a huge influence, I think. CaGBC and all the other GBC’s too. So it is a movement now.

LB: Yeah, in South Africa as well. It has had a massive impact.

P6: Yeah, massive impact. So we are very happy about that but there is way more work that needs to be done to really get it right and to get it better and push it more towards the zero point in the next 10, 15 years.

LB: Perfect, OK.

17) Should initiatives surrounding sustainable urban development be developed at a local level and hence cater for the specific requirements of that particular urban precinct?

P6: No, I think it has to be local because I think that within countries and within regions the differences- it has to be local. It always seems to be strange, one way we always want everything to be the same. But if it is the same then [unintelligible passage]. We cannot control it anyway so just let it go and it has to be local. But I think there has to be some consistency at the end of the day. I think the consistency is best provided by municipalities.

LB: OK, perfect.

18) So what role do you think the local community play in the achievement of sustainable urban development?
P6: I think that local communities can set a lot of the- I do not want to say regulations, but directions and policies to city councils and to other community organisations and so on to push this forward. So if it is affordable housing, or if it is food, bike paths... There are so many different ways in how they can push it forward. So it is both the city and also strong community groups/community organisations, they get involved and become engaged citizenry. Usually people only come out to complain, or they do not like something. They always come out and I find that people are always easily against something before they are for something. They are always against something, but if you are against it then what is your idea? Then usually there is this dead silence. I think people have to think about: 'What are your ideas?' and that is what I like about the millennial's- you know, your generation- they are full of ideas and they like to be connected, and they like to be social, and they want to do stuff and I really like that and I think it is very good for communities.

LB: Yeah, I think that it also shouldn't be something that, communities should not be something that are provided by the government, they should be something that is formed together.

P6: Yeah, exactly but you always have a little bit- if you look at a community, and then you had to live there and then it is supposed to change because more people live there. Then people say: 'No, no' it is kind of like the island effect: 'We are just fine on this island, we do not want any else here' so I think people just need to be open that... I mean we are all dying at some point, we only live for a certain period of time.

LB: I think that is what makes these tools so tricky, it's because we are such complex and unpredictable people. OK, so just one more question.

End of Interview
Appendix E: Emergent Themes

North American Emergent Themes

1) Support for Sustainable Community Development
   A) Political Support
   B) Economic Support
   C) NGO Support
   D) Public/Community Support

2) Challenges Implementing Sustainable Community Development
   A) Resistance to Change
   B) Incomplete Understanding of Sustainable Development
   C) Complexity of the Neighbourhood/Community Scale

3) Implementation of Sustainable Community Development
   A) Rating Tools:
      i) Technically-based Rating Tool
      ii) Development-oriented Rating Tool and Social aspects of Sustainability
   B) Collaboration between Stakeholders
   C) Process-oriented Approach
**South African Emergent Themes**

1) Support for Sustainable Community Development  
   A) Political Support  
   B) Economic Support  
   C) NGO Support  
   D) Public/Community Support

2) Challenges Implementing Sustainable Community Development  
   A) Socio-economic Challenges in “Developing” Cape Town  
   B) Political/Administrative Challenges:  
      i) Lack of Resources  
      ii) Administrative Structures, Leadership and Policies  
      iii) Political Agendas and Interference  
   C) Lack of Awareness/Understanding

3) Implementation of Sustainable Community Development  
   A) Holistic Approaches to Community Development  
   B) Intermediaries  
   C) Community Mobilisation  
   D) Need for Champions and Innovation  
   E) Opportunity for “Developing Countries”
Appendix F: Ethics Form

EBE Faculty: Assessment of Ethics in Research Projects

Any person planning to undertake research in the Faculty of Engineering and the Built Environment at the University of Cape Town is required to complete this form before collecting or analysing data. When completed it should be submitted to the supervisor (where applicable) and from there to the Head of Department. If any of the questions below have been answered YES, and the applicant is NOT a fourth year student, the Head should forward this form for approval by the Faculty EIR committee; submit to Ms Zulpha Geyer (Zulpha.Geyer@uct.ac.za, Chem Eng Building, Ph 021 650 4791). Students must include a copy of the completed form with their thesis when it is submitted for examination.

This form must only be completed once the most recent revision EBE EIR Handbook has been read.

Name of Principal Researcher/Student: Luke Boyle [BIIUUKCOO]
If a Student: Degree: Master of Philosophy (M.Phil.)
If a Research Contract Indicate source of funding/sponsorship: No research contract

Research Project Title:
A systems-based approach to the development of a sustainable community rating tool for the
Overview of ethics issues in your research project: management of urban precincts in South Africa

| Question 1: Is there a possibility that your research could cause harm to a third party (i.e. a person not involved in your project)? | YES | NO |
| Question 2: Is your research making use of human subjects as sources of data? | YES | NO |
| Question 3: Does your research involve the participation of, or provision of services to, communities? | YES | NO |
| Question 4: If your research is sponsored, is there any potential for conflicts of interest? | YES | NO |

If you have answered YES to any of the above questions, please append a copy of your research proposal, as well as any interview schedules or questionnaires (Addendum 1) and please complete further addenda as appropriate.

I hereby undertake to carry out my research in such a way that

- there is no apparent legal objection to the nature or the method of research; and
- the research will not compromise staff or students or the other responsibilities of the University;
- the stated objective will be achieved, and the findings will have a high degree of validity;
- limitations and alternative interpretations will be considered;
- the findings could be subject to peer review and publicly available; and
- I will comply with the conventions of copyright and avoid any practice that would constitute plagiarism.

Signed by:

<table>
<thead>
<tr>
<th>Principal Researcher/Student:</th>
<th>Full name and signature</th>
<th>Date</th>
</tr>
</thead>
</table>

This application is approved by:

<table>
<thead>
<tr>
<th>Supervisor (if applicable):</th>
<th>Signed</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kathy Mitchell</td>
<td>Signed</td>
<td>23/09/2014</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HOD (or delegated nominee):</th>
<th>Final authority for all assessments with NC to all questions and for all undergraduate research.</th>
<th>Signed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chair: Faculty EIR Committee</td>
<td>For applicants other than undergraduate students who have answered YES to any of the above questions.</td>
<td>Signed</td>
</tr>
</tbody>
</table>

274