

**Understanding the Influence of Money Variables on  
the Outcomes of  
Sustainable Community Plans**

by

Yushuo Cai

A thesis  
presented to the University of Waterloo  
in fulfillment of the  
thesis requirement for the degree of  
Master of Environmental Studies  
in  
Sustainability Management

Waterloo, Ontario, Canada, 2018

© Yushuo Cai 2018

## **Author's Declaration**

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

## **Abstract**

Globally, there is a growing popularity among local governments to apply Cross-Sector Social Partnerships (CSSP) to implement Sustainable Community Plans (SCPs). The aim of this study is to understand the link between the distribution of resources and plan outcomes, and to examine the roles of five plan and structure variables (i.e., oversight by government; collaborative oversight; partner engagement mechanism; number of partners; and community-wide actions) as mediators and moderators. A quantitative method has been used to analyze the data collected from 106 communities worldwide. The main findings of this study indicate the importance of contributed resources (internal, partnership structural, community-wide) on the implementation of SCPs. The results also highlight the critical role community-wide actions play in mediating the relationships, and the significance of collaborative oversight, partner engagement mechanism, and number of partners have in mediating the relationship.

## **Acknowledgement**

First and foremost, I would like to show my gratitude to my supervisor, Dr Amelia Clarke.

Without her mentorship, this journey would have been very hard. I am forever grateful for the genuine advice she provided on my thesis and the warm-hearted guidance on my career. What an inspiration she has been in my life. And, I would also like to thank Dr. Adriane MacDonald for all her insightful comments and the support she has given me.

Thank you so much to ICLEI Canada and my colleagues there: Megan Meany and Ewa Jackson for making me a part of ICLEI team and making me realize how much I love and am proud of the things I am accomplishing working with you.

I also want to extend a very heartfelt thank you and love to my parents, Liqing and Tongjiang who have always been so supportive of my dreams, allowing me the freedom to choose, and the encouragement to face, the path I have chosen. To all my supportive friends and beloved ones: Sarah and Nathan who are always on my side, giving me shoulders to cry on and making my life warm and colorful; Emma and Xinyu, who I miss so much, but feel their love and support from afar; and Valentina, who I feel so lucky to have in my life and am so appreciative for her being with me during this all-important results stage.

Finally, I would like to thank all those who never give up on their dreams in making this planet greener and a better world to live in. They make me realize that individuals can make a difference and that random acts of kindness do matter. I shall never feel lonely with such people in my life.

# Table of Contents

<b>List of Figures</b>	<b>vii</b>
<b>List of Tables</b>	<b>viii</b>
<b>CHAPTER 1: INTRODUCTION</b>	<b>1</b>
1.1 Introduction and Problem Statement	1
1.2 Research Question and Objectives	4
1.3 Contribution of Research	4
1.4 Thesis Outline	5
<b>CHAPTER 2: LITERATURE REVIEW</b>	<b>7</b>
2.1 Sustainable Development	7
2.1.1 Sustainable Community Development	8
2.2 Local Agenda 21	8
2.2.1 Sustainable Community Plans (SCPs)	10
2.3 Collaborative Strategic Management (The Framework)	14
2.3.1 Cross-Sector Social Partnerships	15
2.3.2 Outcomes of Collaborative Strategic Management Process	22
2.3.3 Role of Financial Factors During Implementation	26
2.4 Summary	34
<b>CHAPTER 3: METHODS</b>	<b>35</b>
3.1 Research Design	35
3.2 Database Details	36
3.3 Measure Development	37
3.3.1 Independent Variables	37
3.3.2 Moderation Variables	38
3.3.3 Dependent Variables	38
3.3.4 Mediation Variable	39
3.4 Data Analysis	39
3.5 Reliability / Validity	44
3.6 Limitations	46
3.7 Summary	48
<b>CHAPTER 4: RESULTS</b>	<b>49</b>
4.1 Principal Component Analysis of Items	49
4.2 One-to-One Relationships between Money Variables and Plan Outcomes	51
4.2.1 Non-Significant Regressions	51
4.2.2 Significant Regressions	51
4.3 Moderations for Contributed Resources	53
4.3.1 Non-Significant Moderators for Contributed Resources	53
4.3.2 Significant Moderators for Contributed Resources	54
4.4 Mediations for Contributed Resources	61
4.4.1 Non-significant Mediations for Contributed Resources	61
4.4.2 Significant Mediations for Contributed Resources	62
4.5 Summary of the Results	64
<b>CHAPTER 5: DISCUSSION</b>	<b>65</b>
5.1 Implication of the Findings	65
5.1.1 Mediator: Community-Wide Actions	66
5.1.2 Moderator: Partner Engagement Mechanism	67

5.1.3 Number of Partners	68
5.1.4 Collaborative Oversight and Oversight by Local Government	69
<b>CHAPTER 6: CONCLUSION</b>	<b>70</b>
6.1 Summary	70
6.2 Contribution to Theory	70
6.3 Contribution to Practice & Recommendations	71
6.4 Limitations & Suggestions of Future Research	72
<b>References:</b>	<b>75</b>
<b>Appendices</b>	<b>84</b>
Appendix I International Survey	84
Appendix II Ethics Procedure	99
Appendix III ANCOVA Outputs with Plan Action as Dependent Variable	100
Appendix IV ANCOVA Outputs with Plan Action as Dependent Variable	109
Appendix V Bivariate Outputs	121
Appendix VI Principal Component Outputs	122
Appendix VII Significant Ordinary Least Square Outputs	128
Appendix VIII Significant Moderations for Contributed Resources Outputs	132
Appendix IX Significant Mediations for Contributed Resources Outputs	143
Appendix X Significant Mediation for Attracted Resources Outputs	147
Appendix XI Study on Savings and Attracted Resources	149
Section 1: Hypotheses	149
Section 2: Results	153
Section 3: Discussion	162
Appendix XII Control Variables	164
Section 1: Method	164
Section 2: Results	165

# List of Figures

<b>Figure 1: Variables Being Studied by the Project</b>	<b>5</b>
<b>Figure 2: Two Types of CSSPs</b>	<b>17</b>
<b>Figure 3: Diagram of Hypotheses Tested</b>	<b>27</b>
<b>Figure 4: Diagrams of Moderator and Mediator</b>	<b>43</b>
<b>Figure 5: Interaction Effect of Contributed Resources Internally and Collaborative Oversight</b>	<b>55</b>
<b>Figure 6: Interaction Effect of Contributed Resources on Structure and Partner Engagement Mechanism</b>	<b>56</b>
<b>Figure 7: Interaction Effect of Contributed Resources on Structure and Partner Engagement Mechanism</b>	<b>57</b>
<b>Figure 8: Interaction Effect of Contributed Resources Community-wide and Partner Engagement Mechanism</b>	<b>59</b>
<b>Figure 9: Interaction Effect of Contributed Resources Community-Wide and Partner Engagement Mechanism</b>	<b>60</b>
<b>Figure 10: Model of Contributed Resources on Partnership Structure as a Predictor of Plan Progress, Mediated by Community-Wide Actions</b>	<b>62</b>
<b>Figure 11: Model of Contributed Resources Community-wide as A Predictor of Plan Progress, Mediated by Community-Wide Actions</b>	<b>63</b>
<b>Figure 12: Interaction Effect of Attracted Resources and Number of Partners</b>	<b>157</b>
<b>Figure 13: Interaction Effect of Attracted Resources and Number of Partners</b>	<b>158</b>
<b>Figure 14: Interaction Effect of Attracted Resources and Partner Engagement Mechanism</b>	<b>159</b>
<b>Figure 15: Model of Attracted Resources as A Predictor of Plan Progress, Mediated by Community-wide Actions</b>	<b>161</b>

# List of Tables

<b>Table 1: Topics Included in SCPs</b>	<b>12</b>
<b>Table 2: Canadian Community Indicator Domains</b>	<b>26</b>
<b>Table 3: Table of Hypotheses Tested</b>	<b>32</b>
<b>Table 4: Tests for Data Screening</b>	<b>48</b>
<b>Table 5: Results of Principal Component Analysis (PCA)</b>	<b>50</b>
<b>Table 6: Table of Variables and Cronbach's Alpha</b>	<b>50</b>
<b>Table 7: Ordinary Least Square Results for One-to-One Relationships Testing</b>	<b>51</b>
<b>Table 8: Non-Significant Moderators.</b>	<b>53</b>
<b>Table 9: Hypotheses with Valid Overall Model but No Moderation Effects</b>	<b>54</b>
<b>Table 10: Non-Significant Mediations for Contributed Resources</b>	<b>61</b>
<b>Table 11: Summary of the Results with Actions as DV.</b>	<b>64</b>
<b>Table 12: Summary of the Results with Progress as DV.</b>	<b>64</b>
<b>Table 13: Non-Significant Moderations for Savings on Actions</b>	<b>154</b>
<b>Table 14: Non-significant Mediations for Savings</b>	<b>155</b>
<b>Table 15: Non-Significant Moderations for Attracted Resources</b>	<b>156</b>
<b>Table 16: Non-significant Mediations for Attracted Resources</b>	<b>160</b>
<b>Table 17: Results of ANCOVA Hypotheses Testing.</b>	<b>165</b>
<b>Table 18: Results of ANCOVA with Plan Action as Dependent Variable.</b>	<b>165</b>
<b>Table 19: Results of ANCOVA with Plan Progress as Dependent Variable.</b>	<b>166</b>
<b>Table 20: Results of Bivariate Analysis.</b>	<b>167</b>

# CHAPTER 1: INTRODUCTION

## 1.1 Introduction and Problem Statement

The meaning of “Sustainable Development” was defined in 1987 in Brundtland Report as development that “meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987, p. 43). In response to the growing impact of human activities on the planet (Millennium Ecosystem Assessment, 2005), the concept has been shaped ever since, not only integrating environment, social, and economic aspects, but also modifying to accommodate different norms and values in practice (Dezelan & Maksuti, 2014). The definition of the concept, however, lacks full consensus due to its complex and ambiguous nature, especially in term of its localization (Callaghan & Colton, 2007).

This thesis focuses on sustainable development at the community level. Since 2016, cities have played host to 54% of the world’s population and account for more than 70% of the global carbon dioxide emissions (UN Habitat, 2016). In the past twenty years, issues persisting in urban areas have included: expanding numbers of urban slums; inadequate urban services; climate change; insecurity and ever-increasing inequality and exclusion (UN Habitat, 2016). Sustainable community development is ushering in new solutions for cities to tackle such complex situations at the community level (Roseland, 2000).

As the set of goals and targets to promote sustainable community development, sustainable community plans (SCPs), also recognized as Local Agenda 21 (LA21) plans, have been embedded as a tool to incorporate sustainable development at the local level (Clarke, 2012; Selman, 1998). Since 2012, over 6400 governments in 113 countries have engaged in LA21 activities; and the overall timeframe of the plan has shifted to a longer period, indicating a growing commitment to sustainable practices worldwide (ICLEI, 2002). SCPs can vary based on different topics (e.g., transportation, water, waste) (MacDonald, Clarke, Huang, Roseland, & Seitanidi, 2017); timeframes (short-term, mid-term, and long-term) (Clarke & Erfan, 2007); and stakeholder engagement models (participation and partnership) (Clarke & Erfan, 2007). These detailed differences will be discussed in the literature review part of the thesis.

Worldwide, regions participating in LA21s display a diversity of situations. Europe is more advanced in the practice of SCPs compared to other regions (ICLEI, 2012b; Tsenkova, 2005). In Spain, for example, more than 3700 LA21 activities were going on in 2012 due to the commitment of local authorities (ICLEI, 2012b). The past 20 years has also witnessed growing participation from local governments in LA21s in non-European regions (ICLEI, 2012b). 86% of the local governments in Korea have constituted local councils for LA21s (ICLEI, 2012b). In Brazil, the new form of integrated urban planning has brought about cheap and convenient public transit to Curitiba (ICLEI, 2012b). The planning strategy has been adopted by other Latin American cities as well (e.g., Bogota, Quito, Guatemala City, and Mexico City) (ICLEI, 2012b). However, LA21s often vary based on a country's development and economical status. For example, SCPs in developing countries tend to concentrate on more urgent needs, such as reducing poverty and/or improving basic services (ICLEI, 2012b).

Though the practices of LA21 are becoming common phenomena, the execution of LA21s is also facing challenges, such as involving business sectors in the plan (Selman, 1998); representing the public will in the decision-making processes (Calabuig, Peris, & Ferrero, 2009; Selman, 1998); lack of financial resources (ICLEI, 2002; Garcia-Sanchez & Prado-Lorenzo, 2007); and inadequate organizational structure at the community level (Calabuig et al., 2009; Garcia-Sanchez & Prado-Lorenzo, 2007).

The LA 21 process requires collaboration in the plan formulation and implementation phases (ICLEI, 2002). While implementing SCPs, the goal is often too large to be realized through the power of any single organization; therefore, involving different parties of stakeholders is indispensable for municipalities to achieve sustainability goals (Clarke, 2014). It is widely acknowledged that partnerships play a key role in achieving their common goals or solving complicated issues (Cairns & Harris, 2011; Selsky & Parker, 2005). Creating a cross-sector social partnership (CSSP) is becoming a growing approach at the local level. Public, private and civil society sectors are facing challenges and ongoing policy pressures to partner across sectors (Cairns & Harris, 2011; Selsky & Parker, 2005). Globally, the increasing popularity of Cross-Sector Social Partnerships (CSSPs) is also supported through international agreements and organizations, such as SDGs (2015), New Urban Agenda (2016), and ICLEI (2002) through

facilitating the implementation of SCPs.

Challenges often occur during CSSP operations, such as non-flexible organization procedures, imbalanced decision-making, and absence of communication (Selin & Chavez, 1995). Therefore, understanding how to design a successful partnership is important.

Past studies have mainly focused on the formation of the partnerships, motivations, and cost and benefit analysis of the partnership process, yet little is known about the direct and indirect effects of partnership structures on the implementation of CSSPs (Barroso-Mendez et al., 2016; Clarke, 2012; Glasbergen, 2010; Pittz and Adler, 2016; Elbers & Schulpen, 2011). The role of financial factors during SCP implementation has also scarcely been studied. Though several studies have discovered that direct funding can promote the success of a partnership (Purcal, Muir, Patulny, Thomson, & Flaxman, 2011), and funding can avoid the loss of experts and increase the efficiency for managers to gear towards the goals (McGlashan, 2003), the association between the way financial resources and supports are attracted and contribute to the initiatives, activities and the outcomes of the SCPs have of yet not been undertaken.

This thesis aims to fill this gap and explore the link between distribution of resources and plan outcomes, testing the roles of five plan and structure variables that serve as mediators and moderators.

## 1.2 Research Question and Objectives

In general, this study aims to delve into the relationships between partner-focused collaborative partnership structures and resources and plan outcomes. Plan outcomes are measured both by the progress against the goals and the partnership's actions. The following partner-focused structure variables were explored: number of partners; oversight; partner engagement mechanism; and community-wide actions. In the survey, there are six key elements of resources: dedicated department and full-time employees; savings on actions; contributed resources internally; attracted resources; contributed resources on structure; and contributed resources community-wide. This thesis only focuses on the three elements of contributed resources, and their effects on the plan outcomes were also tested. To understand the interactive influence of these factors on the outcomes of community sustainable plans, the research question below will be answered:

- **What are the relationships between money, partner-focused partnership structures and community sustainable plan outcomes (actions and progress)?**

The objective of this study is to:

1. **Test, through statistical analysis, how the influences of partner-focused partnership structures and distribution of resources vary on plan outcomes.**

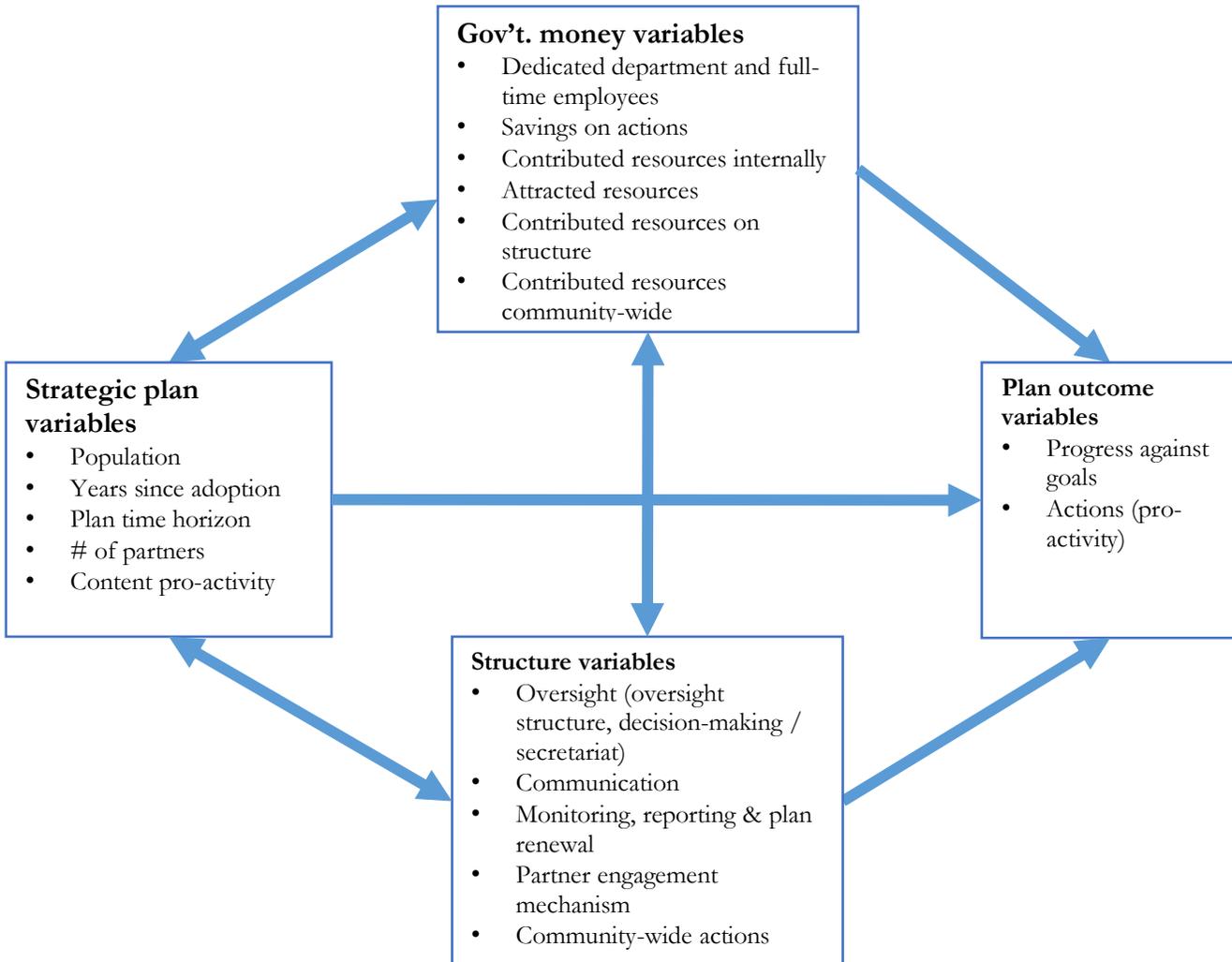
## 1.3 Contribution of Research

This thesis investigates SCPs in 16 different topics (e.g., energy, land use, transportation, water, etc.), covering environmental, social and economic aspects. The study facilitates the design of a successful partnership in achieving ideal collaborative actions and fills the gap of the function of financing factors under the influence of partnership structures, providing empirical evidence for achieving SCP goals through large CSSPs (multi-stakeholder partnerships). The study will also address the gap of how resources are allocated from local government, while collaborating with other partners in their communities.

The following figure details the variables being studied in the research project being run out of the University of Waterloo. This thesis studies a subset of these, all based on data collected through an international survey of local governments. However, the two structure variables, communication and monitoring, are not tested in this thesis for moderation effect. The other

three structure variables are selected since they can provide information on partners in the partnership.

**Figure 1: Variables Being Studied by the Project**



Adapted from: (MacDonald, Clarke, Huang, Roseland, & Seitanidi, 2018)

## 1.4 Thesis Outline

The thesis encompasses six chapters: 1) The introduction (Chapter 1) is followed by the literature review (Chapter 2), methodology (Chapter 3), results (Chapter 4), discussion (Chapter 5), and conclusions (Chapter 6).

Chapter 2 provides an overview of past studies and positions the thesis in current literature. It introduces the concepts of sustainable development and sustainable community development as well as the historical development, characteristics, and implementation challenges for sustainable community plans (SCPs). The chapter then discusses collaborative strategic management of cross-sector partnerships as the framework of this study, and details the six outcomes outlined in the framework, followed by the examination of the role of the financial factors during implementation.

Chapter 3 provides details of the research design, the database details, and the data analysis. The study builds on an existing study and utilizes statistical tools to analyze the influence of the financial factors on plan outcomes. Chapter 4 reports the findings from several tests. The results provided in this chapter answer the research question of the relationships between money, partner-focused partnership structures, and community sustainable plan outcomes (actions and progress). Chapter 5 proposes the implications of the findings and discusses why the roles variables play as mediators and moderators are significant to practitioners. Chapter 6 summarizes the whole thesis, outlines the contributions, and outlines possible future research directions.

## **CHAPTER 2: LITERATURE REVIEW**

The literature review chapter covers three areas: sustainable development, Local Agenda 21, and collaborative strategic management. This chapter highlights the role of financial factors during implementation and examines how the research question contributes to the existing literature. The chapter begins with the concept of sustainable development and is followed by the history and current situation of Local Agenda 21s, thus providing a general background for the topic's fit in a broader sense in practice. The framework of this study is then introduced. Distribution of resources is examined in the existing literature in the content of large CSSPs.

### **2.1 Sustainable Development**

In the past 50 years, ecosystems have been largely changed through human activity at a more rapid and alarming rate than in any other period in man's history. The transformation and surge of demand in natural resources have led to irreversible biodiversity loss and environmental degradation of multifarious ecosystem services (Tilman & Lehman, 2001). To face the change and reverse the degradation, policies and practices both at the international and local level are required to be introduced (Millennium Ecosystem Assessment, 2005).

The term sustainable development was created in the face of these challenges. It was first defined in *Our Common Future*, which is also known as the Brundtland Report. It is the development that "meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987, p. 43). The term has been developed ever since, and has been used dynamically, not only linking the environment, social, and economic issues at the local level, but also as a bridge to connect local and global matters (Millennium Ecosystem Assessment, 2005).

Sustainable development has been shaped over the years by ethical norms and prevailing values for practical purposes, mainly due to the lack of consensus on its explicit meaning (Dezelan & Maksuti, 2014). Therefore, it is changeable and highly relevant to the complexity of local

situations. At a community level, the movement also focuses on building resilience, which is the ability to adapt to crisis, for both short and long terms (Callaghan & Colton, 2007).

In 2014, the United Nations released 17 Sustainable Development Goals, representing the most significant challenges facing sustainable development globally (United Nations, 2014). Among the 17 goals, Goal #11, “make cities and human settlements inclusive, safe, resilient and sustainable”, addresses the importance of sustainable cities and communities (United Nations, 2014, p. 17). Goal #17 underlies the significance of promoting partnerships for the goals, “building on the experience and resourcing strategies of partnerships” (United Nations, 2014, p. 23). The topic being investigated in the thesis is highly relevant to the two goals, and touches on others, as sustainable development at the local level encompasses many topics.

### **2.1.1 Sustainable Community Development**

A sustainable community is a community where both economic and social needs are satisfied while the environment is well managed and sustained (Roseland, 2000). Similar to the concept of sustainable development, the activities to achieving a sustainable community can vary from community to community (Roseland, 2000). At present, urban sprawl is a major issue that cities are facing around the world, especially concerning North American cities. Due to non-ecological land use and design, more fossil fuels are consumed to satisfy the demand for private cars. Other environmental consequences, such as the loss of biodiversity, reduced agriculture area, air pollution, traffic congestion, long commuting time between residential and office zones, are also due to inefficient use of space and energy, (Roseland, 2000; UN Habitat, 2016). In response to these challenges, sustainable community development provides a new approach for cities to shift from an unsustainable economic development model to a new model aiming to balance the development of economy, society, and the environment (Harris, 2000). Local governments worldwide are developing climate change mitigation and adaptation plans, in face of the influences of climate change and extreme weather, ensuring the social equity of low income households and vulnerable groups (Baker, Peterson, Brown, & McAlpine, 2012).

## **2.2 Local Agenda 21**

Agenda 21 was first adopted by more than 178 Governments at the United Nations Conference on Environment and Development (UNCED), which was held in Rio de Janeiro, Brazil in 1992

(United Nations Conference on Environment and Development (UNCED), 1992). It provides a new approach to development, combining the main elements from the Brundtland Report with the concept of environmental protection (Dezelan & Maksuti, 2014). It is a voluntary action plan, globally created for sustainable development. Since many issues addressed by Agenda 21 are rooted in the local level, the action plans to be implemented by local authorities are termed as “Local Agenda 21” (LA21) (ICLEI, 1997).

The aim of an LA21 is to pursue sustainable development at the local level. Its definition is:

“A participatory, multi-stakeholder process to achieve the goals of *Agenda 21* at the local level through the preparation and implementation of a long-term, strategic plan that addresses priority local sustainable development concerns” (ICLEI, 2002, p. 3).

Therefore, LA21 not only includes the formulation of a plan, but also contains a whole strategy that enables the implementation of the plan, such as monitoring, partner engagement, and community-wide actions (ICLEI, 2002). To implement its sustainability goals, each community essentially has its own unique sustainable strategic and/or action plan (ICLEI, 1997).

Since the creation of the term, more than ten thousand local communities are engaged in LA21 activities around the world (ICLEI, 2012b). A community must meet the following standards to be regarded as having an LA21:

- Must include a participatory process with local citizens
- Must include a consensus on a vision for a sustainable future
- Must address economic, social, and ecological needs together
- Must establish a roundtable, stakeholder group, forum, or equivalent multi-sectoral community group to oversee the process
- Must prepare an action plan
- Must prepare an action plan with concrete long-term targets
- Must establish indicators to monitor progress
- Must establish a monitoring and reporting framework (ICLEI, 2002, p.8)

### **2.2.1 Sustainable Community Plans (SCPs)**

Sustainable plans consist of two types: corporate plans and community plans (Clarke & Ordonez-Ponce, 2017). Corporate plans refer to plans made by local governments for the actions within its control and impact, and local government is treated as the corporation in this case. Community plans, on the other hand, include actions taken within the whole geographical boundary (Clarke & Ordonez-Ponce, 2017). The plans are usually created by the community through public collaboration, since stakeholders are essential for actions to happen at the community level (Clarke & Ordonez-Ponce, 2017). In the community plan, local governments not only include stakeholders' opinions, but further engage stakeholders as partners working together to achieve the goals (Clarke & Erfan, 2007).

A sustainable community plan (SCP) is a set of goals and targets integrating economic, social, and ecological aspects (Clarke, 2012). Many municipal-level SCPs are restricted by geographical regions to allow for a higher efficiency of resource sharing (Clarke, 2012). Sustainable community plans often appear in different terms in documents and articles. This term can also be referred to as:

- Integrated Community Sustainability Plans (ICSPs)
- Collaborative Community Sustainability Strategies
- Local Agenda 21 Plans
- Local Action Plans
- Urban Sustainability Plans

(Clarke, 2011; Parenteau, 1994; Park, Purcell, & Purkis, 2009)

### 2.2.1.1 Historical Development

Over the past 20 years, LA21 has been developed to be a significant instrument for sustainable human development, reflecting the growing need for sustainable development at the local level (Selman, 1998). The emergence of the local sustainable development trend also appears from multiple dimensions. In addition to local governments, regional associations have shown increasing influence in the management of sustainable development (ICLEI, 2012b). New campaigns (e.g., The EU-backed Covenant of Mayors) were launched, with an increasing number of organizations working with cities (e.g., United Cities and Local Governments (UCLG)) (ICLEI, 2012b). Initiatives have emerged in support of the implementation of LA21 plans, such as the International Council for Local Environmental Initiatives<sup>1</sup> (ICLEI)'s Model Communities Program, the UN Environment Program's Sustainable Cities Program, and the UN Development Program's *Capacity 21* study (Selman, 1998). As a government-to-government entity, ICLEI provides tools and resources for local governments to implement Agenda 21 in the form of case studies and surveys (ICLEI, 2002). In ICLEI's Local Sustainability Report 2002, LA21 activities were identified in over 6400 local governments in 113 countries worldwide during the past 10-year period (ICLEI, 2002). Since 2012, this number has increased to more than 10,000 local governments (ICLEI, 2012b).

Overall, Europe is the most active region for LA21s, taking up 80% of the local governments (ICLEI, 2012b). Europe has more well-developed sustainable development programs and plans compared to North America. By 2005, European countries had already had systematic sustainable plans both at the national and local level, and had attained great experience in implementing the plans (Tsenkova, 2005). The urban regeneration of Economic Commission for Europe (ECE) region has been even more effective through community plans with strategies from social, political, and environmental categories, such as increasing employment opportunities and remediation of brownfields (Tsenkova, 2005). By contrast, though the number of cities engaged in LA21s is growing, in Canada and the US, regional planning was less recognized due to the absence of federal intervention and the strong power of provincial governments (Tsenkova, 2005). Since 2005 in Canada, the federal government incentive has

---

<sup>1</sup> ICLEI was formally an acronym for International Council for Local Environmental Initiatives. They have since changed their name to ICLEI Local Governments for Sustainability and are commonly known as ICLEI.

integrated community sustainability plans (ICSPs) and inspired roughly 1000 plans to be developed of which about 150 are community-wide and still active today (Clarke, 2014).

### 2.2.1.2 The Characteristics of the SCPs

The topics of the SCPs usually vary, depending on the prioritized issue in a community (MacDonald, 2016). Current SCP topics addressed by local governments around the world are shown in Table 1. The categories of the plan range from environmental (e.g., air, water, waste, and energy), to social (e.g., food security and housing), and economics, such as employment (MacDonald, 2016). The percentage of each topic included in SCPs is adopted from the results of the initial international survey conducted by MacDonald et al. (2017). As shown in the table, none of the topics are integrated in every plan. The top three topics addressed in SCPs by local governments are: natural resources management, water resources management, and energy management (ICLEI, 2012b; MacDonald et al., 2017).

**Table 1: Topics Included in SCPs**

<ul style="list-style-type: none"> <li>• Waste: 84.7%</li> <li>• Energy: 82.9%</li> <li>• Water: 82.9%</li> <li>• Climate Change: 78.4%</li> <li>• Land Use: 72.1%</li> <li>• Transportation: 71.2%</li> <li>• Air: 57.7%</li> <li>• Ecological Diversity: 56.8%</li> </ul>	<ul style="list-style-type: none"> <li>• Civic Engagement: 49.5%</li> <li>• Employment: 49.5%</li> <li>• Housing: 45.9%</li> <li>• Social Infrastructure: 42.3%</li> <li>• Safety (Crime): 27.9%</li> <li>• Food Security: 27.0%</li> <li>• Poverty Alleviation: 25.2%</li> <li>• Noise Pollution: 15.3%</li> </ul>
---	---

Adapted from: (MacDonald et al., 2017)

The ICLEI (2012) report further pointed out that the actual implementation of the topics may differ from the expectation due to the difficulties encountered in LA21 activities. Though waste, water, and energy are the three most popular topics, waste reduction, public awareness, water quality, and city beautification were identified by local governments as areas where improvements actually took place. In addition, the choice of topics also differs based on the development level of the countries. For example, for developing countries in Asia, Africa, and

Latin America, the focus of LA21 is more on reducing poverty and improving the accessibility to services (ICLEI, 2012b).

Sustainable community plans normally fall under three time horizons: short-term (under five years), mid-term (five to 25 years), and long-term (25 years +) (Clarke & Erfan, 2007). Short-term action plans work better in immediate engagement of partners than do long-term ones. For a long-term action plan, such as a 100-year plan, it is difficult to sustain partnerships. However, short-term plans tend to attract the immediate buy-in of partners (Clarke & Erfan, 2007).

Different time horizons reflect different topics and abilities in taking on current environmental issues (Clarke & Erfan, 2007). In addition, the focus of a plan varies by the time horizons. Short-term plans tend to focus more on economic benefits since the results can be seen in a short period, whereas long-term plans lean more on ecological considerations (Clarke & Erfan, 2007). The majority of community plans in Canada have a short time horizon (81% of the plans are less than five years), with only 2.3% of the SCPs being more than 12 years (Clarke, Huang, Roseland, & Chen, 2018). Worldwide, the time horizons of the plans are also becoming longer compared to the ad hoc programs developed earlier, reflecting a longer term commitment in communities (Tsenkova, 2005).

### **2.2.1.3 Implementation Challenges of SCPs**

To implement SCPs, local government usually collaborates with other sectors, ranging from public, private, to civil society such as non-profit organizations (Clarke, 2014). In recent years, the role of the government sector has shifted from making policies and providing services to also managing the networks built with different sectors (Clarke, 2012; Mazzara, Sangiorgi, & Siboni, 2010). Inter-organizational collaboration serves as a necessity in solving the sustainable development issues for plan implementation (Clarke, 2012; Mazzara et al., 2010). Numerous cross-sector partners and voluntary actions are needed to implement a local sustainability plan (Clarke & Erfan, 2007). Partnerships and resources play pivotal roles in achieving these sustainability goals at the local level during the collaboration of governments with other sectors (Clarke & Erfan, 2007).

Despite the popularity of SCPs, current studies have shown that communities face numerous

challenges in implementing SCPs (Calabuig et al., 2009; Garcia-Sanchez & Prado-Lorenzo, 2007; Selman, 1998). Multi-stakeholder engagement is the first challenge to tackle within the implementation process (Selman, 1998; Tsenkova, 2005). Implementation often requires cooperation between the public and private sectors; and policy making can be isolated when the needs of the various administrative levels fail to be addressed (Selman, 1998; Tsenkova, 2005). Challenges can also occur when local government tries to link the stakeholder-based plan with its own planning and incorporate community needs in the political will for sustainable development (Milutinovic & Jolovic, 2010; Selman, 1998). In addition, the absence of involvement from the business sector is also a common issue often pointed out in public-private partnerships (Selman, 1998). The business sector tends to participate in specific environmental-related issues for profit return instead of engaging in a general sustainability agenda (Selman, 1998).

Difficulties were also noted when including public will in the decision-making process (Selman, 1998). Since some of the SCPs are government-oriented, the role of local authority is heavily emphasized, and the voice of public does not always reach the upper level in this scenario (Selman, 1998). Inadequate funding of economic, material, and human resources, and lack of well-organized organizational structure at the local government level also pose challenges (Calabuig et al., 2009; Garcia-Sanchez & Prado-Lorenzo, 2007; Milutinovic & Jolovic, 2010). In addition to the unclear assignment of responsibilities, there also lacks a complex evaluation structure to examine the efficiency of the implementation progress of SCPs and a growing demand for a monitoring system (Calabuig et al., 2009; Tsenkova, 2005). Other factors such as the absence of financial support, community consensus, relevant information, and support from national government are also brought up during the implementation process (ICLEI, 2012b).

### **2.3 Collaborative Strategic Management (The Framework)**

Collaborative strategies have emerged and thrived in the past few years in the field of public management (Bryson, Berry, & Yang, 2010; Choi & Robertson, 2014; Favoreu, Carassus, & Maurel, 2016; Selin & Chavez, 1995; Selsky & Parker, 2005). It is particularly used by the governments to collaborate with stakeholders from public and/or private sectors (Bryson et al., 2010; Selsky & Parker, 2005). Since LA 21 encourages local governments to work in partnership with stakeholders to achieve the goals, collaborative strategies provide local governments an approach to effectively implement LA21 programs (Cotter & Hannan, 1999).

The collaborative strategic management approach is driven by four factors: the reduced public funding and resources; an increasing demand to solve complex social questions; the need to engage civil society; and the demand of putting together the expertise and skills in different sectors through collaboration and networking (Choi & Robertson, 2014). Collaborative strategic management can be characterized by the interactions between and within organizations in terms of the sharing of information, skills and resources, while the actions are taking place towards the common goals of the partnership (Favoreu et al., 2016). In other words, solutions or collective strategies to a complex issue are created (Favoreu et al., 2016).

Collaborative strategic management serves as the conceptual framework of this study; the collaborative process model proposed in the work of Clarke and Fuller (2010), whereby they tested it with two empirical cases. The term collaborative strategy is defined as “joint determination of the vision and long-term collaborative goals for addressing a given social problem, along with the adoption of both organizational and collective courses of action and the allocation of resources to carry out these courses of action” (Clarke & Fuller, 2010, p.86). The model encompasses five stages of the collaborative strategic formulation and implementation by the CSSP: forming the partnership; establishing the collaborative strategic plan; implementing the plan individually and collectively; and the implementation outcomes. Six different types of outcomes were also proposed: plan-centric; process-centric; partner-centric; person-centric; and environmental-centric (Clarke & Fuller, 2010). This thesis focuses on the plan-centric outcomes, measured by the progress of the issue being addressed. The framework of the thesis also limits the boundary of the study to the partnership and grounds it in management theory.

### **2.3.1 Cross-Sector Social Partnerships**

Cross-Sector Social Partnerships (CSSPs) are gaining increasing attention due to the growing needs and number of partnerships in this format, their significant influence at both the global and local level, and their complex format of various sizes, lengths, and number of partners (London, Rondinelli, & O'Neill, 2006; Selsky & Parker, 2005). The growth is mainly due to the benefits brought about by CSSP format (Cairns & Harris, 2011; Dempsey, Burton, & Duncan, 2016). For example, non-profit organizations usually work as the voice of local community members, especially that of the minority and other vulnerable groups (Cairns & Harris, 2011). Forming a

partnership can allow local government to better reflect the public's interests. In addition, a partnership can lead to mutual learning of both skills and expertise (Cairns & Harris, 2011).

The key characteristic of a cross-sector social partnership is that this type of partnership focuses on social issues, other than economic-centered (Parmigiani & Rivera-Santos, 2011).

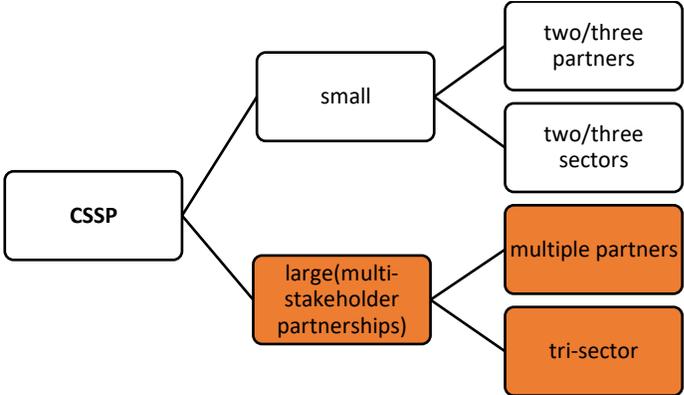
Governments, firms, and/or non-profit organizations collaborate to address social challenges, such as alleviating poverty, or achieving environmental sustainability (Parmigiani & Rivera-Santos, 2011; Selsky & Parker, 2005).

Unlike other types of partnerships, a CSSP involves two or more sectors from the public, the private, or civil society voluntarily working together to solve problems towards the achievement of mutual goals (Clarke & Fuller, 2010; Parmigiani & Rivera-Santos, 2011; Selsky & Parker, 2005). Local governments and schools /universities are commonly seen as part of the public sector, whereas not-for profit organizations and regional groups are recognized as part of civil society sector organizations (Freeman, Littlewood, & Whitney, 1996). The private sector often includes local businesses and industries (Freeman et al., 1996). CSSPs can first be categorized based on interactions of different sectors: private-civil society; public-private; public-civil society; and tri-sector (Selsky & Parker, 2005). Among the four types, most studies have focused on public-private partnerships due to the challenges of attracting financial resources for governments to complete public infrastructure (Ismail, 2013; Selsky & Parker, 2005). This type of collaboration also adds value to the financial resources since private sectors often bring expertise and skills to the partnership (Choi & Robertson, 2014; Ismail, 2013). This study focuses on tri-sector partnerships, involving all three public, private, and civil society organizations.

CSSPs can also be categorized into small or large partnerships based on partner numbers. Small CSSPs only have two or three partners from two or three sectors. By contrast, large CSSPs (also recognized as multi-stakeholder partnerships) involve multiple partners from the three sectors. (Clarke & MacDonald, 2016). Large CSSPs are often more inclusive than small CSSPs, since the process encourages the participation of all partners, whereas the partners of small CSSPs are usually carefully selected for a specific fit (Clarke & MacDonald, 2016). This study focuses on large CSSPs characterized by multiple partners from the three sectors (private, public, and civil

society), as shown in the shaded areas in Figure 2. The partnerships discussed in this study are such that the leading organization is not limited to municipalities only. Other organizations can also play a leadership role in implementing the plan (Clarke & Erfan, 2007). That said, all the studied partnerships include local government as a key stakeholder.

**Figure 2: Two Types of CSSPs**



CSSPs usually have diverse goals and approaches for social issues due to differences in stakeholders (London et al., 2006; Selsky & Parker, 2005). Different motivations form the partnership, and varied understanding of institutional norms can make CSSPs difficult to manage (Cairns & Harris, 2011; Parmigiani & Rivera-Santos, 2011; Selsky & Parker, 2005). At the formation stage, firms are incentivized by the increasing expectations of corporate responsibility. Non-profit organizations aim to increase efficiency and accountability through the partnership; and governments are motivated to have more transparent operations (Parmigiani & Rivera-Santos, 2011; Selsky & Parker, 2005). While sectors begin to work collaboratively, collisions occur resulting from distinctive organization features (Cairns & Harris, 2011). For the civil society sector, such as a non-profit organization, it often faces challenges of maintaining its own independence while following requirements from the public sector. On the other hand, the public sector, such as governments, is often under pressure to understand the different features of the other sectors, such that processes like decision-making and planning can be more efficient (Cairns & Harris, 2011). Challenges can be exacerbated when other sector(s) are getting grants from the government. This imbalanced situation not only raises the question about the transparency and accountability of the partnership structures, but also the degree of participation and engagement (Cairns & Harris, 2011).

Therefore, the design of the partnership and understanding its mechanism are pivotal to achieving an effective CSSP, which not only requires financial input, but also factors such as communication skills and expertise in problem-solving during the partnership (Cairns & Harris, 2011). The study of financial factors under the impact of the partnership structure in CSSP holds significant value.

### **2.3.1.1 Oversight Structure**

The importance of having an oversight structure to oversee the implementation of the collaborative goals is well stated in the literature (Clarke, 2012; Linden, 2003; Shaw, 2003). Since organizations face challenges in understanding the institutional norms and environmental pressures addressed by organizations in the other sectors, and finding appropriate joint decision-making mechanisms, an oversight structure with a dedicated team to coordinate the process promotes a successful implementation of SCPs (Clarke, 2012; Linden, 2003; Shaw, 2003). It has been pointed out that conflicts are better solved with an oversight structure, since staff serves a neutral position in problem-solving (Bolda, Saucier, Maddox, Wetle, & Lowe, 2006).

Oversight structure usually includes a secretariat who plays a significant role in coordinating partners, and a decision-making body to monitor the process and staff members (Clarke, 2012). Hence, the whole progress of the SCP implementation can be coordinated and monitored, which largely increases the efficiency of the implementation (Clarke, 2012). The secretariat should not only carry the responsibility of overseeing the renewal of SCP plans, but also be in charge of monitoring the progress, building the network, and identifying the short-term actions (Clarke, 2012). For example, between 1999 and 2012, Barcelona reduced energy consumption and CO<sub>2</sub>e (carbon dioxide equivalents) emissions by 2% and 29% per capita (Clarke & Ordonez-Ponce, 2017). The achievement was reached both through partners' actions and well-organized oversight structure. The partnership was overseen by the multi-stakeholder council with staff from the local government department. The council played a significant role in involving over 800 organizations as partners and monitoring the sustainability progress, thus promoting the progress of the SCPs (Clarke & Ordonez-Ponce, 2017).

Oversight structure is important for a successful partnership since it works to coordinate and monitor the process of the partnership. The presence of such structure improves democracy and

inclusiveness of the organization, thereby acknowledging the importance of the partners involved and increasing the chances of a smooth implementation of SCPs.

### **2.3.1.2 Number of Partners**

A partnership with a large number of partners can get access to more economic resources (Butler, 2001). Existing studies often argue that a growing number of partners does not necessarily lead to successful outcomes, mainly due to the following three reasons. First, there will be fewer interactions and more conflicts between each partner, thus partners are not well-engaged compared to those partnerships of a small size (Butler, 2001). Furthermore, due to the competitive nature of partnerships, a larger number of partners often face the dilemma that though more resources are available, the accessibility of resources for each partner can be less (Babiak & Thibault, 2007; Butler, 2001). The competition between the partners can significantly impede a successful partnership and decrease the chances of survival of the partnership (Park & Russo, 1996). In addition, the mutual goal of the partnership may prove more challenging to achieve when the partnership is not well-managed because partners have their own preferences and put their own interests first before group interests (Babiak & Thibault, 2007; Van Puyvelde et al., 2015). Chances of free-riding will also increase due to lack of incentives for partners to behave accordingly (Garcia-Canal, Valdes-Llaneza, & Arino, 2003).

However, the three challenges all derive from the difficulty in managing a large group. Despite the challenges listed, with the presence of a well-managed internal structure, such as an arms-length organization to oversee the partnership and coordinate the partners, a larger number of partners can lead to more effective outcomes (Butler, 2001; Park & Russo, 1996).

### **2.3.1.3 Partner Engagement Mechanism**

The partner engagement mechanism involves two steps: partner selection and the involvement of key stakeholders (Clarke, 2011). Partner selection is important at the initial stage of the partnership (Barroso-Méndez, Galera-Casquet, Seitanidi, & Valero-Amaro, 2016). Having “the right people around the table” is crucial to a sustainable partnership (Israel et al., 2006). Partnering with sectors sharing the same values and beliefs are more likely to reach a high level of trust and commitment, and in return stimulate a successful implementation process (Barroso-Méndez et al., 2016). Clarke (2011) also points out the importance of engaging the right number of, and the right key, stakeholders into the plan during the partner selection stage. An effective selection can determine the outcome of the partnership. For example, for a SCP focusing on climate change, the involvement of major GHG emitters is indispensable (Clarke, 2011). The partner engagement mechanism is also crucial for the partnership implementation in a cross-sector partnership (Clarke, 2012). Trust and commitment can be cultivated during the engagement process, thus leading to a higher level of cooperation and the forming of stronger bonds in partner interactions (Barroso-Méndez et al., 2016).

The partner engagement mechanism at the early stage of the partnership, including recruitment and partner selection, is found to have a significant influence on the development of the partnership in the later stage (Lewis, Baeza, & Alexander, 2008; Perkins et al., 2010). The mechanism of engaging a large number of partners can also be crucial to plan outcomes (Clarke, 2012). Partner selection as well as engagement are also identified as key factors for plan outcomes (Barroso-Méndez et al., 2016; Clarke, 2012; Glasbergen, 2010). Selecting stakeholders with similar values into the partnership can not only ensure the contribution from the influencers, but also paves a smoother path for building up a stronger partnership (Glasbergen, 2010). Engaging partners through different channels such networking events or structures such as committee, can cultivate the partners’ commitment, hence further improves the quality and efficiency of partnership implementation (Barroso-Méndez et al., 2016; Clarke, 2012; Glasbergen, 2010).

Therefore, efforts from local authorities in partner engagement mechanisms are crucial for SCPs to be carried out. A careful selection of partners with similar values can reduce the occurrence of conflicts, while ensuring the key influencers contribute to the complex issues.

#### **2.3.1.4 Community-wide Actions**

The pivotal role of community-wide actions on SCP outcomes has been recognized in literature (Israel et al., 2006; Kruijsen, Owen, & Boyd, 2013; Storey, Santucci, Fraser, Aleluia, & Chomchuen, 2015). Literature has pointed out that community involvement is indispensable for the change happening at local level, and the benefits leading to the community often serve as drivers for partners to stay engaged (Israel et al., 2006; Kruijsen et al., 2013). Researchers found out that, sustainable and ongoing change can only happen in local level when members and groups in the community take actions together (Kruijsen et al., 2013). Partnership at local level has to ground in the community and incorporate the interests of the community groups to achieve effective outcomes (Kruijsen et al., 2013; Storey et al., 2015). Effective steps such as forming a guide group and setting clear vision can be a starting point, since individuals are more willing to make a change in a group format (Kruijsen et al., 2013).

The significance of community-wide actions is also addressed in Clarke (2011& 2012). In Clarke (2011), the four cities (Montreal, Hamilton, Greater Vancouver and Whistler) with SCPs were studied in depth. The results indicated that actions should be taken at individual partners' level to allow plan outcomes be achieved on GHG emissions and air quality. For example, partners actions in Montreal are based on plans selected by individual partners on annual basis, whereas partners actions in Great Vancouver are self-disciplined, created by partners (Clarke, 2011). Therefore, to achieve best results for SCP implementation, community-wide actions from both municipal government and partners are essential. For municipal government, SCP should be integrated in city's plans and policies (Clarke, 2012). The impacts of partners should be beyond consultation for advice. Enabling the partners to commit to annual actions and reports can bring benefits to community-wide results (Clarke, 2012).

## **2.3.2 Outcomes of Collaborative Strategic Management Process**

### **2.3.2.1 Overview of the Different Types of Outcomes**

As mentioned in the framework of the thesis, there are five stages to a collaborative strategic management process, from partnership formation, plan formation to plan implementation and outcomes. The implementation outcome is recognized as the final stage of the process. Outcomes are the results of the actions taken both at the partnership level and at the individual partner level (Clarke & Fuller, 2010). Six different types of outcomes of the collaborative strategic management process are of particular interest for the context of SCPs: (a) plan outcomes; (b) process outcomes; (c) partner outcomes; (d) outside stakeholder outcomes; (e) person outcomes; and (f) environmental outcomes (Clarke & Fuller, 2010).

Plan outcomes are characterized by partners collaborating to solve a complex issue, and relevant actions are documented in the collaborative strategic plans (Clarke & Fuller, 2010). In this study, plan outcomes are measured by the sustainability progress against the mutual goals partners share in the SCPs and actions on the proactivity continuum (Clarke & MacDonald, 2016). The progress is usually documented in the form of reports and can be monitored by comparing the results recorded in the reports by years (Clarke, 2011). For example, in a study where SCPs from four different Canadian regions were chosen for the investigation of the link between implementation structure and plan outcomes, the plan outcomes were assessed by whether the goals set on reducing greenhouse gas (GHG) emissions and improving air quality were achieved (Clarke, 2011).

By contrast, process outcomes are “outcomes that lead to alterations, adaptations, and changes to the collaboration formation, design, and implementation process, along with actions as part of the implementation process” (Clarke & Fuller, 2010, p. 90). The process outcomes can be the number of large emitters engaged, or the opportunities created for information and resource sharing (Clarke, 2011). Collective learning, strategic budget management, or creative solutions that occur during the implementation process can be counted as process outcomes (Steijn, Klijn, & Edelenbos, 2011).

Partner outcomes are the results experienced by individual partners, such as cost saving, improved efficiency, or gained knowledge and training (Bamberger, 1991; Clarke & MacDonald, 2016). An example is the study done by Clarke and MacDonald (2016) that examined the partner outcomes from cross-sector partnerships using the resource-based view (RBV). The RBV is good at explaining why partners value certain resources more than others, and it can be divided into three categories: physical/financial capital, organizational capital, and human capital (Clarke & MacDonald, 2016).

The other three types of outcomes (i.e., outside stakeholder, person, and environmental outcomes) are generally less focused on by studies of SCPs (Clarke & Fuller, 2010). Outside stakeholder outcomes involve “changes in the inter-organizational relationships between the collaboration (including its individual partner organizations) and non-participating stakeholders” (Clarke & Fuller, 2010, p. 90). Personal outcomes are limited to the individual level. Environmental outcomes refer to the externalities generated to “ecological, economic, governmental, legal, political, regulatory, social, and/or technological environments”, which are beyond the focus and expectation of the original issues handled by the partners (Clarke & Fuller, 2010, p. 90).

### **2.3.2.2 Plan-Centric Outcomes**

Tangible outcomes, such as measurable improvements, serve as an indispensable factor for successful partnerships (Kochan et al. 2008). More tangible plan outcomes can lead to higher chances for organizations to tackle the issues and crises together (Kochan et al. 2008). The challenge of measuring outcomes of cross-sector partnerships is widely acknowledged in the literature, especially the measurement of intangible outcomes such as partner reputation, or long-term impacts beyond the timeframe of the assessments (Jørgensen, 2006). Since partnership outcomes are often confounded with outcomes generated by other non-program events, separating the outcomes can also be extremely challenging (Jørgensen, 2006). As one of the six types of outcomes, the measurement of plan outcomes also faces the same issue. The environmental strategic model comes up in the literature in response to the measurement challenge. It was first introduced by Roome (1992), and then further developed by Lin (2012).

The environmental strategic model introduced by Roome (1992) consists of five strategic options to evaluate sustainable activities: Non-compliance; compliance; compliance plus; commercial and environmental excellence; and leading edge. The first three compliance-related strategies are in response to governments' legal requirements or social pressure from the community. Non-compliance represents companies whose strategies are not responsive to the environmental standards and regulations, mainly due to the associated cost or the difficulty to change at the management level. Compliance strategies refer to companies who change their policies in reaction to the environmental policies. However, Roome (1992) points out that, due to the lagging effect of the environmental policies, it is unlikely for firms falling into this category to gain competitive advantage in the market for its environmental actions. Unlike the reactive movements of compliance strategies, compliance plus means that firms taking proactive strategies beyond the scope of the simple reflections of environmental policies. It is challenging though for companies to reflect their actual needs to policy-making. Commercial and environmental excellence indicates that the company combines environmental impacts into its core values. The last strategy, leading edge, reflects such innovative companies whose practice and standards set examples for other companies in the field (Roome, 1992).

Building on the previous literature, Lin (2012) developed a proactivity scale to test the conceptual framework developed in her study and to measure the outcomes of strategic alliances in tackling complex environmental issues. In her study, Lin (2012) investigates whether structure can lead to different degrees of proactive environmental strategy adoption in firms during the alliances. The proactivity scale was created to estimate firms' involvement in sustainability practices. The scale was categorized into four groups showing the increasing level of practices, from the control and prevention of pollution, to product stewardship and clean technology (an indication of a company's contribution to sustainable development) (Lin, 2012). Since the proxy was used to evaluate the engagement of companies, it can also be potentially used for CSSPs to measure plan outcomes.

In addition to the proactivity scale, the sustainable indicators and domains advanced by Taylor (2012) also serves as a valuable guideline for its research focus at the local level. Taylor (2012) developed a set of sustainability indicator domains to use in the Canadian Community

Sustainability Indicator Framework to identify sustainability goals. Sustainable indicators are commonly used to assess the progress towards sustainable goals and provide information about the trends of social and environmental systems (Fehr, Sousa, Pereira, & Pelizer, 2004). Due to the benefits of facilitating the decision-making process, monitoring the change of the system, and simplifying the communication between stakeholders, the indicators are instrumental in sustainability measurement (Shen, Ochoa, Shah, & Zhang, 2011). Agenda 21 also encourages the use of indicators in the decision-making process of local governments (United Nations Economic & Social Affairs, 2007). On the one hand, the development of indicators needs to be specialized for real-life scenarios and coordinate theories into practices. On the other hand, there is an increasing need for indicators to be standardized for a same-level comparison, especially for municipalities to compare sustainable development efforts with each other under the content of Local Agenda 21 (Taylor, 2012).

In response to the surging needs, Taylor (2012) proposed 17 sustainability indicator domains which are under full consensus, and three additional domains requiring further agreement. The domains are listed in the following table.

**Table 2: Canadian Community Indicator Domains**

<b>Energy</b>	<b>Social Infrastructure</b>
<b>Land Use</b>	<b>Education</b>
<b>Transport</b>	<b>Health</b>
<b>Water</b>	<b>Safety</b>
<b>Waste</b>	<b>Financial Security</b>
<b>Air</b>	<b>Employment</b>
<b>Environmental Governance</b>	<b>Local Economy</b>
<b>Environmental Impacts Outside Cities</b>	<b>Food Security</b>
<b>Housing</b>	<b>Ecological Diversity</b>
<b>Civic Engagement</b>	<b>Greenhouse Gas Emissions and Climate Change</b>

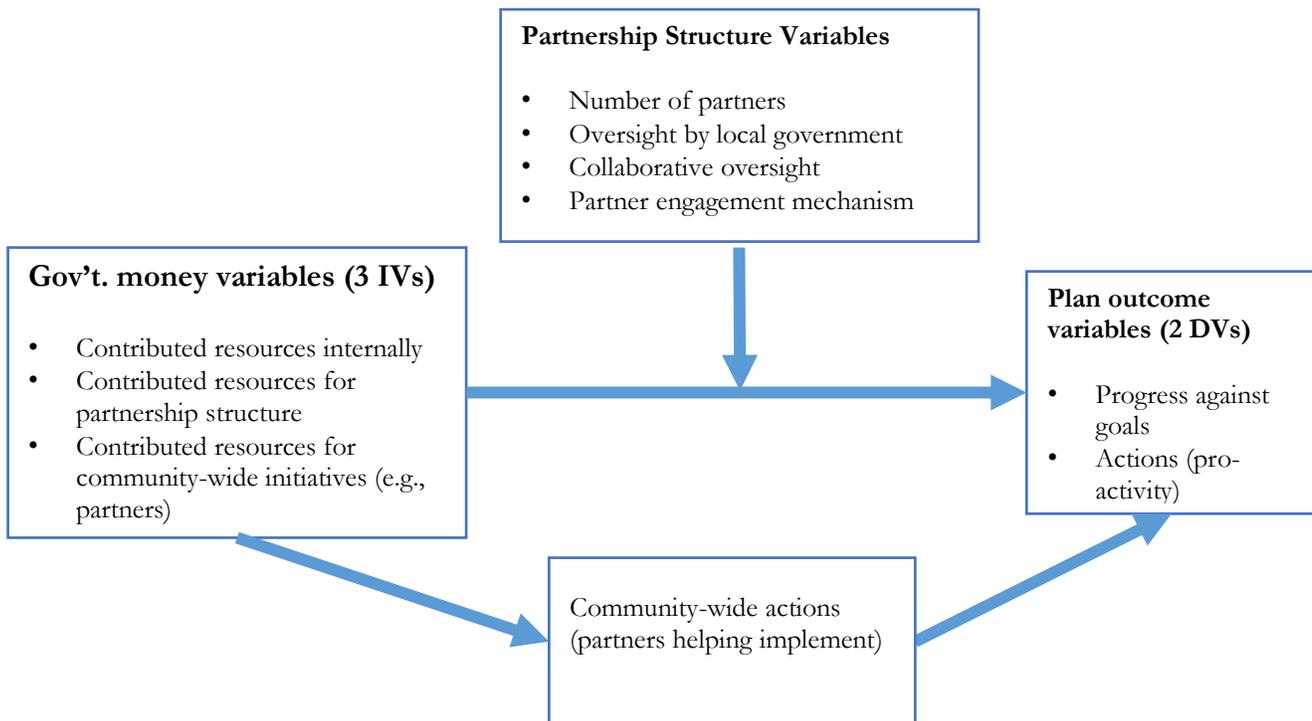
Adapted from: (Taylor 2012, p.65).

Though the study conducted was limited to Canadian communities, the study provides significant insights for indicator development as well as information to help governments' decision-making on their choice of indicators for the sustainability progress measurement. The topic areas categorizing the measurement of plan outcomes of this thesis are based on the 17 domains listed above. Shaded area indicates the three potential domains still under debate for full consensus.

### **2.3.3 Role of Financial Factors During Implementation**

This section introduces the government money variables in three subsections: contributed resources internally; contributed resources for partnership structure; contributed resources for community-wide initiatives, and they are tested as independent variables. Hypotheses are proposed as the mediating and moderating roles partnership structure variables play in the relationships between money variables and plan outcome variables.

**Figure 3: Diagram of Hypotheses Tested**



### **2.3.3.1 Financial Supports from Local Government**

Funding plays a crucial role in sustaining a partnership, and in many cases, the withdrawal of funding can lead to the failure of the partnership (Feinberg, Bontempo, & Greenberg, 2008; McGlashan, 2003; Perkins et al., 2010). The overall budget dedicated to the plans and how the resources are distributed will impact the time horizon of plan implementation, since direct or follow-up funding for external projects can increase the chances of long-term plan implementation (Bamberger, 1991). Though many countries have been using financing tools for green budget in the forms such as tax and levies, few countries have a systematic management of how to use the reserved fund for sustainable development (Volkery, Swanson, Jacob, Bregha, & Pintér, 2006). Secure funding together with other factors, such as effective communication and trust between the partners, are well recognized as stimulators in a successful partnership (Purcal et al., 2011).

Funding for implementation structures and for activities can be provided in two forms: core funding or project funding. Project funding is usually the funding provided for a specific topic,

such as beach cleanups, or conferences, with funders tending to invest in such a project for the short-term benefit (McGlashan, 2003). In comparison, core funding is fundamental for a partnership to operate such things as office space, accountancy, and legal fees, to name a few (McGlashan, 2003). Core funding coupled with a dedicated staff is found to have strong correlation with an improved network and activities among partners, thus playing a pivotal role in improving partnership outcomes (Purcal et al., 2011). Raising funds for core costs to procure a dedicated department and stable employees is more difficult, since the return on investment takes longer than does project funding (Purcal et al., 2011). Therefore, local authorities play crucial roles regarding the funding of the SCPs. They can either work on attracting project and core funding for community-wide sustainability initiatives, or in providing financial support in the form of both core and project funding (Clarke, 2012; MacDonald, 2016; McGlashan, 2003). Having a dedicated department and staff on the sustainability plans can not only foster communication, but also bring more opportunities to partners, which can then lead to an effective partnership (Allen, Beaudoin, & Gilden, 2017).

In this study, financial support from local government are evaluated through three aspects: contributed resources internally; contributed resources for partnership structure; and contributed resources for community-wide initiatives. The first aspect measures the proactivity of local governments who are dedicating resources to internal sustainability initiatives, such as training of staff. The second aspect assesses the government financial supports on administrative activities for better partnership structures. Finally, the third aspect indicates the resources from the government allocated to community-wide sustainability initiatives, such as collaborative projects. Hypotheses 1, 2, and 3 use contributed resources internally, contributed resources for partnership structure, and for community-wide initiatives accordingly as independent variables.

### **2.3.3.2 Oversight as a Hypothetical Moderator**

Oversight serves an important role in contributing resources. In cases where the money comes from governmental funding, having appropriate monitoring and reporting accountability can ensure the accountability of both sectors (Cairns and Harris, 2011). In this survey, oversight is measured through two components: collaborative oversight and oversight by local government. In collaborative oversight, the secretariat such as the committee, board, or issue-based task forces are formed by partners, whereas in oversight by local government, the SCP implementations are organized by the local government.

Cross-sector multi-stakeholder councils and advisory bodies have been utilized in countries such as South Korea and Germany, to facilitate participation, provide advice, and cultivate the trust between different groups (Volkery et al., 2006). The advisory council also plays an important role in monitoring plan outcomes (Volkery et al., 2006). Multi-stakeholder advisory committee can facilitate the government learning and collaboration at local level (Lee & van de Meene, 2012). The social networking within and among cities are easier to be formed with the presence of multi-stakeholder committee since such structure can provide decision makers information and knowledge to enhance the climate change policy performance (Lee & van de Meene, 2012).

Volkery et al. (2006) pointed out that the advisory committee should have representatives from key stakeholders should have equal chance to participate in the committee based on case studies from 19 developed and developing countries. During the CSSP, power imbalance can often occur due to the different backgrounds of the parties (Elbers & Schulpen, 2011). Non-democratic decision-making usually tends to emerge in this situation, followed by distrust between partners, especially when it comes to politics and funding (Elbers & Schulpen, 2011). Therefore, an oversight structure can promote transparency and cultivate inclusiveness among the partners, hence increasing the effectiveness of the partnership (Doberstein, 2016; Pittz and Adler, 2016). With the presence of oversight structure, contributed resources from the local government are more likely to lead to effective plan implementation.

### **2.3.3.3 Number of Partners and Partner Engagement Mechanism as Hypothetical Moderators**

In addition to oversight, the number of partners and the partner engagement mechanism are also crucial factors in resources distribution. The study of Brazilian energy sector highlights the importance of effective mechanism to engage partners (Matos & Silvestre, 2013). Based on the findings from two programs, Matos and Silvestre (2013) point out that financial supports and tax incentives should be utilized by the government to encourage the participation of poor farmers in addition to training. Since the private sector requires a certain percent of return of investment(ROI), local government should change the business model to enhance the ROI, attracting private sector in this way (Matos & Silvestre, 2013). Therefore, having right mechanism to manage stakeholders plays a crucial role in the implementation.

Partner engagement has been identified as one of the key factors of success through ICLEI member cities (ICLEI, 2012a). City of Melbourne invited project partners in the process of making community plan “Future Melbourne” plan (ICLEI, 2012a). City of Toronto also actively create avenues for stakeholder engagement, the establishment of WeatherWise Partnership partners (ICLEI, 2012a). When the partnership is funded and especially dedicated to support partnership activities, the number of partners increased along with an improved relationship between the partners (Purcal et al., 2011). For projects with dedicated funding, local government with efforts of strengthening the partnership can determine whether partners are willing to participate in the partnership, hence influence plan outcomes (Purcal et al., 2011). Funding to promote the engagement of key stakeholders is crucial for a successful partnership, since trust and commitment are cultivated through the process (Lewis et al., 2008; Perkins et al., 2010). Due to the significance of engaging partners, it can be predicted that without the presence of partner engagement mechanism, contributed resources may not always result in more significant plan outcomes. Allocating resources to partnership with larger size might be more likely to lead to effective plan implementations.

### **2.3.3.4 Community-wide Actions as a Hypothetical Mediator**

Contributed resources can increase community-wide activities (Clarke, 2012; Storey et al., 2015). Case studies show that municipalities not only need to guide SCPs, but also need to provide

financial support to achieve actions community-wide (Clarke, 2012). Financial support and staff training can further promote the understanding of sustainability and incorporate the concept in community-wide initiatives and internal actions (Clarke, 2012). In this study, the variable ‘community-wide actions’ is regarded as the same variable as ‘plan actions’, hence no hypothesis is proposed with plan actions as a dependent variable, while “community-wide actions” is the independent variable.

A great example of how community-wide actions are required to improve urban environmental sanitation is solid waste management in India (Joseph, 2006). In addition to involve key stakeholders such as private sectors and financing institutions, actions at community scale are utmost for the issue to be addressed. Joseph (2006) finds that structure and initiatives to engage actions at community level are still not commonly seen in urban settings. Stakeholders from the community can play different roles in contributing the waste management, for example, individual household has to separate garbage to make door-to-door collection effective (Joseph, 2006). A community-based organization is encouraged to establish to work with local government, encouraging community participation and facilitating the activities and households (Joseph, 2006).

In addition, a study focusing on effective partnership for waste-to-resource plans also pointed out that for communities with effective outcomes, community actions for waste reduction are encouraged through funding and subsidizing (Storey et al., 2015). Therefore, community wide actions can serve as an indicator to measure how proactive a community is in implementing community plans, and can explain why contributed resources are leading to active plan outcomes.

**Table 3: Table of Hypotheses Tested**

<b>Relationship Types</b>	<b>Moderators/Mediator</b>	<b>Hypotheses</b>
Direct	N/A	<p><i>Hypothesis 1a: Contributed resources internally have a positive effect on plan actions.</i></p> <p><i>Hypothesis 1b: Contributed resources internally have a positive effect on plan progress.</i></p> <p><i>Hypothesis 2a: Contributed resources on partnership structure have a positive effect on plan actions.</i></p> <p><i>Hypothesis 2b: Contributed resources on partnership structure have a positive effect on plan progress.</i></p> <p><i>Hypothesis 3a: Contributed resources community-wide have a positive effect on plan actions.</i></p> <p><i>Hypothesis 3b: Contributed resources community-wide have a positive effect on plan progress.</i></p>
Moderation	Collaborative Oversight	<p><i>Hypothesis 1c: Collaborative oversight strengthens the positive relationship between contributed resources internally and plan actions.</i></p> <p><i>Hypothesis 1d: Collaborative oversight strengthens the positive relationship between contributed resources internally and plan progress.</i></p> <p><i>Hypothesis 2c: Collaborative oversight strengthens the positive relationship between contributed resources on structure and plan actions.</i></p> <p><i>Hypothesis 2d: Collaborative oversight strengthens the positive relationship between contributed resources on structure and plan progress.</i></p> <p><i>Hypothesis 3c: Collaborative oversight strengthens the positive relationship between contributed resources community-wide and plan actions.</i></p> <p><i>Hypothesis 3d: Collaborative oversight strengthens the positive relationship between contributed resources community-wide and plan progress.</i></p>
Moderation	Oversight by Local Government	<p><i>Hypothesis 1e: Oversight by local government strengthens the positive relationship between contributed resources internally and plan actions.</i></p> <p><i>Hypothesis 1f: Oversight by local government strengthens the positive relationship between contributed resources internally and plan progress.</i></p> <p><i>Hypothesis 2e: Oversight by local government strengthens the positive relationship between contributed resources on structure and plan actions.</i></p> <p><i>Hypothesis 2f: Oversight by local government strengthens the positive relationship between contributed resources on structure and plan progress.</i></p>

		<p><i>Hypothesis 3e: Oversight by local government strengthens the positive relationship between contributed resources community-wide and plan actions.</i></p> <p><i>Hypothesis 3f: Oversight by local government strengthens the positive relationship between contributed resources community-wide and plan progress.</i></p>
Moderation	Number of Partners	<p><i>Hypothesis 1g: Number of partners strengthens the positive relationship between contributed resources internally and plan actions.</i></p> <p><i>Hypothesis 1h: Number of partners strengthens the positive relationship between contributed resources internally and plan progress.</i></p> <p><i>Hypothesis 2g: Number of partners strengthens the positive relationship between contributed resources on structure and plan actions.</i></p> <p><i>Hypothesis 2h: Number of partners strengthens the positive relationship between contributed resources on structure and plan progress.</i></p> <p><i>Hypothesis 3g: Number of partners strengthens the positive relationship between contributed resources community-wide and plan actions.</i></p> <p><i>Hypothesis 3h: Number of partners strengthens the positive relationship between contributed resources community-wide and plan progress.</i></p>
Moderation	Partner Engagement Mechanism	<p><i>Hypothesis 1i: Partner engagement mechanism strengthens the positive relationship between contributed resources internally and plan actions.</i></p> <p><i>Hypothesis 1j: Partner engagement mechanism strengthens the positive relationship between contributed resources internally and plan progress.</i></p> <p><i>Hypothesis 2i: Partner engagement mechanism strengthens the positive relationship between contributed resources on structure and plan actions.</i></p> <p><i>Hypothesis 2j: Partner engagement mechanism strengthens the positive relationship between contributed resources on structure and plan progress.</i></p> <p><i>Hypothesis 3i: Partner engagement mechanism strengthens the positive relationship between contributed resources community-wide and plan actions.</i></p> <p><i>Hypothesis 3j: Partner engagement mechanism strengthens the positive relationship between contributed resources community-wide and plan progress.</i></p>
Mediation	Community-Wide Actions	<p><i>Hypothesis 1k: Community-wide actions mediate the relationship between contributed resources internally and plan progress.</i></p> <p><i>Hypothesis 2k: Community-wide actions mediate the relationship between contributed resources on structure and plan progress.</i></p> <p><i>Hypothesis 3k: Community-wide actions mediate the relationship between contributed resources community-wide and plan progress.</i></p>

## 2.4 Summary

Sustainable Community Plans (SCPs) are created to address the need for sustainable community development. Since Rio 1992, Local Agenda 21 has involved communities worldwide to pursue sustainable development at the local level. SCPs do not only help the public sector achieve its goals, but also serve as effective guidance for organizations with different interests and values to work together toward a common goal. Collaboration between local stakeholders is usually required for the implementation of these plans.

At present, the literature on cross-sector partnerships mainly focuses on the formulation of collaborative goals, but not on the techniques that enable the implementation of the plans. Little is known about the relationship between money variables, partnership structure, and plan outcomes (i.e., sustainability progress), especially the role of financial factors under the influence of partnership structure variables during the implementation process. Drawing upon the existing literature, hypotheses are formed regarding the mediation and moderation effects of oversight structure, number of partners, partner engagement, and community-wide actions in the relationship between financial factors and plan outcomes.

## CHAPTER 3: METHODS

The following chapter covers the methodology of this research study. The objective of this study is to:

- **Test how the influences of partner-focused partnership structures and distribution of resources vary on plan outcomes through statistical analysis.**

The method is based on the data analysis of an international survey and aims to investigate the role of resources in achieving plan outcomes. The development of the survey involved seven stages (MacDonald, 2016). The time span of the survey was more than two years and involved a rigorous design, including a pilot study in Canada before being launched internationally (MacDonald, 2016). Large in scope, it was conducted by experienced researchers (MacDonald, 2016). It was of lower cost and less time-consuming to use the current data instead of conducting a new study.

The chapter commences by introducing the research design and the details of the international survey's database. Two tests, ordinal least squares and Hayes' PROCESS test, were conducted using SPSS to test the relationships, mediating and moderating the variables. Following the detailed discussion of statistical tests, the limitations, reliability, and validity of the study are fully discussed.

### 3.1 Research Design

The international survey in Appendix I is part of a larger international collaborative research project aiming to facilitate local governments around the world to implement LA21 and SCPs more effectively. A pilot study of the international survey was first initiated with Canadian communities by the research team through the online platform Fluidsurvey. Participants of the survey were local governments with implemented SCPs. Surveys were delivered through ICLEI Canada (Local Government for Sustainability) and the Federation of Canadian Municipalities (FCM) to their member municipalities. Two reminder emails were sent to the members after the first round of data collection (Chen, 2013). 43 responses were collected from 37 communities (Chen, 2013).

Questions in this international survey were tested in the pilot study by Chen (2013) and then modified through member feedback (MacDonald, 2016). The survey contains four parts (A, B C, and D). Most questions in part B, C, and D are closed-ended with choices from a five-point continuous scale ranging from ‘disagree’=1 to ‘agree’=5. Part A concerns demographic information. Questions were asked on such points as to the size of the community, participants’ organization type, and basic information on the community’s sustainability plan. In part B, governance and operation, questions were divided into five sections: Oversight Structure; Governance; Evaluation and Control; Partner Engagement Mechanism; and Communication. The five key structural features developed in Clarke (2011) serve as the foundation for the questions on collaborative structures in part B. The survey questions in part B were developed on a Likert scale. In part C, plan outcomes were measured by community’s actions taken in each topic area of SCPs using proxy and by sustainability progress using progress made towards the goals. Questions are based on the sustainable indicator domains proposed by Taylor (2012) and the proactive environmental strategies model developed by Roome (1992), in which participants were asked to rate the approach of SCPs of their communities in the following proactivity continuum: compliance, beyond compliance, proactive, and leading edge. Finally, in part D, questions were asked regarding information on government’s money variables, such as the number of its full-time employees and volunteers, and money saved and attracted through the implementation of the SCPs.

### **3.2 Database Details**

To test the relationship between targeted variables, the study uses a quantitative approach. This research project was approved by the Office of Research Ethics. Ethic clearance (in Appendix II) was acquired for the author to view the database’s raw data. The database collected through the international survey conducted by ICLEI and Project LA21 (at the University of Waterloo) were analyzed. In 2014 when the survey was dispensed, 984 communities around the world (ICLEI members) were invited to fill out the survey, among which 787 communities use at least one official language from the four languages offered in the survey (Korean, English, Spanish and French). Therefore, communities speaking one of the four languages serve as the population of the survey. 106 communities filled out the survey in total, resulting in a 13.47% response rate.

Data collection of this study experienced two stages. In stage one, surveys were sent through an online platform, Fluidsurvey, by ICLEI Global and regional offices. In stage two, 78 communities were communicated through Sustainability tools for Assessing & Rating (STAR) community database, a selection tool based on two criteria: Having a SCP; and engaging at least five partners for the plan (MacDonald, 2016).

Purpose sampling/expert sampling was applied in the original data collection (MacDonald, 2016). The target participants are ICLEI global members who are often direct contacts from the local government, and experts in their municipality or region's sustainability initiatives (MacDonald, 2016). Since in purpose sampling the participants are often selected for the purpose of the study, this type of sampling falls under nonprobability sampling (i.e., each participant from the entire population has an unequal chance in being selected) (Etikan, Musa, & Alkassim, 2016). Due to the lack of representatives in the nonprobability sampling, this technique is normally applied with a large population when randomization is almost impossible due to limited time and resources. Therefore, in this case, findings cannot be generalized to the entire population (Etikan et al., 2016).

### **3.3 Measure Development**

#### **3.3.1 Independent Variables**

The three independent variables, contributed resources internally, contributed resources for partnership structure, and contributed resources for community-wide initiatives (e.g., partners) were measured on a five-point Likert scale ranging from 1= "None at all" to 5 = "A significant amount" to evaluate the amount of money. The three variables are measured by three items in the survey accordingly, and they are "contributed resources to the internal sustainability initiatives (e.g., sustainability offices and staff, sustainability programs and training etc.)", "contributed financial support to the governance and/or administrative activities (e.g., communication, monitoring and reporting, and partner engagement)", and "contributed financial support to community-wide sustainability initiatives (e.g. collaborative projects)".

### **3.3.2 Moderation Variables**

All moderation variables were measured on a five-point Likert scale ranging from 1= “Disagree” to 5 =” Agree”. The detailed results of variable grouping and Cronbach’s alpha of each variable are shown later in the results chapter.

Number of partners was measured through an eight-point scale, ranging from 1= “0”, 2= “1-5”, 3= “6-10”, 4= “11-20”, 5= “21-50”, 6= “51-99”, 7= “100+” and the 8<sup>th</sup> point is “not sure”. All the responses with the 8<sup>th</sup> point are substituted by the scale that are most frequently answered to make the continuum valid. Since point 2 takes 25.2% of all the responses this point is most representative of the sample population. Therefore, the continuum of this question is from 1 to 7.

The variable “oversight by local government” is measured by one item “the local government”. Collaborative oversight contains four items, and a sample item is “an arm’s length organization (e.g., non-governmental organization)”. Partner engagement mechanism contains four items, and a sample item is “encourage partner organizations to engage in community sustainability initiatives”. Cronbach’s alpha for this measure is 0.862.

### **3.3.3 Dependent Variables**

Plan actions is assessed as dependent variable through the proactivity continuum developed based on Roome (1992), Lin (2012). The 16 items of this measure are adapted from the 16 topic areas in Taylor (2012). The continuum consists four levels, 1= “Compliance”, “Beyond Compliance (internal)”, “Proactive (community-wide)”, and “Leading Edge”. Cronbach’s alpha for this measure is 0.980.

Plan progress is assessed as dependent variable and measured by the progress towards the goals. The 16 items of this measure are adapted from the 16 topic areas in Taylor (2012). A five-point instrument was developed, 1= “Did not meet goals at all”, 2= “Met some goals”, 3= “Met expected goals”, 4= “Exceeded goals”, and 5= “Greatly exceeded goals”. Cronbach’s alpha for this measure is 0.548.

### **3.3.4 Mediation Variable**

Community-wide actions is assessed as a mediator, using the same data collected for plan actions. Cronbach's alpha for this measure is 0.980.

## **3.4 Data Analysis**

This study employed SPSS software to conduct statistical analysis, aiming to test how different variables influence the plan outcomes separately and collectively. The data analysis involved two steps: ordinary least square, and Hayes' PROCESS. Collaborative structure variables and government's 'money' variables were treated as independent variables, and plan outcomes were regarded as dependent variables. The five partner-focused structure variables (number of partners, oversight by local government, collaborative oversight, partner engagement mechanism, and community-wide actions) and the plan outcome variables were examined through exploratory data analysis for data regrouping.

Treating ordinal data as interval has always been controversial, with the debate mainly focusing on whether the Likert scale can be used for parametric tests, such as ANOVA and regression. Such a method belongs to the misuse of data according to a group of researchers (Allen & Seaman, 2007; Jamieson, 2004; Knapp, 1990). The most popular article to represent the arguments is written by Jamieson (2004), which became the most downloaded article of the year 2004 (Norman, 2010). It is common for the Likert scale to have skewed or polarised data to reflect respondents' attitudes (Jamieson, 2004). Non-parametric tests should be applied for Likert ordinal scales due to the non-normal nature of the data, since parameters such as mean and standard deviations are invalid (Allen & Seaman, 2007; Jamieson, 2004). It has been argued that parametric statistical tests are generally more powerful than nonparametric ones, and require less sample size to detect the difference between two groups (Allen & Seaman, 2007; Sullivan & Artino, 2013). The concerns pertaining to the loss of statistical power to detect interaction effects in moderated regression analysis are also expressed by researchers, and the main critics are that the 5-point Likert scale can be too coarse to capture the latent responses, so respondents have to reduce the response to choose an answer (Russell & Bobko, 1992). Such information loss can

increase the effect size of moderated regression to an average 93% based on research results (Russell & Bobko, 1992).

Despite the controversies, many studies increasingly provide the theoretical background and empirical evidence to justify that parametric statistics can be used for Likert scales, even in the case of non-normal distributed data (Allen & Seaman, 2007; Carifio & Perla, 2007; Edgell & Noon, 1984; Norman, 2010; Rhemtulla, Brosseau-Liard, & Savalei, 2012). To understand and resolve the controversies, it is important to first start with the concept of Likert scales. The Likert scale is originally designed to capture the latent continuous variable of respondents' attitudes or views; therefore, an interval level is considered to better reflect the meaning of the latent factor (Allen & Seaman, 2007).

Another common misconception is treating the Likert scale the same as Likert type (Boone & Boone, 2012). For Likert type, questions are not designed to combine the answers to the composite scale, whereas for the Likert scale, questions are designed to measure a character, with the intention of combining answers into a variable (Boone & Boone, 2012).

Correspondingly, Likert types should be treated as ordinal scales, and Likert scales should be analyzed as interval scales (Boone & Boone, 2012). The data in the database uses the Likert scale.

For many researchers, the misconception of the Likert scale also generates from a "lack of first-hand familiarity and understanding of primary sources" (p.106), as pointed out by Carifio and Perla (2007). The use of empirical evidence is inevitable in such an argument. Through statistical tests, Carifio and Perla proved that a Likert scale cannot only be treated as interval data, but also be tested through F-test, even when it is moderately skewed due to the strong robustness of an F-test (Carifio & Perla, 2007). Furthermore, Dr. Geoff Norman, one of the well-known leaders in health science research methodology, provided a systematic review in response to the current controversies. He argued that while researchers critique that parametric tests should not be employed for ordinal data, many of them fail to account for the robustness of the tests (Norman, 2010). Norman (2010) also pointed out that a non-parametric test such as ANOVA will only be extremely inaccurate when the data is dichotomizing (i.e., fall into two categories only)

regardless of the sample size (Norman, 2010). He also found that the Pearson correlation is very robust with nonnormality, since it generates almost identical results as the Spearman correlation, the test normally used for non-normal data (Norman, 2010). The result corresponds with Edgell & Noon (1984), who drew the same conclusion decades ago arguing that the Pearson coefficient is very robust to the violation of the assumption of normality.

The same holds for confirmatory factor analysis (Rhemtulla et al., 2012). Even though the method holds assumptions for non-normal and continuous data, a simulation study has shown that it can produce valid data with five categories and symmetric category thresholds (Rhemtulla et al., 2012).

In addition to studies addressing the arguments, increasingly more journal articles published using parametric tests for Likert Scales also provided well-grounded evidence for the validity of such a method. In a study concerning small- and medium-sized enterprises, published in *Strategic Management Journal*, the data was also collected from a survey using a five-point Likert scale, followed by the employment of a t-test and Ordinary Least Square for relationship testing and model building (Arend, 2006). In another article on professional partnerships, published in the journal *Human Relations*, the research team used a survey-based data collection method with a seven-category Likert Scale. Parametric tests such as factor analysis was also applied to the data to examine the discriminant validity (Lander, Heugens, & van Oosterhout, 2017).

Based on the nature of the data collected, the majority of the responses are left skewed instead of normally distributed, indicating that the number of neutral to positive feedback is greater than the negative feedback. Log-transformation is the most widely applied technique to deal with skewed data. The transformed data share less in common with the original data, not only making the original data more difficult to interpret, but also generating inaccurate estimation of the mean of the original data (Feng et al., 2014). Therefore, original data was used to do the statistical analysis instead of transforming it. As argued above, the tests can handle skewed data due to their robustness.

As one of the most frequently applied statistical analyses, simple linear regression is commonly applied to test whether a relationship between two variables can be established (Sandilands, 2014). It was conducted to find the equation for the best possible straight line for the relationship between each pair of variables (the coefficient of the model showing the strength of the relationship) (Sandilands, 2014). The results with P value < 0.05 (95% confidence interval) indicate that the coefficient is significant; therefore, the relationship between the two variables does exist.

The following hypotheses are tested through Ordinary Least Square/Simple Linear Regression:

*Hypothesis 1a: Contributed resources internally have a positive effect on plan actions.*

*Hypothesis 1b: Contributed resources internally have a positive effect on plan progress.*

*Hypothesis 2a: Contributed resources on partnership structure have a positive effect on plan actions.*

*Hypothesis 2b: Contributed resources on partnership structure have a positive effect on plan progress.*

*Hypothesis 3a: Contributed resources community-wide have a positive effect on plan actions.*

*Hypothesis 3b: Contributed resources community-wide have a positive effect on plan progress.*

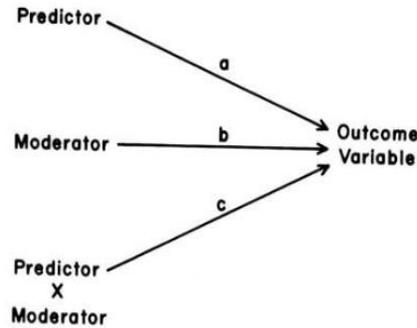
Mediator shows the relationship between the independent and dependent variables, and its presence decreases the relationship, even to zero in some cases (Baron & Kenny, 1986).

Moderator is the third variable that changes the strength (can increase or decrease the strength) or direction of the relationship between the independent and dependent variables. Unlike mediator, moderator does not explain the reason for the relationship (Baron & Kenny, 1986).

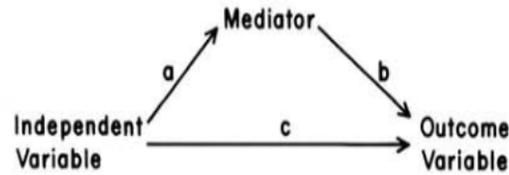
Therefore, moderator explains the conditions of when the relationship holds, whereas mediator speaks to why such conditions occur.

**Figure 4: Diagrams of Moderator and Mediator**

**Diagram 1**



**Diagram 2**



In Diagram1, the presence of moderator is validated if path c is significant. In Diagram2, the variations in independent variables is justified by the variations in mediator, and the variations in mediator is justified by the variations in outcome variable (Baron & Kenny, 1986, p. 1174& p.1176)

Hayes' PROCESS tool was employed in testing mediation and moderation; the tool uses 1000 bootstrap samples as the default (Field, 2008). Bootstrapping is a resampling technique used to assess the confidence or precision of the current sample representing the population (Hayes, 2013). By resampling from the original sample, a new bootstrap population is created through simulation. Then, a new sample, the same size as the original sample, is randomly generated from the bootstrap population. The process can be repeated thousands of times (Hayes, 2013).

Hayes' PROCESS tool was chosen over Sobel's test for moderation and mediation due to its strong statistical power (Zhao, Lynch, & Chen, 2010). The bootstrap test is also more rigorous and powerful in indirect effect of predictor and moderator (Zhao et al., 2010). The structure equation model (SEM) is known for its ability to explain measurement errors of a model with latent variables (Hayes, Montoya, & Rockwood, 2017). However, without the presence of latent variables, the differences produced in the results of Hayes' PROCESS tool and structure equation model (SEM) can be "trivial" (Hayes et al., 2017, p. 78). Since the survey was designed with the intention to measure certain variables through questions, the focus of dataset cleaning is on reducing the number of observed variables, rather than capturing the latent variables.

Therefore, the results of this study produced by PROCESS tool are as significant as the SEM.

### **3.5 Reliability / Validity**

The reliability and validity of the data were examined through a series of tests. Reliability indicates the consistency of the measurement results, whereas validity represents the accuracy of the results (Golafshani, 2003). First, at the data screening stage, data were examined for missing values, unengaged responses, and outliers, then the data were systematically tested for multicollinearity, normality, consistency, and cohesiveness to prepare for hypothesis testing. A post-hoc test was also conducted to evaluate the level of common method bias.

Missing answers from the respondents were marked as '99' in SPSS as a way to represent the missing value (Field, 2008). The missing data in the model were handled with the Listwise Deletion Method in SPSS. The method excludes cases with missing data on the variables being analyzed (Field, 2008). Past literature has indicated concerns about losing statistical power due to reduced sample size (Roth, 2006). However, since linear regressions were conducted in the study, this method ensures the same sample size for each variable measured in the regression model. Another concern brought up about missing data in the literature is that the Listwise Deletion Method only yields unbiased estimates when the missing data are missing completely at random (MCAR), that is, whether the missing data is dependent on the variables in the dataset (Little, 1988). The missing data were tested through Little's MCAR test. The p-value of the test is 0.148, indicating that the null hypothesis cannot be rejected; therefore, the data were missing completely at random (Little, 1988).

The standard deviation of each case (identified by the variance of individual participant responses) was calculated to detect unengaged responses. A standard deviation close to 0 indicates the absence of variation in answers, indicating unengaged responses in choosing answers (Field, 2008). Each case had a standard deviation above 1; therefore, no cases were deleted.

Outliers were also examined on two continuous variables through boxplots (number of full-time employees, and volunteers designated to local government's sustainability initiatives) based on the questions from the international survey (Field, 2008). No unusual outliers were identified through boxplot.

The multicollinearity of the data was examined by the Variable inflation factor (VIF) test and the correlation matrix of different questions. A VIF of 5 to 10 reflects a significant correlation to be aware of to avoid the item's influence on the validity of the regression analysis (Akinwande, Dikko, & Samson, 2015; O'Brien, 2007). Items with VIF larger than 10 are deemed multilinear and are removed from the corresponding variables (or combined together by taking the value of the mean) (Akinwande et al., 2015; O'Brien, 2007). A cutoff value of 0.8 was used for the correlation matrix to determine the multicollinearity (Vatcheva, Lee, McCormick, & Rahbar, 2016). No item was dropped from the variables due to multicollinearity.

The Shapiro-Wilk test was used to test the normality of samples. It has been regarded as the best method for testing normality by some researchers, due to its high statistical power (Ghasemi & Zahediasl, 2012). All the variables show significant p-values ( $p < 0.01$ ), indicating that the data is not normal. However, the results are expected to show that the data are not normal, since it corresponds to the nature of the Likert scale. As discussed above, data analysis conducted in this thesis also work under the condition of data being not normal.

The consistency and reliability of the data was assessed by Cronbach's alpha method. The suggested value is between 0.70 to 0.95 (Tavakol & Dennick, 2011). Values higher than 0.90 may result from the highly correlated items and redundancy of the data (Streiner, 2003; Tavakol & Dennick, 2011).

Principal component analysis (PCA) was performed to reduce the dimension of the data. PCA has the ability to transform the correlated observed data into a smaller number of uncorrelated data (Abdi & Williams, 2010). The survey is designed and constructed with the clear intention to capture certain variables based on questions. Since the purpose is to reduce the dimensionality of the observed data, instead of understanding the underlying construct of the data and identifying the latent variables, PCA was chosen over factor analysis (Abdi & Williams, 2010; Field, 2008).

Kaiser-Meyer-Olkin Measure of Sampling Adequacy was first conducted to determine whether the data were suitable for PCA. A value above 0.7 is commonly accepted (Field, 2008).

There are two types of rotations in PCA: orthogonal rotation and oblique rotation (Field, 2008). Oblique rotation is commonly used when underlying factors can possibly be correlated with each other (Conway & Huffcutt, 2003; Field, 2008). Since factors might be correlated in this study (for example, partner engagement might be correlated with the number of partners), direct oblimin factor rotation was selected as the commonly used method for oblique rotation. The generally accepted cutoff value for factor loading ranges from 0.4 to 0.7 (Costello & Osborne, 2005; Matsunaga, 2010). Smaller loadings are allowed for a larger sampling size (Yong & Pearce, 2013). A study with a 300-sample size should have at least 0.32 for loading value to be significant (Yong & Pearce, 2013). This study takes 0.5 as the cutoff value. Items with low communalities (below 0.5), and with lowest value/cross loadings on pattern matrix were separated as a new variable (MacCallum, Widaman, Zhang, & Hong, 1999). Low communality indicates that either the item cannot be well explained by the factor, or that an additional factor should be explored (Costello & Osborne, 2005).

Cross-loading happens when an item has a loading of 0.32 or higher at two or more factors (Costello & Osborne, 2005). In the case of cross-loadings, both the highest and second highest loading scores were examined based on 0.6/0.3 rules as one of the widely accepted methods (Henson & Roberts, 2016). Items with a highest score larger than 0.6 and with a lowest score lower than 0.3 are retained (Henson & Roberts, 2016). This approach is considered as a more rigorous one than the approach of using a single cut-off value for the highest loading.

### **3.6 Limitations**

The limitations of this study are: generalization of the study; differences among the communities being studied. The data of the international survey was collected from members of ICLEI-Local Governments for Sustainability (ICLEI Global). To save time, participants are the contacts from local governments, so the samples of this study are not randomized (MacDonald, 2016). Since the sampling technique is not random sampling, the study may not be able to be generalized to the communities which are not ICLEI members. In addition, each community studied in the survey has its own geographic location, population, and other unique characteristics. Since only certain variables are studied in this study, the relationships may be influenced by irrelevant variables due to the difference in communities.

Multiple regression was employed in this study to determine if the demographic variables, the characteristics of the plans (population and continent), and the results show that plan outcomes are not influenced by the two control variables.

What is more, the framework of this study works under specific conditions. One requirement is that a deliberate plan is formulated through the partnership as part of collaborative strategic management (Clarke & Fuller, 2010). Therefore, this study cannot be generalized to the whole population due to its unique samples and sampling methods.

Though the quantitative tools to analyze the secondary data are effective in answering the research questions, limitations and boundaries do exist in this study. From the aspect of the survey, the bias created by the relatively low response rate from some regions of the world are needed to be considered carefully. Response rates are usually calculated by dividing the number of usable responses returned (completed surveys) by the total number of participants contacted for the survey. Online surveys usually show a lower response rate than paper-based surveys due to the lack of face-to-face administration (Nulty, 2008). The most significant concern about low response rate is the representativeness of the group, which usually results from sample bias (Cuddeback, Wilson, Orme, & Combs-Orme, 2004). Sample bias can be introduced due to the systematic differences between respondents and non-respondents (Nulty, 2008). In this study, respondents may be more aware of sustainability issues, or they are more well-trained by their communities.

Currently, the most prevalent methods for increasing the response rate of online surveys are sending email reminders and providing incentives such as rewards (Nulty, 2008). These measures were already taken to boost the response rates for the international survey (MacDonald, 2016). Efforts have been made to increase the non-response rate of the survey, which are financial incentive, extended survey time, and contacting participants through different channels. \$10 iTunes or Amazon gift cards were attached at the end of the survey as a reward. Participants were contacted via emails, tweets, newsletters, and phone calls (MacDonald, 2016).

### 3.7 Summary

In summary, this chapter introduced the research design and data collection of the international survey. The survey consists of four parts, and the database used in this study belongs to part of the survey. Purpose sampling technique was applied for the data collection, and participants were contacted by ICLEI Global and regional offices.

The chapter also justifies the choice of using the Likert scale as a continuum. Though studies argue that parametric tests cannot be performed for data collected using a Likert scale since the data is skewed, a growing body of literature provides evidence to support such a choice. First, unlike Likert type, the Likert scale is originally designed to capture the latent continuous variable of respondents' attitudes or views. Furthermore, the robustness of the parametric tests (ANOVA & factor analysis) are strong enough even with non-normal data.

Ordinary least square was chosen to explain the one-to-one relationship between money variables and plan outcomes. Hayes' PROCESS tool was applied for mediation and moderation tests since it produced almost identical results as the SEM but was easier to perform. Table 4 summarizes the tests performed in the data screening stage for reliability and validity:

**Table 4: Tests for Data Screening**

<b>Data Screening</b>	<b>Tests</b>	<b>Cut-off point</b>	<b>Results</b>
Missing values	Little's MCAR test	P-value > 0.05	P=0.148, missing at random
Unengaged responses	Standard Deviation of each respondent	Cannot be close to 0	SD >1, no case was deleted
Normality-test	Shapiro-Wilk Test	P-value > 0.05 to be normal	No item was dropped
Multicollinearity	Correlation Matrix & Variance Inflation Factor (VIF)	5-10, correlation > 0.8	Data skewed
Sampling adequacy for PCA	KMO test	>0.7	0.789, can perform PCA

## **CHAPTER 4: RESULTS**

The following chapter presents the results from the principal component analysis (PCA), ordinary least square, and Hayes' PROCESS. First, items are grouped into different variables based on the results of the PCA, and the reliability of the grouping is examined through Cronbach's Alpha. The results of the one-to-one relationship between money variables and plan outcomes are presented next, followed by the moderations and mediations of the contributed resources, saving on actions, and attracted resources accordingly. Each of the subsections begins with the non-significant results, followed by detailed explanations of the significant results.

### **4.1 Principal Component Analysis of Items**

The PCA is performed to reduce the dimension of observed items and form new groupings. Plan Actions (PA) and Plan Progress (PP) are not tested for variable grouping. In the survey, each topic area is one question for participants to rate the actions and progress. However, communities only have action plans with part of the 16 topic areas, so not all questions are answered. Sample size will be too small to be presentative after Listwise deletion to perform the PCA. Therefore, all 16 items are kept in the variable of PA and PP for the integrity of the question, since each of them represents a unique topic.

Table 5 shows the results of the PCA (see Appendix VI). The Kaiser-Meyer-Olkin measure verifies the sampling adequacy for the analysis as  $KMO = 0.789 (>0.7)$ , indicating that the PCA can be performed on the data (Field, 2008). Comm. stands for communalities. The results, all  $>0.5$ , indicate that all items present precise measurements of what they intend to measure. The results of the pattern matrix of three factors are presented. Factor 1 represents Partner Engagement Mechanism (PE); Factor 2 represents Oversight Structure of Partners (OP); and Factor 3 represents Oversight Structure of Local Government (OL). Clear grouping patterns are shown through the pattern matrix. Based on the results of the PCA, items are clustered into three main factors with item "the local government" serving as a single-item variable. The item "other processes that engage partners" (O5) was counted as cross-loading based on 0.6/0.3 rules (Henson & Roberts, 2016). However, the issue is solved after separating the local government as a new variable.

**Table 5: Results of Principal Component Analysis (PCA)**

<b>Items</b>	<b>Comm.</b>	<b>PE</b>	<b>OP</b>	<b>OL</b>
an arm's length organization (O1)	.699		.789	
a committee or board made up of partners (O2)	.508		.601	
issue-based task force made up of partners (O3)	.589		.794	
the local government (O4)	.768			.831
other processes that engage partners (O5)	.743		.440	.697
allows for multiple avenues for partners to contribute (PE1)	.738	.836		
encourage partner organizations to engage in community sustainability initiatives (PE2)	.817	.896		
encourage partner organizations to implement internal sustainability initiatives (PE3)	.730	.823		
ensure all the organizations that need to be members of the partnership are members (PE4)	.585	.755		
<b>Kaiser-Meyer-Olkin Measure of Sampling Adequacy</b>	<b>0.789</b>			

Table 6 presents the results for variable grouping and Cronbach's alpha for the consistency of new groupings (Tavakol & Dennick, 2011). The common acceptable value of Cronbach's alpha is between 0.70 and 0.95 (Tavakol & Dennick, 2011). However, alpha values falling between 0.45 and 0.98 can be considered as "sufficient" (Taber, 2017). A high value of alpha (0.980) occurs for Actions Variables, whereas a relative low value occurs for Progress (0.548).

**Table 6: Table of Variables and Cronbach's Alpha**

<b>Variables</b>	<b># of items</b>	<b>Item names</b>	<b>Cronbach's alpha</b>
Number of partners (NP)	1		-
Oversight by local government (OL)	1	O4	-
Collaborative oversight (OP)	4	O1, O2, O3, O5	0.672
Partner engagement mechanism (PE)	4	PE1-PE4	0.862
Plan Actions (PA)	16		0.980
Plan Progress (PP)	16		0.548

## 4.2 One-to-One Relationships between Money Variables and Plan Outcomes

The results of the one-to-one relationships between money variables and plan outcomes are presented in this section. Table 7 summarizes the overall outputs of Ordinary Least Square tests. The b values represent the strength of the relationship between independent and dependent variables. R-square and F value show the proportion of variances explained by the model and how good the model is. The null hypothesis is rejected with a significant P-value ( $< 0.05$ ). Hypotheses marked with \* indicate significant regressions. Results are discussed further in this section.

**Table 7: Ordinary Least Square Results for One-to-One Relationships Testing**

	$b_0$	$b_1$	R - squared ( $R^2$ )	F value(F)	Degrees of Freedom(Df)	P-value
<i>Hypothesis 1a</i>	1.975	0.116	0.031	2.624	(1, 83)	0.109
<i>Hypothesis 1b*</i>	1.944	0.162	0.104	9.707	(1,84)	0.003
<i>Hypothesis 2a</i>	1.926	0.129	0.038	3.333	(1,84)	0.071
<i>Hypothesis 2b*</i>	2.104	0.110	0.051	4.523	(1,85)	0.036
<i>Hypothesis 3a*</i>	1.735	0.188	0.078	6.918	(1,82)	0.010
<i>Hypothesis 3b</i>	2.128	0.102	0.041	3.512	(1,83)	0.064

### 4.2.1 Non-Significant Regressions

Ordinary least squares were calculated to predict plan actions based on contributed resources internally (Hypothesis 1a) and contributed resources on structure (Hypothesis 2a). Relationship was also tested between plan progress and contributed resources community-wide (Hypothesis 3b). According to Table 7, non-significant relationships are shown for these hypotheses ( $p > 0.05$ ).

### 4.2.2 Significant Regressions

As shown in Table 7, Hypotheses 1b, 2b, 3a marked with \* represent significant regressions. Detailed outputs are reported in the following paragraphs. The output for the results of this statistical test can also be found in Appendix VII.

***Hypothesis 1b:*** *Contributed resources internally have a positive effect on plan progress.*

A simple linear regression was calculated to predict plan progress based on contributed resources internally. A significant regression equation was found ( $F(1, 84) = 1.649$ ,  $p < 0.01$ ) with  $R^2 = 0.104$ . The  $R^2$  value implies that the 10.4% of variation in plan progress can be explained by the model containing only contributed resources on partnership structure.

The equation of the hypothesis is:  $\text{Plan progress} = 1.944 + 0.162 * \text{Contributed resources internally}$ . The slope coefficient is 0.162, indicating each one unit increase in contributed resources internally will result in a 0.162-unit increase in plan progress.

***Hypothesis 2b:*** *Contributed resources on partnership structure have a positive effect on plan progress.*

A simple linear regression was calculated to predict plan progress based on contributed resources on partnership structure. A significant regression equation was found ( $F(1, 85) = 4.523$ ,  $p < 0.05$ ) with  $R^2 = 0.225$ . The  $R^2$  value implies that the 22.5% of variation in plan progress can be explained by the model containing only contributed resources on structure.

The equation of the hypothesis is:  $\text{Plan progress} = 2.104 + 0.110 * \text{Contributed resources on structure}$ . The slope coefficient is 0.110, indicating each one unit increase in contributed resources on structure will result in a 0.110-unit increase in plan progress.

***Hypothesis 3a:*** *Contributed resources community-wide have a positive effect on plan actions.*

A simple linear regression was calculated to predict plan actions based on contributed resources community-wide. A significant regression equation was found ( $F(1, 82) = 6.918$ ,  $p = 0.01$ ) with  $R^2 = 0.078$ . The  $R^2$  value implies that 7.8 % of variation in plan actions can be explained by the model containing only contributed resources community-wide.

The equation of the hypothesis is:  $\text{Plan actions} = 1.735 + 0.188 * \text{Contributed resources community-wide}$ . The slope coefficient is 0.188, indicating each one unit increase in contributed resources community-wide will result in a 0.188-unit increase in plan actions.

### 4.3 Moderations for Contributed Resources

The results of the moderation effects for contributed resources internally, on partnership structure, and community-wide are presented in this section. Hypotheses with non-significant moderation effects are presented first, followed by significant moderators with a detailed analysis of the outputs.

#### 4.3.1 Non-Significant Moderators for Contributed Resources

Table 8 shows the results of the overall model summary of the non-significant moderators. C1= contributed resources internally, C2= contributed resources on partnership structure, C3= contributed resources community-wide, PA=plan actions, PP= plan progress. P values ( $>0.05$ ) indicate that the overall relationship models are invalid. Hypotheses with P values ( $<0.05$  but marked with \*) represent valid overall models, but moderation effects fail to show up in these models.

**Table 8: Non-Significant Moderators.**

Independent variables	Moderators	Dependent variables	R-square	F value	P-value	Hypotheses
C1	Collaborative oversight	PA	0.046	$F(3, 76) = 1.501$	$>0.05$	1c
C2		PA	0.072	$F(3, 76) = 2.660$	$>0.05$	2c
		PP	0.085	$F(3, 77) = 2.660$	$<0.01$	2d*
C3		PA	0.079	$F(3, 79) = 2.203$	$>0.05$	3c
		PP	0.047	$F(3, 75) = 3.058$	$<0.05$	3d*
C1	Oversight by local government	PA	0.066	$F(3, 77) = 1.961$	$>0.05$	1g
		PP	0.107	$F(3, 78) = 2.466$	$>0.05$	1h
C2		PA	0.068	$F(3, 78) = 2.237$	$>0.05$	2g
		PP	0.076	$F(3, 79) = 2.024$	$>0.05$	2h
C3		PA	0.101	$F(3, 76) = 2.495$	$>0.05$	3g
		PP	0.053	$F(3, 77) = 1.408$	$>0.05$	3h
C1	Number of partners	PA	0.046	$F(3, 81) = 1.015$	$>0.05$	1k
		PP	0.126	$F(3, 82) = 28.01$	$<0.01$	1l*
C2		PA	0.062	$F(3, 82) = 1.165$	$>0.05$	2k

		<i>PP</i>	0.087	$F(3, 83) = 7.450$	$<0.01$	2l*
<i>C3</i>		<i>PA</i>	0.102	$F(3, 80) = 2.720$	0.05	3k*
		<i>PP</i>	0.079	$F(3, 81) = 3.465$	0.02	3l*
<i>C1</i>	<b>Partner engagement mechanism</b>	<i>PA</i>	0.083	$F(3, 80) = 3.500$	0.05	1o
		<i>PP</i>	0.112	$F(3, 81) = 7.994$	0.01	1p
<i>C1</i>	<b>Community-wide actions</b>	<i>PP</i>	0.162	$F(3, 80) = 4.272$	$<0.05$	1s*
<i>C2</i>		<i>PP</i>	0.129	$F(3, 81) = 2.886$	$<0.05$	2s*
<i>C3</i>		<i>PP</i>	0.164	$F(3, 79) = 3.692$	$<0.05$	3s*

Further analysis is conducted with Hypotheses and the valid overall model (marked with \*). As shown in Table 9, though the model holds, all 95% CIs of b contain 0, indicating the possibility that the coefficient of interaction term is 0. All the P-values in the table are also greater than 0.05. Moderation effects fail to show up by significant interaction terms since the interaction terms are invalid.

**Table 9: Hypotheses with Valid Overall Model but No Moderation Effects**

Hypotheses	b	t	P-value	95% CI <sup>2</sup>
2d*	-0.069	-1.479	0.143	[-0.162, 0.024]
3d*	-0.076	-1.654	0.102	[-0.168, 0.016]
1l*	0.004	0.598	0.552	[-0.008, 0.015]
2l*	0.002	0.090	0.929	[-0.043, 0.047]
3k*	-0.038	-1.070	0.288	[-0.108, 0.033]
3l*	-0.015	-0.898	0.372	[-0.047, 0.018]
1o*	0.172	1.863	0.066	[-0.012, 0.356]
1p*	-0.072	-1.049	0.297	[-0.207, 0.064]
1s*	-0.005	-0.047	0.963	[-0.222, 0.211]
2s*	0.085	0.900	0.371	[-0.103, 0.274]
3s*	0.143	1.311	0.194	[-0.074, 0.360]

#### 4.3.2 Significant Moderators for Contributed Resources

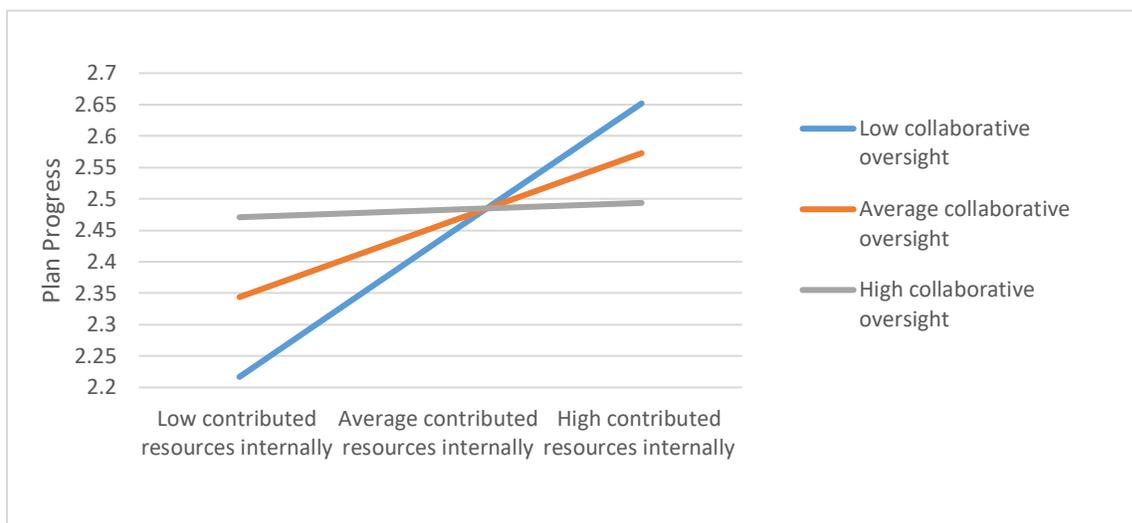
Significant moderation effects showed up for Hypotheses 1d, 2o, 2p, 3o, 3p. Detailed outputs are reported in the following paragraphs. The output for the results of this statistical test can also be found in Appendix VIII.

<sup>2</sup> 95% CI stands for confidence interval, and indicates that there is a 95% possibility that the interval contains the true mean of population.

**Hypothesis 1d:** Collaborative oversight strengthens the positive relationship between contributed resources internally and plan progress.

First, the overall model is valid with  $F(3, 77) = 4.91, p < 0.01, R^2 = 0.108$ . Moderation is shown by a significant interaction effect, with  $b = -0.12, p < 0.05, 95\% \text{ CI} = [-0.22, -0.02]$ , indicating that the relationship between contributed resources internally and plan progress is moderated by collaborative oversight.

**Figure 5: Interaction Effect of Contributed Resources Internally and Collaborative Oversight**



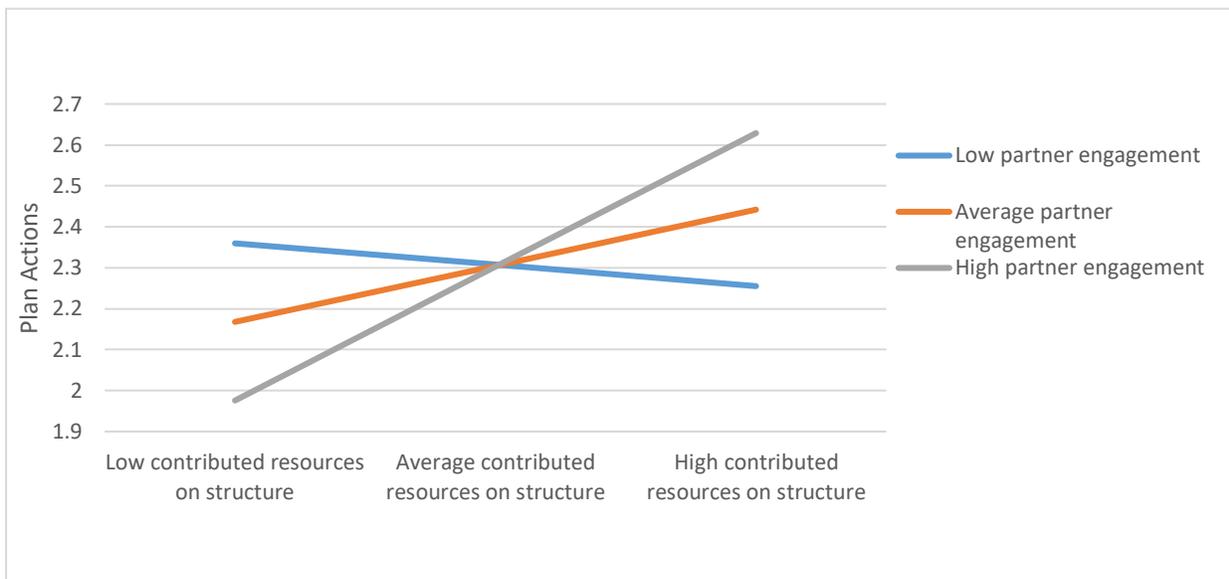
1. When the level of collaborative oversight is low, there is a significant positive relationship between contributed resources internally and plan progress,  $b = 0.210, 95\% \text{ CI} [0.079, 0.342], t = 3.182, p < 0.01$ .
2. At the average level of collaborative oversight, there is a significant positive relationship between contributed resources internally and plan progress,  $b = 0.111, 95\% \text{ CI} [0.002, 0.220], t = 2.018, p < 0.05$ .
3. When the level of collaborative oversight is high, there is a non-significant positive relationship between contributed resources internally and plan progress,  $b = 0.011, 95\% \text{ CI} [-0.129, 0.151], t = 0.157, p > 0.05$ .

Therefore, at low and mean level, the collaborative oversight strengthens the positive relationship between contributed resources internally and plan progress.

**Hypothesis 2o:** *Partner engagement mechanism strengthens the positive relationship between contributed resources on structure and plan actions.*

First, the overall model is valid with  $F(3, 81) = 4.540, p < 0.01, R^2 = 0.107$ . Moderation is shown by a significant interaction effect, with  $b = 0.193, p < 0.05, t = 2.451, 95\% \text{ CI} [0.036, 0.350]$ , indicating that the relationship between contributed resources on structure and plan actions is moderated by partner engagement mechanism.

**Figure 6: Interaction Effect of Contributed Resources on Structure and Partner Engagement Mechanism**



1. When the level of partner engagement mechanism is low, there is a non-significant negative relationship between contributed resources on partnership structure and plan actions,  $b = -.047, 95\% \text{ CI} [-0.257, 0.162], t = -0.447, p > 0.05$ .
2. At the average level of partner engagement mechanism, there is a non-significant positive relationship between contributed resources on partnership structure and plan actions,  $b = 0.124, 95\% \text{ CI} [-0.007, 0.254], t = 1.884, p > 0.05$ .

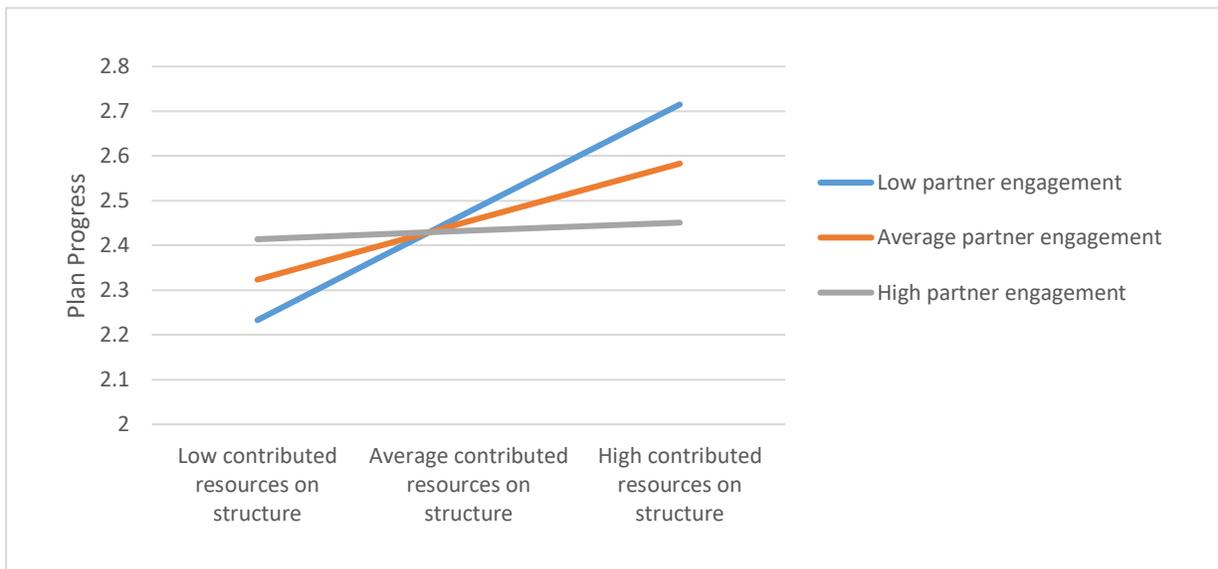
3. When the level of partner engagement mechanism is high, there is a non-significant positive relationship between contributed resources on partnership structure and plan actions,  $b= 0.294$ , 95% CI [0.125, 0.463],  $t= 3.466$ ,  $p<0.01$ .

Therefore, at a high level, partner engagement mechanism strengthens the positive relationship between contributed resources on partnership structure and plan actions.

**Hypothesis 2p:** *Partner engagement mechanism strengthens the positive relationship between contributed resources on structure and plan progress.*

First, the overall model is valid with  $F(3, 82) = 8.209$ ,  $p<0.01$ ,  $R^2= 0.094$ . Moderation is shown by a significant interaction effect, with  $b= -0.114$ ,  $t= -2.618$ ,  $p=0.01$ , 95% CI is [-0.201, -0.028], indicating that the relationship between contributed resources on partnership structure and plan progress is moderated by partner engagement mechanism.

**Figure 7: Interaction Effect of Contributed Resources on Structure and Partner Engagement Mechanism**



1. When the level of partner engagement mechanism is low, there is a significant positive relationship between contributed resources on partnership structure and plan progress,  $b=0.217$ ,

95% CI [0.122, 0.313],  $t= 4.529$ ,  $p< 0.01$ .

2. At the average level of partner engagement mechanism, there is a significant relationship positive between contributed resources on partnership structure and plan progress,  $b= 0.117$ , 95% CI [0.035, 0.199],  $t= 2.841$ ,  $p< 0.01$ .

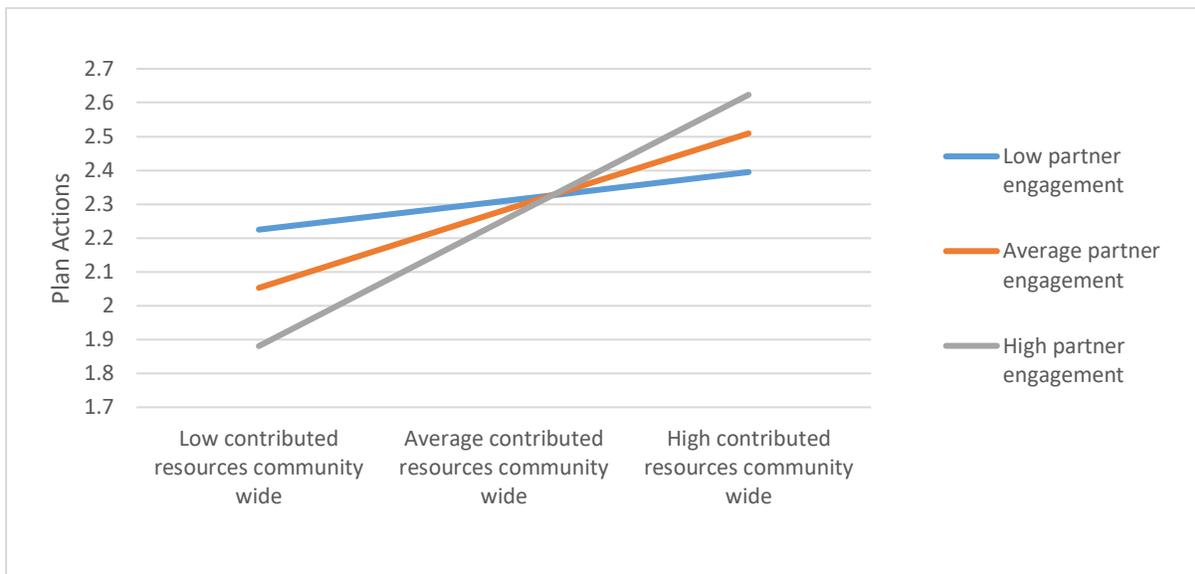
3. When the level of partner engagement mechanism is high, there is a non-significant negative relationship between contributed resources on partnership structure and plan progress,  $b= 0.017$ , 95% CI = [-0.110, 0.143],  $t= 0.263$ ,  $p>0.05$ .

Therefore, at a low and mean level, partner engagement mechanism strengthens the positive relationship between contributed resources on partnership structure and plan progress.

***Hypothesis 3o: Partner engagement mechanism strengthens the positive relationship between contributed resources community-wide and plan actions.***

First, the overall model is valid with  $F(3, 79) = 8.209$ ,  $p<0.01$ ,  $R^2= 0.134$ . Moderation is shown by a significant interaction effect, with  $b= 0.151$ ,  $t= 2.243$ ,  $p< 0.05$ , 95% CI is [0.017, 0.285], indicating that the relationship between contributed resources community-wide and plan actions is moderated by partner engagement mechanism.

**Figure 8: Interaction Effect of Contributed Resources Community-wide and Partner Engagement Mechanism**



1. When the level of partner engagement mechanism is low, there is a non-significant relationship between contributed resources community-wide and plan actions,  $b = 0.079$ , 95% CI  $[-0.082, 0.240]$ ,  $t = 0.978$ ,  $p > 0.05$ .

2. At the average level of partner engagement mechanism, there is a significant relationship between contributed resources community-wide and plan actions,  $b = 0.212$ , 95% CI  $[0.082, 0.342]$ ,  $t = 3.239$ ,  $p < 0.01$ .

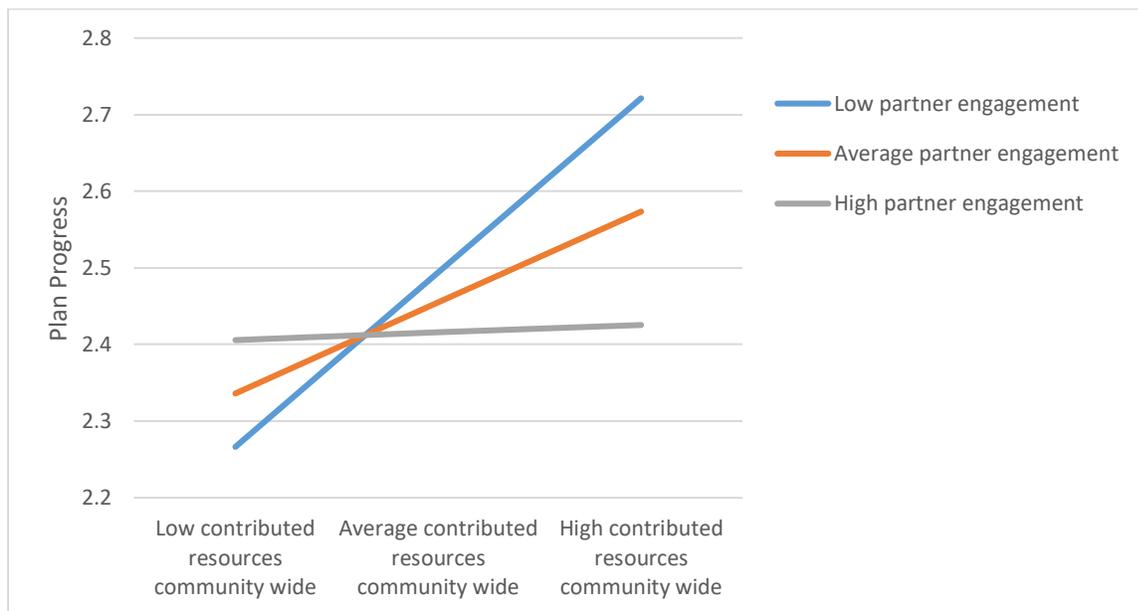
3. When the level of partner engagement mechanism is high, there is a significant positive relationship between contributed resources community-wide and plan actions,  $b = 0.345$ , 95% CI  $= [0.155, 0.534]$ ,  $t = 3.622$ ,  $p < 0.01$ .

Therefore, at a mean level and high level, partner engagement mechanism strengthens the positive relationship between contributed resources community-wide and plan actions.

**Hypothesis 3p:** *Partner engagement mechanism strengthens the positive relationship between contributed resources community-wide and plan progress.*

First, the overall model is valid with  $F(3, 80) = 5.492$ ,  $p < 0.01$ ,  $R^2 = 0.081$ . Moderation is shown by a significant interaction effect, with  $b = -0.114$ ,  $t = -2.359$ ,  $p < 0.05$ , 95% CI is  $[-0.211, -0.018]$ , indicating that the relationship between contributed resources community-wide and plan progress is moderated by partner engagement mechanism.

**Figure 9: Interaction Effect of Contributed Resources Community-Wide and Partner Engagement Mechanism**



1. When the level of partner engagement mechanism is low, there is a significant relationship between contributed resources community-wide and plan progress,  $b = 0.208$ , 95% CI  $[0.101, 0.316]$ ,  $t = 3.851$ ,  $p < 0.01$ .

2. At the average level of partner engagement mechanism, there is a significant relationship between contributed resources community-wide and plan progress,  $b = 0.109$ , 95% CI  $[0.005, 0.212]$ ,  $t = 2.087$ ,  $p < 0.05$ .

3. When the level of partner engagement mechanism is high, there is a non-significant relationship between contributed resources community-wide and plan progress,  $b = 0.009$ , 95% CI  $[-0.146, 0.164]$ ,  $t = 0.116$ ,  $p > 0.05$ .

Therefore, at low level and mean level, partner engagement mechanism strengthens the positive relationship between contributed resources community-wide and plan progress.

## 4.4 Mediations for Contributed Resources

The results of the mediation effects for contributed resources internally on partnership structure and community-wide are presented in this section. Hypotheses with non-significant mediation effects are presented first, followed by significant mediators with a detailed analysis of the outputs.

### 4.4.1 Non-significant Mediations for Contributed Resources

Table 10 shows the hypotheses with non-significant indirect effects with CI containing 0, implying that no mediation effects were found in the models. IV= independent variables, DV= dependent variables. C1= contributed resources internally, C2= contributed resources on structure, C3= contributed resources community-wide, PA=plan actions, PP= plan progress.

**Table 10: Non-Significant Mediations for Contributed Resources**

IV	Mediators	DV	Indirect effect b	BCa CI	Hypotheses
C1	<i>Collaborative oversight</i>	PA	-0.009	[-0.038, 0.054]	1e
		PP	0.009	[-0.020, 0.052]	1f
C2		PA	0.004	[-0.053, 0.055]	2e
		PP	0.007	[-0.031, 0.055]	2f
		PA	0.019	[-0.033, 0.086]	3e
C3		PP	0.007	[-0.048, 0.065]	3f
C1	<i>Oversight by local government</i>	PA	-0.020	[-0.088, 0.018]	1i
		PP	0.019	[-0.017, 0.094]	1j
C2		PA	-0.011	[-0.072, 0.012]	2i
		PP	0.015	[-0.007, 0.081]	2j
C3		PA	-0.002	[-0.040, 0.014]	3i
		PP	0.004	[-0.010, 0.051]	3j
C1	<i>Number of partners</i>	PA	-0.011	[-0.056, 0.029]	1m
		PP	0.015	[-0.005, 0.056]	1n
C2		PA	-0.003	[-0.022, 0.012]	2m
		PP	0.007	[-0.007, 0.030]	2n
C3		PA	-0.009	[-0.055, 0.023]	3m

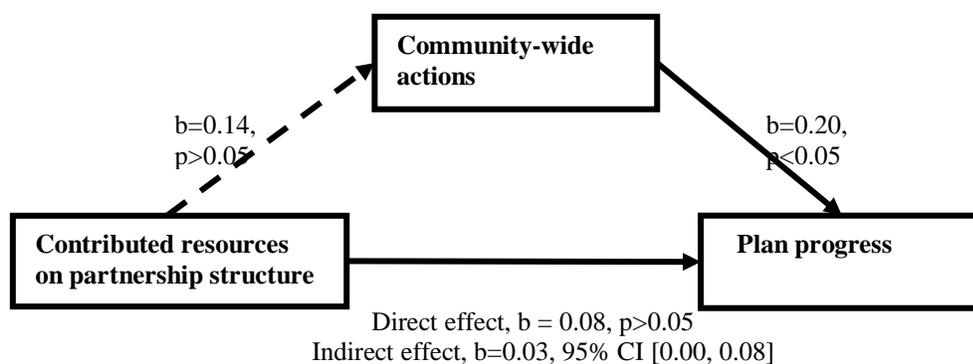
		PP	0.015	[-0.007, 0.047]	3n
C1	<i>Partner engagement mechanism</i>	PA	-0.000	[-0.022, 0.016]	1o
		PP	-0.001	[- 0.021, 0.011]	1p
C2		PA	-0.002	[- 0.043, 0.025]	2o
		PP	-0.003	[- 0.038, 0.022]	2p
C3		PA	-0.005	[- 0.051, 0.036]	3o
		PP	-0.012	[- 0.068, 0.023]	3p
C1	<i>Community-wide actions</i>	PP	0.022	[- 0.001, 0.074]	1t

#### 4.4.2 Significant Mediations for Contributed Resources

This section presents the outputs of two hypotheses with significant mediation effects (see Appendix IX), Hypotheses 2t and 3t, with figures illustrating the paths, direct and indirect effects.

*Hypothesis 2t: Community-wide actions mediates the relationship between contributed resources on structure and plan progress.*

**Figure 10: Model of Contributed Resources on Partnership Structure as a Predictor of Plan Progress, Mediated by Community-Wide Actions**



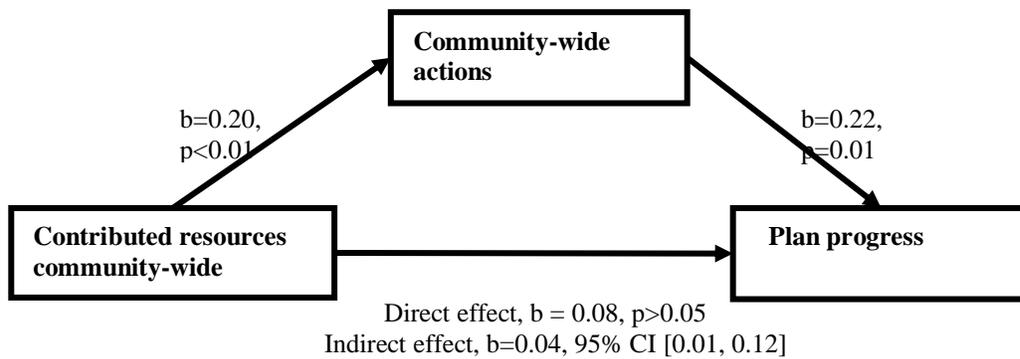
The dash line indicates a non-significant relationship. The 95% CI of the indirect effects was obtained with 1000 bootstrap resamples. Contributed resources on structure fail to significantly predict community-wide actions ( $b = 0.14$ ,  $p > 0.05$ ), whereas community-wide actions significantly predict plan progress ( $b = 0.20$ ,  $p < 0.05$ ). The  $R^2$  value is 0.1168, indicating that the model explains 11.68% of the variance in plan progress. A positive  $b$  value signifies that when community-wide actions increase, plan progress increases as well.

There was also a significant indirect effect of contributed resources internally on plan progress

through plan actions,  $b=0.03$ , BCa CI<sup>1</sup> [0.0026, 0.0814] (see Figure 10). Type I error was controlled within the 95% confidence interval. The output for the results of this statistical test can also be found in Appendix IX. These findings support Hypothesis 2t.

**Hypothesis 3t:** *Community-wide actions mediates the relationship between contributed resources community-wide and plan progress.*

**Figure 11: Model of Contributed Resources Community-wide as A Predictor of Plan Progress, Mediated by Community-Wide Actions**



The 95% CI of the indirect effects was obtained with 1000 bootstrap resamples. As shown in the diagram, contributed resources community-wide significantly predict community-wide actions ( $b=0.20$ ,  $p<0.01$ ). The  $R^2$  value indicates that the model explains 8.46% of the variance in community-wide actions. The  $b=0.20$  signifies that when contributed resources community-wide increase by one unit, the community-wide actions increase by 20% (0.20 unit).

Furthermore, community-wide actions significantly predict plan progress ( $b= 0.22$ ,  $p=0.01$ ). The  $R^2$  value indicates that the model explains 13.23% of the variance in plan progress. A positive  $b$  value shows that when community-wide actions increase, plan progress increases as well.

There is also a significant indirect effect of contributed resources internally on plan progress through plan actions,  $b=0.04$ , BCa CI<sup>1</sup> [0.0084, 0.1193] (see Figure 11). Type I error was controlled within the 95% confidence interval. These findings support Hypothesis 3t. The output for the results of this statistical test can also be found in Appendix IX.

## 4.5 Summary of the Results

Table 11 and 12 show the summary of the results, presented with plan actions as dependent variable (DV) first, followed by plan progress as dependent variable. Each row provides information for a money variable as independent variable (IV).

**Table 11: Summary of the Results with Actions as DV.**

		<b>Actions (DV)</b>
IV	<b>Contributed resources internally</b>	Moderated by oversight in partnership (b= -0.12, p<0.05, 95% CI [-0.22, -0.02])
	<b>Contributed resources for partnership structure</b>	Moderated by partner engagement mechanism (b= 0.193, p<0.05, t=2.451, 95% CI [0.036, 0.350])
	<b>Contributed resources for community-wide initiatives (e.g., by partners)</b>	Direct (b <sub>0</sub> = 1.735, b <sub>1</sub> = 0.188, R <sup>2</sup> = 0.078, F (1, 82) = 6.918, p= 0.01)
		Moderated by partner engagement mechanism (b= 0.151, t= 2.243, p< 0.05, 95% CI [0.017, 0.285])

**Table 12: Summary of the Results with Progress as DV.**

		<b>Progress (DV)</b>
IV	<b>Contributed resources internally</b>	Direct (b <sub>0</sub> = 1.944, b <sub>1</sub> = 0.162, R <sup>2</sup> = 0.104, F (1, 84) = 1.649, p<0.01)
	<b>Contributed resources for partnership structure</b>	Direct (b <sub>0</sub> = 2.104, b <sub>1</sub> = 0.110, R <sup>2</sup> = 0.225, F (1, 85) = 4.523, p< 0.05)
		Mediated by community- wide actions (indirect effect b=0.03, BCa CI [0.0026, 0.0814])
		Moderated by partner engagement mechanism (b= -0.114, t= -2.618, p=0.01, 95% CI [-0.201, -0.028])
	<b>Contributed resources for community-wide initiatives (e.g., by partners)</b>	Mediated by community- wide actions (indirect effect b=0.04, BCa CI <sup>1</sup> [0.0084, 0.1193])
		Moderated by partner engagement mechanism (b= -0.114, t= -2.359, p< 0.05, 95% CI [-0.211, -0.018])

## **CHAPTER 5: DISCUSSION**

The purpose of this study is to understand the distribution of resources in plan implementation, and the role partnership structure plays in mediating and moderating such relationships, two points which are lacking in the current literature (Barroso-Mendez et al., 2016; Clarke, 2012; Glasbergen, 2010; Pittz and Adler, 2016; Elbers & Schulpen, 2011). To fulfill the objective, a statistical analysis was conducted with two models where plan actions and progress serve as the dependent variables. A table was developed based on the findings connecting the contributed resources, and plan actions and progress, and highlighting the role of community-wide actions as mediator, and the influence of oversight by local government, partner engagement mechanism, and number of partners as moderators.

### **5.1 Implication of the Findings**

A strong relationship was found between contributed resources internally, on structure, community-wide, and plan progress. Similar patterns have emerged for contributed resources community-wide and plan actions. The findings are consistent with the literature, in which funding is essential for a successful partnership (Feinberg et al., 2008; McGlashan, 2003; Perkins et al., 2010; Purcal et al., 2011). Past studies have noted the positive influence that funding has on partnerships through their encouragement of communication and the opportunities they provide (Allen et al., 2017; Purcal et al., 2011). Sustainable funding, whether directly from the government, or attracted through partners, can help staff stay focused on achieving SCP goals and reduce the chances of quick turnover and loss of expertise (Allen et al., 2017).

The findings also extend our understanding in several ways. First, existing studies have only looked at the effect of contributed resources as a whole instead of categorizing it into different forms. In addition, whether local government prefers to invest in one form of the resources over another is yet unknown. The findings indicate that, contributing resources is equally important for the three formats. In other words, allocating resources on internal sustainability initiatives such as staff training, or on partnership structure such as oversight and partner engagement mechanism are equally important as financing individual projects. Future research might focus

on how local governments can contribute the three forms of resources differently and the impact of such decisions on plan outcomes.

Results also show that not only contributed and attracted resources can have a positive influence on plan outcomes, but also that positive relationships are strengthened with the presence of community-wide actions, collaborative oversight, partner engagement mechanism, and number of partners. The mediation and moderation effects are discussed in detail in the following sections.

### **5.1.1 Mediator: Community-Wide Actions**

The findings suggest that community-wide actions serve as a mediator for the relationships between contributed resources on partnership structure, contributed resources community-wide, attracted resources, and plan progress. However, no mediation effect was found for contributed resources internally and plan outcomes. Since community-wide actions focus on sustainability at the community-wide level and actions happening beyond internal, it was expected that community-wide actions would not mediate the relationship between contributed resources internally and plan outcomes.

The results of this study are consistent with those of earlier studies. The crucial influence of community-wide actions and its necessity for transition at local level SCPs outcomes are well addressed in the literature (Israel et al., 2006; Kruijzen et al., 2013; Storey et al., 2015). The finding also echoes those of Kruijzen et al. (2013) in that only collective actions taken at the community level can lead to widespread and ongoing changes. For example, initiating the actions of different stakeholders such as private sectors and individual households in the community is found to be the primary step to achieve community solid waste reduction (Joseph, 2006). It also provides evidence for Clarke's (2012) study which highlighted that partners should get engaged in the partnership more than just at the consultation level. Furthermore, the results provide evidence of former studies where contributed resources can encourage community-wide actions (Clarke, 2012; Storey et al., 2015). Case studies have found that community actions for waste reduction are more active with funding and subsidies (Storey et al., 2015). Financial

support can promote higher level activities such as the partner organization implementing its own corporate plan and reporting back the progress through its annual report (Clarke, 2012).

This study uses a proxy to measure actions, so the results reflect the proactivity of actions. Depending on the sustainability development level of a community, different levels of actions can be taken. The study brings attention to the significance of proactivity of actions. In other words, whether the actions taken due to compliance, at the internal level, community-wide or leading edge will have strong impact on plan implementations. The proactivity also explains why the investment of resources are contributing to SCP implementation. In other words, if the municipalities are not committing to actions beyond compliance, the resources distributed to partnership, either from local government or external investors, might not even promote the implementation of SCPs. Therefore, for a successful implementation of SCPs, ensuring actions are enabled at the local level are inevitable (Kruijssen et al., 2013; Storey et al., 2015).

### **5.1.2 Moderator: Partner Engagement Mechanism**

The moderation effects were found for partner engagement mechanism, strengthening the positive relationship of contributed resources on structure, contributed resources community-wide for both plan actions and progress . It was expected that a moderation effect would fail to show up between contributed resources internally and plan outcomes. Partner engagement mechanism encourages activities among partners, which does not necessarily help the implementation of SCP by local government at the corporate level. These findings echo those of past literature, where partner engagement mechanism is identified as a crucial factor to effective plan outcomes (Barroso-Méndez et al., 2016; Clarke, 2012; Glasbergen, 2010). Results are also consistent with the case study conducted by Clarke (2011) and ICLEI (2012a), wherein partner engagement mechanism was identified as a key successful factor and played a key role in combating climate change. Cities such as Melbourne and Toronto have been actively engaging partners in their SCP implementations.

This study combines partner selection and involvement into one variable called partner engagement mechanism. The findings might be explained in the following ways. First, at the partner selection stage, involving key stakeholders in the partnership ensures the contribution of

the influencers in the partnership (Glasbergen, 2010). In addition, engaging partners with similar values makes it easier to cultivate mutual trust among the partners (Barroso-Méndez et al., 2016). Second, with well selected partners, engagement tools and channels are required to boost the actions of the partners, hence improving the outcomes of SCPs (Barroso-Mendez et al., 2016; Clarke, 2012). Therefore, during the implementation of SCPs, in addition to attracting and providing funding, municipalities should also utilize the partner engagement mechanism, choosing the right stakeholders and creating opportunities to involve these partners.

### **5.1.3 Number of Partners**

Number of partners fails to moderate the relationship. As shown from the results for contributed resources and plan outcomes, the number of partners does not influence the relationship, indicating that the size is not the real issue in the partnership.

Earlier literature has shown two opposite opinions on the influence of number of partners on partnership outcomes (Babiak & Thibault, 2007; Butler, 2001; Van Puyvelde et al., 2015). The first argument is that a larger size of partnership may negative influence plan outcomes. With a large number of partners, more conflicts and competition between partners can occur (Babiak & Thibault, 2007; Butler, 2001), together with the chances of free-riding among partners (Babiak & Thibault, 2007; Garcia-Sanchez & Prado-Lorenzo, 2007; Van Puyvelde et al., 2015)

However, the findings of this research indicate that these literature may only telling half of the story. Partners can have different levels of engagements in a partnership, ranging from consultation only, to actively constructing and implementing their own sustainability initiatives, and having a relatively advanced monitoring and reporting system to keep track of the progress (Butler, 2001; Park & Russo, 1996). Issues generated by the number of partners, such as conflicts, can be solved with the presence of a well-managed structure such as an arms-length entity to oversee the partnership (Clarke, 2012). Therefore, the design of the partnership and how active partners are engaged matters, and not the number of partners. The results provide empirical evidence for the latter argument.

One limitation is that the study lacks information collected to reflect partners' activeness in the partnership. Further study can develop scales to measure the degree of activeness of partners in

the partnership, since it is likely to serve as a crucial mediator for relationships to SCP outcomes.

#### **5.1.4 Collaborative Oversight and Oversight by Local Government**

Collaborative oversight was found to serve as the moderator for the relationship between contributed resources internally and plan actions. In other words, financing of internal resources, such as offices and staff, and programs and training, can produce more effective plan outcomes with the presence of oversight structure constructed by the partners. By contrast, oversight by local government failed to show mediation or moderation effects between the relationships.

The findings are supported by literature, where oversight contributes to promoting transparency and accountability, providing advice and knowledge for decision-makers, and encouraging collaboration between partners (Cairns and Harris, 2011; Volkery et al., 2006; Lee & van de Meene, 2012). Multi-stakeholder council and advisory bodies have been successfully practiced in many cities (Volkery et al., 2006; Lee & van de Meene, 2012; Clarke & Ordonez-Ponce, 2017). A recent study presents the example of Barcelona where oversight by local government and a multi-stakeholder committee handle communication issues, monitor the progress of SCPs, and engage partners (Clarke & Ordonez-Ponce, 2017). Such oversight structure contributes largely to the achievement of Barcelona's SCP goals (Clarke & Ordonez-Ponce, 2017). Our findings highlight the importance of having an oversight structure formed by multi-stakeholders in a community. Collaborative oversight can enable the collaborative actions among partners including local government, so such transformation can be powerful in exerting a positive influence of resources distributed internally on plan outcomes. In other words, with the presence of the multi-stakeholder committee, training of local government internal staff can better reflect the community needs in implementing SCPs.

The study extends our understanding by providing evidence that, while government contributed internal resources, to achieve more effective outcomes, the oversight structure should also be made up by partners, instead of just local government itself.

## **CHAPTER 6: CONCLUSION**

### **6.1 Summary**

Overall, the study has explored the relationships between the distribution of resources, partner-focused partnership structures, and community sustainable plan outcomes through statistical analysis. The study is based on an existing work in which data were collected through an international survey on the implementation of SCPs. The results of this study are based on a sample of 106 local governments involved in implementing SCPs through a partnership of at least five partners. Ordinary least squares and Hayes' PROCESS tools were employed for the examination of one-to-one relationships between distribution of resources and plan outcomes, and mediations and moderations effects of the five partner-focused structure variables: oversight by government, collaborative oversight, partner engagement mechanism, number of partners, and community-wide actions.

The results suggest that three forms of contributed resources (internal, partnership structure, community-wide) have strong relationships with plan outcomes. The study has also shown the indispensable roles that community-wide actions play in mediating the relationships, and the significance of collaborative oversight, partner engagement mechanism, and number of partners in mediating the relationship.

### **6.2 Contribution to Theory**

Current cross-sector partnership research has mainly focused on the formulation of collaborative goals, but not on the techniques enabling the implementation of the plans (Cairns & Harris, 2011; Dempsey et al., 2016). Little is known about the relationship between partnership structure and plan outcomes (i.e., sustainability progress and actions). The study makes contributions to the theory of collaborative strategic management and cross-sector social partnership in several ways.

The first contribution is the study of the distribution of resources in the context of large cross-sector partnership social during SCP implementations. Existing literature has found that secure funding has significant influence on a successful partnership (Feinberg et al., 2008; McGlashan,

2003; Perkins et al., 2010; Purcal et al., 2011; Allen et al., 2017). The study echoes former studies and adds content to the roles financial factors play in implementing SCPs. Findings in this study not only address the importance of contributed resources, but also imply that the three forms, internal sustainability initiatives, administrative activities, and community-wide initiatives, are equally important for plan outcomes.

The second contribution is the study of partnership structures in moderating and mediating the relationships between distribution of resources and plan outcomes. For four variables in this study, oversight, partner engagement mechanism, number of partners, and community-wide actions, existing literature has not yet addressed the roles they play in the relationship between financial factors and plan outcomes. This study fills theoretical gaps in the literature and provides information on how these variables interact with financial factors during the implementation of SCPs. Existing literature has pointed out that collective actions community-wide are needed for sustainable changes to happen (Kruijssen et al., 2013); and it is considered as an important factor to implement SCPs successfully (Clarke, 2012). Findings of this study draw attention to the importance of community-wide actions which serve as a mediator. The role partner engagement mechanism plays as a moderator validates the literature. The results also provide evidence to the literature which argues that issues occurring in the partnership can be managed through the design of the structure of the partnership (Clarke, 2012), and highlights the importance of having an oversight committee made up of partners aside from local government.

### **6.3 Contribution to Practice & Recommendations**

Sustainable community plans (SCPs) do not only help the public sector achieve their goals, but also serve as effective guidance for organizations with different interests and values, enabling them to work together toward a common goal (Clarke, 2012; Mazzara et al., 2010).

Collaboration between local stakeholders is usually required for the implementation of these plans. Worldwide, CSSP is gaining popularity for local governments to implement SCPs, as the involvement of multiple stakeholders allow municipalities to achieve community-wide goals (Clarke, 2014). The CSSP approach is also promoted by policies, international agreements, and organizations such as ICLEI (Cairns & Harris, 2011; Selsky & Parker, 2005; ICLEI, 2002). It is time-urgent to understand how to design a successful partnership. This study provides insights

for local governments around the world on effectively implementing their SCPs with partners, through the model developed which considers the factors mediating and moderating the relationship between contributed and attracted resources, and plan outcomes. The study can also help contribute to the achievement of the global Sustainable Development Goals (SDGs) on cities (#11) and on partnerships (#17).

To successfully implement SCPs, local government should allocate resources in three different forms. Internally, local government can allocate resources to sustainability offices and staff training. Financial supports on oversight communication, partner engagement mechanism, monitoring, and reporting can also increase the possibilities of effectively implementing SCPs, in addition to funding individual projects happening at the community level.

However, even when ample resources are allocated to SCPs, the plan will not be implemented effectively without the engagement of partners and collective actions community-wide. In the meantime, local government should also be aware of the crucial roles that collaborative oversight, partner engagement mechanism, and number of partners play in the process. Oversight structure, such as arm's length entity and/or task forces made up of partners, should be formed in the partnership through the support of local governments. In addition, multiple avenues can be provided by the government to involve partners, such as assigning targeted actions for partners to help implement.

## **6.4 Limitations & Suggestions of Future Research**

One limitation is the generalization of the study. The knowledge presented in this study may not be transferrable to municipalities that are not ICLEI members. In addition, due to language constraints, participants are limited to cities whose official languages are one (or more) of the following: English, French, Spanish, and Korean. Participants of the study are ICLEI members, with a majority of them from developed countries. How will the results differ if the participants are from developing countries? The overall budget of government institutions and the distribution of the budget in developing countries can be quite different from developed countries (UNESCO, 2016). The financial situation of municipalities may largely determine the amount of resources governments can contribute to SCPs. Therefore, similar studies can be

conducted in developing countries. In addition to the economic factors, political factors may also play a role in the implementation of SCPs. In countries where the political power is centralized, such as China, the structure of SCPs, how partners are engaged, and level of participation of partners might differ greatly from countries with high political decentralization. Future studies can also consider comparing the influence that geographical location, population, economic and political situations for the implementation of SCPs have on different regions.

In addition, this study takes a quantitative approach, using a Likert Scale as a continuum. Plan outcomes were also measured using proxy developed through previous studies and using progress on goals (Roome, 1992; Lin, 2012). Future survey design could consider using seven points instead of five points for more precise reflections of the information, and collect more information on the goals.

Furthermore, the four moderators in this study (oversight by government; collaborative oversight; partner engagement mechanism; and number of partners) are tested separately instead of combined together. It is possible that the moderation effect will be significant when combining two moderators together. For example, the findings indicate that oversight by local government fail to moderate the relationship. However, in the case study of Barcelona, the oversight structure of the city is made up of both local government employees and multi-stakeholders (Clarke & Ordonez-Ponce, 2017). It is likely to see a moderation effect when combining oversight by local government and collaborative oversight together.

Post analysis was conducted due to a conservation raised at the defense. It was suggested that continent and population should be considered as control variables. The whole section of control variable analysis can be found in Appendix XII. The results indicate that population has no effect on the relationships between contributed resources and plan outcomes. However, continents show up as a significant control variable. The new findings suggest that the direct relationships can be impacted by the presence of different geographical locations. Therefore, future research should consider continents as a moderator if this factor interests researchers. Alternatively, controlling communities within the same continent during relationship testing could garner more reliable results.

There are several suggestions for future research. First, this study is an international study on contributed resources and plan outcomes, from the perspective of local government. Future studies can conduct research in a more detailed construct, understanding the distribution of resources from partners' perspectives, such as whether resources influence how actively partners are engaged in the partnership and how the resources are allocated to individual partners in the partnership. In addition, though the study has linked three forms of contributed resources to plan outcomes, in practice, do they have the same level of difficulty in implementation? Would municipalities prefer one over another due to other factors? Future research can delve more into detail on the challenges and concerns of local governments allocating resources to SCPs.

In summary, the study has helped to show the role money variables play in enabling the achievement of plan outcomes, revealing the mediation of community-wide actions and the moderation of partner engagement mechanism, number of partners, and collaborative oversight. In addition to the contribution of this study on collaborative strategic management and cross-sector social partnerships, the study also provides guidance for local government to follow while allocating resources to SCPs. Lastly, the study also encourages further research from the perspective of partners, understanding the impact of resources allocation at the individual partner level.

## References:

- Abdi, H., & Williams, L. J. (2010). Principal Component Analysis. *John Wiley Sons*, 2, 433–459. <http://doi.org/10.1002/wics.101>
- Akinwande, M. O., Dikko, H. G., & Samson, A. (2015). Variance Inflation Factor: As a Condition for the Inclusion of Suppressor Variable(s) in Regression Analysis. *Open Journal of Statistics*, 05(07), 754–767. <http://doi.org/10.4236/ojs.2015.57075>
- Aksorn, P., & Charoenngam, C. (2015). Sustainability Factors Affecting Local Infrastructure Project. *Facilities*, 33(1/2), 119–143. <http://doi.org/10.1108/F-01-2013-0005>
- Allen, E., & Seaman, C. A. (2007). Likert Scales and Data Analyses. *Quality Progress*, 40(7), 64–65.
- Allen, J. H., Beaudoin, F., & Gilden, B. (2017). Building Powerful Partnerships: Lessons from Portland's Climate Action Collaborative. *Sustainability: the Journal of Record*, 10(5), 276–281. <http://doi.org/10.1089/sus.2017.0010>
- Arend, R. J. (2006). SME: Supplier Alliance Activity in Manufacturing: Contingent Benefits and Perceptions. *Strategic Management Journal*, 27(8), 741–763. <http://doi.org/10.1002/smj.538>
- Babbie, E. R. (2004). *The practice of social research* (10 ed.). Belmont, CA: Thomson/Wadsworth.
- Babiak, K., & Thibault, L. (2007). Challenges in Multiple Cross-Sector Partnerships. *Nonprofit and Voluntary Sector Quarterly*, 38(1), 117–143. <http://doi.org/10.1177/0899764008316054>
- Baker, I., Peterson, A., Brown, G., & McAlpine, C. (2012). Local government response to the impacts of climate change: An evaluation of local climate adaptation plans. *Landscape and Urban Planning*, 107(2), 127–136. <http://doi.org/10.1016/j.landurbplan.2012.05.009>
- Bamberger, M. (1991). The Importance of Community Participation. *Public Administration and Development*, 11, 281–284. <http://doi.org/10.1002/pad.4230110317/asset/4230110317ftp.pdf>
- Baron, R. M., & Kenny, D. A. (1986). The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations. *Journal of Personality and Social Psychology*, 51(6), 1173–1182.
- Barroso-Méndez, M. J., Galera-Casquet, C., Seitanidi, M. M., & Valero-Amaro, V. (2016). Cross-Sector Social Partnership Success: A Process Perspective on the Role of Relational Factors. *European Management Journal*, 34(6), 674–685. <http://doi.org/10.1016/j.emj.2016.07.004>
- Berke, P. R., & Conroy, M. M. (2000). Are We Planning for Sustainable Development? *Journal of the American Planning Association*, 66(1), 21–33. <http://doi.org/10.1080/01944360008976081>

- Bolda, E., Saucier, P., Maddox, G., Wetle, T., & Lowe, J. (2006). Governance and Management Structures for Community Partnerships: Experiences from the Robert Wood Johnson Foundation's Community Partnerships for Older Adults Program. *The Gerontologist Society of America*, 46(3), 391–397.
- Boone, H. N., & Boone, D. A. (2012). Analyzing Likert Data. *Journal of Extension*, 50(2), 1–5.
- Bryson, J. M., Berry, F. S., & Yang, K. (2010). The State of Public Strategic Management Research: A Selective Literature Review and Set of Future Directions. *The American Review of Public Administration*, 40(5), 495–521. <http://doi.org/10.1177/0275074010370361>
- Butler, B. S. (2001). Membership Size, Communication Activity, and Sustainability: A Resource-Based Model of Online Social Structures. *Information Systems Research*, 12(4), 346–362. <http://doi.org/10.1287/isre.12.4.346.9703>
- Cairns, B., & Harris, M. (2011). Local Cross-Sector Partnerships. *Nonprofit Management and Leadership*, 21(3), 311–324. <http://doi.org/10.1002/nml.20027>
- Calabuig, C., Peris, J., & Ferrero, G. (2009). Key Factors Influencing Local Agenda 21 Planning Approaches. *WIT Transactions on Ecology and the Environment*, 2(120), 527–536. <http://doi.org/10.2495/SDP090492>
- Callaghan, E. G., & Colton, J. (2007). Building Sustainable & Resilient Communities: A Balancing of Community Capital. *Environment, Development and Sustainability*, 10(6), 931–942. <http://doi.org/10.1007/s10668-007-9093-4>
- Carifio, J., & Perla, R. J. (2007). Ten Common Misunderstandings, Misconceptions, Persistent Myths and Urban Legends about Likert Scales and Likert Response Formats and their Antidotes. *Journal of Social Sciences*, 3(3), 106–116.
- Chen, H. (2013). Implementation of Collaborative Community Sustainability Plans (CSSPs): Correlations between Key Collaborative Structural Features and Plan Outcomes. Master's Major Research Paper. SEED, University of Waterloo, Canada.
- Chmutina, K., Goodier, C. I., & Berger, S. (2013). Briefing: Potential of Energy Saving Partnerships in the UK: An Example of Berlin. *Proceedings of the Institution of Civil Engineers - Engineering Sustainability*, 166(6), 315–319. <http://doi.org/10.1680/ensu.12.00015>
- Choi, T., & Robertson, P. J. (2014). Deliberation and Decision in Collaborative Governance: A Simulation of Approaches to Mitigate Power Imbalance. *Journal of Public Administration Research and Theory*, 24(2), 495–518. <http://doi.org/10.1093/jopart/mut003>
- Clark, & Wilson, J. (1961). A Theory of Organizations. *Administrative Science Quarterly*, 6(2), 129–166.
- Clarke, A. (2011). Key Structural Features for Collaborative Strategy Implementation: A Study of Sustainable Development/Local Agenda 21 Collaborations. *Management & Avenir*, 50(10), 153–16. <http://doi.org/10.3917/mav.050.0153>
- Clarke, A. (2012). *Passing Go: Moving Beyond the Plan* (pp. 1–25). Ottawa: Federation of Canadian Municipalities.
- Clarke, A. (2014). Designing Social Partnerships for Local Sustainability Strategy Implementation. In M. Seitanidi & A. Crane (Eds.), *Social Partnerships and Responsible Business: A Research Handbook*. London, UK.
- Clarke, A., & Erfan, A. (2007). Regional Sustainability Strategies: A Comparison of Eight Canadian Approaches, 47(3), 15–18.

- Clarke, A., & Fuller, M. (2010). Collaborative Strategic Management: Strategy Formulation and Implementation by Multi-Organizational Cross-Sector Social Partnerships. *Journal of Business Ethics*, 94, 85–101. <http://doi.org/10.1007/s10551-011-0781-5>
- Clarke, A., & MacDonald, A. (2016). Outcomes to Partners in Multi-Stakeholder Cross-Sector Partnerships: A Resource-Based View. *Business & Society*, 1–35. <http://doi.org/10.1177/0007650316660534>
- Clarke, A., & Ordonez-Ponce, E. (2017). City Scale: Cross-sector Partnerships for Implementing Local Climate Mitigation Plans. *Public Administration Review*.
- Clarke, A., Huang, L., Roseland, M., & Chen, H. (2018). Do Collaborative Planning Processes Lead to Better Outcomes? An Examination of Cross-sector Social Partnerships for Community Sustainability. Presented at the Administrative Science Association of Canada.
- Conway, J. M., & Huffcutt, A. I. (2003). A Review and Evaluation of Exploratory Factor Analysis Practices in Organizational Research. *Organizational Research Methods*, 6(2), 147–168.
- Costello, A. B., & Osborne, J. W. (2005). Best Practices In Exploratory Factor Analysis: Four Recommendations For Getting The Most From Your Analysis. *Practical Assessment, Research Evaluation*, 10, 1–9.
- Cotter, B., & Hannan, K. (1999). Our Community Our Future: A Guide to Local Agenda 21 (pp. 1–190). Canberra: Commonwealth of Australia.
- Cuddeback, G., Wilson, E., Orme, J. G., & Combs-Orme, T. (2004). Detecting and Statistically Correcting Sample Selection Bias. *Journal of Social Service Research*, 30(3), 19–33. [http://doi.org/10.1300/J079v30n03\\_02](http://doi.org/10.1300/J079v30n03_02)
- Dempsey, N., Burton, M., & Duncan, R. (2016). Evaluating the Effectiveness of a Cross-Sector Partnership for Green Space Management: The Case of Southey Owlerton, Sheffield, Uk. *Urban Forestry & Urban Greening*, 15, 155–164. <http://doi.org/10.1016/j.ufug.2015.12.002>
- Dezelan, T., & Maksuti, A. (2014). Towards Our Common Future- Comparative Assessment of the Sustainable Development Strategies of the European Union, the Mediterranean and Slovenia. *Transylvanian Review of Administrative Sciences*, (43), 103–121.
- Doberstein, C. (2016). Designing Collaborative Governance Decision- Making in Search of a “Collaborative Advantage.” *Public Management Review*, 18(6), 819–841. <http://doi.org/10.1080/14719037.2015.1045019>
- Edgell, S. E., & Noon, S. M. (1984). Effect of Violation of Normality on the t Test of the Correlation Coefficient. *Psychological Bulletin*, 95(3), 576–583.
- Elbers, W., & Schulpen, L. (2011). Decision Making in Partnerships for Development. *Nonprofit and Voluntary Sector Quarterly*, 40(5), 795–812. <http://doi.org/10.1177/0899764010366304>
- Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of Convenience Sampling and Purposive Sampling. *American Journal of Theoretical and Applied Statistics*, 5(1), 1–4. <http://doi.org/10.11648/j.ajtas.20160501.11>
- Favoreu, C., Carassus, D., & Maurel, C. (2016). Strategic Management in The Public Sector: A Rational, Political or Collaborative Approach? *International Review of Administrative Sciences*, 82(3), 435–453. <http://doi.org/10.1177/0020852315578410>
- Fehr, M., Sousa, K. A., Pereira, A. F. N., & Pelizer, L. C. (2004). Proposal of Indicators To Assess Urban Sustainability In Brazil. *Environment, Development and Sustainability*, 355–366.

- Feinberg, M. E., Bontempo, D. E., & Greenberg, M. T. (2008). Predictors and Level of Sustainability of Community Prevention Coalitions. *American Journal of Preventive Medicine*, 34(6), 495–501. <http://doi.org/10.1016/j.amepre.2008.01.030>
- Feng, C., Wang, H., Lu, N., Chen, T., He, H., Lu, Y., & Tu, X. M. (2014). Log-Transformation and Its Implications for Data Analysis. *Shanghai Archives of Psychiatry*, 26(2), 105–109. <http://doi.org/10.3969/j.issn.1002-0829.2014.02.009>
- Field, A. (2008). *Discovering Statistics Using SPSS* (3 ed.) (pp. 1–857). California: SAGE Publications Ltd.
- Freeman, C., Littlewood, S., & Whitney, D. (1996). Local Government and Emerging Models of Participation in the Local Agenda 21 Process. *Journal of Environmental Planning and Management*, 39(1), 65–78.
- Garcia-Canal, E., Valdes-Llaneza, A., & Arino, A. (2003). Effectiveness of Dyadic and Multi-Party Joint Ventures. *Organization Studies*, 24(5), 743–770.
- Garcia-Sanchez, I. M., & Prado-Lorenzo, J.-M. (2007). Determinant Factors in the Degree of Implementation of Local Agenda 21 in the European Union. *Sustainable Development*, 16(1), 17–34. <http://doi.org/10.1002/sd.334>
- Ghasemi, A., & Zahediasl, S. (2012). Normality Tests for Statistical Analysis: A Guide for Non-Statisticians. *International Journal of Endocrinology and Metabolism*, 10(2), 486–489. <http://doi.org/10.5812/ijem.3505>
- Glasbergen, P. (2010). Understanding Partnerships for Sustainable Development Analytically: The Ladder of Partnership Activity as a Methodological Tool. *Environmental Policy and Governance*, 21(1), 1–13. <http://doi.org/10.1002/eet.545>
- Golafshani, N. (2003). Understanding Reliability and Validity in Qualitative Research. *The Qualitative Report*, 8(4), 597–606.
- Hayes, A. F. (2013). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*. New York, NY, US: Guilford Press.
- Hayes, A. F., Montoya, A. K., & Rockwood, N. J. (2017). The analysis of mechanisms and their contingencies: PROCESS versus structural equation modeling. *Australasian Marketing Journal (AMJ)*, 25(1), 76–81. <http://doi.org/10.1016/j.ausmj.2017.02.001>
- Henson, R. K., & Roberts, J. K. (2016). Use of Exploratory Factor Analysis in Published Research. *Educational and Psychological Measurement*, 66(3), 393–416. <http://doi.org/10.1177/0013164405282485>
- ICLEI. (1997). Sustainable Development Through Local Action. Retrieved April 17, 2018, from <http://archive.iclei.org/documents/Global/biennial96-97.pdf>
- ICLEI. (2002). Local Governments' Response to Agenda 21: Summary Report of Local Agenda 21 Survey with Regional Focus[PDF]. Retrieved March 5, 2018, from <https://www.ircwash.org/sites/default/files/Walker-2002-Local.pdf>
- ICLEI. (2012a). Local Sustainability 2012: Showcasing Progress: Case Studies (pp. 1–80). Bonn, Germany : ICLEI-Local Governments for Sustainability World Secretariat, 2012.
- ICLEI. (2012b). Local Sustainability 2012: Taking Stock and Moving Forward (pp. 1–87). Bonn, Germany: ICLEI - Local Governments for Sustainability World Secretariat.
- Ismail, S. (2013). Critical success factors of public private partnership (PPP) implementation in Malaysia. *Asia-Pacific Journal of Business Administration*, 5(1), 6–19. <http://doi.org/10.1108/17574321311304503>

- Israel, B. A., Krieger, J., Vlahov, D., Ciske, S., Foley, M., Fortin, P., et al. (2006). Challenges and Facilitating Factors in Sustaining Community-Based Participatory Research Partnerships: Lessons Learned from the Detroit, New York City and Seattle Urban Research Centers. *Journal of Urban Health*, 83(6), 1022–1040. <http://doi.org/10.1007/s11524-006-9110-1>
- Jamieson, S. (2004). Likert Scales: How to (Ab)use Them. *Medical Education*, 38(12), 1217–1218. <http://doi.org/10.1111/j.1365-2929.2004.02012.x>
- Joseph, K. (2006). Stakeholder Participation for Sustainable Waste Management. *Habitat International*, 30(4), 863–871. <http://doi.org/10.1016/j.habitatint.2005.09.009>
- Jørgensen, M. (2006). Evaluating Cross-Sector Partnerships. Retrieved June 28, 2017, from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.557.3951&rep=rep1&type=pdf>
- Keselman, H. J., Huberty, C. J., Lix, L. M., Olejnik, S., Cribbie, R. A., Donahue, B., ... & Levin, J. R. (1998). Statistical practices of educational researchers: An analysis of their ANOVA, MANOVA, and ANCOVA analyses. *Review of educational research*, 68(3), 350-386.
- Knapp, T. R. (1990). Treating Ordinal Scales as Interval Scales: An Attempt to Resolve the Controversy. *Nursing Research*, 39(2), 121–123.
- Kruijssen, J. H. J., Owen, A., & Boyd, D. M. G. (2013). Community Sustainability Plans to enable change towards sustainable practice – a Scottish case study. *Local Environment*, 19(7), 748–766. <http://doi.org/10.1080/13549839.2013.792046>
- Lander, M. W., Heugens, P. P., & van Oosterhout, J. H. (2017). Towards an Integrated Framework of Professional Partnership Performance: The Role of Formal Governance and Strategic Planning. *Human Relations*, 70(11), 1388–1414.
- Lee, T., & van de Meene, S. (2012). Who Teaches and Who Learns? Policy Learning through the C40 Cities Climate Network. *Policy Sciences*, 45(3), 199–220. <http://doi.org/10.1007/s11077-012-9159-5>
- Lewis, J. M., Baeza, J. I., & Alexander, D. (2008). Partnerships in Primary Care in Australia: Network Structure, Dynamics and Sustainability. *Social Science & Medicine*, 67(2), 280–291. <http://doi.org/10.1016/j.socscimed.2008.03.046>
- Lin, H. (2012). Strategic Alliances for Environmental Improvements. *Business & Society*, 51(2), 335–348. <http://doi.org/10.1177/0007650312437918>
- Linden, R. (2003). The Discipline of Collaboration. *Leader to Leader*, 2003(29), 41–47. <http://doi.org/10.1002/ltl.37>
- Little, R. J. A. (1988). A Test of Missing Completely at Random for Multivariate Data with Missing Values. *Journal of the American Statistical Association*, 83(404), 1198–1202. <http://doi.org/10.2307/2290157>
- London, T., Rondinelli, D. A., & O'Neill, H. (2006). Strange Bedfellows: Alliances between Corporations and Nonprofits. In *Handbook of Strategic Alliances* (pp. 353–366). SAGE Publications, Inc. <http://doi.org/10.4135/9781452231075.n19>
- MacDonald, A. (2016). *Multi-Stakeholder Partnerships for Community Sustainability Plan Implementation: Understanding Structures and Outcomes at the Partner and Partnership Levels* (pp. 1–341). PHD Dissertation. Waterloo, Canada: University of Waterloo
- MacDonald, A., Clarke, A., Huang, L., Roseland, M., & Seitanidi, M. M. (2017). Multi-Stakeholder Partnerships (SDG #17) as a Means of Achieving Sustainable Communities and Cities (SDG #11). In W. Leal Filho (Ed.), *Handbook of Sustainability Science and Research*. New York, USA: Springer Publishing Company.

- Matos, S., & Silvestre, B. S. (2013). Managing Stakeholder Relations When Developing Sustainable Business Models: The Case Of the Brazilian Energy Sector. *Journal of Cleaner Production*, 45(C), 61–73. <http://doi.org/10.1016/j.jclepro.2012.04.023>
- Matsunaga, M. (2010). How to Factor-Analyze Your Data Right: Dos, Donts, and How-Tos. *International Journal of Psychological Research*, 1–14.
- Mazzara, L., Sangiorgi, D., & Siboni, B. (2010). Public Strategic Plans In Italian local Governments. *Public Management Review*, 12(4), 493–509. <http://doi.org/10.1080/14719037.2010.496264>
- McGlashan, D. J. (2003). Funding in Integrated Coastal Zone Management Partnerships. *Marine Pollution Bulletin*, 46(4), 393–396. [http://doi.org/10.1016/S0025-326X\(02\)00257-6](http://doi.org/10.1016/S0025-326X(02)00257-6)
- Millennium Ecosystem Assessment. (2005). Ecosystems and Human Wellbeings: Synthesis (pp. 1–155). Washington, DC: Island Press.
- Milutinovic, S., & Jolovic, A. (2010). Building Capacity for Sustainability: Strategic Planning Processes for Local Sustainable Development Practices in Western Balkan. *Lex Localis - Journal of Local Self-Government*, 8(3), 1–20. [http://doi.org/10.4335/8.3.293-311\(2010\)](http://doi.org/10.4335/8.3.293-311(2010))
- Natural Resources Canada. (2013). Energy Performance Contracting Guide for Federal Buildings. Retrieved April 16, 2018, from [https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/oeef/pdf/communities-government/buildings/federal/pdfs/12-0419%20-%20EPC\\_e.pdf](https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/oeef/pdf/communities-government/buildings/federal/pdfs/12-0419%20-%20EPC_e.pdf)
- Norman, G. (2010). Likert scales, levels of measurement and the “laws” of statistics. *Advances in Health Sciences Education*, 15(5), 625–632. <http://doi.org/10.1007/s10459-010-9222-y>
- Nulty, D. D. (2008). The Adequacy of Response Rates to Online and Paper Surveys: What Can Be Done? *Assessment & Evaluation in Higher Education*, 33(3), 301–314. <http://doi.org/10.1080/02602930701293231>
- O’Brien, R. M. (2007). A Caution Regarding Rules of Thumb for Variance Inflation Factors. *Quality & Quantity*, 41(5), 673–690. <http://doi.org/10.1007/s11135-006-9018-6>
- O’Regan, B., Morrissey, J., Foley, W., & Moles, R. (2009). The relationship between settlement population size and sustainable development measured by two sustainability metrics. *Environmental Impact Assessment Review*, 29(3), 169–178. <http://doi.org/10.1016/j.eiar.2008.08.002>
- Parenteau, R. (1994). Local Action Plans for Sustainable Communities. *Environment and Urbanization*, 6(2), 1–17.
- Park, & Russo, M. V. (1996). When Competition Eclipses Cooperation: An Event History Analysis of Joint Venture Failure. *Management Science*, 42(6), 875–890.
- Park, C., Purcell, M., & Purkis, J. (2009). Integrated Community Sustainability Planning - A Guide (pp. 1–128). the Natural Step.
- Parmigiani, A., & Rivera-Santos, M. (2011). Clearing a Path Through the Forest: A Meta-Review of Interorganizational Relationships. *Journal of Management*, 37(4), 1108–1136. <http://doi.org/10.1177/0149206311407507>
- Perkins, D. F., Feinberg, M. E., Greenberg, M. T., Johnson, L. E., Chilenski, S. M., Mincemoyer, C. C., & Spoth, R. L. (2010). Team Factors That Predict to Sustainability Indicators for Community-Based Prevention Teams. *Evaluation and Program Planning*, 1–10. <http://doi.org/10.1016/j.evalprogplan.2010.10.003>

- Purcal, C., Muir, K., Patulny, R., Thomson, C., & Flaxman, S. (2011). Does Partnership Funding Improve Coordination and Collaboration among Early Childhood Services? - Experiences from the Communities for Children Programme. *Child & Family Social Work, 16*(4), 474–484. <http://doi.org/10.1111/j.1365-2206.2011.00766.x>
- Rhemtulla, M., Brosseau-Liard, P. É., & Savalei, V. (2012). When Can Categorical Variables Be Treated as Continuous? A Comparison of Robust Continuous and Categorical SEM Estimation Methods Under Suboptimal Conditions. *Psychological Methods, 17*(3), 354–373. <http://doi.org/10.1037/a0029315>
- Roome, N. (1992). Developing Environmental Management Strategies. *Business Strategies and the Environment, 1*, 11–24.
- Roseland, M. (2000). Sustainable Community Development: Integrating Environmental, Economic, and Social Objectives. *Progress in Planning, 54*(2000), 73–132.
- Roth, P. (2006). Missing Data: A Conceptual Review for Applied Psychologists. *Personnel Psychology, 47*(3), 1–24. <http://doi.org/10.1111/j.1744->
- Russell, C. J., & Bobko, P. (1992). Moderated Regression Analysis and Likert Scales: Too Coarse for Comfort. *Journal of Applied Psychology, 77*(3), 336–342.
- Sandilands, D. (2014). Bivariate Analysis. In *Encyclopedia of Quality of Life and Well-Being Research* (pp. 416–418). Dordrecht: Springer Netherlands. [http://doi.org/10.1007/978-94-007-0753-5\\_222](http://doi.org/10.1007/978-94-007-0753-5_222)
- Selin, S., & Chavez, D. (1995). Developing a Collaborative Model for Environmental Planning and Management. *Journal of Environmental Management, 19*(2), 189–195.
- Selman, P. (1998). Local Agenda 21: Substance or Spin? *Journal of Environmental Planning and Management, 41*(5), 533–553. <http://doi.org/10.1080/09640569811443>
- Selsky, J. W., & Parker, B. (2005). Cross-Sector Partnerships to Address Social Issues: Challenges to Theory and Practice. *Journal of Management, 31*(6), 849–873. <http://doi.org/10.1177/0149206305279601>
- Shaw, M. M. (2003). Successful collaboration between the nonprofit and public sectors. *Nonprofit Management and Leadership, 14*(1), 107–120. <http://doi.org/10.1002/nml.24>
- Shen, L.-Y., Ochoa, J. J., Shah, M. N., & Zhang, X. (2011). The Application Of Urban Sustainability Indicators - A Comparison Between Various Practices. *Habitat International, 35*(1), 17–29. <http://doi.org/10.1016/j.habitatint.2010.03.006>
- Slack, E. (2011). Financing Large Cities and Metropolitan Areas. IMFG Papers on Municipal Finance and Governance. Institute on Municipal Finance and Governance Munk School of Global Affairs, University of Toronto. Retrieved from: [https://munkschool.utoronto.ca/imfg/uploads/174/enidslack\\_imfg\\_no.\\_3\\_online\\_.pdf](https://munkschool.utoronto.ca/imfg/uploads/174/enidslack_imfg_no._3_online_.pdf)
- Steijn, B., Klijn, E.-H., & Edelenbos, J. (2011). Public Private Partnerships: Added Value by Organizational Form or Management? *Public Administration, 89*(4), 1235–1252. <http://doi.org/10.1111/j.1467-9299.2010.01877.x>
- Storey, D., Santucci, L., Fraser, R., Aleluia, J., & Chomchuen, L. (2015). Designing Effective Partnerships for Waste-to-Resource Initiatives: Lessons Learned from Developing Countries. *Waste Management & Research, 33*(12), 1066–1075. <http://doi.org/10.1177/0734242X15602964>
- Sullivan, G. M., & Artino, A. R., Jr. (2013). Analyzing and Interpreting Data From Likert-Type Scales. *Journal of Graduate Medical Education, 5*(4), 541–542. <http://doi.org/10.4300/JGME-5-4-18>

- Taber, K. S. (2017). The Use of Cronbach's Alpha When Developing and Reporting Research Instruments in Science Education. *Research Science Education*, 1–24. <http://doi.org/10.1007/s11165-016-9602-2>
- Takeuchi, K., & Aginam, O. (2010). Sustainability challenges and opportunities in Africa. *Sustainability Science*, 6(1), 3–5. <http://doi.org/10.1007/s11625-010-0124-y>
- Tavakol, M., & Dennick, R. (2011). Making Sense of Cronbach's Alpha. *International Journal of Medical Education*, 2, 53–55. <http://doi.org/10.5116/ijme.4dfb.8dfd>
- Taylor, A. (2012). Indicators, Domains, And Scoring Methods for A Canadian Community Sustainability Indicator Framework, 1–128. Master Dissertation. Waterloo, Canada: University of Waterloo
- The Atmospheric Fund. (2017). Energy Efficiency Financing Tools for the Canadian Context. Retrieved April 16, 2018, from [http://taf.ca/wp-content/uploads/2017/11/TAF\\_Guide\\_Energy\\_Efficiency\\_Financing\\_Tools\\_2017-03-15.pdf](http://taf.ca/wp-content/uploads/2017/11/TAF_Guide_Energy_Efficiency_Financing_Tools_2017-03-15.pdf)
- Tilman, D., & Lehman, C. (2001). Human-Caused Environmental Change: Impacts on Plant Diversity and Evolution. *National Academy of Sciences Colloquium*, 98(10), 5433–5440.
- Tsenkova, S. (2005). Urban Sustainability in Europe and North America. *Cities, Policy Planning Research Series*, 1–74.
- UN Habitat. (2016). *Urbanization and Development: Emerging Futures* (pp. 1–264). Nairobi: UN Habitat.
- UNESCO. (2016). Sustainable Development in the Least Developed Countries -Towards 2030. Retrieved April 17, 2018, from <http://unesdoc.unesco.org/images/0024/002448/244835E.pdf>
- United Nations. (2014). Open Working Group Proposal of the General Assembly on Sustainable Development Goals. Retrieved July 27, 2017, from <https://undocs.org/A/68/970>
- United Nations Conference on Environment and Development (UNCED). (1992). Agenda21. Retrieved March 6, 2018, from <https://sustainabledevelopment.un.org/content/documents/Agenda21.pdf>
- United Nations Economic & Social Affairs. (2007). *Indicators of Sustainable Development: Guidelines and Methodologies* (pp. 1–99). New York: United Nations publication.
- Van Puyvelde, S., Huybrechts, G., Willems, J., Jegers, M., Bidee, J., Vantilborgh, T., & Pepermans, R. (2015). Optimal Membership Size and the Governance of Grassroots Associations, 1–7. <http://doi.org/10.1016/j.sosij.2014.11.002>
- Vatcheva, K., Lee, M., McCormick, J. B., & Rahbar, M. H. (2016). Multicollinearity in Regression Analyses Conducted in Epidemiologic Studies. *Epidemiology: Open Access*, 06(02), 1–20. <http://doi.org/10.4172/2161-1165.1000227>
- Volkery, A., Swanson, D., Jacob, K., Bregha, F., & Pintér, L. (2006). Coordination, Challenges, and Innovations in 19 National Sustainable Development Strategies. *World Development*, 34(12), 2047–2063. <http://doi.org/10.1016/j.worlddev.2006.03.003>
- Watson, P., Gabriel, M., & Rooney, M. (2015). Get Bill Smart: A Community-Partnership Approach to Supporting Low-Income Households to Achieve Home Energy Savings. *Indoor and Built Environment*, 24(7), 867–877. <http://doi.org/10.1177/1420326X15591637>
- WCED. (1987). Our Common Future: Report of the World Commission on Environment and Development. Retrieved July 27, 2017, from <http://www.un-documents.net/our-common-future.pdf>
- Yong, A. G., & Pearce, S. (2013). A Beginner's Guide to Factor Analysis: Focusing on Exploratory Factor Analysis. *Tutorials in Quantitative Methods for Psychology*, 9(2), 79–94. <http://doi.org/10.20982/tqmp.09.2.p079>

Zhao, X., Lynch, J. G., Jr., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and Truths about Mediation Analysis. *Journal of Consumer Research*, 37(2), 197–206.  
<http://doi.org/10.1086/651257>

# Appendices

## Appendix I International Survey

11/13/13

Implementation of community sustainability plans: A study on governance and outcomes - 0%

Administrator Toolbar

Jump to page:

### Implementation of community sustainability plans: A study on governance and outcomes

0%

Title of Project: *Implementation of community sustainability plans: An international study on governance and outcomes.*

You are invited to participate in a research study conducted under the leadership of *Dr. Amelia Clarke* from the *School of Environment, Enterprise and Development*, University of Waterloo, Canada. The objective of the research study is to consider the relationship between governance approach and outcomes resulting from the implementation of a community sustainability plan. Community sustainability plans identify a vision, including the environmental, social, and economic goals, and targets of a local community.

If you decide to participate, you will be asked to complete a **20-30** minute online survey. The questions are related to the governance of your community's sustainability plan. For example, survey questions focus on mechanisms for implementation of your community's sustainability plan such as decision-making approaches, monitoring and reporting, communications, community-wide actions, and finances.

If you prefer not to complete the survey on the web, please contact us and we will make arrangements to provide you another method of participation. Participation in this study is voluntary. You may decline to answer any questions that you do not wish to answer and you can withdraw your participation at any time by not submitting your responses. There are no known or anticipated risks from participating in this study.

It is important for you to know that any information you provide will be confidential. All of the data will be summarized and no individual community will be identified in these summarized results. Please note that the web-survey does not collect IP addresses.

As a special thank you for filling out the survey you will receive a \$10 gift card to your choice of Amazon or iTunes.

Should you have any questions about the study, please contact *Dr. Amelia Clarke* at [amelia.clarke@uwaterloo.ca](mailto:amelia.clarke@uwaterloo.ca) or *Adriane MacDonald* at [a24macdo@uwaterloo.ca](mailto:a24macdo@uwaterloo.ca). Further, if you would like to receive a copy of the results of this study, please include your email on the last page of the survey.

I would like to assure you that this study has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Committee. However, the final decision about participation is yours. If you have any comments or concerns resulting from your participation in this study, please feel free to contact *Dr. Maureen Nummelin*, Director, Office of Research Ethics, at 1-519-888-4567 ext. 36005 or by email at [maureen.nummelin@uwaterloo.ca](mailto:maureen.nummelin@uwaterloo.ca).

Thank you for considering to participate in this study.

#### Consent to Participate

With full knowledge of all foregoing, I agree, of my own free will, to participate in this study.

I agree to participate, click "NEXT"

I do not wish to participate (please close your web browser now)

Form Tools powered by [FluidSurveys](#)

## Implementation of community sustainability plans: A study on governance and outcomes

16%

### Part A

#### Question 1

What local authority or community are you representing in this survey?

What country is your community in?

Please select the continent your country is in

- Africa
- Asia
- Australia
- Europe
- North America
- South America

#### Question 2

Select the population range that best describes your community

- Under 50,000
- 50,001 - 100,000
- 100,001 - 500,000
- 500,001 - 1,000,000
- 1,000,001 - 5,000,000
- 5,000,001+

#### Question 3

Please select one of the following organization types that best reflect the local government entity you represent as you fill out the survey.

- Local Government (whole)
- Local Government (one department)
- Other, please specify

#### Question 4

Please select the role that most identifies you within your organization

- Elected Official
- Director
- Manager
- Coordinator/Specialist/Officer/Planner
- Project/Program Assistant
- Intern/Student
- Other, please specify...

**Question 5**

Community sustainability plans often include several sustainable development topic areas. Below are sixteen topics commonly associated with community sustainability. Each community has different needs so we understand that your plan might not cover all of these topics. To answer this question, please only select the topics that appear in your community sustainability plan.

- Energy
- Land Use
- Transportation
- Water
- Waste
- Air
- Housing
- Financial Security/ Poverty Alleviation
- Local Economy/Employment
- Food Security
- Ecological Diversity
- Climate Change
- Noise Pollution
- Civic Engagement
- Social Infrastructure
- Safety (Crime)

**Question 6**

How old is your community sustainability plan?

- 0-2 years
- 3-5 years
- 6-8 years
- 9-11 years
- 12-14 years
- 15+ years
- Not sure

**Question 7**

What is the time horizon of your community sustainability plan?

- 0-10
- 11-20
- 21-30
- 31-40
- 41-50
- 51-60
- 61+
- Not sure

**Question 8**

How many partners are involved in the implementation of your community sustainability plan?

- 0
- 1-5
- 6-10
- 11-20
- 21-50
- 51-99
- 100+

11/3/13

Implementation of community sustainability plans: A study on governance and outcomes - 17%

Not sure

Form Tools powered by [FluidSurveys](#)

## Implementation of community sustainability plans: A study on governance and outcomes

33%

### Part B

#### Question 1 - Oversight Structure

Please rate the level of the following statements. Implementation activities for your community sustainability plan are organized through....

	Never	Rarely	Occasionally	Frequently	Very Frequently
<b>an arm's length organization (e.g., non-governmental organization)</b>	<input type="checkbox"/>				
<b>a committee or board made up of partners</b>	<input type="checkbox"/>				
<b>issue-based task forces made up of partners</b>	<input type="checkbox"/>				
<b>the local governmental government</b>	<input type="checkbox"/>				
<b>other processes that engage partners</b>	<input type="checkbox"/>				

#### Question 2 - Governance

Please rate to what extent you agree or disagree with the following statements.

	Disagree	Somewhat disagree	Neither agree or disagree	Somewhat agree	Agree
<b>strategic decisions (e.g., what projects to implement, what aspects of progress to monitor, what information to communicate) are made by the local government partner</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>strategic decisions are made collaboratively by all partners, including the local government (e.g., through committees, networks, issue-based task-forces)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>implementation decisions (e.g., how to implement the projects, how to monitor progress, how to communicate) are made by the local government partner</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>implementation decisions are made collaboratively by all partners, including the local government</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>monitoring is done by the local government partner</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>monitoring is done collaboratively by all partners, including the local government</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<b>reporting is done by the local government partner</b>	<input type="checkbox"/>				
<b>reporting is done collaboratively by all partners, including the local government</b>	<input type="checkbox"/>				
<b>communication is facilitated by the local government partner</b>	<input type="checkbox"/>				
<b>communication is facilitated collaboratively by all partners, including the local government</b>	<input type="checkbox"/>				
<b>meetings and/or other partner events are coordinated by the local government partner</b>	<input type="checkbox"/>				
<b>meetings and/or other partner events are coordinated collaboratively by all partners, including the local government</b>	<input type="checkbox"/>				

**Question 3 - Evaluation and Control**

Please rate to what extent you agree or disagree with this following statements. Implementation of your community sustainability plan include mechanisms that....

	<b>disagree</b>	<b>somewhat disagree</b>	<b>neutral</b>	<b>somewhat agree</b>	<b>agree</b>
<b>monitor progress made on community-wide sustainability goals</b>	<input type="checkbox"/>				
<b>monitor progress made on partners' sustainability goals</b>	<input type="checkbox"/>				
<b>monitor progress made on the local government's sustainability goals</b>	<input type="checkbox"/>				
<b>report on progress made on community-wide sustainability goals</b>	<input type="checkbox"/>				
<b>report on progress made on partners' sustainability goals</b>	<input type="checkbox"/>				
<b>report on progress made on local government's sustainability goals</b>	<input type="checkbox"/>				
<b>report on local government and partner sustainability <u>actions</u></b>	<input type="checkbox"/>				
<b>identify necessary adjustments required for meeting the community's sustainability goals</b>	<input type="checkbox"/>				
<b>allow for adjustments to be made to the community's sustainability goals</b>	<input type="checkbox"/>				
<b>facilitate the timely renewal of the community sustainability plan</b>	<input type="checkbox"/>				

**Question 4 - Partner Engagement**

Please rate to what extent you agree or disagree with this following statements. Implementation of your community sustainability plan include mechanisms that....

	disagree	somewhat disagree	neutral	somewhat agree	agree
<b>allows for multiple avenues for partners to contribute (e.g., committees, networks, issue-based task-forces)</b>	<input type="checkbox"/>				
<b>encourage partner organizations to engage in community sustainability initiatives</b>	<input type="checkbox"/>				
<b>encourage partner organizations to implement internal sustainability initiatives (e.g., zero waste programs)</b>	<input type="checkbox"/>				
<b>ensure all the organizations that need to be members of the partnership are members</b>	<input type="checkbox"/>				

**Question 5 - Communication**

For each of the following statements please rate the amount of communication to partners on activities related to your community sustainability plan (or other related initiative) done through....

	Never	Rarely	Occasionally	Frequently	Very Frequently
<b>a website</b>	<input type="checkbox"/>				
<b>a newsletter</b>	<input type="checkbox"/>				
<b>regular email updates sent to partners</b>	<input type="checkbox"/>				
<b>partner networking events</b>	<input type="checkbox"/>				
<b>sustainability focused educational seminars and workshops</b>	<input type="checkbox"/>				
<b>awards and/or recognition events for partners</b>	<input type="checkbox"/>				
<b>annual or regular meetings with partners to discuss progress and next steps</b>	<input type="checkbox"/>				

Form Tools powered by [FluidSurveys](#)

## Implementation of community sustainability plans: A study on governance and outcomes

50%

### Part C - Outcomes

#### Question 1 - Plan Outcomes (note, Question 2 is about action while Question 1 is about plan content)

Please use the following proactivity continuum to rate the approach set in your community sustainability plan's topic areas: (1) Compliance: ensure regulations are met (by the local government); (2) Beyond Compliance: local government proactively working to reduce negative or increase positive impacts internally; (3) Proactive: proactively working together with others to reduce negative or increase positive community-wide impacts; (4) Leading Edge: effecting change beyond community boundaries (supply chain, procurement, training others).

	Compliance	Beyond Compliance (internal)	Proactive (community-wide)	Leading Edge
Energy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Land Use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transportation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Water	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Waste	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Air	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Housing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Financial Security/ Poverty Alleviation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Local Economy/Employment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Food Security	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ecological Diversity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Climate Change	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Noise Pollution	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Civic Engagement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Social Infrastructure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Safety (Crime)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

#### Question 2

Based on the above proactivity continuum, please rate your community's actions taken in each topic area as a result of the community sustainability plan.

	Compliance	Beyond Compliance (internal)	Proactive (community-wide)	Leading Edge
Energy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Land Use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transportation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3/31/2014

Implementation of community sustainability plans: A study on governance and outcomes - 50%

	1	2	3	4
<b>Water</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Waste</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Air</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Housing</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Financial Security/ Poverty Alleviation</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Local Economy/Employment</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Food Security</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Ecological Diversity</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Climate Change</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Noise Pollution</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Civic Engagement</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Social Infrastructure</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Safety (Crime)</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Question 3**

In your community sustainability plan's topic areas, please indicate your opinion on the progress made towards the goals set?

	<b>Did not meet goals at all</b>	<b>Met some goals</b>	<b>Met expected goals</b>	<b>Exceeded goals</b>	<b>Greatly exceeded goals</b>
<b>Energy</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Land Use</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Transportation</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Water</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Waste</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Air</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Housing</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Financial Security/ Poverty Alleviation</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Local Economy/Employment</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Food Security</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Ecological Diversity</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Climate Change</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Noise Pollution</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Civic Engagement</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Social Infrastructure</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Safety (Crime)**

**Question 4 -Process Outcomes**

Please rate your level of agreement with the following statements. In the implementation of the community sustainability plan...

	disagree	somewhat disagree	neutral	somewhat agree	agree
partners are able to adapt to changing conditions, such as fewer funds than expected, changing political climate, or change in leadership	<input type="checkbox"/>				
the collaborative group has the ability to survive even if it had to make major changes in its plans or add some new members to reach its goals	<input type="checkbox"/>				
there is adequate 'people power' for the collaborative group to do what it wants to accomplish	<input type="checkbox"/>				
there are adequate funds for the collaborative group to do what it wants to accomplish	<input type="checkbox"/>				
the partners in leadership positions have good skills for working with other people and orgnaizations	<input type="checkbox"/>				
new sustainability focused organizations (e.g., not-for-profit or social enterprise) have formed	<input type="checkbox"/>				
new collaboratively implemented sustainability projects have formed	<input type="checkbox"/>				

**Question 5 - Partner Outcomes**

Please rate the level of the following statements. As a result of implementing the community sustainability plan...

	disagree	somewhat disagree	neutral	somewhat agree	agree
sustainability knowledge in the local authority has increased	<input type="checkbox"/>				
sustainability knowledge among partners has increased	<input type="checkbox"/>				
the partners have a better understanding of the sustainability issues in the community	<input type="checkbox"/>				
positive professional relationships have formed among the partners	<input type="checkbox"/>				
partners have an improved understanding of each others' perspectives	<input type="checkbox"/>				
positive relationships have formed between the community and the partners	<input type="checkbox"/>				

<b>people involved in our collaboration always trust one another</b>	<input type="checkbox"/>				
<b>communication among the people in this collaborative group happen at both formal meetings and in informal ways</b>	<input type="checkbox"/>				
<b>the sustainability goals set in the community sustainability plan have been achieved</b>	<input type="checkbox"/>				

**Question 6**

If your community sustainability plan includes climate change mitigation please fill in the following information (if possible). For example, your community might have provided this information to the Carbons Cities Climate Registry. If you do not have this information, just skip this question.

Corporate GHG target(s)	<input type="text"/>
Baseline year for your corporate GHG inventory	<input type="text"/>
Total CO2E emissions in your corporate GHG inventory in the baseline year	<input type="text"/>
Year of your latest corporate GHG inventory	<input type="text"/>
Total CO2E emissions in your latest corporate GHG inventory	<input type="text"/>
Community-wide GHG target(s)	<input type="text"/>
Baseline year for your community-wide GHG inventory	<input type="text"/>
Total CO2E emissions in your community-wide GHG inventory in the baseline year	<input type="text"/>
Year of your latest community-wide GHG inventory	<input type="text"/>
Total CO2E emissions in your latest community-wide GHG inventory	<input type="text"/>

## Implementation of community sustainability plans: A study on governance and outcomes

66%

### Part D - Resources

#### Question 1a

Does your local government have a department/unit dedicated to sustainability initiatives?

- Yes (if "yes", please answer Question 1b)
- No (if "no", go to question 2)

#### Question 1b

Has the department/unit been created after your local government became involved in implementing the community sustainability plan?

- Yes
- No

#### Question 2

Approximately how many full-time employees [or full-time equivalents] are designated to your local government's sustainability initiatives? Please estimate the number

#### Question 3

Approximately how many volunteers are designated to your local government's sustainability initiatives? Please estimate the number

#### Question 4

Please rate the level of the following statements. As a result of the community sustainability plan to what extent has your local authority...

	None at all	Very little	Some	A fair amount	A significant amount
<b>saved money from implementing internal sustainability initiatives (e.g., sustainability offices and staff, sustainability programs and training, etc.)</b>	<input type="checkbox"/>				
<b>attracted additional funding for community-wide sustainability initiatives from others (e.g., other levels of government, private sector, etc.)</b>	<input type="checkbox"/>				
<b>contributed financial or other resources to the internal sustainability initiatives (e.g., sustainability offices and staff, sustainability programs and training, etc.)</b>	<input type="checkbox"/>				
<b>contributed financial support to the governance and/or administrative activities (e.g., communication,</b>	<input type="checkbox"/>				

10/29/13

Implementation of community sustainability plans: A study on governance and outcomes - 67%

**monitoring and reporting, and partner engagement)**

**contributed financial support to community-wide sustainability initiatives (e.g., collaborative projects)**

<input type="checkbox"/>				
<input type="checkbox"/>				

[Back](#) [Next](#)

Form Tools powered by [FluidSurveys](#)

11/13/13

Implementation of community sustainability plans: A study on governance and outcomes - 83%

Dr. May Seitanidi, Kent Business School, United Kingdom  
Dr. Mark Roseland, Simon Fraser University, Canada and  
David Runnells, Centre for International Governance Innovation, Canada

In partnership with:  
ICLEI Local Governments for Sustainability

Funded by:  
CIGI - Centre for International Governance Innovation  
SSHRC  
Sustainable Prosperity  
Mitacs

Form Tools powered by [FluidSurveys](#)

## Implementation of community sustainability plans: A study on governance and outcomes

83%

**Please remember to click the submit button at the very bottom of this page in order to submit your completed survey.**

Comments (optional):

### Thank you!

Thank you for participating in our survey. Your feedback is extremely valuable in helping us understand governance approach and related outcomes of implementing a community sustainability plan. As a special thank you for your time, we would like to give you a \$10 gift, please select the gift card you would like below.

Can we follow-up with you if we have additional questions? If yes, please leave your email address in the comment box above.

- Yes  
 No

If you would like a copy of the results, please insert your email address in the box below, and an electronic copy will be sent to you once the analysis is complete.

#### Thank You Gift

Please select the \$10 gift card you would like and include your email in the box below so we can send you the gift card.

- Amazon  
 iTunes

Your email address

If you have any general comments or questions related to this study, please contact **Dr. Amelia Clarke at the University of Waterloo via e-mail at [amelia.clarke@uwaterloo.ca](mailto:amelia.clarke@uwaterloo.ca)**.

We would like to assure you that this study has been reviewed by, and received ethics clearance through, the Office of Research Ethics. If you have any concerns regarding your participation in this study, please contact Dr. Maureen Nummelin, Director, Officer of Research Ethics, at 1-519-888-4567 ext. 36005 or by email at [maureen.nummelin@uwaterloo.ca](mailto:maureen.nummelin@uwaterloo.ca).

Dr. Amelia Clarke, Assistant Professor  
 Adriane MacDonald, PhD Candidate

School of Environment, Enterprise, and Development  
 University of Waterloo, Canada  
 telephone: +1 519-888-4567 ext 38910  
 email: [amelia.clarke@uwaterloo.ca](mailto:amelia.clarke@uwaterloo.ca)  
<https://uwaterloo.ca/school-environment-enterprise-development/people-profiles/amelia-clarke>

In collaboration with:

Dr. Lei Huang, State University of New York at Fredonia, United States

# Appendix II Ethics Procedure

UNIVERSITY OF WATERLOO

Page 5 of 11

## UNIVERSITY OF WATERLOO OFFICE OF RESEARCH ETHICS

### Notification of Ethics Clearance of Application to Conduct Research with Human Participants

**Principal/Co-Investigator:** Areia Clarke  
**Department:** Environment and Business

**Student Investigator:** Haize Chen  
**Department:** Environment and Business

**Student Investigator:** Adriana MacDonald  
**Department:** Local Economic Development

**Collaborator:** Lei Huang  
**Department:** School of Business Administration, DePaul University, Canada

**Collaborator:** M. May Seltanidi  
**Department:** Business School, Hull University, UK

**ORE File #:** 17348

**Project Title:** Implementation of collaborative regional sustainable development strategies: A international study on structure and outcomes (Part I) - Validating partner-centric outcomes)

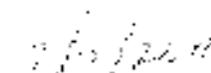
*This certificate provides confirmation that the additional information and materials requested for the above project have been reviewed and are considered acceptable in accordance with the University of Waterloo's Guidelines for Research with Human Participants and the Tri-Council Policy Statement: Ethical Conduct in Research Involving Humans. Thus, the project has received ethics clearance. This clearance is valid for a period of five years from the date shown below and is subject to an annual ethics review process (see Note 2). A new application must be submitted for on-going projects extending beyond five years.*

**Note 1:** *This project must be conducted in accordance with the description in the application and revised materials for which ethics clearance has been granted. All subsequent modifications to the application must be submitted for prior ethics review using ORE Form 104 and must not be initiated until notification of ethics clearance has been received.*

**Note 2:** *All ongoing research projects must undergo annual ethics review. ORE Form 105 is used for this purpose and must be submitted by the Faculty Investigator/Supervisor (FIS) when requested by the ORE. Researchers must submit a Form 105 at the conclusion of the project if it continues for less than a year.*

**Note 3:** *FIs and FISs also are reminded that they must immediately report to the ORE (using ORE Form 105) any events related to the procedures used that adversely affected the participants and the steps taken to deal with these.*

  
Susan E. Sykes, Ph.D., C.Psych.  
Director, Office of Research Ethics

  
Date

OR  
Suzanne Banti, M. Math  
Senior Manager, Research Ethics

OR  
Julie Jaza, B.Sc.  
Manager, Research Ethics

October 16, 2009-10 University of Waterloo

## Appendix III ANCOVA Outputs with Plan Action as Dependent Variable

UNIANOVA Action BY D4C1  
 /METHOD=SSTYPE(3)  
 /INTERCEPT=INCLUDE  
 /PRINT ETASQ DESCRIPTIVE HOMOGENEITY  
 /CRITERIA=ALPHA(.05)  
 /DESIGN=D4C1.

### Between-Subjects Factors

		N
contributed financial/other	1	5
resources to the internal	2	19
sustainability initiatives	3	33
	4	17
	5	11

### Descriptive Statistics

Dependent Variable: Action

	Mean	Std. Deviation	N
contributed financial/other			
resources to the internal			
sustainability initiatives			
1	2.1015	1.00051	5
2	2.1867	.73481	19
3	2.3436	.80087	33
4	2.4247	.64506	17
5	2.5550	.36082	11
Total	2.3378	.72019	85

### Levene's Test of Equality of Error Variances<sup>a,b</sup>

		Levene Statistic	df1	df2	Sig.
Action	Based on Mean	2.833	4	80	.030
	Based on Median	2.368	4	80	.060
	Based on Median and with adjusted df	2.368	4	67.931	.061
	Based on trimmed mean	2.952	4	80	.025

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.<sup>a,b</sup>

a. Dependent variable: Action

b. Design: Intercept + D4C1

### Tests of Between-Subjects Effects

Dependent Variable: Action

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1.361 <sup>a</sup>	4	.340	.645	.632	.031
Intercept	311.613	1	311.613	590.630	.000	.881
D4C1	1.361	4	.340	.645	.632	.031
Error	42.207	80	.528			
Total	508.135	85				
Corrected Total	43.568	84				

a. R Squared = .031 (Adjusted R Squared = -.017)

```
UNIANOVA Action BY D4C1 WITH Q3Continent
/METHOD=SSTYPE(3)
/INTERCEPT=INCLUDE
/PRINT ETASQ DESCRIPTIVE HOMOGENEITY
/CRITERIA=ALPHA(.05)
/DESIGN=Q3Continent D4C1.
```

### Between-Subjects Factors

		N
contributed financial/other resources to the internal sustainability initiatives	1	5
	2	19
	3	33
	4	17
	5	11

### Descriptive Statistics

Dependent Variable: Action

	Mean	Std. Deviation	N
contributed financial/other resources to the internal sustainability initiatives			

1	2.1015	1.00051	5
2	2.1867	.73481	19
3	2.3436	.80087	33
4	2.4247	.64506	17
5	2.5550	.36082	11
Total	2.3378	.72019	85

### Levene's Test of Equality of Error Variances<sup>a</sup>

Dependent Variable: Action

F	df1	df2	Sig.
1.980	4	80	.105

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.<sup>a</sup>

a. Design: Intercept + Q3Continent + D4C1

### Tests of Between-Subjects Effects

Dependent Variable: Action

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	4.164 <sup>a</sup>	5	.833	1.670	.152	.096
Intercept	17.372	1	17.372	34.829	.000	.306
Q3Continent	2.803	1	2.803	5.620	.020	.066
D4C1	.899	4	.225	.451	.772	.022
Error	39.404	79	.499			
Total	508.135	85				
Corrected Total	43.568	84				

a. R Squared = .096 (Adjusted R Squared = .038)

```
UNIANOVA Action BY D4C2
/METHOD=SSTYPE(3)
/INTERCEPT=INCLUDE
/PRINT ETASQ DESCRIPTIVE HOMOGENEITY
/CRITERIA=ALPHA(.05)
/DESIGN=D4C2.
```

### Between-Subjects Factors

		N
contributed financial support to the governance and/or administrative activities	1	7
	2	19
	3	30
	4	21
	5	9

### Descriptive Statistics

Dependent Variable: Action

contributed financial support to the governance and/or administrative activities	Mean	Std. Deviation	N
1	2.2058	.83323	7
2	2.0070	.72302	19
3	2.4473	.80624	30
4	2.3387	.65397	21
5	2.6235	.36796	9
Total	2.3223	.73033	86

### Levene's Test of Equality of Error Variances<sup>a,b</sup>

		Levene Statistic	df1	df2	Sig.
Action	Based on Mean	1.880	4	81	.122
	Based on Median	1.927	4	81	.114
	Based on Median and with adjusted df	1.927	4	72.044	.115
	Based on trimmed mean	1.910	4	81	.117

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.<sup>a,b</sup>

a. Dependent variable: Action

b. Design: Intercept + D4C2

### Tests of Between-Subjects Effects

Dependent Variable: Action

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	3.274 <sup>a</sup>	4	.819	1.576	.188	.072
Intercept	348.541	1	348.541	671.179	.000	.892
D4C2	3.274	4	.819	1.576	.188	.072
Error	42.063	81	.519			
Total	509.135	86				
Corrected Total	45.337	85				

a. R Squared = .072 (Adjusted R Squared = .026)

UNIANOVA Action BY D4C2 WITH Q3Continent  
 /METHOD=SSTYPE(3)  
 /INTERCEPT=INCLUDE  
 /PRINT ETASQ DESCRIPTIVE HOMOGENEITY  
 /CRITERIA=ALPHA(.05)  
 /DESIGN=Q3Continent D4C2.

### Between-Subjects Factors

		N
contributed financial support to	1	7
the governance and/or	2	19
administrative activities	3	30
	4	21
	5	9

### Descriptive Statistics

Dependent Variable: Action

contributed financial support to the governance and/or administrative activities	Mean	Std. Deviation	N
1	2.2058	.83323	7
2	2.0070	.72302	19
3	2.4473	.80624	30
4	2.3387	.65397	21

5	2.6235	.36796	9
Total	2.3223	.73033	86

### Levene's Test of Equality of Error Variances<sup>a</sup>

Dependent Variable: Action

F	df1	df2	Sig.
1.304	4	81	.276

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.<sup>a</sup>

a. Design: Intercept + Q3Continent + D4C2

### Tests of Between-Subjects Effects

Dependent Variable: Action

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	6.575 <sup>a</sup>	5	1.315	2.714	.026	.145
Intercept	14.662	1	14.662	30.261	.000	.274
Q3Continent	3.301	1	3.301	6.813	.011	.078
D4C2	3.610	4	.903	1.863	.125	.085
Error	38.762	80	.485			
Total	509.135	86				
Corrected Total	45.337	85				

a. R Squared = .145 (Adjusted R Squared = .092)

```
UNIANOVA Action BY D4C1 WITH Q4Population
/METHOD=SSTYPE(3)
/INTERCEPT=INCLUDE
/PRINT ETASQ DESCRIPTIVE HOMOGENEITY
/CRITERIA=ALPHA(.05)
/DESIGN=Q4Population D4C1.
```

### Between-Subjects Factors

		N
contributed financial/other	1	5
resources to the internal	2	19
sustainability initiatives	3	33
	4	17

### Descriptive Statistics

Dependent Variable: Action

contributed financial/other resources to the internal sustainability initiatives	Mean	Std. Deviation	N
1	2.1015	1.00051	5
2	2.1867	.73481	19
3	2.3436	.80087	33
4	2.4247	.64506	17
5	2.5550	.36082	11
Total	2.3378	.72019	85

### Levene's Test of Equality of Error Variances<sup>a</sup>

Dependent Variable: Action

F	df1	df2	Sig.
3.337	4	80	.014

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.<sup>a</sup>

a. Design: Intercept + Q4Population + D4C1

### Tests of Between-Subjects Effects

Dependent Variable: Action

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	3.295 <sup>a</sup>	5	.659	1.293	.275	.076
Intercept	299.119	1	299.119	586.754	.000	.881
Q4Population	1.934	1	1.934	3.794	.055	.046
D4C1	1.669	4	.417	.818	.517	.040
Error	40.273	79	.510			
Total	508.135	85				
Corrected Total	43.568	84				

a. R Squared = .076 (Adjusted R Squared = .017)

UNIANOVA Action BY D4C2 WITH Q4Population  
 /METHOD=SSTYPE(3)  
 /INTERCEPT=INCLUDE  
 /PRINT ETASQ DESCRIPTIVE HOMOGENEITY  
 /CRITERIA=ALPHA(.05)  
 /DESIGN=Q4Population D4C2.

**Between-Subjects Factors**

		N
contributed financial support to	1	7
the governance and/or	2	19
administrative activities	3	30
	4	21
	5	9

**Descriptive Statistics**

Dependent Variable: Action

contributed financial support to the governance and/or administrative activities	Mean	Std. Deviation	N
1	2.2058	.83323	7
2	2.0070	.72302	19
3	2.4473	.80624	30
4	2.3387	.65397	21
5	2.6235	.36796	9
Total	2.3223	.73033	86

**Levene's Test of Equality of Error Variances<sup>a</sup>**

Dependent Variable: Action

F	df1	df2	Sig.
1.494	4	81	.212

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.<sup>a</sup>

a. Design: Intercept + Q4Population + D4C2

**Tests of Between-Subjects Effects**

Dependent Variable: Action

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	5.241 <sup>a</sup>	5	1.048	2.091	.075	.116
Intercept	337.353	1	337.353	673.080	.000	.894
Q4Population	1.966	1	1.966	3.923	.051	.047
D4C2	3.712	4	.928	1.851	.127	.085
Error	40.097	80	.501			
Total	509.135	86				
Corrected Total	45.337	85				

a. R Squared = .116 (Adjusted R Squared = .060)

## Appendix IV ANCOVA Outputs with Plan Action as Dependent Variable

UNIANOVA Progress BY D4C1  
 /METHOD=SSTYPE(3)  
 /INTERCEPT=INCLUDE  
 /PRINT ETASQ DESCRIPTIVE HOMOGENEITY  
 /CRITERIA=ALPHA(.05)  
 /DESIGN=D4C1.

### Between-Subjects Factors

		N
contributed financial/other	1	5
resources to the internal	2	19
sustainability initiatives	3	35
	4	16
	5	11

### Descriptive Statistics

Dependent Variable: Progress

	Mean	Std. Deviation	N
contributed financial/other			
resources to the internal			
sustainability initiatives			
1	1.8381	.54017	5
2	2.3164	.50213	19
3	2.4921	.57160	35
4	2.4772	.39266	16
5	2.7561	.48227	11
Total	2.4463	.53980	86

### Levene's Test of Equality of Error Variances<sup>a,b</sup>

		Levene Statistic	df1	df2	Sig.
Progress	Based on Mean	.861	4	81	.491
	Based on Median	.560	4	81	.693
	Based on Median and with adjusted df	.560	4	72.236	.693
	Based on trimmed mean	.836	4	81	.506

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.<sup>a,b</sup>

a. Dependent variable: Progress

b. Design: Intercept + D4C1

### Tests of Between-Subjects Effects

Dependent Variable: Progress

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	3.315 <sup>a</sup>	4	.829	3.129	.019	.134
Intercept	324.734	1	324.734	1226.114	.000	.938
D4C1	3.315	4	.829	3.129	.019	.134
Error	21.453	81	.265			
Total	539.405	86				
Corrected Total	24.767	85				

a. R Squared = .134 (Adjusted R Squared = .091)

```
UNIANOVA Progress BY D4C2
/METHOD=SSTYPE(3)
/INTERCEPT=INCLUDE
/PRINT ETASQ DESCRIPTIVE HOMOGENEITY
/CRITERIA=ALPHA(.05)
/DESIGN=D4C2.
```

### Between-Subjects Factors

		N
contributed financial support to	1	7
the governance and/or	2	20
administrative activities	3	30
	4	21
	5	9

### Descriptive Statistics

Dependent Variable: Progress

contributed financial support to  
the governance and/or  
administrative activities

	Mean	Std. Deviation	N
1	2.0939	.28830	7
2	2.3055	.42540	20
3	2.5095	.59031	30
4	2.5416	.62331	21
5	2.5422	.44207	9
Total	2.4403	.53951	87

### Levene's Test of Equality of Error Variances<sup>a,b</sup>

		Levene Statistic	df1	df2	Sig.
Progress	Based on Mean	2.440	4	82	.053
	Based on Median	2.335	4	82	.062
	Based on Median and with adjusted df	2.335	4	77.004	.063
	Based on trimmed mean	2.378	4	82	.058

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.<sup>a,b</sup>

a. Dependent variable: Progress

b. Design: Intercept + D4C2

### Tests of Between-Subjects Effects

Dependent Variable: Progress

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1.656 <sup>a</sup>	4	.414	1.452	.224	.066
Intercept	373.652	1	373.652	1310.701	.000	.941

D4C2	1.656	4	.414	1.452	.224	.066
Error	23.376	82	.285			
Total	543.125	87				
Corrected Total	25.032	86				

a. R Squared = .066 (Adjusted R Squared = .021)

UNIANOVA Progress BY D4C3  
 /METHOD=SSTYPE(3)  
 /INTERCEPT=INCLUDE  
 /PRINT ETASQ DESCRIPTIVE HOMOGENEITY  
 /CRITERIA=ALPHA(.05)  
 /DESIGN=D4C3.

#### Between-Subjects Factors

		N
contributed financial support to	1	7
community-wide sustainability	2	23
initiatives	3	27
	4	21
	5	7

#### Descriptive Statistics

Dependent Variable: Progress

contributed financial support to community-wide sustainability initiatives	Mean	Std. Deviation	N
1	2.3539	.30509	7
2	2.3392	.50100	23
3	2.3400	.58691	27
4	2.5913	.62841	21
5	2.6924	.46899	7
Total	2.4321	.55346	85

**Levene's Test of Equality of Error Variances<sup>a,b</sup>**

		Levene Statistic	df1	df2	Sig.
Progress	Based on Mean	1.490	4	80	.213
	Based on Median	.898	4	80	.469
	Based on Median and with adjusted df	.898	4	69.679	.470
	Based on trimmed mean	1.409	4	80	.239

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.<sup>a,b</sup>

a. Dependent variable: Progress

b. Design: Intercept + D4C3

**Tests of Between-Subjects Effects**

Dependent Variable: Progress

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1.477 <sup>a</sup>	4	.369	1.218	.310	.057
Intercept	366.572	1	366.572	1209.101	.000	.938
D4C3	1.477	4	.369	1.218	.310	.057
Error	24.254	80	.303			
Total	528.495	85				
Corrected Total	25.731	84				

a. R Squared = .057 (Adjusted R Squared = .010)

```
UNIANOVA Progress BY D4C1 WITH Q3Continent
/METHOD=SSTYPE(3)
/INTERCEPT=INCLUDE
/PRINT ETASQ DESCRIPTIVE HOMOGENEITY
/CRITERIA=ALPHA(.05)
/DESIGN=Q3Continent D4C1.
```

**Between-Subjects Factors**

	N	
contributed financial/other	1	5
resources to the internal	2	19

sustainability initiatives	3	35
	4	16
	5	11

### Descriptive Statistics

Dependent Variable: Progress

contributed financial/other resources to the internal sustainability initiatives	Mean	Std. Deviation	N
1	1.8381	.54017	5
2	2.3164	.50213	19
3	2.4921	.57160	35
4	2.4772	.39266	16
5	2.7561	.48227	11
Total	2.4463	.53980	86

### Levene's Test of Equality of Error Variances<sup>a</sup>

Dependent Variable: Progress

F	df1	df2	Sig.
.775	4	81	.545

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.<sup>a</sup>

a. Design: Intercept + Q3Continent + D4C1

### Tests of Between-Subjects Effects

Dependent Variable: Progress

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	3.544 <sup>a</sup>	5	.709	2.672	.028	.143
Intercept	30.520	1	30.520	115.045	.000	.590
Q3Continent	.230	1	.230	.866	.355	.011
D4C1	3.022	4	.756	2.848	.029	.125
Error	21.223	80	.265			

Total	539.405	86			
Corrected Total	24.767	85			

a. R Squared = .143 (Adjusted R Squared = .090)

UNIANOVA Progress BY D4C2 WITH Q3Continent  
 /METHOD=SSTYPE(3)  
 /INTERCEPT=INCLUDE  
 /PRINT ETASQ DESCRIPTIVE HOMOGENEITY  
 /CRITERIA=ALPHA(.05)  
 /DESIGN=Q3Continent D4C2.

### Between-Subjects Factors

		N
contributed financial support to	1	7
the governance and/or	2	20
administrative activities	3	30
	4	21
	5	9

### Descriptive Statistics

Dependent Variable: Progress

contributed financial support to the governance and/or administrative activities	Mean	Std. Deviation	N
1	2.0939	.28830	7
2	2.3055	.42540	20
3	2.5095	.59031	30
4	2.5416	.62331	21
5	2.5422	.44207	9
Total	2.4403	.53951	87

### Levene's Test of Equality of Error Variances<sup>a</sup>

Dependent Variable: Progress

F	df1	df2	Sig.
2.301	4	82	.065

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.<sup>a</sup>

a. Design: Intercept + Q3Continent + D4C2

### Tests of Between-Subjects Effects

Dependent Variable: Progress

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	2.424 <sup>a</sup>	5	.485	1.737	.135	.097
Intercept	25.051	1	25.051	89.753	.000	.526
Q3Continent	.768	1	.768	2.753	.101	.033
D4C2	1.948	4	.487	1.745	.148	.079
Error	22.608	81	.279			
Total	543.125	87				
Corrected Total	25.032	86				

a. R Squared = .097 (Adjusted R Squared = .041)

```
UNIANOVA Progress BY D4C3 WITH Q3Continent
/METHOD=SSTYPE(3)
/INTERCEPT=INCLUDE
/PRINT ETASQ DESCRIPTIVE HOMOGENEITY
/CRITERIA=ALPHA(.05)
/DESIGN=Q3Continent D4C3.
```

### Between-Subjects Factors

	N
contributed financial support to	7
community-wide sustainability	23
initiatives	27
	21
	7

### Descriptive Statistics

Dependent Variable: Progress  
 contributed financial support to  
 community-wide sustainability  
 initiatives

	Mean	Std. Deviation	N
1	2.3539	.30509	7
2	2.3392	.50100	23
3	2.3400	.58691	27
4	2.5913	.62841	21
5	2.6924	.46899	7
Total	2.4321	.55346	85

### Levene's Test of Equality of Error Variances<sup>a</sup>

Dependent Variable: Progress

F	df1	df2	Sig.
1.678	4	80	.163

Tests the null hypothesis that the error variance of the  
 dependent variable is equal across groups.<sup>a</sup>

a. Design: Intercept + Q3Continent + D4C3

### Tests of Between-Subjects Effects

Dependent Variable: Progress

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1.834 <sup>a</sup>	5	.367	1.212	.311	.071
Intercept	26.748	1	26.748	88.423	.000	.528
Q3Continent	.357	1	.357	1.180	.281	.015
D4C3	1.412	4	.353	1.167	.332	.056
Error	23.897	79	.302			
Total	528.495	85				
Corrected Total	25.731	84				

a. R Squared = .071 (Adjusted R Squared = .012)

UNIANOVA Progress BY D4C2 WITH Q4Population  
 /METHOD=SSTYPE(3)

/INTERCEPT=INCLUDE  
 /PRINT ETASQ DESCRIPTIVE HOMOGENEITY  
 /CRITERIA=ALPHA(.05)  
 /DESIGN=Q4Population D4C2.

**Between-Subjects Factors**

		N
contributed financial support to	1	7
the governance and/or	2	20
administrative activities	3	30
	4	21
	5	9

**Descriptive Statistics**

Dependent Variable: Progress

contributed financial support to the governance and/or administrative activities	Mean	Std. Deviation	N
1	2.0939	.28830	7
2	2.3055	.42540	20
3	2.5095	.59031	30
4	2.5416	.62331	21
5	2.5422	.44207	9
Total	2.4403	.53951	87

**Levene's Test of Equality of Error Variances<sup>a</sup>**

Dependent Variable: Progress

F	df1	df2	Sig.
2.233	4	82	.073

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.<sup>a</sup>

a. Design: Intercept + Q4Population + D4C2

**Tests of Between-Subjects Effects**

Dependent Variable: Progress

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
--------	-------------------------------	----	----------------	---	------	------------------------

Corrected Model	1.815 <sup>a</sup>	5	.363	1.267	.286	.073
Intercept	342.574	1	342.574	1195.175	.000	.937
Q4Population	.159	1	.159	.556	.458	.007
D4C2	1.595	4	.399	1.392	.244	.064
Error	23.217	81	.287			
Total	543.125	87				
Corrected Total	25.032	86				

a. R Squared = .073 (Adjusted R Squared = .015)

UNIANOVA Progress BY D4C3 WITH Q4Population  
/METHOD=SSTYPE(3)  
/INTERCEPT=INCLUDE  
/PRINT ETASQ DESCRIPTIVE HOMOGENEITY  
/CRITERIA=ALPHA(.05)  
/DESIGN=Q4Population D4C3.

#### Between-Subjects Factors

		N
contributed financial support to	1	7
community-wide sustainability	2	23
initiatives	3	27
	4	21
	5	7

#### Descriptive Statistics

Dependent Variable: Progress

contributed financial support to community-wide sustainability initiatives	Mean	Std. Deviation	N
1	2.3539	.30509	7
2	2.3392	.50100	23
3	2.3400	.58691	27
4	2.5913	.62841	21
5	2.6924	.46899	7
Total	2.4321	.55346	85

**Levene's Test of Equality of Error Variances<sup>a</sup>**

Dependent Variable: Progress

F	df1	df2	Sig.
1.351	4	80	.259

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.<sup>a</sup>

a. Design: Intercept + Q4Population + D4C3

**Tests of Between-Subjects Effects**

Dependent Variable: Progress

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1.579 <sup>a</sup>	5	.316	1.033	.404	.061
Intercept	330.091	1	330.091	1079.711	.000	.932
Q4Population	.102	1	.102	.334	.565	.004
D4C3	1.341	4	.335	1.096	.364	.053
Error	24.152	79	.306			
Total	528.495	85				
Corrected Total	25.731	84				

a. R Squared = .061 (Adjusted R Squared = .002)

## Appendix V Bivariate Outputs

### Correlations

		Q3Continent	Action
Q3Continent	Pearson Correlation	1	.312**
	Sig. (2-tailed)		.002
	N	106	94
Action	Pearson Correlation	.312**	1
	Sig. (2-tailed)	.002	
	N	94	94

\*\* . Correlation is significant at the 0.01 level (2-tailed).

### Correlations

		Action	Q4Population
Action	Pearson Correlation	1	-.162
	Sig. (2-tailed)		.118
	N	94	94
Q4Population	Pearson Correlation	-.162	1
	Sig. (2-tailed)	.118	
	N	94	106

### Correlations

		Q4Population	Progress
Q4Population	Pearson Correlation	1	.101
	Sig. (2-tailed)		.335
	N	106	94
rogress	Pearson Correlation	.101	1
	Sig. (2-tailed)	.335	
	N	94	94

## Appendix VI Principal Component Outputs

### FACTOR

```

/VARIABLES B1O1 B1O2 B1O3 B1O4 B1O5 B4PE1 B4PE2 B4PE3 B4PE4
/MISSING LISTWISE
/ANALYSIS B1O1 B1O2 B1O3 B1O4 B1O5 B4PE1 B4PE2 B4PE3 B4PE4
/PRINT INITIAL KMO EXTRACTION ROTATION
/FORMAT BLANK(.30)
/PLOT EIGEN
/CRITERIA MINEIGEN(1) ITERATE(25)
/EXTRACTION PC
/CRITERIA ITERATE(25) DELTA(0)
/ROTATION OBLIMIN
/METHOD=CORRELATION.

```

### Factor Analysis

		Notes
Output Created		20-FEB-2018 09:47:08
Comments		
Input	Data	/Users/yushuoc/Desktop/My thesis my output/Alicia thesis only_Jan 21.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	107
Missing Value Handling	Definition of Missing	MISSING=EXCLUDE: User-defined missing values are treated as missing.
	Cases Used	LISTWISE: Statistics are based on cases with no missing values for any variable used.

Syntax	FACTOR /VARIABLES B1O1 B1O2 B1O3 B1O4 B1O5 B4PE1 B4PE2 B4PE3 B4PE4 /MISSING LISTWISE /ANALYSIS B1O1 B1O2 B1O3 B1O4 B1O5 B4PE1 B4PE2 B4PE3 B4PE4 /PRINT INITIAL KMO EXTRACTION ROTATION /FORMAT BLANK(.30) /PLOT EIGEN /CRITERIA MINEIGEN(1) ITERATE(25) /EXTRACTION PC /CRITERIA ITERATE(25) DELTA(0) /ROTATION OBLIMIN /METHOD=CORRELATION.	
Resources	Processor Time	00:00:00.38
	Elapsed Time	00:00:00.00
	Maximum Memory Required	11368 (11.102K) bytes

**KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.789
Bartlett's Test of Sphericity	Approx. Chi-Square	269.776
	df	36
	Sig.	.000

**Communalities**

	Initial	Extraction
an arm's length organization	1.000	.699
a committee or board made up of partners	1.000	.508
issue-based task force made up of partners	1.000	.589

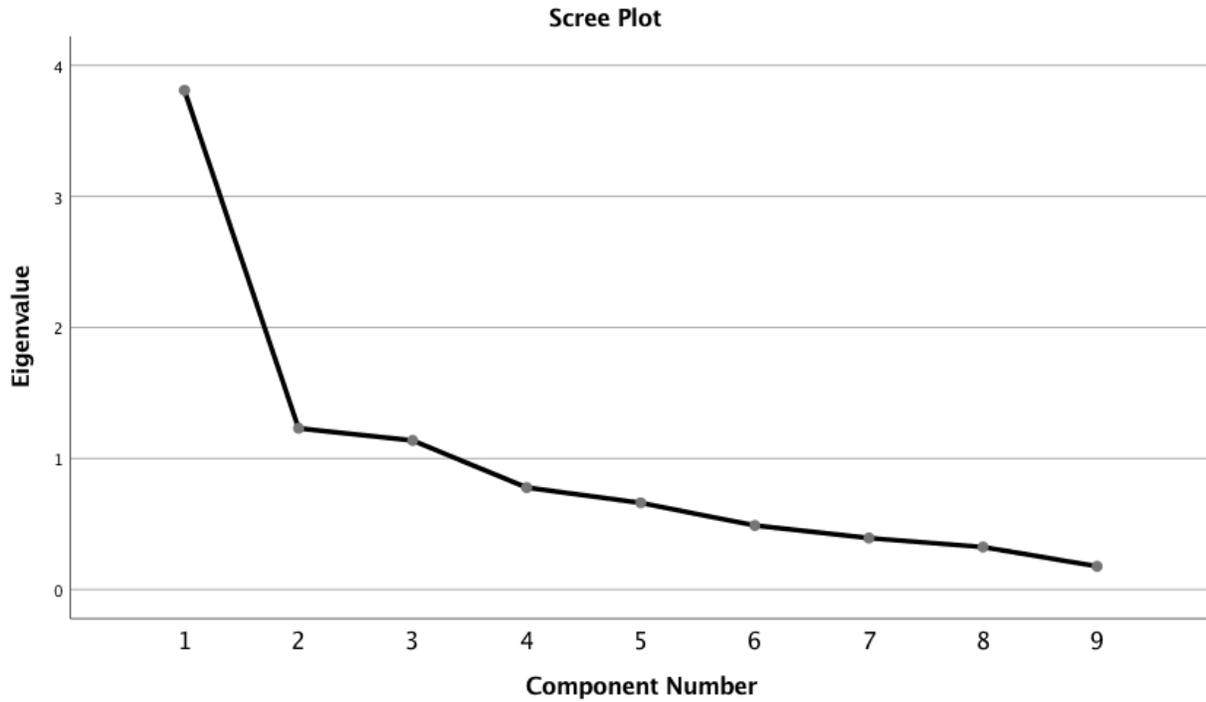
the local government	1.000	.768
other processes that engage partners	1.000	.743
allows for multiple avenues for partners to contribute	1.000	.738
encourage partner organizations to engage in community sustainability initiatives	1.000	.817
encourage partner organizations to implement internal sustainability initiatives	1.000	.730
ensure all the organizations that need to be members of the partnership are members	1.000	.585

Extraction Method: Principal Component Analysis.

Component	Total Variance Explained						Rotation Sums of Squared Loadings <sup>a</sup>
	Initial Eigenvalues			Extraction Sums of Squared Loadings			
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	
1	3.810	42.329	42.329	3.810	42.329	42.329	3.293
2	1.230	13.671	56.000	1.230	13.671	56.000	2.643
3	1.137	12.635	68.634	1.137	12.635	68.634	1.353
4	.778	8.647	77.282				
5	.661	7.345	84.626				
6	.489	5.435	90.062				
7	.393	4.363	94.425				
8	.324	3.603	98.028				
9	.178	1.972	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.



**Component Matrix<sup>a</sup>**

	Component		
	1	2	3
an arm's length organization	.655	.345	-.387
a committee or board made up of partners	.584	.358	
issue-based task force made up of partners	.623	.336	
the local government			.817
other processes that engage partners	.416	.663	.361
allows for multiple avenues for partners to contribute	.797	-.307	
encourage partner organizations to engage in community sustainability initiatives	.836	-.337	
encourage partner organizations to implement internal sustainability initiatives	.802		

ensure all the organizations that need to be members of the partnership are members	.660	-.330	
---	------	-------	--

Extraction Method: Principal Component Analysis.<sup>a</sup>

a. 3 components extracted.

**Pattern Matrix<sup>a</sup>**

	Component		
	1	2	3
an arm's length organization		.800	
a committee or board made up of partners		.668	
issue-based task force made up of partners		.725	
the local government			.846
other processes that engage partners		.512	.680
allows for multiple avenues for partners to contribute	.788		
encourage partner organizations to engage in community sustainability initiatives	.872		
encourage partner organizations to implement internal sustainability initiatives	.808		
ensure all the organizations that need to be members of the partnership are members	.771		

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.<sup>a</sup>

a. Rotation converged in 9 iterations.

**Structure Matrix**

	Component		
	1	2	3
an arm's length organization	.395	.825	

a committee or board made up of partners	.346	.706	
issue-based task force made up of partners	.380	.761	
the local government			.847
other processes that engage partners		.532	.722
allows for multiple avenues for partners to contribute	.837	.459	
encourage partner organizations to engage in community sustainability initiatives	.901	.412	
encourage partner organizations to implement internal sustainability initiatives	.849	.407	
ensure all the organizations that need to be members of the partnership are members	.755		

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

**Component Correlation Matrix**

Component	1	2	3
1	1.000	.387	.133
2	.387	1.000	.125
3	.133	.125	1.000

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

## Appendix VII Significant Ordinary Least Square Outputs

*Hypothesis 1b: Contributed resources internally have a positive effect on plan progress.*

REGRESSION  
 /MISSING LISTWISE  
 /STATISTICS COEFF OUTS R ANOVA  
 /CRITERIA=PIN(.05) POUT(.10)  
 /NOORIGIN  
 /DEPENDENT MeanProgress  
 /METHOD=ENTER D4C1.

Variables Entered/Removed <sup>a</sup>			
Model	Variables Entered	Variables Removed	Method
1	contributed financial/other resources to the internal sustainability initiatives <sup>b</sup>		Enter

a. Dependent Variable: MeanProgress

b. All requested variables entered.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.322 <sup>a</sup>	.104	.093	.51411

a. Predictors: (Constant), contributed financial/other resources to the internal sustainability initiatives

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.566	1	2.566	9.707	.003 <sup>b</sup>
	Residual	22.202	84	.264		
	Total	24.767	85			

a. Dependent Variable: MeanProgress

b. Predictors: (Constant), contributed financial/other resources to the internal sustainability initiatives

		Coefficients <sup>a</sup>				
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.944	.170		11.405	.000
	contributed financial/other resources to the internal sustainability initiatives	.162	.052	.322	3.116	.003

a. Dependent Variable: MeanProgress

**Hypothesis 2b:** *Contributed resources on partnership structure have a positive effect on plan progress.*

REGRESSION  
 /MISSING LISTWISE  
 /STATISTICS COEFF OUTS R ANOVA  
 /CRITERIA=PIN(.05) POUT(.10)  
 /NOORIGIN  
 /DEPENDENT MeanProgress  
 /METHOD=ENTER D4C2.

Variables Entered/Removed <sup>a</sup>			
Model	Variables Entered	Variables Removed	Method
1	contributed financial support to the governance and/or administrative activities <sup>b</sup>		Enter

a. Dependent Variable: MeanProgress

b. All requested variables entered.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.225 <sup>a</sup>	.051	.039	.52879

a. Predictors: (Constant), contributed financial support to the governance and/or administrative activities

		ANOVA <sup>a</sup>				
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.265	1	1.265	4.523	.036 <sup>b</sup>
	Residual	23.768	85	.280		
	Total	25.032	86			

a. Dependent Variable: MeanProgress

b. Predictors: (Constant), contributed financial support to the governance and/or administrative activities

		Coefficients <sup>a</sup>				
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.104	.168		12.536	.000
	contributed financial support to the governance and/or administrative activities	.110	.052	.225	2.127	.036

a. Dependent Variable: MeanProgress

**Hypothesis 3a:** *Contributed resources community-wide have a positive effect on plan actions.*

```
REGRESSION
/MISSING LISTWISE
/STATISTICS COEFF OUTS R ANOVA
/CRITERIA=PIN(.05) POUT(.10)
/NOORIGIN
/DEPENDENT MeanAction
/METHOD=ENTER D4C3.
```

**Variables Entered/Removed<sup>a</sup>**

Model	Variables Entered	Variables Removed	Method
1	contributed financial support to community-wide sustainability initiatives <sup>b</sup>		Enter

a. Dependent Variable: MeanAction

b. All requested variables entered.

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.279 <sup>a</sup>	.078	.067	.69945

a. Predictors: (Constant), contributed financial support to community-wide sustainability initiatives

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.385	1	3.385	6.918	.010 <sup>b</sup>
	Residual	40.117	82	.489		
	Total	43.502	83			

a. Dependent Variable: MeanAction

b. Predictors: (Constant), contributed financial support to community-wide sustainability initiatives

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.735	.229		7.577	.000
	contributed financial support to community-wide sustainability initiatives	.188	.071	.279	2.630	.010

a. Dependent Variable: MeanAction

# Appendix VIII Significant Moderations for Contributed Resources Outputs

*Hypothesis 1d: Collaborative oversight strengthens the positive relationship between contributed resources internally and plan progress.*

Run MATRIX procedure:

\*\*\*\*\* PROCESS Procedure for SPSS Release 2.16.3 \*\*\*\*\*

Written by Andrew F. Hayes, Ph.D. www.afhayes.com

\*\*\*\*\*

Model = 1  
 Y = Progress  
 X = D4C1  
 M = MeanO

Sample size  
 81

\*\*\*\*\*

Outcome: Progress

Model Summary

R	R-sq	MSE	F	df1	df2	p
.3281	.1076	.2409	4.9125	3.0000	77.0000	.0036

Model

	coeff	se	t	p	LLCI	ULCI
constant	2.4582	.0599	41.0337	.0000	2.3390	2.5775
MeanO	.0286	.0765	.3742	.7093	-.1236	.1809
D4C1	.1107	.0548	2.0181	.0471	.0015	.2199
int_1	-.1189	.0485	-2.4503	.0165	-.2155	-.0223

Product terms key:

int\_1 D4C1 X MeanO

R-square increase due to interaction(s):

	R2-chng	F	df1	df2	p
int_1	.0446	6.0042	1.0000	77.0000	.0165

\*\*\*\*\*

Conditional effect of X on Y at values of the moderator(s):

MeanO	Effect	se	t	p	LLCI	ULCI
-.8380	.2103	.0661	3.1816	.0021	.0787	.3419
.0000	.1107	.0548	2.0181	.0471	.0015	.2199
.8380	.0110	.0704	.1568	.8758	-.1291	.1512

Values for quantitative moderators are the mean and plus/minus one SD from mean.  
 Values for dichotomous moderators are the two values of the moderator.

\*\*\*\*\* JOHNSON-NEYMAN TECHNIQUE \*\*\*\*\*

Moderator value(s) defining Johnson-Neyman significance region(s)

Value	% below	% above
.0117	53.0864	46.9136

Conditional effect of X on Y at values of the moderator (M)

MeanO	Effect	se	t	p	LLCI	ULCI
-2.1204	.3628	.1134	3.1996	.0020	.1370	.5885
-1.9204	.3390	.1050	3.2290	.0018	.1299	.5481
-1.7204	.3152	.0968	3.2551	.0017	.1224	.5080
-1.5204	.2914	.0890	3.2746	.0016	.1142	.4687
-1.3204	.2677	.0816	3.2816	.0016	.1052	.4301
-1.1204	.2439	.0747	3.2668	.0016	.0952	.3925
-.9204	.2201	.0684	3.2168	.0019	.0839	.3563
-.7204	.1963	.0631	3.1124	.0026	.0707	.3219
-.5204	.1725	.0589	2.9316	.0044	.0553	.2897
-.3204	.1488	.0560	2.6558	.0096	.0372	.2603
-.1204	.1250	.0548	2.2820	.0253	.0159	.2340
.0117	.1093	.0549	1.9913	.0500	.0000	.2186
.0796	.1012	.0552	1.8325	.0707	-.0088	.2112
.2796	.0774	.0573	1.3501	.1809	-.0368	.1916
.4796	.0536	.0610	.8800	.3816	-.0677	.1750
.6796	.0299	.0658	.4538	.6513	-.1012	.1609
.8796	.0061	.0717	.0849	.9325	-.1366	.1488
1.0796	-.0177	.0783	-.2260	.8218	-.1736	.1382
1.2796	-.0415	.0855	-.4851	.6289	-.2117	.1288
1.4796	-.0653	.0931	-.7005	.4857	-.2507	.1202
1.6796	-.0890	.1012	-.8801	.3816	-.2905	.1124
1.8796	-.1128	.1095	-1.0307	.3059	-.3308	.1051

\*\*\*\*\*

Data for visualizing conditional effect of X on Y

Paste text below into a SPSS syntax window and execute to produce plot.

```
DATA LIST FREE/D4C1 MeanO Progress.
BEGIN DATA.
```

```
-1.0341  -.8380  2.2168
.0000    -.8380  2.4343
1.0341   -.8380  2.6518
-1.0341  .0000   2.3438
.0000    .0000   2.4582
1.0341   .0000   2.5727
-1.0341  .8380   2.4708
.0000    .8380   2.4822
1.0341   .8380   2.4936
```

```
END DATA.
```

```
GRAPH/SCATTERPLOT=D4C1 WITH Progress BY MeanO.
```

\*\*\*\*\* ANALYSIS NOTES AND WARNINGS \*\*\*\*\*

Level of confidence for all confidence intervals in output:

95.00

NOTE: The following variables were mean centered prior to analysis:  
 D4C1 MeanO

NOTE: Some cases were deleted due to missing data. The number of such cases was:  
 26

NOTE: All standard errors for continuous outcome models are based on the HC3 estimator

----- END MATRIX -----

***Hypothesis 2o: Partner engagement mechanism strengthens the positive relationship between contributed resources on structure and plan actions.***

Run MATRIX procedure:

\*\*\*\*\* PROCESS Procedure for SPSS Release 2.16.3 \*\*\*\*\*

Written by Andrew F. Hayes, Ph.D. [www.afhayes.com](http://www.afhayes.com)

\*\*\*\*\*

Model = 1  
 Y = Action  
 X = D4C2  
 M = MeanPE

Sample size  
 85

\*\*\*\*\*

Outcome: Action

Model Summary

	R	R-sq	MSE	F	df1	df2	p
	.3264	.1065	.4806	4.5402	3.0000	81.0000	.0054

Model

	coeff	se	t	p	LLCI	ULCI
constant	2.3049	.0791	29.1310	.0000	2.1475	2.4623
MeanPE	-.0029	.1009	-.0285	.9774	-.2036	.1978
D4C2	.1235	.0655	1.8837	.0632	-.0069	.2539
int_1	.1930	.0788	2.4508	.0164	.0363	.3497

Product terms key:

int\_1 D4C2 X MeanPE

R-square increase due to interaction(s):

	R2-chng	F	df1	df2	p
int_1	.0671	6.0066	1.0000	81.0000	.0164

\*\*\*\*\*

Conditional effect of X on Y at values of the moderator(s):

MeanPE	Effect	se	t	p	LLCI	ULCI
--------	--------	----	---	---	------	------

-.8836	-.0471	.1053	-.4473	.6558	-.2566	.1624
.0000	.1235	.0655	1.8837	.0632	-.0069	.2539
.8836	.2940	.0848	3.4664	.0008	.1253	.4628

Values for quantitative moderators are the mean and plus/minus one SD from mean.  
 Values for dichotomous moderators are the two values of the moderator.

\*\*\*\*\* JOHNSON-NEYMAN TECHNIQUE \*\*\*\*\*

Moderator value(s) defining Johnson-Neyman significance region(s)

Value	% below	% above
.0311	42.3529	57.6471

Conditional effect of X on Y at values of the moderator (M)

MeanPE	Effect	se	t	p	LLCI	ULCI
-2.9010	-.4365	.2508	-1.7406	.0855	-.9354	.0625
-2.7010	-.3979	.2356	-1.6890	.0951	-.8666	.0708
-2.5010	-.3593	.2204	-1.6297	.1070	-.7979	.0793
-2.3010	-.3207	.2054	-1.5610	.1224	-.7294	.0881
-2.1010	-.2821	.1905	-1.4805	.1426	-.6611	.0970
-1.9010	-.2435	.1758	-1.3851	.1698	-.5932	.1063
-1.7010	-.2049	.1612	-1.2708	.2074	-.5256	.1159
-1.5010	-.1663	.1469	-1.1319	.2610	-.4585	.1260
-1.3010	-.1276	.1329	-.9606	.3396	-.3920	.1367
-1.1010	-.0890	.1193	-.7463	.4577	-.3265	.1484
-.9010	-.0504	.1064	-.4742	.6366	-.2621	.1612
-.7010	-.0118	.0943	-.1256	.9004	-.1994	.1757
-.5010	.0268	.0834	.3210	.7491	-.1392	.1927
-.3010	.0654	.0743	.8798	.3815	-.0825	.2132
-.1010	.1040	.0677	1.5361	.1284	-.0307	.2387
.0311	.1295	.0651	1.9897	.0500	.0000	.2589
.0990	.1426	.0643	2.2162	.0295	.0146	.2706
.2990	.1812	.0648	2.7982	.0064	.0524	.3100
.4990	.2198	.0689	3.1915	.0020	.0828	.3568
.6990	.2584	.0761	3.3962	.0011	.1070	.4098
.8990	.2970	.0856	3.4687	.0008	.1266	.4674
1.0990	.3356	.0968	3.4671	.0008	.1430	.5282

\*\*\*\*\*

Data for visualizing conditional effect of X on Y

Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/D4C2 MeanPE Action.  
 BEGIN DATA.

-1.1104	-.8836	2.3597
.0000	-.8836	2.3074
1.1104	-.8836	2.2551
-1.1104	.0000	2.1678
.0000	.0000	2.3049
1.1104	.0000	2.4420
-1.1104	.8836	1.9758
.0000	.8836	2.3023
1.1104	.8836	2.6288

END DATA.  
GRAPH/SCATTERPLOT=D4C2 WITH Action BY MeanPE.

\*\*\*\*\* ANALYSIS NOTES AND WARNINGS \*\*\*\*\*

Level of confidence for all confidence intervals in output:  
95.00

NOTE: The following variables were mean centered prior to analysis:  
D4C2 MeanPE

NOTE: Some cases were deleted due to missing data. The number of such cases was:  
22

NOTE: All standard errors for continuous outcome models are based on the HC3 estimator

----- END MATRIX -----

*Hypothesis 2p: Partner engagement mechanism strengthens the positive relationship between contributed resources on structure and plan progress.*

Run MATRIX procedure:

\*\*\*\*\* PROCESS Procedure for SPSS Release 2.16.3 \*\*\*\*\*

Written by Andrew F. Hayes, Ph.D. [www.afhayes.com](http://www.afhayes.com)

\*\*\*\*\*

Model = 1  
Y = Progress  
X = D4C2  
M = MeanPE

Sample size  
86

\*\*\*\*\*

Outcome: Progress

Model Summary

R	R-sq	MSE	F	df1	df2	p
.3061	.0937	.2732	8.2092	3.0000	82.0000	.0001

Model

	coeff	se	t	p	LLCI	ULCI
constant	2.4533	.0583	42.0515	.0000	2.3372	2.5693
MeanPE	-.0237	.0981	-.2420	.8094	-.2188	.1713
D4C2	.1169	.0412	2.8410	.0057	.0350	.1988
int_1	-.1143	.0437	-2.6180	.0105	-.2012	-.0275

Product terms key:

int\_1 D4C2 X MeanPE

R-square increase due to interaction(s):

	R2-chng	F	df1	df2	p
int_1	.0413	6.8541	1.0000	82.0000	.0105

\*\*\*\*\*

Conditional effect of X on Y at values of the moderator(s):

MeanPE	Effect	se	t	p	LLCI	ULCI
-.8767	.2172	.0479	4.5294	.0000	.1218	.3125
.0000	.1169	.0412	2.8410	.0057	.0350	.1988
.8767	.0167	.0634	.2630	.7932	-.1095	.1428

Values for quantitative moderators are the mean and plus/minus one SD from mean.  
 Values for dichotomous moderators are the two values of the moderator.

\*\*\*\*\* JOHNSON-NEYMAN TECHNIQUE \*\*\*\*\*

Moderator value(s) defining Johnson-Neyman significance region(s)

Value	% below	% above
.2377	60.4651	39.5349

Conditional effect of X on Y at values of the moderator (M)

MeanPE	Effect	se	t	p	LLCI	ULCI
-2.9050	.4491	.1222	3.6744	.0004	.2059	.6922
-2.7050	.4262	.1140	3.7391	.0003	.1994	.6529
-2.5050	.4033	.1058	3.8108	.0003	.1928	.6139
-2.3050	.3805	.0978	3.8905	.0002	.1859	.5750
-2.1050	.3576	.0899	3.9788	.0001	.1788	.5364
-1.9050	.3347	.0821	4.0759	.0001	.1714	.4981
-1.7050	.3119	.0746	4.1810	.0001	.1635	.4602
-1.5050	.2890	.0673	4.2911	.0000	.1550	.4230
-1.3050	.2661	.0605	4.3989	.0000	.1458	.3865
-1.1050	.2433	.0542	4.4885	.0000	.1354	.3511
-.9050	.2204	.0487	4.5300	.0000	.1236	.3172
-.7050	.1975	.0441	4.4740	.0000	.1097	.2854
-.5050	.1747	.0410	4.2561	.0001	.0930	.2563
-.3050	.1518	.0396	3.8291	.0003	.0729	.2307
-.1050	.1289	.0401	3.2116	.0019	.0491	.2088
.0950	.1061	.0425	2.4970	.0145	.0216	.1906
.2377	.0897	.0451	1.9893	.0500	.0000	.1795
.2950	.0832	.0464	1.7945	.0764	-.0090	.1754
.4950	.0603	.0514	1.1726	.2444	-.0420	.1627
.6950	.0375	.0574	.6524	.5160	-.0768	.1517
.8950	.0146	.0640	.2279	.8203	-.1128	.1420
1.0950	-.0083	.0711	-.1163	.9077	-.1497	.1332

\*\*\*\*\*

Data for visualizing conditional effect of X on Y

Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/D4C2 MeanPE Progress.  
 BEGIN DATA.

```
-1.1099  -.8767  2.2330
.0000    -.8767  2.4741
```

1.1099	-.8767	2.7151
-1.1099	.0000	2.3235
.0000	.0000	2.4533
1.1099	.0000	2.5830
-1.1099	.8767	2.4139
.0000	.8767	2.4325
1.1099	.8767	2.4510

END DATA.

GRAPH/SCATTERPLOT=D4C2 WITH Progress BY MeanPE.

\*\*\*\*\* ANALYSIS NOTES AND WARNINGS \*\*\*\*\*

Level of confidence for all confidence intervals in output:  
95.00

NOTE: The following variables were mean centered prior to analysis:  
D4C2 MeanPE

NOTE: Some cases were deleted due to missing data. The number of such cases was:  
21

NOTE: All standard errors for continuous outcome models are based on the HC3 estimator

----- END MATRIX -----

***Hypothesis 3o: Partner engagement mechanism strengthens the positive relationship between contributed resources community-wide and plan actions.***

Run MATRIX procedure:

\*\*\*\*\* PROCESS Procedure for SPSS Release 2.16.3 \*\*\*\*\*

Written by Andrew F. Hayes, Ph.D. [www.afhayes.com](http://www.afhayes.com)

\*\*\*\*\*

Model = 1  
Y = Action  
X = D4C3  
M = MeanPE

Sample size  
83

\*\*\*\*\*

Outcome: Action

Model Summary

R	R-sq	MSE	F	df1	df2	p
.3658	.1338	.4581	4.8112	3.0000	79.0000	.0040

Model

	coeff	se	t	p	LLCI	ULCI
constant	2.2809	.0775	29.4493	.0000	2.1267	2.4350
MeanPE	-.0328	.1028	-.3193	.7503	-.2374	.1718

D4C3	.2119	.0654	3.2389	.0018	.0817	.3422
int_1	.1512	.0674	2.2426	.0277	.0170	.2853

Product terms key:

int\_1 D4C3 X MeanPE

R-square increase due to interaction(s):

	R2-chng	F	df1	df2	p
int_1	.0391	5.0294	1.0000	79.0000	.0277

\*\*\*\*\*

Conditional effect of X on Y at values of the moderator(s):

MeanPE	Effect	se	t	p	LLCI	ULCI
-.8796	.0790	.0808	.9776	.3313	-.0818	.2398
.0000	.2119	.0654	3.2389	.0018	.0817	.3422
.8796	.3449	.0952	3.6221	.0005	.1554	.5344

Values for quantitative moderators are the mean and plus/minus one SD from mean.

Values for dichotomous moderators are the two values of the moderator.

\*\*\*\*\* JOHNSON-NEYMAN TECHNIQUE \*\*\*\*\*

Moderator value(s) defining Johnson-Neyman significance region(s)

Value	% below	% above
-.4998	24.0964	75.9036

Conditional effect of X on Y at values of the moderator (M)

MeanPE	Effect	se	t	p	LLCI	ULCI
-2.9187	-.2293	.1969	-1.1643	.2478	-.6212	.1627
-2.7187	-.1990	.1842	-1.0804	.2833	-.5657	.1677
-2.5187	-.1688	.1717	-.9833	.3285	-.5105	.1729
-2.3187	-.1386	.1592	-.8701	.3869	-.4555	.1784
-2.1187	-.1083	.1470	-.7368	.4634	-.4010	.1843
-1.9187	-.0781	.1350	-.5783	.5647	-.3469	.1907
-1.7187	-.0479	.1234	-.3879	.6991	-.2934	.1977
-1.5187	-.0176	.1121	-.1572	.8755	-.2408	.2055
-1.3187	.0126	.1014	.1243	.9014	-.1892	.2144
-1.1187	.0428	.0914	.4687	.6406	-.1391	.2247
-.9187	.0731	.0824	.8868	.3779	-.0909	.2371
-.7187	.1033	.0748	1.3816	.1710	-.0455	.2521
-.5187	.1335	.0690	1.9365	.0564	-.0037	.2708
-.4998	.1364	.0685	1.9905	.0500	.0000	.2728
-.3187	.1638	.0654	2.5024	.0144	.0335	.2940
-.1187	.1940	.0646	3.0027	.0036	.0654	.3226
.0813	.2242	.0666	3.3692	.0012	.0918	.3567
.2813	.2545	.0710	3.5817	.0006	.1130	.3959
.4813	.2847	.0776	3.6665	.0004	.1301	.4392
.6813	.3149	.0859	3.6673	.0004	.1440	.4859
.8813	.3452	.0953	3.6216	.0005	.1555	.5349
1.0813	.3754	.1056	3.5542	.0006	.1652	.5856

\*\*\*\*\*

Data for visualizing conditional effect of X on Y

Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/D4C3 MeanPE Action.  
BEGIN DATA.

-1.0763	-.8796	2.2248
.0000	-.8796	2.3098
1.0763	-.8796	2.3948
-1.0763	.0000	2.0528
.0000	.0000	2.2809
1.0763	.0000	2.5090
-1.0763	.8796	1.8808
.0000	.8796	2.2520
1.0763	.8796	2.6232

END DATA.

GRAPH/SCATTERPLOT=D4C3 WITH Action BY MeanPE.

\*\*\*\*\* ANALYSIS NOTES AND WARNINGS \*\*\*\*\*

Level of confidence for all confidence intervals in output:  
95.00

NOTE: The following variables were mean centered prior to analysis:  
D4C3 MeanPE

NOTE: Some cases were deleted due to missing data. The number of such cases was:  
24

NOTE: All standard errors for continuous outcome models are based on the HC3 estimator

----- END MATRIX -----

***Hypothesis 3p: Partner engagement mechanism strengthens the positive relationship between contributed resources community-wide and plan progress.***

Run MATRIX procedure:

\*\*\*\*\* PROCESS Procedure for SPSS Release 2.16.3 \*\*\*\*\*

Written by Andrew F. Hayes, Ph.D. [www.afhayes.com](http://www.afhayes.com)

\*\*\*\*\*

Model = 1  
Y = Progress  
X = D4C3  
M = MeanPE

Sample size  
84

\*\*\*\*\*

Outcome: Progress

Model Summary

R	R-sq	MSE	F	df1	df2	p
.2841	.0807	.2919	5.4924	3.0000	80.0000	.0018

Model

	coeff	se	t	p	LLCI	ULCI
constant	2.4548	.0607	40.4281	.0000	2.3340	2.5756
MeanPE	-.0449	.0993	-.4520	.6525	-.2424	.1527
D4C3	.1087	.0521	2.0874	.0400	.0051	.2124
int_1	-.1143	.0484	-2.3592	.0208	-.2107	-.0179

Product terms key:

int\_1 D4C3 X MeanPE

R-square increase due to interaction(s):

	R2-chng	F	df1	df2	p
int_1	.0365	5.5656	1.0000	80.0000	.0208

\*\*\*\*\*

Conditional effect of X on Y at values of the moderator(s):

MeanPE	Effect	se	t	p	LLCI	ULCI
-.8725	.2084	.0541	3.8507	.0002	.1007	.3161
.0000	.1087	.0521	2.0874	.0400	.0051	.2124
.8725	.0090	.0779	.1157	.9082	-.1460	.1640

Values for quantitative moderators are the mean and plus/minus one SD from mean.

Values for dichotomous moderators are the two values of the moderator.

\*\*\*\*\* JOHNSON-NEYMAN TECHNIQUE \*\*\*\*\*

Moderator value(s) defining Johnson-Neyman significance region(s)

Value	% below	% above
.0338	40.4762	59.5238

Conditional effect of X on Y at values of the moderator (M)

MeanPE	Effect	se	t	p	LLCI	ULCI
-2.9226	.4427	.1323	3.3466	.0012	.1795	.7060
-2.7226	.4198	.1233	3.4044	.0010	.1744	.6653
-2.5226	.3970	.1145	3.4676	.0008	.1692	.6248
-2.3226	.3741	.1058	3.5363	.0007	.1636	.5847
-2.1226	.3513	.0973	3.6104	.0005	.1577	.5449
-1.9226	.3284	.0890	3.6885	.0004	.1512	.5056
-1.7226	.3056	.0811	3.7678	.0003	.1442	.4670
-1.5226	.2827	.0736	3.8423	.0002	.1363	.4291
-1.3226	.2599	.0666	3.9005	.0002	.1273	.3924
-1.1226	.2370	.0604	3.9226	.0002	.1168	.3572
-.9226	.2141	.0552	3.8773	.0002	.1042	.3241
-.7226	.1913	.0514	3.7244	.0004	.0891	.2935
-.5226	.1684	.0491	3.4287	.0010	.0707	.2662
-.3226	.1456	.0487	2.9864	.0037	.0486	.2426
-.1226	.1227	.0503	2.4413	.0168	.0227	.2228
.0338	.1049	.0527	1.9901	.0500	.0000	.2097
.0774	.0999	.0535	1.8657	.0658	-.0067	.2064
.2774	.0770	.0582	1.3224	.1898	-.0389	.1929
.4774	.0542	.0641	.8453	.4005	-.0734	.1817

.6774	.0313	.0708	.4424	.6594	-.1095	.1721
.8774	.0085	.0781	.1082	.9141	-.1469	.1638
1.0774	-.0144	.0859	-.1678	.8672	-.1853	.1565

\*\*\*\*\*

Data for visualizing conditional effect of X on Y  
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/D4C3 MeanPE Progress.  
BEGIN DATA.

-1.0915	-.8725	2.2664
.0000	-.8725	2.4939
1.0915	-.8725	2.7214
-1.0915	.0000	2.3361
.0000	.0000	2.4548
1.0915	.0000	2.5735
-1.0915	.8725	2.4058
.0000	.8725	2.4156
1.0915	.8725	2.4255

END DATA.  
GRAPH/SCATTERPLOT=D4C3 WITH Progress BY MeanPE.

\*\*\*\*\* ANALYSIS NOTES AND WARNINGS \*\*\*\*\*

Level of confidence for all confidence intervals in output:  
95.00

NOTE: The following variables were mean centered prior to analysis:  
D4C3 MeanPE

NOTE: Some cases were deleted due to missing data. The number of such cases was:  
23

NOTE: All standard errors for continuous outcome models are based on the HC3 estimator

----- END MATRIX -----

# Appendix IX Significant Mediations for Contributed Resources Outputs

*Hypothesis 2t: Community-wide actions mediates the relationship between contributed resources on structure and plan progress.*

Run MATRIX procedure:

\*\*\*\*\* PROCESS Procedure for SPSS Release 2.16.3 \*\*\*\*\*

Written by Andrew F. Hayes, Ph.D. www.afhayes.com

\*\*\*\*\*

Model = 4  
 Y = Progress  
 X = D4C2  
 M = Action

Sample size  
 85

\*\*\*\*\*

Outcome: Action

Model Summary

R	R-sq	MSE	F	df1	df2	p
.2057	.0423	.5186	3.6653	1.0000	83.0000	.0590

Model

	coeff	se	t	p	LLCI	ULCI
constant	1.9135	.2310	8.2846	.0000	1.4541	2.3729
D4C2	.1360	.0711	1.9145	.0590	-.0053	.2774

\*\*\*\*\*

Outcome: Progress

Model Summary

R	R-sq	MSE	F	df1	df2	p
.3418	.1168	.2615	5.4231	2.0000	82.0000	.0061

Model

	coeff	se	t	p	LLCI	ULCI
constant	1.7240	.2217	7.7767	.0000	1.2830	2.1650
Action	.1956	.0779	2.5101	.0140	.0406	.3507
D4C2	.0810	.0516	1.5703	.1202	-.0216	.1835

\*\*\*\*\* TOTAL EFFECT MODEL \*\*\*\*\*

Outcome: Progress

Model Summary

R	R-sq	MSE	F	df1	df2	p
.2213	.0490	.2782	4.2727	1.0000	83.0000	.0418

Model

	coeff	se	t	p	LLCI	ULCI
constant	2.0983	.1692	12.4038	.0000	1.7619	2.4348
D4C2	.1076	.0520	2.0670	.0418	.0041	.2111

\*\*\*\*\* TOTAL, DIRECT, AND INDIRECT EFFECTS \*\*\*\*\*

Total effect of X on Y

Effect	SE	t	p	LLCI	ULCI
.1076	.0520	2.0670	.0418	.0041	.2111

Direct effect of X on Y

Effect	SE	t	p	LLCI	ULCI
.0810	.0516	1.5703	.1202	-.0216	.1835

Indirect effect of X on Y

Effect	Boot SE	BootLLCI	BootULCI
Action	.0266	.0192	.0814

Partially standardized indirect effect of X on Y

Effect	Boot SE	BootLLCI	BootULCI
Action	.0495	.0347	.1477

Completely standardized indirect effect of X on Y

Effect	Boot SE	BootLLCI	BootULCI
Action	.0547	.0375	.1624

Ratio of indirect to total effect of X on Y

Effect	Boot SE	BootLLCI	BootULCI	
Action	.2474	6.3885	.0060	1.9133

Ratio of indirect to direct effect of X on Y

Effect	Boot SE	BootLLCI	BootULCI	
Action	.3287	26.8556	-.0173	10.4550

R-squared mediation effect size (R-sq\_med)

Effect	Boot SE	BootLLCI	BootULCI	
Action	.0224	.0180	.0018	.0802

Normal theory tests for indirect effect

Effect	se	Z	p
.0266	.0183	1.4512	.1467

\*\*\*\*\* ANALYSIS NOTES AND WARNINGS \*\*\*\*\*

Number of bootstrap samples for bias corrected bootstrap confidence intervals:

1000

Level of confidence for all confidence intervals in output:

95.00

NOTE: Some cases were deleted due to missing data. The number of such cases was:

22

NOTE: Kappa-squared is disabled from output as of version 2.16.

----- END MATRIX -----

**Hypothesis 3t:** *Community-wide actions mediates the relationship between contributed resources community-wide and plan progress.*

Run MATRIX procedure:

\*\*\*\*\* PROCESS Procedure for SPSS Release 2.16.3 \*\*\*\*\*

Written by Andrew F. Hayes, Ph.D. [www.afhayes.com](http://www.afhayes.com)

\*\*\*\*\*

Model = 4  
Y = Progress  
X = D4C3  
M = Action

Sample size  
83

\*\*\*\*\*

Outcome: Action

Model Summary

R	R-sq	MSE	F	df1	df2	p
.2908	.0846	.4875	7.4850	1.0000	81.0000	.0076

Model

	coeff	se	t	p	LLCI	ULCI
constant	1.7199	.2290	7.5112	.0000	1.2643	2.1755
D4C3	.1960	.0716	2.7359	.0076	.0535	.3385

\*\*\*\*\*

Outcome: Progress

Model Summary

R	R-sq	MSE	F	df1	df2	p
.3637	.1323	.2707	6.0965	2.0000	80.0000	.0034

Model

	coeff	se	t	p	LLCI	ULCI
constant	1.6748	.2223	7.5350	.0000	1.2324	2.1171
Action	.2179	.0828	2.6314	.0102	.0531	.3827
D4C3	.0798	.0558	1.4308	.1564	-.0312	.1909

\*\*\*\*\* TOTAL EFFECT MODEL \*\*\*\*\*

Outcome: Progress

Model Summary

R	R-sq	MSE	F	df1	df2	p
.2391	.0572	.2905	4.9098	1.0000	81.0000	.0295

Model

	coeff	se	t	p	LLCI	ULCI
constant	2.0495	.1768	11.5939	.0000	1.6978	2.4013

D4C3 .1225 .0553 2.2158 .0295 .0125 .2326

\*\*\*\*\* TOTAL, DIRECT, AND INDIRECT EFFECTS \*\*\*\*\*

Total effect of X on Y

Effect	SE	t	p	LLCI	ULCI
.1225	.0553	2.2158	.0295	.0125	.2326

Direct effect of X on Y

Effect	SE	t	p	LLCI	ULCI
.0798	.0558	1.4308	.1564	-.0312	.1909

Indirect effect of X on Y

Effect	Boot SE	BootLLCI	BootULCI
Action	.0427	.0266	.1193

Partially standardized indirect effect of X on Y

Effect	Boot SE	BootLLCI	BootULCI
Action	.0774	.0456	.1962

Completely standardized indirect effect of X on Y

Effect	Boot SE	BootLLCI	BootULCI
Action	.0833	.0475	.2101

Ratio of indirect to total effect of X on Y

Effect	Boot SE	BootLLCI	BootULCI	
Action	.3485	30.3367	.0594	1.8790

Ratio of indirect to direct effect of X on Y

Effect	Boot SE	BootLLCI	BootULCI	
Action	.5349	40.0630	-.7210	11.6954

R-squared mediation effect size (R-sq\_med)

Effect	Boot SE	BootLLCI	BootULCI	
Action	.0349	.0257	.0024	.1090

Normal theory tests for indirect effect

Effect	se	Z	p
.0427	.0233	1.8340	.0667

\*\*\*\*\* ANALYSIS NOTES AND WARNINGS \*\*\*\*\*

Number of bootstrap samples for bias corrected bootstrap confidence intervals:

1000

Level of confidence for all confidence intervals in output:

95.00

NOTE: Some cases were deleted due to missing data. The number of such cases was:

24

NOTE: Kappa-squared is disabled from output as of version 2.16.

----- END MATRIX -----

# Appendix X Significant Mediation for Attracted Resources Outputs

*Hypothesis 5t: Community-wide actions mediates the relationship between attracted resources and plan progress.*

Run MATRIX procedure:

\*\*\*\*\* PROCESS Procedure for SPSS Release 2.16.3 \*\*\*\*\*

Written by Andrew F. Hayes, Ph.D. [www.afhayes.com](http://www.afhayes.com)

\*\*\*\*\*

Model = 4  
 Y = Progress  
 X = D4S2  
 M = Action

Sample size  
 82

\*\*\*\*\*

Outcome: Action

Model Summary

R	R-sq	MSE	F	df1	df2	p
.2141	.0458	.4839	3.8423	1.0000	80.0000	.0535

Model

	coeff	se	t	p	LLCI	ULCI
constant	1.9901	.2095	9.4997	.0000	1.5732	2.4070
D4S2	.1187	.0605	1.9602	.0535	-.0018	.2391

\*\*\*\*\*

Outcome: Progress

Model Summary

R	R-sq	MSE	F	df1	df2	p
.3785	.1432	.2534	6.6039	2.0000	79.0000	.0022

Model

	coeff	se	t	p	LLCI	ULCI
constant	1.6430	.2211	7.4298	.0000	1.2029	2.0832
Action	.2321	.0809	2.8693	.0053	.0711	.3932
D4S2	.0702	.0448	1.5645	.1217	-.0191	.1594

\*\*\*\*\* TOTAL EFFECT MODEL \*\*\*\*\*

Outcome: Progress

Model Summary

R	R-sq	MSE	F	df1	df2	p
.2323	.0540	.2763	4.5624	1.0000	80.0000	.0357

Model

	coeff	se	t	p	LLCI	ULCI
constant	2.1050	.1583	13.2978	.0000	1.7900	2.4200

D4S2 .0977 .0457 2.1360 .0357 .0067 .1887

\*\*\*\*\* TOTAL, DIRECT, AND INDIRECT EFFECTS \*\*\*\*\*

Total effect of X on Y

Effect	SE	t	p	LLCI	ULCI
.0977	.0457	2.1360	.0357	.0067	.1887

Direct effect of X on Y

Effect	SE	t	p	LLCI	ULCI
.0702	.0448	1.5645	.1217	-.0191	.1594

Indirect effect of X on Y

Effect	Boot SE	BootLLCI	BootULCI
Action .0275	.0199	.0012	.0775

Partially standardized indirect effect of X on Y

Effect	Boot SE	BootLLCI	BootULCI
Action .0513	.0362	.0018	.1396

Completely standardized indirect effect of X on Y

Effect	Boot SE	BootLLCI	BootULCI
Action .0655	.0424	.0035	.1709

Ratio of indirect to total effect of X on Y

Effect	Boot SE	BootLLCI	BootULCI
Action .2819	36.7244	.0168	2.7507

Ratio of indirect to direct effect of X on Y

Effect	Boot SE	BootLLCI	BootULCI
Action .3926	9.8436	-.1076	12.4154

R-squared mediation effect size (R-sq\_med)

Effect	Boot SE	BootLLCI	BootULCI
Action .0274	.0238	-.0005	.1009

Normal theory tests for indirect effect

Effect	se	Z	p
.0275	.0177	1.5554	.1198

\*\*\*\*\* ANALYSIS NOTES AND WARNINGS \*\*\*\*\*

Number of bootstrap samples for bias corrected bootstrap confidence intervals:

1000

Level of confidence for all confidence intervals in output:

95.00

NOTE: Some cases were deleted due to missing data. The number of such cases was:

25

NOTE: Kappa-squared is disabled from output as of version 2.16.

----- END MATRIX -----

# Appendix XI Study on Savings and Attracted Resources

## Section 1: Hypotheses

### 1.1 Savings on Actions

There is no literature yet linking savings to SCP outcomes. Savings often occur through partnership implementation when partners are committed to internal environmental initiatives as part of SCP implementation (Clarke, 2012). A study examining the potential of energy-saving partnerships in the UK pointed out that energy cost savings through the partnership can serve as a crucial driver for local government support (Chmutina, Goodier, & Berger, 2013). In Berlin, through the Energy Saving Partnership, energy service companies invest expertise and finance in the project, then a contractor will guarantee a certain amount of energy saving. The partners and the contractor will share the cost reduction once the energy is reduced. The model has achieved success in Berlin (Chmutina et al., 2013). Savings from enhanced efficiency can lead to reduced costs through decreasing consumption (Clarke & MacDonald, 2016; Watson, Gabriel, & Rooney, 2015; Chmutina et al., 2013). Since savings are influential in attracting resources and gaining financial support from local government, the influence is expected to carry over to plan outcomes as well through the interaction with other factors:

*Hypothesis 4a: Savings have a positive effect on plan actions.*

*Hypothesis 4b: Savings have a positive effect on plan progress.*

To date, there have been no studies on the influence of oversight on direct savings. However, oversight structure can monitor and coordinate the implementation of SCP and cultivate trust and transparency among partners (Cairns and Harris, 2011; Clarke & Ordonez-Ponce, 2017). Since savings can be generated through the effective implementation of the sustainability initiatives (Clarke & MacDonald, 2016), it is expected that the presence of oversight influences savings.

*Hypothesis 4c: Collaborative oversight strengthens the positive relationship between savings and plan actions.*

*Hypothesis 4d: Collaborative oversight strengthens the positive relationship between savings and plan progress.*

*Hypothesis 4e: Oversight by local government strengthens the positive relationship between savings and plan actions.*

*Hypothesis 4f: Oversight by local government strengthens the positive relationship between*

*savings and plan progress.*

There is no current study examining the relationship between number of partners and savings; however, savings might create incentives for membership. There are three types of incentives for partners in a partnership: material, solidary, and purposive incentives (Clark & Wilson, 1961). Material incentives are relevant to tangible resources such as money, whereas solidary incentives are intangible, such as fighting for a common goal. Purposive incentives are similar to solidary incentives, but focus on solving a specific issue (Clark & Wilson, 1961). Savings through sustainability initiatives might create the three forms of incentives for partners to participate in the partnership, either for financial or environmental reasons.

*Hypothesis 4g: Number of partners strengthens the positive relationship between savings and plan actions.*

*Hypothesis 4h: Number of partners strengthens the positive relationship between savings and plan progress.*

Savings can result from an improved relationship with the five types of stakeholders: local community, employees, suppliers, consumers, and investors (Jørgensen, 2006). More support from local government, enhanced chances to attract investors, enhancing employees' productivity through programs and training can all lead to increased savings. For companies, local partnerships allow them to gain a better reputation and build a stronger network with local suppliers; possible cost savings can occur through reduced disputation and production delay (Jørgensen, 2006). Therefore, savings might be achieved through improved funding of the project, or through a positive relationship with stakeholders, during the partnership implementation. The following hypotheses are formed:

*Hypothesis 4i: Partner engagement strengthens the positive relationship between savings and plan actions.*

*Hypothesis 4j: Partner engagement strengthens the positive relationship between savings and plan progress.*

During the implementation of the partnership, savings usually occur through improved efficiency for partners from implementing the sustainability initiatives in the communities (Clarke & MacDonald, 2016). Savings can be generated from internal environmental initiatives in the form of reducing energy waste, and/or water consumption (Clarke & MacDonald, 2016). For example, as a partner organization, Whistler Blackcomb saved \$800,000 CAN annually through their

energy-saving initiatives as part of the SCP of Whistler, BC (Clarke & MacDonald, 2016). Similarly, a community-partnership approach to increase energy savings in low-income households can lead to cost savings for participants enrolled in the program (Watson, Gabriel, & Rooney, 2015). Therefore, community-wide actions are related to savings:

*Hypothesis 4k: Community-wide actions strengthen the positive relationship between savings and plan progress.*

*Hypothesis 4l: Community-wide actions mediate the relationship between savings and plan progress.*

## **1.2 Attracted Resources**

Having stable financial resources plays a pivotal role in attracting partners, and in some cases the partnership cannot even be formed without the initial funding (Purcal et al., 2011). An effective financial plan and secure financial resources in the early stage can determine the effectiveness of the sustainability plans (Perkins et al., 2010). Though the mechanism of how financial supports are obtained influence the outcomes of CSSPs, it is not yet fully understood in the current literature, especially for activities at the community level. It is reasonable to assume that attracting resources plays a significant role in both forming and continuing the partnership. On the one hand, resources attracted for administrative activities will in turn benefit SCPs through active interactions, such as communication and more opportunities to engage partners (Feinberg et al., 2008; McGlashan, 2003; Perkins et al., 2010). On the other hand, ample funding can save time and energy and keep staff focused on realizing goals (J. H. Allen et al., 2017; Purcal et al., 2011).

Municipalities can attract resources from partners, the private sectors or upper-level government for sustainability programs. For example, Local improvement charges (LIC) has been gaining popularity in recent years as one of the innovative energy efficiency financing tools (The Atmospheric Fund, 2017). The tool creates incentives for building owners to undertake energy retrofits and upgrade their properties with little to no up-front costs. Financing, in the form of low-interest loans, is often pooled from upper-level government, or a third-party company, and paid back on the property tax bill (The Atmospheric Fund, 2017). Thus, the following hypotheses are formed:

*Hypothesis 5a: Attracted resources have a positive effect on plan actions.*

*Hypothesis 5b: Attracted resources have a positive effect on plan progress.*

Research has also found that a dedicated unit and staff can not only facilitate the partnerships, but also speed the process of attracting resources (J. H. Allen et al., 2017). Oversight structure can largely reduce administrative time, thus increasing time spent on fundraising (J. H. Allen et al., 2017). Thus, the following hypotheses are formed:

*Hypothesis 5c: Collaborative oversight strengthens the positive relationship between attracted resources and plan actions.*

*Hypothesis 5d: Collaborative oversight strengthens the positive relationship between attracted resources and plan progress.*

*Hypothesis 5e: Oversight by local government strengthens the positive relationship between attracted resources and plan actions.*

*Hypothesis 5f: Oversight by local government strengthens the positive relationship between attracted resources and plan progress.*

A larger number of partners can attract more resources to the partnership. First, partners will bring resources such as funding and expertise to the partnership, thereby increasing the collective resources of the partnership (Van Puyvelde et al., 2015). Second, funders or new partners have a higher possibility of being drawn into a partnership for financial or human resource reasons when the membership size is larger (Feinberg et al., 2008).

*Hypothesis 5g: Number of partners strengthens the positive relationship between attracted resources and plan actions.*

*Hypothesis 5h: Number of partners strengthens the positive relationship between attracted resources and plan progress.*

The partner engagement mechanism can utilize the resources attributed to SCPs. Feinberg et al. (2008) find that attracting resources has a positive relationship with team functioning. The partner engagement mechanism can build up the trust and commitment in the partnership (Barroso-Méndez et al., 2016). In a situation where money is involved, through improving the accountability and transparency of the partnership, the partner engagement mechanism can improve the values of the resources through the democratic process (Glasbergen, 2010).

*Hypothesis 5i: Partner engagement mechanism strengthens the positive relationship between*

*attracted resources and plan actions.*

*Hypothesis 5j: Partner engagement mechanism strengthens the positive relationship between attracted resources and plan progress.*

Finance is considered a crucial factor for the sustainability of the community project. The top-down approach with the funding that government has attracted from other partners, together with community engagement, are considered as two determinant factors for plan outcomes (Aksorn & Charoenngam, 2015). For example, an energy performance contract is a widely applied community-wide financial tool to retrofit existing buildings (Natural Resources Canada, 2013). With local governments facilitating the tool and attracting finance from energy service companies (ESCOs), building owners are able to get equipment and technology for building renovation with little or no up-front costs from the ESCOs, and pay back the company with savings occurred from the upgraded building (Natural Resources Canada, 2013). Therefore, the amount of resources attracted can have influences on community-wide actions:

*Hypothesis 5k: Community-wide actions strengthens the positive relationship between attracted resources and plan progress.*

*Hypothesis 5l: Community-wide actions mediates the relationship between attracted resources and plan progress.*

## Section 2: Results

### 2.1 One-to-One Relationships between Savings, Attracted Resources and Plan Outcomes

#### Non-Significant Regressions

	<b>b0</b>	<b>b1</b>	<b>R - squared (R2)</b>	<b>F value(F)</b>	<b>Degrees of Freedom(DF)</b>	<b>P-value</b>
<i>Hypothesis 4a</i>	1.999	0.093	0.020	1.649	(1, 80)	0.203
<i>Hypothesis 4b</i>	2.185	0.085	0.028	2.347	(1, 81)	0.129
<i>Hypothesis 5a</i>	1.995	0.114	0.042	3.568	(1, 81)	0.062
<i>Hypothesis 5b*</i>	2.103	0.102	0.059	5.178	(1, 82)	0.025

Ordinary least squares were calculated to predict plan actions and progress based on savings (Hypothesis 4a and 4b), and attracted resources (Hypothesis 5a and 5b).

## Significant Regressions

**Hypothesis 5b:** *Attracted resources have a positive effect on plan progress.*

A simple linear regression was calculated to predict plan progress based on attracted resources. A significant regression equation was found ( $F(1, 82) = 5.178$ ,  $p < 0.05$ ) with  $R^2 = 0.059$ . The  $R^2$  value implies that the 5.9% of variation in plan progress can be explained by the model containing only attracted resources.

The equation of the hypothesis is:  $\text{Plan progress} = 2.103 + 0.102 * \text{Attracted resources}$ . The slope coefficient is 0.244, indicating each one unit increase in attracted resources will result in a 0.244-unit increase in plan progress.

## 2.2 Moderations for Savings on Actions

The results of mediation effects for savings on actions are presented. Moderation effects fail to show up for all the models in this section.

Table 13 shows the hypotheses with non-significant moderation effects with  $p\text{-value} > 0.05$  for overall model. For Hypothesis 4s\*, though the overall model is valid, the moderation effect fails to show up through a significant interaction effect, with  $b = -0.015$ ,  $t = -0.142$ ,  $p = 0.888$ , 95% CI [-0.221, 0.192]. IV= independent variables, DV= dependent variables, PA= plan actions, PP= plan progress.

**Table 13: Non-Significant Moderations for Savings on Actions**

IV	Moderators	DV	R-square	F value	P-value	Hypotheses
Savings	Collaborative oversight	PA	0.060	$F(3, 72) = 1.397$	$> 0.05$	4c
		PP	0.019	$F(3, 73) = 0.436$	$> 0.05$	4d
	Oversight by local government	PA	0.056	$F(3, 74) = 1.733$	$> 0.05$	4g
		PP	0.096	$F(3, 75) = 1.984$	$> 0.05$	4h
	Number of partners	PA	0.051	$F(3, 78) = 1.984$	$> 0.05$	4k
		PP	0.066	$F(3, 79) = 0.511$	$> 0.05$	4l
	Partner engagement mechanism	PA	0.033	$F(3, 77) = 0.968$	$> 0.05$	4o

	<i>PP</i>	0.038	$F(3, 78) = 1.037$	$> 0.05$	<i>4p</i>
<i>Community-wide actions</i>	<i>PP</i>	0.144	$F(3, 77) = 3.123$	$< 0.05$	<i>4s*</i>

### 2.3 Mediations for Savings on Actions

The results of mediation effects for savings on actions are presented in this section. Table 14 shows the hypotheses with non-significant indirect effects, implying that no mediation effects were found in these models. IV= independent variables, DV= dependent variables, PA= plan actions, PP= plan progress.

**Table 14: Non-significant Mediations for Savings**

IV	Mediators	DV	Indirect effect b	Indirect effect BCa CI	Hypotheses
<i>Savings</i>	<i>Collaborative oversight</i>	PA	-0.013	[-0.062, 0.010]	4e
		PP	-0.006	[-0.045, 0.005]	4f
	<i>Oversight by local government</i>	PA	-0.000	[-0.021, 0.018]	4i
		PP	-0.000	[-0.026, 0.024]	4j
	<i>Number of partners</i>	PA	-0.004	[-0.058, 0.014]	4m
		PP	0.010	[-0.006, 0.051]	4n
	<i>Partner engagement mechanism</i>	PA	-0.006	[-0.045, 0.007]	4q
		PP	0.000	[-0.021, 0.019]	4r
	<i>Community-wide actions</i>	PP	0.027	[-0.004, 0.078]	4t

### 2.4 Moderations for Attracted Resources

The results of moderation effects for attracted resources are presented in this section. Hypotheses with non-significant moderation effects are presented first, followed by significant moderators with a detailed analysis of the outputs.

## Non-Significant Moderations for Attracted Resources

Table 15 shows the hypotheses with non-significant moderations for attracted resources. P values (>0.05) indicate that the overall relationship models are invalid. Though the overall model for Hypothesis 5s\* is valid, the moderation effect fails to show up through a significant interaction effect, with  $b=0.109$ ,  $t=0.987$ ,  $p=0.327$ , 95% CI [-0.111, 0.328]. IV= independent variables, DV= dependent variables, PA= plan actions, PP= plan progress

**Table 15: Non-Significant Moderations for Attracted Resources**

Independent variables	Moderators	Dependent variables	R-square	F value	P-value	Hypotheses
Attracted resources	Collaborative oversight	plan actions	0.053	F (3, 74) = 1.085	>0.05	5c
		plan progress	0.050	F (3, 75) = 0.963	>0.05	5d
	Oversight by local government	plan actions	0.068	F (3, 76) = 1.815	>0.05	5g
		plan progress	0.096	F (3, 77) = 1.236	>0.05	5h
	Partner engagement mechanism	plan actions	0.053	F (3, 79) = 0.673	>0.05	5o
	Community-wide actions	plan progress	0.163	F (3, 78) = 3.079	< 0.05	5s*

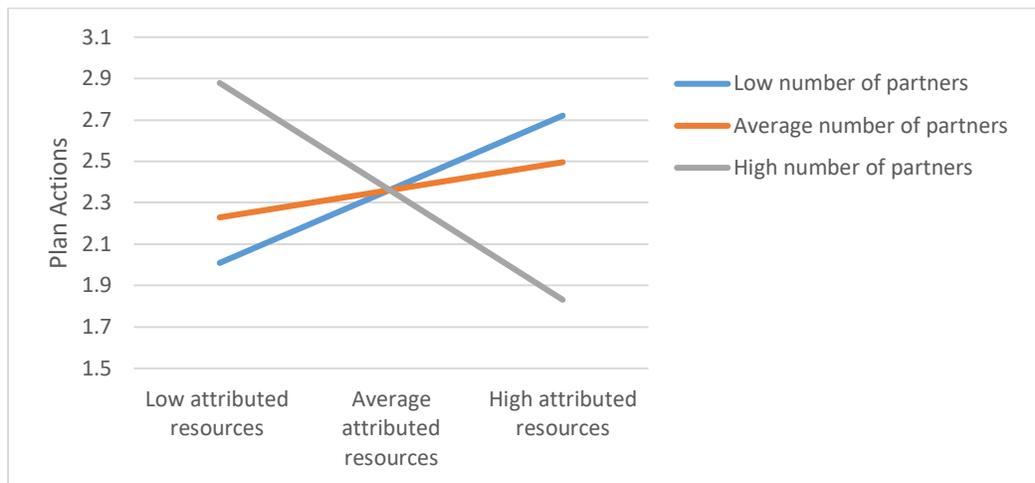
## Significant Moderations for Attracted Resources

This section presents the three hypotheses (Hypotheses 5k, 5l and 5p) with significant moderation effects for attracted resources.

**Hypothesis 5k:** *Number of partners strengthens the positive relationship between attracted resources and plan actions.*

First, the overall model is valid with  $F(3, 79) = 3.016$ ,  $p < 0.05$ ,  $R^2 = 0.104$ . Moderation is shown by a significant interaction effect, with  $b = -0.048$ ,  $t = -2.009$ ,  $p < 0.05$ , 95% CI is [-0.096, -0.001], indicating that the relationship between attracted resources community-wide and plan actions is moderated by number of partners.

**Figure 12: Interaction Effect of Attracted Resources and Number of Partners**



1. When the level of number of partners is low, there is a significant relationship between attracted resources and plan actions,  $b = 0.280$ , 95% CI [ 0.087, 0.472],  $t = 2.891$ ,  $p < 0.01$ .

2. At the average number of partners, there is a significant relationship between attracted resources and plan actions,  $b = 0.105$ , 95% CI [0.000, 0.209],  $t = 1.997$ ,  $p < 0.05$ .

3. When the number of partners is high, there is a non-significant relationship between attracted resources and plan progress,  $b = -0.412$ , 95% CI = [-0.944, 0.121],  $t = -1.538$ ,  $p > 0.05$ .

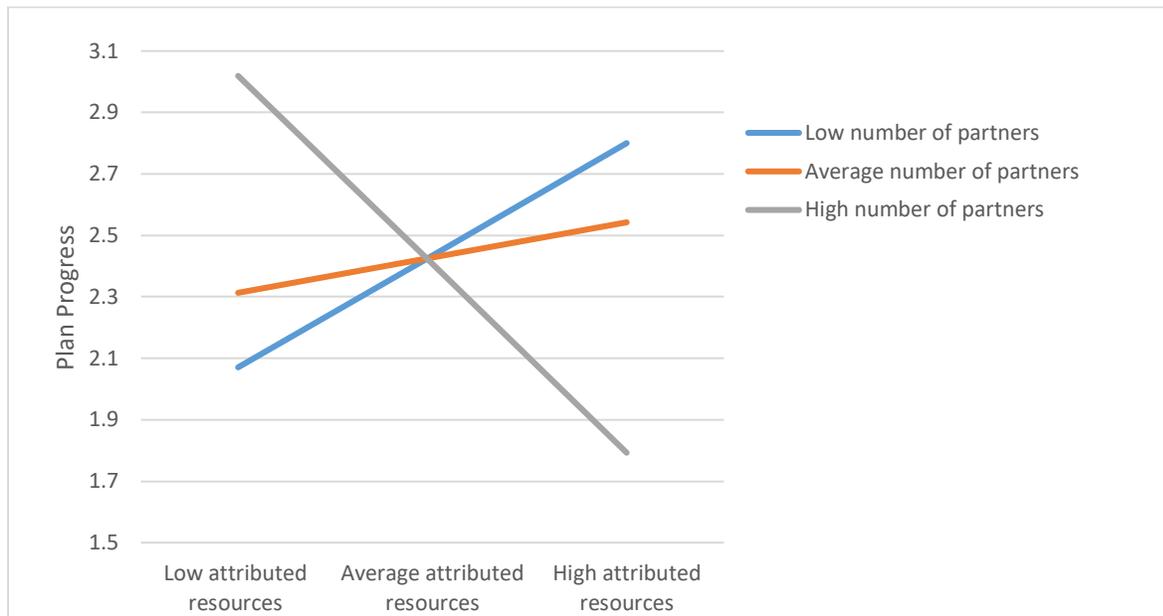
Therefore, at a low level and mean level, number of partner strengthens the positive relationship between attracted resources and plan actions.

**Hypothesis 5I:** *Number of partners strengthens the positive relationship between attracted resources and plan progress.*

Overall model:  $F(3, 80) = 4.584$ ,  $p < 0.01$ ,  $R^2 = 0.180$ .

Interaction term: Moderation is shown by a significant interaction effect, with  $b = -0.054$ ,  $t = -2.746$ ,  $p < 0.01$ , 95% CI is [-0.092, -0.015], indicating that the relationship between attracted resources and plan progress is moderated by number of partners.

**Figure 13: Interaction Effect of Attracted Resources and Number of Partners**



1. When the level of number of partners is low, there is a significant relationship between attracted resources and plan progress,  $b= 0.284$ , 95% CI [0.129, 0.440],  $t= 3.633$ ,  $p<0.01$ .

2. At the average number of partners, there is a significant relationship between attracted resources and plan progress,  $b= 0.089$ , 95% CI [0.004, 0.175],  $t= 2.082$ ,  $p< 0.05$ .

3. When the number of partners is high, there is a significant negative relationship between attracted resources and plan progress,  $b= -0.478$ , 95% CI = [-0.908, -0.048],  $t= -2.210$ ,  $p<0.05$ .

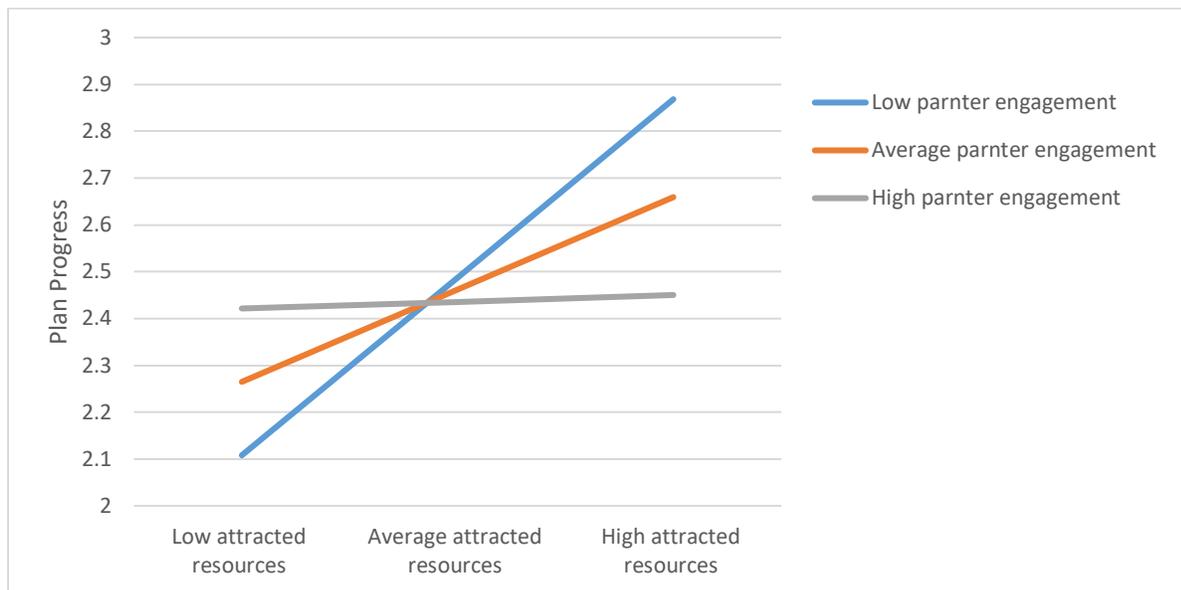
Therefore, the moderation effects show up at all levels. At a low level and mean level, number of partner strengthens the positive relationship between attracted resources and plan progress; at a high level, number of partners lead to a negative relationship between attracted resources and plan progress.

**Hypothesis 5p:** Partner engagement mechanism strengthens the positive relationship between attracted resources and plan progress.

First, the overall model is valid with  $F(3, 80) = 8.507$ ,  $p<0.01$ ,  $R^2= 0.158$ . Moderation is shown by a significant interaction effect, with  $b= -0.162$ ,  $t= -2.549$ ,  $p< 0.05$ , 95% CI is [-0.289, -0.036],

indicating that the relationship between attracted resources and plan progress is moderated by partner engagement mechanism.

**Figure 14: Interaction Effect of Attracted Resources and Partner Engagement Mechanism**



1. When the level of partner engagement mechanism is low, there is a significant relationship between attracted resources and plan progress,  $b= 0.296$ , 95% CI [0.160, 0.432],  $t= 4.338$ ,  $p<0.01$ .
2. At the mean partner engagement mechanism, there is a significant relationship between attracted resources and plan progress,  $b= 0.154$ , 95% CI [0.055, 0.252],  $t= 3.105$ ,  $p< 0.01$ .
3. When the partner engagement mechanism is high, there is a non-significant relationship between attracted resources and plan progress,  $b= 0.011$ , 95% CI = [-0.149, 0.172],  $t= 0.139$ ,  $p>0.05$ .

Therefore, at a low level and mean level, partner engagement mechanism strengthens the positive relationship between attracted resources and plan progress.

## 2.5 Mediations for Attracted Resources

The results of the mediation effects for attracted resources are presented in this section. Hypotheses with non-significant mediation effects are presented first, followed by a significant moderator with a detailed analysis of the outputs.

### Non-significant Mediations for Attracted Resources

Table 16 shows the hypotheses with non-significant indirect effects with CI containing 0, implying that no mediation effects were found in the models. IV= independent variables, DV= dependent variables, PA= plan actions, PP= plan progress.

**Table 16: Non-significant Mediations for Attracted Resources**

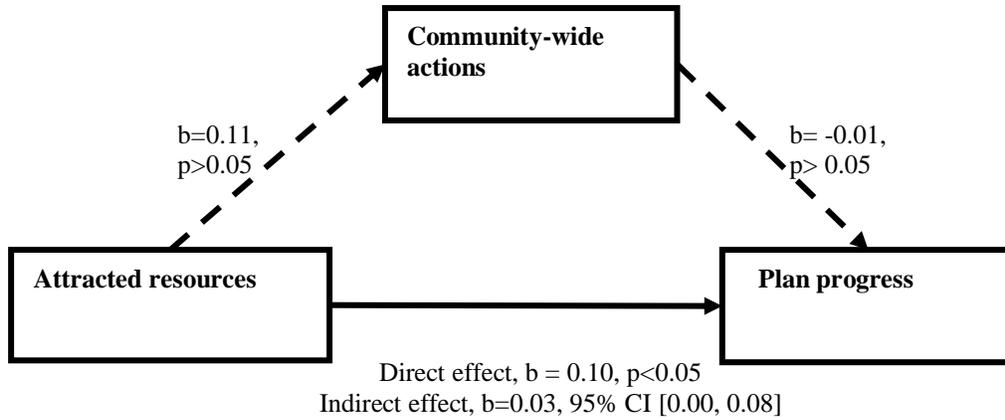
IV	Mediators	DV	Indirect effect b	Indirect effect BCa CI	Hypotheses
<i>Attracted resources</i>	<i>Collaborative oversight</i>	<i>PA</i>	0.015	[-0.017, 0.085]	<i>5e</i>
		<i>PP</i>	0.009	[-0.013, 0.058]	<i>5f</i>
	<i>Oversight by local government</i>	<i>PA</i>	-0.000	[-0.022, 0.019]	<i>5i</i>
		<i>PP</i>	0.001	[-0.019, 0.043]	<i>5j</i>
	<i>Number of partners</i>	<i>PA</i>	-0.000	[-0.013, 0.027]	<i>5m</i>
		<i>PP</i>	-0.001	[-0.007, 0.013]	<i>5n</i>
	<i>Partner engagement mechanism</i>	<i>PA</i>	0.002	[-0.016, 0.044]	<i>5q</i>
		<i>PP</i>	-0.001	[-0.025, 0.018]	<i>5r</i>

### Significant Mediations for Attracted Resources

The variable “community-wide actions” is found to be a significant mediator for the relationship between attracted resources and plan progress. Detailed outputs are presented in the following.

*Hypothesis 5t: Community-wide actions mediates the relationship between attracted resources and plan progress.*

**Figure 15: Model of Attracted Resources as A Predictor of Plan Progress, Mediated by Community-wide Actions**



The dash line indicates a non-significant relationship. The 95% CI of the indirect effects was obtained with 1000 bootstrap resamples. Attracted resources fail to significantly predict community-wide actions ( $b=0.11, p > 0.05$ ), and community-wide actions fail to predict plan progress as well ( $b= -0.01, p > 0.05$ ). However, there was a significant indirect effect of contributed resources internally on plan progress through plan actions,  $b=0.02, BCa CI^1 [0.0012, 0.0775]$  (see Figure 15). Type I error was controlled within the 95% confidence interval. The output for the results of this statistical test can also be found in Appendix X. These findings support Hypothesis 5t.

<b>Actions (DV)</b>		Moderated by number of partners ( $b= -0.048, t= -2.009, p < 0.05, 95\% CI [ -0.096, -0.001]$ )
		Direct ( $b_0 = 2.103, b_1 = 0.102, R^2 = 0.059, F(1, 82) = 5.178, p < 0.05$ )
	<b>Attracted resources from partners</b>	Mediated by community- wide actions (indirect effect $b=0.02, BCa CI^1 [0.0012, 0.0775]$ )
		Moderated by partner engagement mechanism ( $b= -0.162, t= -2.549, p < 0.05, 95\% CI [-0.289, -0.036]$ )
		Moderated by number of partners ( $b= -0.054, t= -2.746, p < 0.01, 95\% CI [-0.092, -0.015]$ )
<b>Progress (DV)</b>		

## **Section 3: Discussion**

### **3.1 Number of Partners as Moderator**

Number of partners moderates the relationships between attracted resources and plan actions and progress. It is unexpected to see that moderation of number of partners does not show up for contributed resources and plan outcomes. On the one hand, funding serves as a driver for partners to join in the partnership (Purcal et al., 2011). On the other hand, partners themselves can bring resources to the partnership; and new partners are easier to attract to a partnership with a larger membership size (Feinberg et al., 2008; Van Puyvelde et al., 2015). The findings contradict the literature and indicate that with the presence of funding from the government, the size of the partnership does not necessarily influence plan outcomes.

### **3.2 Savings**

Since savings can be achieved through the implementation of sustainability initiatives such as energy and water saving programs (Chmutina et al., 2013; Clarke & MacDonald, 2016), or through improved relationships and trusts between stakeholders and investors (Jørgensen, 2006), a relationship between savings and plan outcomes is expected. However, the findings fail to capture the relationship between savings and plan outcomes. The results can be interpreted in several ways. Based on the limited studies on savings, savings often serve as an incentive for partners to join the SCP (Chmutina et al., 2013; Clark & Wilson, 1961). Such effect is outside the scope of the study since the survey was specifically designed to assess saving money as a result of implementing an SCP. Hence, the relationship cannot be captured through this study. Another possible explanation might be that the relationship is controlled by the time horizon of the SCPs. Savings resulting from energy efficiency might expect a long pay-back time, therefore the relationship can fail to be captured at the beginning of the implementation of the plan. In addition, as part of the limitation of the study, the question designed around savings was focused on savings achieved from implementing internal sustainability initiatives. Answers captured in the study are focused on savings occurring at the local government level rather than at the partnership level. Therefore, it is possible that participants from the local government are unaware of the savings from partners.

The study tested savings as the result of implementing SCPs from the perspective of local government, but what about savings occurring among partners? Future studies can conduct surveys among partners and focus on whether savings are obtained among partners and whether savings serve as a driver for partners to join the partnership.

## **Appendix XII Control Variables**

Population size has the potential to influence municipal budget and sustainable plans according to literature (Berke and Conroy, 2000; Slack, 2011; O'Regan et al., 2009). Small communities tend to have less resources for SCP implementation (Berke and Conroy, 2000; Slack, 2011). By contrast, in spite of having more revenues from financing tools such as taxes, the total expenditures and per-capita spending in larger municipalities are found to be larger compared to smaller municipalities (Slack, 2011). O'Regan et al. (2009) also provides empirical evidence for the connection between population size and relative sustainability based on the research of 79 Irish villages.

In addition, sustainable development level and dedicated budget may also vary on continents. The location of the community can connect to the available natural resources and determine how the inhabitants should be developed to achieve sustainability (Berke and Conroy, 2000). For example, Africa has abundant natural resources and advantage in developing renewable energies such as hydro power, however, the continent also contains the poorest region worldwide (Takeuchi and Aginam, 2011). Therefore, population size and continents serve as control variables in this study.

### **Section 1: Method**

Analysis of Covariance (ANCOVA) is chosen for control variable testing. ANCOVA plays an important role in testing the confounding impact of control variable within the relationship between independent and dependent variables (Keselman et al., 1998). Two steps were involved in the procedure. In step one, two assumptions are tested to determine whether the prerequisites are satisfied for ANCOVA. Assumption 1 (A1) is the Independence. In other words, no interaction between independent variable and the covariate. Assumption 2 (A2) is the homogeneity of regression slopes (Keselman et al., 1998). In step 2, ANCOVA was conducted in SPSS. Table 17 shows the results of hypotheses testing. As shown in the table, all the p-values for A1 are greater than 0.05, indicating that there is no interaction between the independent variable and covariate. There are two columns for A2, with plan action and plan progress as dependent variables correspondingly. P-values for A2 marked with \* shows significant results,

and indicating that the homogeneity of regression slopes is violated for ANCOVA. For the three hypotheses in which assumption 2 are violated, bivariate (Pearson) correlation analysis was adopted to identify the correlations between the control variable and dependent variable (Babbie, 2004).

**Table 17: Results of ANCOVA Hypotheses Testing.**

	Control Variables	p-value for A1	p-value for A2 – Plan Action	p-value for A2 – Plan Progress
<b>Contributed resources internally</b>	Continent	0.794	0.172	0.102
<b>Contributed resources for partnership structure</b>		0.623	0.063	0.104
<b>Contributed resources for community-wide initiatives (e.g., by partners)</b>		0.103	0.002*	0.297
<b>Contributed resources internally</b>	Population	0.410	0.241	0.009*
<b>Contributed resources for partnership structure</b>		0.683	0.341	0.537
<b>Contributed resources for community-wide initiatives (e.g., by partners)</b>		0.532	0.010*	0.354

**Section 2: Results**

Table 18 and 19 show the results of ANCOVA (see Appendix III and IV for detailed outputs). Partial Eta Squared explains total variance in a dependent variable explained by independent variable. The results indicate that the influence of control variable continent has been found between three relationships: the relationship between contributed resources internally and plan progress; contributed resources internally and plan actions; and contributed resources for partnership structure and plan actions.

**Table 18: Results of ANCOVA with Plan Action as Dependent Variable.**

Plan Action	Control Variables	Partial Eta Squared for control	Partial Eta Squared of IV Before	Partial Eta Squared of IV After	Significance

<b>Contributed resources internally</b>	Continent	P=0.020, 0.066	P= 0.632, 0.031	P=0.772, 0.022	Yes
<b>Contributed resources for partnership structure</b>		P=0.011, 0.078	P= 0.188, 0.072	P=0.125, 0.085	Yes
<b>Contributed resources for community-wide initiatives (e.g., by partners)</b>		N/A	N/A	N/A	N/A
<b>Contributed resources internally</b>	Population	P=0.055, 0.046	P= 0.632, 0.031	P= 0.517, 0.040	No
<b>Contributed resources for partnership structure</b>		P=0.051, 0.047	P= 0.188, 0.072	P= 0.127, 0.085	No
<b>Contributed resources for community-wide initiatives (e.g., by partners)</b>		N/A	N/A	N/A	N/A

**Table 19: Results of ANCOVA with Plan Progress as Dependent Variable.**

Plan Progress	Control Variables	Partial Eta Squared for control	Partial Eta Squared of IV Before	Partial Eta Squared of IV After	Significance
<b>Contributed resources internally</b>	Continent	P=0.355, 0.011	P=0.019, 0.134	P=0.029, 0.125	Yes
<b>Contributed resources for partnership structure</b>		P= 0.101, 0.033	P=0.224, 0.066	P= 0.148, 0.079	No
<b>Contributed resources for community-wide initiatives (e.g., by partners)</b>		P=0.281, 0.015	P=0.310, 0.057	P=0.332, 0.056	No
<b>Contributed resources internally</b>	Population	N/A	N/A	N/A	No
<b>Contributed resources for partnership structure</b>		P=0.458, 0.007	P=0.224, 0.066	P=0.244, 0.064	No
<b>Contributed resources for community-wide initiatives (e.g., by partners)</b>		P=0.565, 0.004	P=0.310, 0.057	P=0.364, 0.053	No

Table 20 shows the results of bivariate analysis corresponding to the three relationships marked in \* in Table 4 where the assumptions are not met (see Appendix V for detailed outputs). The

results indicate that in general continent is related to plan actions. The results correspond to the finding using ANCOVA.

**Table 20: Results of Bivariate Analysis.**

	Control Variable	Correlation	P-value	Significance
Plan Actions	Continent	0.312	0.002	Yes
Plan Actions	Population	-0.162	0.118	No
Plan Progress	Population	0.101	0.335	No

Therefore, population size of the community has control variables have little or no effect on the correlations between the variables, whereas continents have significant effects.