SUSTAINABILITY IN THE PRIVATE AND PUBLIC SECTORS: A COMPARISON OF MOTIVATORS, ACTIONS, BARRIERS AND REPORTING OF RESULTS

by

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Presented to the Faculty of the Graduate School of

The University of Texas at Arlington in Partial Fulfillment

of the Requirements

for the Degree of

DOCTOR OF PHILOSOPHY

THE UNIVERSITY OF TEXAS AT ARLINGTON

Fall 2012

Acknowledgements

I am grateful to family, friends, and colleagues for their support throughout this academic journey. To Audrey, my partner, for your steadfast love, support, and assistance. Regarding the little "h" in my PhD, you have more than earned it. To Teresea and John, you allowed me to fulfill a lifelong goal while working at the greatest job yet. To the rest of my colleagues at The University of Texas at Arlington, Division for Enterprise Development, you are an incredible team and I am proud of the public service we provide together. To my parents, I don't know how you did it. You are both amazing and I am who I am because of my family. To the Holman family, my would-be in-laws, you too are my family.

I also want to acknowledge some of the key members of my academic team at UT Arlington. Thanks to Dr. Fred Forgey for your determination to make this program a success and your dedication to your student's success as well. Thanks to Dr. Maria Martinez-Cosio for the most exemplary instruction of my academic career. You are the model of an ideal professor and an inspiration. Thanks to Dr. Whittemore for joining the UT Arlington team, you are an asset to our fine institution. Finally, thanks to my steadfast cohort partner, James Howard Johnson, I learned so much from you. I am glad we made it through this program together. I would work with you any time.

November 12, 2012

Abstract

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BARRIERS AND RESULTS REPORTING

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The concept of sustainability has developed over the past 40 years and continues to advance as organizations implement sustainable practices, quantify sustainability results, and communicate their accomplishments to key stakeholders. Despite these advances, sustainability remains an emerging field in need of clear definitions and goals; development of best practices; and effective tools for measuring, reporting, and benchmarking results. The literature suggests that the private sector is more advanced than the public sector in addressing these challenges. The purpose of this study was to discover if the public sector lags in pursuing sustainability, and if so, to identify some of the reasons for this dynamic. Through an analysis of 375 responses to a survey of both private- and public-sector organizations, there is evidence that the public sector lags behind the private sector, particularly with regard to measuring, reporting, and benchmarking

sustainability results. However, this study also revealed that local governments are in a position to lead. They implement more sustainability actions than private corporations, yet they lack the formal framework to effectively connect their actions to sustainability goals. Recommendations to advance the field of sustainability include developing enhanced sustainability reporting tools, increasing stakeholder involvement, and sharing best practices.

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Chapter 1

Introduction

Background

The concept of sustainability originated in the fields of biology and ecology. In these fields, the term "sustainability" is used to describe "the rate at which renewable resources could be extracted or damaged by pollution without threatening the underlying integrity of ecosystems" (Vos, 2007, p. 335). This idea was adopted by economists in an attempt to more appropriately value natural resources and better understand the relationship between natural resources and the economy. The concept is now widely used in business and management literature, as well as by policy-makers and engineers (Vos, 2007). Although the term is rampant, the definitions and understandings of sustainability vary across settings.

The precursors to the modern sustainability movement are rooted in the human connection with nature. In the United States (U.S.), these roots can be seen in the native cultural traditions of living off the land. In the 1800s, the transcendentalist movement, marked by the writings of Henry David Thoreau and Ralph Waldo Emerson, again raised the human connection with nature. In the early 1900s, the conservationist movement and the works of John Muir provided further grounding for what would become the modern sustainability movement

(Edwards, 2005). Muir was the cofounder of the grass roots conservation organization, the Sierra Club. His nature writings and environmental activism emphasized the importance of protecting and preserving the natural environment and inspired the establishment of the National Park Service.

In the 1970s and 1980s several key publications and advancements in computer modeling set the stage for contemporary sustainability paradigms. During this era, the topic of sustainability was also addressed by the United Nations (UN). The UN explored sustainability issues in the 1972 Stockholm Conference, the 1983 World Commission on Environment and Development (WCED) (also known as the Brundtland Commission), and the 1992 Conference on Environment and Development (Earth Summit).

The Brundtland Commission produced what has become the most-cited definition of sustainability describing sustainable development as "development that meets the needs of the present without compromising the ability of the future generations to meet their own needs" (World Commission on Environment and Development [WCED], 1987, p. 43). The Brundtland Commission was also the first to articulate the sustainability model known as the "Three Es". This model stated the importance of evaluating any proposed initiative with reference to the interaction of ecology/environment, economy/employment and equity/equality (Edwards, 2005). The Earth Summit of 1992 also produced *Agenda 21* (United Nations [UN], 1992) which addressed the "perpetuation of disparities between

and within nations, a worsening of poverty, hunger, ill health and illiteracy, and the continuing deterioration of the ecosystems on which we depend for our well-being" (Preamble, para. 1.1). These international efforts shaped the global sustainability movement.

In the business sector, the "Triple Bottom Line" became the predominant paradigm of sustainability. A company's triple bottom line consists not only of the financial aspects of the organization, but also incorporates its social and environmental impacts and contributions. Though based on the work of Spreckley (1981), Elkington (1997) is credited with coining the phrase "Triple Bottom Line" in his book, *Cannibals with Forks: The Triple Bottom Line of 21st Century Business*. In this book, he argued that a company's success is commonly measured by more than simply satisfying the traditional bottom line of profitability, but success also requires satisfactory performance related to environmental quality and social justice – thus yielding a triple bottom line. Elkington (1997) also referred to this model of sustainability in business as the "Three Ps" of People, Planet, and Profit.

Though 30 years have passed since this concept emerged for business, there have not been any uniform federal codes or regulations passed in the U.S. governing sustainability practices or reporting (Cowan et al., 2010). However, in spite of the lack of a clear definition for sustainability and the relative absence of regulatory requirements relating to sustainability actions, many companies have

voluntarily adopted sustainability practices and participate in standardized reporting programs. Programs such as the Global Reporting Initiative (GRI), Dow Jones Sustainability Index (DJSI), International Organization for Standardization (ISO) 14001: Environmental Management System Certification, and Leadership in Environmental Engineering and Design (LEED) all provide consistency and guidance for the voluntary sustainability actions of organizations. Additional information about these programs is presented in Chapter 2, Literature Review.

In comparing the literature and available information regarding private- and public-sector sustainability initiatives, there is significantly less discussion and study of standardized measurement and reporting models and tools targeting public-sector sustainability efforts. According to *The World Factbook* (Central Intelligence Agency [CIA], 2009), there are more people living in urban settings than in rural settings worldwide and, in the U.S., the urban areas are home to 82% of the country's population. With the majority of the world's population living and working in cities, the "quality of life of billions of people hinges on whether free-market economic development fosters the growth of green cities" (Kahn, 2006, p. 130). The profession of urban planning is on the front line of the green-city movement, yet those in local government struggle to find ways to balance the environmental, economic, and social equity needs of the community (Wheeler, 2004). Utilizing sustainability-oriented criteria to monitor relevant indicators and

govern new development could help create a more hopeful and lasting future. Demonstrating how these changes could improve the quality of urban living, while helping to meet regional and global needs, fosters the acceptance and advancement of sustainability efforts.

With corporations serving as a major driver of economic development, as well as a major influence on the daily choices made by individuals in a capitalist society, it is possible that the recent trajectory toward corporate sustainability could be mirrored at the local government level. Applicable best practices from corporate sustainability programs could guide local governments in the implementation, monitoring, and reporting of the sustainability efforts in the public sector to improve the outlook for sustainable urban development. These possibilities serve as the inspiration for this research.

Problem Statement, Purpose Statement, and Research Questions

World population growth, intensifying resource demands, and rapid urbanization have led to a tipping point, making clear the need for more sustainable actions. Globally, and in the U.S., there remain few laws or regulations governing sustainability. As a result, most sustainability efforts are voluntarily. In spite of this lack of government enforcement, the sustainability agenda has been taken up by a plethora of organizations including large U.S. corporations, the United Nations, the World Health Organization, the World

Council of Churches, various levels of government around the globe, and a broad cross-section of the global business community. The problem faced by urban planning professionals, and citizens in general, is that based on the relevant literature and the availability of standardized sustainability models, public-sector organizations (local governments) lag behind private organizations (corporations) in having systematic means of implementing and measuring sustainability efforts. Based on this observation, this research hypothesizes that the public sector also lags the private sector in pursuing sustainability goals and implementing sustainability actions. Given that public-sector sustainability initiatives impact and influence large numbers of people, improvements in this sector would likely yield significant results.

The purpose of this study was to better understand: 1) key factors driving public and private organizations to embrace sustainability; 2) convergences, divergences, and potential points of collaboration between private- and public-sector organizations related to sustainability; and 3) best practices that could advance standardized measuring and reporting tools for public-sector sustainability efforts. This was accomplished by exploring the motivators, actions, barriers, and results reporting for the sustainability efforts of both private- and public-sector organizations. The research questions that guided this study were:

1) Will research data regarding the sustainability motivators, actions, barriers, and results reporting by private- and public-sector organizations support or challenge a research hypothesis that local governments lag behind private corporations in the pursuit of sustainability?
2) What are the motivators and barriers to sustainability actions for corporate organizations and local governments? Which are shared in common and which are distinct?
3) What are the sustainability actions taken by corporate organizations and local governments? Which are shared in common and which are distinct?
4) What differences exist between corporate organizations and local governments in how sustainability results are measured and reported?
5) Could best practices be shared between corporate organizations and local governments to advance the implementation of sustainability?

Research Design Overview and Assumptions

To address the research problem and achieve the purpose of this study, multiple choice surveys were distributed to sustainability professionals in U.S. corporations and to those who oversee sustainability efforts at the local government level. The survey respondent distribution list was compiled from a

corporate list service provider and a city/county membership association. Surveys were available in both printed and electronic version. Survey results were analyzed utilizing various statistical methods.

This research assumed that in comparison to the public-sector organizations in the U.S. (particularly local governments), private-sector organizations (corporations) have achieved more advances in sustainability through the formalization and standardization of activities, measurements, and reports. This has, in large part, been accomplished through the voluntarily actions of companies and industry groups. Also assumed was that by studying the motivators, barriers, actions, and reporting of sustainability efforts of both private and public organizations, information could be gathered to support improved integration of sustainability practices into the professions of urban planning and local government management to yield more sustainable cities.

Significance

Sustainability is of local and global relevance because human activities impact the natural resources needed to foster healthy, productive societies. Given the significance of their influence on daily life, local governments and corporations are two sectors that are well positioned to have the greatest impact on sustainability. Through this study, urban planning and sustainability professionals can gain valuable insights to enhance the quality of life in local

neighborhoods and around the globe through environmental, economic, and social equity improvements.

Chapter 2

Literature Review

This chapter will first provide a broad sweep of literature that has converged to generally define the field of sustainability. The various sections of this chapter will review the evolution of the field of sustainability. Attention is given to the history and developments of sustainability within the private sector. Included in this section are a variety of tools and models utilized to implement and assess sustainability efforts within corporations. The next portion of this literature reviews turns to the urban setting and the role of urban planning professionals in the quest for sustainability within the public sector. This section includes information on the tools and models used to advance sustainability among local governments.

Finally, this chapter considers the empirical research that has been conducted related to sustainability at the local government level. This section is included for the public sector and not for the private sector because matters of urban planning and public policy are ultimately the focus of this research endeavor and the theory, practice, and research of sustainability in the public sector is still in the early phases of development. The transitions in the life of a theory move from a quest to define the terms and solidify the theory; to the construction of models to help explain and operationalize the theory; and finally to empirical research to quantify and qualify the validity and usefulness of the

theory. As evidenced by the literature, these transitions are only recently taking place for the theory of urban sustainability. Though it is worth noting that this evolution is not one of clear boundaries and linear progressions, it has entered academic practice and related literature in an increasingly substantive way.

Defining Sustainability

According to Gunder (2006), the problem with defining sustainability is that it is a "fuzzy concept…[that] everyone purports to understand intuitively but somehow finds very difficult to operationalize into concrete terms" (p. 211). The result has been many attempts throughout the literature and in practice to define, or better define, sustainability.

The modern sustainability movement has its roots in biology and ecology. The contemporary sustainability paradigms began emerging in the late 1900s. The National Environmental Policy Act (NEPA) of 1969 established environmental consideration as a requirement for federal government agencies. The purposes of NEPA are:

> To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural

> resources important to the Nation; and to establish a Council on Environmental Quality. (National Environmental Policy Act of 1969, Sec. 2)

This gave birth to wider environmental policies within the U.S., including the establishment of the Environmental Protection Agency in 1970.

The movement was further popularized when key publications began raising questions about the feasibility of a sustainable future for the next generation. In January 1972, an article entitled "A Blueprint for Survival" was published, occupying an entire issue of *The Ecologist* (Vol. 2, No.1). Demand for the issue was so great that it was subsequently republished in paperback as *Blueprint for Survival* (Goldsmith, 1972). In the publication, Goldsmith (1972) decried "the extreme gravity of the global situation" and warned that "if current trends are allowed to persist, the breakdown of society and the irreversible disruption of the life-support systems on this planet, possibly by the end of the century, certainly within the lifetimes of our children, are inevitable" (preface).

Also published that year was *The Limits to Growth* (Meadows, Meadows, Randers, & Behrens, 1972) which utilized computer modeling to project the consequences of rapid growth coupled with the finite supply of resources. These publications demonstrated and warned of the unsustainable path of resource use and pollution which threatened to undermine growth in economic output (Meadows et al., 2004). The authors concluded with the belief that "it is possible

to alter these growth trends and to establish a condition of ecological and economic stability that is sustainable far into the future" (Meadows et al., 1972, p. 24). With these writings, the idea of sustainability moved from a concept tied to sustained-yield forestry practices to be used in reference to broader human practices of sustainability (Wheeler, 2000).

The quest to make modern civilization "sustainable" was also taken up by the UN at the Stockholm Conference in 1972 which "inspired…a 'global trusteeship' of subsequent international environmental treaties" (Basiago, 1995, p. 109). This also began the more popular discussions of sustainability. In 1974, a World Council of Churches (WCC) gathering of scientists, theologians, and economists responded to *The Limits to Growth* (Meadows et al., 1972). The WCC issued a call for a sustainable society which placed the equitable distribution of resources at the center of the budding sustainability discussion (Wheeler, 2000).

In the early 1980s, sustainability gained greater public attention through the publication of two additional noteworthy volumes: *How to Save the World: Strategy for World Conservation* (Allen, 1980) and *Building a Sustainable Society* (Brown & Worldwatch Institute, 1981). These books extended the definition of sustainability to include quality of life issues within modern society. Additionally, the UN once again took up the issue of sustainability by convening the 1983 World Commission on Environment and Development (Brundtland

Commission). The call for social equity had become central to the issue of sustainability and became a key focus for the Commission.

The Brundtland Commission produced what has become the most widely-used definition of sustainable development as "development which meets the needs of the present, without compromising the ability of future generations to meet their own needs" (WCED, 1987, para. 27). Wheeler (2000) noted that from this point forward, "the need to reconcile economic, environmental, and social justice needs was to become an enduring theme of sustainable development discussions" (p. 134). He offered his own definition of sustainable development as "development that improves the long-term health of human and ecological systems" (p. 134).

In 1992, the UN Conference on Environment and Development (Earth Summit) was held in Rio de Janeiro. During this conference, "sustainable development" was established as the most important policy of the 21st century, resulting in the *Rio Declaration on Environment and Development* and *Agenda 21* (United Nations [UN], 1992). These calls to action led to a groundswell of slated programs and endorsements by country leaders from around the globe. It has been observed that "in the light of these events, 'sustainability' is now used widely in biology, economics, sociology, urban planning, ethics and other domains…[it] has emerged as a universal methodology for evaluating whether

human options will yield social and environmental vitality" (Basiago, 1995, p. 109).

If it has, in fact, become a universal methodology espoused by many, it is certainly not one that is easily executed. This is the result of several different challenges. First, within sustainability pursuits among the various fields, and even within a given field, "there is a lack of specificity and unanimity with respect to defining terminology" (Conroy & Iqbal, 2009, p. 110). Compounding the significant variations in terminology, there is an even wider diversity in the implementation of sustainable practices. Wheeler (2000) discussed the problematic nature of defining and implementing sustainability, making the point that critiques of every attempt to define or implement sustainability fall along a range from extremely ecocentric to overly anthropocentric. Further, basing sustainability on "need" (as in the Brundtland Commission's definition) is problematic because it is a highly subjective concept. Finally, various models such as "ecological footprint" and "carrying capacity" (Rees, 1992; 2003) are arguably impossible to apply so they hold little value in the quest to implement and evaluate sustainability initiatives (van den Bergh & Verbruggen, 1999; Lindberg & McCool, 1998).

Yet, despite these challenges, the practical arena of sustainability and the literature supporting the field have grown exponentially in the past two decades. This has included the development of key models and paradigms used to explain

the concept of sustainability and direct the implementation of sustainable development. "The core of mainstream sustainability thinking has become the idea of three dimensions: environmental, social and economic sustainability" (Adams, 2006, p. 2). This model places sustainability at the nexus of the three dimensions. It is often depicted by three interlocking circles as shown below in Figure 2-1 Diagram of Sustainability.

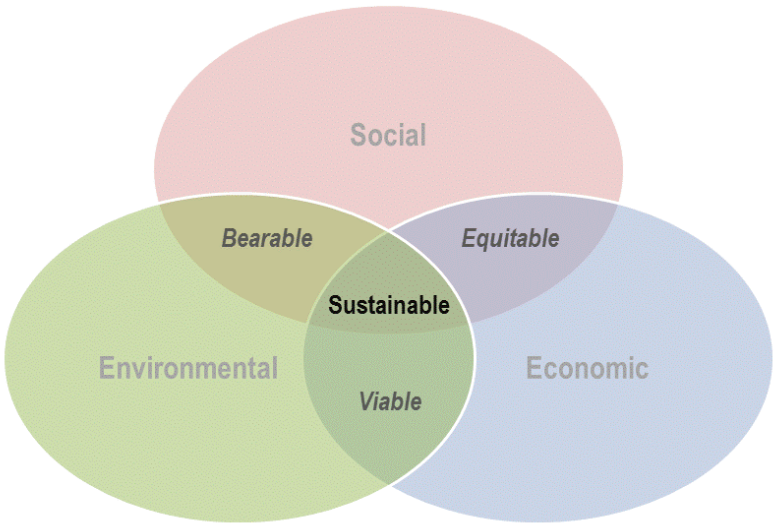


Figure 2-1 Diagram of Sustainability

Sustainability is often said to be a matter of balancing the "Three Es – Environment, Economy, and Equity". The model of the "Three Es" was first articulated by the Brundtland Commission and remains the predominant paradigm today. Jepson (2001) provided a description of this balance stating, "In essence, the emerging sustainability doctrine holds that the natural environment can be protected, the economy developed, and equity achieved all at the same time and

that the extent to which we are successful in this simultaneous achievement is the extent to which we will achieve sustainability" (p. 503).

Sustainability in the Private Sector (Corporate Sustainability)

Corporate sustainability is defined as the ability of a company to satisfy the needs of direct and indirect stakeholders without compromising the company's ability to satisfy the needs of future stakeholders (Dyllick & Hockerts, 2002; Callado & Fensterseifer, 2011). Sustainability in the private sector is led by large corporations interested in efficiency and improved corporate image. Today, to be a sustainable organization, a company needs to understand its impacts on the world and have the capacity to learn and innovate in response to those impacts (McElroy, 2006; Hadders, n.d.). Perrini and Tencati (2006) stated "a sustainability-oriented company is one that develops over time by taking into consideration the economic, social and environmental dimensions of its processes and performance" (p. 298).

The corporate sustainability movement has been long in coming. The Industrial Revolution of the 18th and 19th centuries brought dramatic changes in practically every occupational sector – manufacturing, agriculture, mining, and transportation. It fundamentally changed the U.S. economy and led to significant shifts in culture and society. Fueled by a seemingly endless supply of natural resources, the consumption-based world economy and global marketplace gave

birth to unbridled resource depletion, rampant waste, and an increasingly inequitable distribution of goods and services. Industrialization expanded with little knowledge or understanding of its impacts on the world.

As the 20th century approached, inflating costs and resource scarcities emerged as a real constraint to business. These realities, coupled with the broader movement related to sustainability, prompted business leaders to leverage sustainable practices as a way to operate, protect, and grow their businesses. Organizations began to innovate in response to the impacts of industrialization on the world. While maintaining the perspective of profit, sustainability became a way to address a variety of business concerns and social issues (Edwards, 2005; Savitz & Weber, 2006).

The idea of corporate reporting extending beyond financial reports was recommended by Spreckley. In his book, *Social Audit – A Management Tool for Co-operative Working* (Spreckley, 1981), he proposed the idea of enhanced corporate reporting with a model encouraging companies to report on their social responsibility in the same way they produce annual financial reports. For a healthy economy, Spreckley touted the importance of looking beyond the money transactions to include "other 'currencies' such as education, social interaction, [and] environmental care…when considering the transactions within a 'social' economy" (Spreckley, 1981, p. 14).

This history gave rise to the notion of the "Triple Bottom Line." The Triple Bottom Line model takes into account not only the financial status of an organization – historically known as the "bottom line" – but also the social and environmental impacts and contributions made by a company. Elkington (1997) coined the phrase in his book, *Cannibals with Forks: The Triple Bottom Line of 21st Century Business*, in which he argued that a company's success is commonly measured by more than simply satisfying the traditional bottom line of profitability. Lasting business success requires satisfactory performance related to environmental quality and social justice, thus yielding a triple bottom line. The Triple Bottom Line dimensions are also commonly called the "Three Ps": people, planet and profits (Elkington, 1997).

With the 21st century on the horizon, President Bill Clinton convened the Council on Sustainable Development. The Council stated, "Our challenge is to create a future in which prosperity and opportunity increase while life flourishes and pressures on oceans, Earth, and atmosphere – the biosphere – diminish; to create, as the Council's vision suggests, a 'life-sustaining Earth' that supports a 'dignified, peaceful, and equitable existence' " (President's Council on Sustainable Development, 1999, p. i). Though many years have passed since the concept of corporate sustainability has emerged, no substantial uniform federal codes or regulations exist in the U.S. to govern sustainability practices or reporting (Cowan et al., 2010).

Today, in spite of the lack of a clear definition for sustainability and the relative absence of regulatory requirements concerning sustainability actions, many companies have adopted a sustainability focus and participate in standardized reporting programs. In fact, large U.S. corporations "appear to have the most advanced sustainability programs" (Cowan et al., 2010, p. 525). Of the Fortune Global 500 companies, "two-thirds issue some type of stand-alone, non-financial report addressing sustainability issues" (Reilly, 2009, p. 33).

There continues to be growing pressure on companies to become more sustainability-oriented – to produce a greater public good and to communicate with increased transparency regarding their actions and impacts. Hadders and Miedema (2009) reflected this sentiment stating "the world badly needs organizations who harness private interest to serve the public interest and who accrue fair returns to shareholders, but not at the expense of the legitimate interest of other stakeholders" (p. 46). This makes sustainability a complex undertaking, one in which, according to Perrini and Tencati (2006), "financial and competitive success, social legitimacy, and efficient use of resources are intertwined according to a synergistic and circular view of the company's aims" (p. 298).

The statements above express the ideals of the corporate sustainability movement. Achieving these lofty sustainability callings are, by any measure, challenging. As discussed earlier, one key challenge in pursuing sustainability is the lack of clarity, consistency, and acceptance of a standard definition of

sustainability. The issue is further compounded by the lack of widely-implemented, effective measurement and reporting tools. This makes deciding on which actions to take, and determining how to measure results and report on the outcomes, an often overwhelmingly difficult barrier to achieving sustainability goals.

Tools for Measuring and Reporting on Corporate Sustainability

To address the challenges of pursuing sustainability, numerous attempts have been made to provide guidance to corporate organizations. Much of the literature on corporate sustainability focuses on the viewpoint of stakeholders. Perrini and Tencati (2006) stated plainly that "corporate sustainability, that is the capacity of a firm to continue operating over a long period of time, depends on the sustainability of its stakeholder relationships" (p. 296). The term "stakeholder" is frequently defined as "…any group or individual who can affect or is affected by the achievement of the organization's objectives" (Freeman, 1984, p. 46). Stakeholders can include employees, clients, suppliers, public authorities, communities (local, regional or national), society at-large, financial partners, and potentially others not listed here – basically anyone who has a "stake" in the organization. The stakeholder view of a firm has a robust set of literature unto itself (see Donaldson & Preston, 1995; Clarkson, 1995; Post, Preston, & Sachs, 2002). According to this view, "a company can last over time if it is able to build

and maintain sustainable and durable relationships with all members of its stakeholder network" (Perrini & Tencati, 2006, p. 298).

Hadders and Miedema (2009) defined stakeholders as minimally consisting of "groups whose interests are impacted by the organization's operations, and who are therefore entitled to consideration" (p. 48). They also provided a relevant definition of corporate sustainability stating that it "encompasses strategies and practices that aim to meet the needs of stakeholders today while seeking to protect, support, and enhance the human and natural resources that will be needed in the future" (p. 46).

Effective stakeholder communication is essential to managing stakeholder relationships. Unfortunately, communicating the sustainability message to stakeholders can be difficult because: 1) sustainability measures are not standardized; 2) sustainability data is not required for standard mandatory reports; 3) effective communication of sustainability data may require translation [explanation] of technical content; and 4) sustainability initiatives emanate from various levels of a company so they follow multiple communication paths which can lead to incomplete or contradictory messages (Reilly, 2009). The key to overcoming these difficulties is the development of standardized tools for measuring, reporting, and benchmarking sustainability information.

The need for standardized reporting is twofold. First, stakeholders need to compare, on a level field, the sustainability actions, commitments, and

performance of corporations. Tools that can aid in this endeavor are critical for corporate success and those companies who experience the most success with sustainability programs have identified a good "fit between the sustainability strategy and the corporate competitive strategy" of their organization (Baumgartner & Ebner, 2010, p. 87). Making these types of strategic connections requires adequate processes and management tools. In calling for new sustainability accounting systems to more effectively communicate sustainability performance, Perrini and Tencati (2006) insisted that a truly "sustainability-oriented company is fully aware of its responsibilities towards the different stakeholders and adopts methods and tools that allow it to improve its social and ecological performance" (p. 298).

Secondly, standardized reporting is needed because in a global market economy, with vast resources controlled by large private companies, social problems and environmental degradation are linked to corporate operations and operating policies (Laine, 2009). As evidenced by the literature, there is an upsurge in sustainability actions and sustainability reporting as a way for corporations to respond to the growing call for increased accountability and transparency (Laine, 2009; Spence, 2009; Gray, Owen, & Adams, 1996). This trend reflects an acknowledgement of the society's "right to know about the extent to which its principles and tenets are being complied with and how [natural] resources are being looked after" (Gray & Milne, 2004, p. 73-74).

Some scholars and citizens contend, from a critical perspective, that sustainability reports could reflect merely a change in rhetoric, often called "green-washing." Laine (2009) reported that "there is a body of research (e.g. Cho, 2009; Tregidga & Milne, 2006; Tinker & Neimark, 1987) suggesting that companies engage in social and environmental reporting mainly in order to secure their own position and private interests" (p. 15). Baumgartner and Ebner (2010) suggested "one reason for green-washing could be that corporations do not really know how they can integrate sustainability issues into their business routines and strategies" (p. 76).

To address these concerns, the development of tools and models has grown. Perrini and Tencati (2006), reported that "more than a hundred standards and management solutions were developed to evaluate and report the economic, social, environmental and sustainability performance of companies" (p. 299). One of the early tools was proposed by Kaplan and Norton (1992) who developed a "balance scorecard" tool for managers that includes a relevant set of measurements for both financial and operational performance based on the premise that "an organization's measurement systems strongly affect the behavior of managers and employees" (p. 71). This tool was designed to improve the information available to executives to enhance their ability to make better decisions in an increasingly competitive world. Financial scorecards – such as return-on-investment and earnings-per-share – remained useful but did not

sufficiently convey performance to foster the innovation and continuous improvement needed for a company to remain competitive. Instead, the new balanced scorecards included measurements of customer satisfaction, internal processes, and the organization's innovation and improvement activities, information that could drive future financial performance.

The balanced scorecard tool was a precursor to the subsequent benchmarking tools. However, to date, standardization remains a challenge and "there is no one consensual formula or recipe to evaluate what is sustainable or unsustainable" (Callado & Fensterseifer, 2011, p. 44). The four popular programs summarized below, each with their own limitations, currently serve as the primary benchmarking tools intended to provide comparable ratings of organizational performance for use by stakeholders and technical guidance for the decision-makers within organizations.

Global Reporting Initiative (GRI)

> Ceres is a nonprofit organization founded in 1989 in the wake of the Exxon Valdez oil spill. It established the Ceres Principles – a ten-point code of corporate environmental conduct to be publicly endorsed by companies as an environmental mission statement or ethic (Ceres, 2010). Ceres works with companies to address sustainability challenges. Its mission is to integrate sustainability into day-to-day business practices for the health of the planet and

its people. In 1997, Ceres created the Global Reporting Initiative (GRI) with a mission to make sustainability reporting standard practice by providing guidance and support to organizations (Global Reporting Initiative [GRI], 2012).

Dow Jones Sustainability Index (DJSI)

The Dow Jones Sustainability Index was launched in 1999 as the first global index tracking the financial performance of the leading sustainability-driven companies worldwide. The index provides benchmarks for investors who integrate sustainability considerations into their portfolios and provides an effective engagement platform for companies who want to adopt sustainable best practices (Sustainable Asset Management USA, 2012).

International Organization for Standardization (ISO) 14001: Environmental Management System (EMS) Certification

The International Organization for Standardization (ISO) is a non-governmental organization that forms a bridge between the public and private sectors to enable the achievement of consensus on solutions that meet both the requirements of business and the broader needs of society. ISO 14001:2004 provides the requirements for an Environmental Management System (EMS).

> An EMS enables an organization of any size or type to: 1) identify and control the environmental impact of its activities, products or services; 2) improve its environmental performance continually; 3) implement a systematic approach to setting environmental objectives and targets, to achieving them and to demonstrating that they have been achieved; and 4) ensure legal compliance (International Organization for Standardization [ISO], 2011).

Leadership in Environmental Engineering and Design (LEED)

The U.S. Green Building Council (USGBC) is a non-profit community of leaders working to make green buildings available to everyone within a generation. In 2000, the USGBC established the Leadership in Energy and Environmental Design (LEED) certification system which provides building owners and operators with a framework for identifying and implementing practical and measurable green building design, construction, operations, and maintenance solutions (U.S. Green Building Council [USGBC], 2011).

Alternative Models for Measuring and Reporting on Corporate Sustainability

Literature on the topic of sustainability often makes reference to these standardized measuring and reporting tools; however, they each come under

criticism for a variety of reasons. One primary issue is that systems such as these are "not suitable for small- and medium-sized enterprises because of their complexity, limited flexibility and need for formal procedures" (Perrini & Tencati, 2006, p. 299). Thus, varieties of alternative models for measuring and reporting sustainability performance have been proposed in the literature and are summarized below.

Sustainability Evaluation and Reporting System

Perrini and Tencati (2006) proposed a sustainability evaluation and reporting system (SERS) consisting of three modules: 1) the overall reporting system; 2) the integrated information system; and 3) the key performance indicators for corporate sustainability. SERS is a multiple bottom line reporting system, aggregating different management tools in order to supply qualitative and quantitative information (including physical, technical, and financial information) to support the needs and interests of various stakeholder groups. This model is summarized in Figure 2-2 Overview of Sustainability Evaluation and Reporting System (SERS) .

Sustainability Evaluation and Reporting System (SERS):

1. The overall reporting system
   – the annual report
   – the social report
   – the environmental report
   – a set of integrated performance indicators
2. The integrated information system
3. The key performance indicators for corporate sustainability

Figure 2-2 Overview of Sustainability Evaluation and Reporting System (SERS)

The overall reporting system (the first module) is comprised of the annual report, the social report, the environmental report, and a set of integrated performance indicators. The annual report contains the traditional profit and loss account, the balance sheet, and the cash flow statement. For publicly held companies, this type of annual reporting is required and policy makers have strengthened these rules to demand greater transparency in light of recent economic downturns. From a stakeholder view, however, "this type of annual reporting is not sufficient to cover all aspects of corporate performance, including social and environmental [performance]" (Perrini &Tancati, 2006, p. 301). Consequently, supplemental reports were proposed.

The SERS social report focuses on stakeholder groups and includes three elements: 1) the ethical policy, 2) the value-added statement, and 3) the stakeholder analysis. The ethical policy of the company contains specific commitments made to the stakeholder groups and serves as the basis for

evaluating the corporate social performance assessed through value-added statements and the stakeholder analysis. The value-added statement links traditional financial accounting with the social report to measure the financial value "generated and distributed by the company to different stakeholder groups or invested into the firm" (Perrini &Tancati, 2006, p. 301). The stakeholder analysis "aims to assess the sustainability of the interactions between a company and its stakeholders through qualitative and quantitative information…in order to understand the economic costs and benefits related to social activities and policies" (Perrini &Tancati, 2006, p. 302).

The environmental report within SERS is used to "monitor the relationships between corporate activities and natural capital…[to measure the] costs and benefits related to the environmental choices made as regards processes and products" (Perrini &Tancati, 2006, p. 302). This report provides an accounting of the energy and materials used, including an input/output analysis (consumption/emissions) of the operations as well as a lifecycle analysis of the products, resources, and pollutants of the organization. The environmental report also provides an integrated picture of the financial costs and benefits borne by the company as a result of its environmental management activities. This type of reporting is very complex because producing the monetary report requires a well-integrated financial and management system (Burritt, 1997).

The last component for overall reporting in SERS is a set of integrated performance indicators which allow a company to readily check and report on its overall corporate performance. These are "cross-cutting indicators [that] relate physical and technical quantities to financial ones" (Perrini & Tencati, 2006, p. 303). The goal of reporting on these indicators is to "build a true and fair view of the business situation in order to strengthen, improve and manage in a sustainable way the stakeholder relationship" (Perrini &Tancati, 2006, p. 303).

In addition to these four elements of the first module (the overall reporting system), SERS requires an overarching and integrated information system and a set of key performance indicators. The integrated information system "enables an organization to collect, process and share physical/technical and financial data" (Perrini &Tancati, 2006, p. 303). This requirement is in concert with the goal stated by UN (1993, 2003) to build a satellite accounting system to collect and organize financial, social, and environmental performance data through a set of integrated databases. This integration of data allows company operators, decision-makers, and other stakeholders to assess the company's overall performance and its sustainability. The key performance indicators provide a dashboard of sustainability that serves as a "tool to continually monitor an organization's performance trends" (Perrini & Tencati, 2006, p. 304).

Sustainability Maturity Model

Representing another approach to sustainability measuring and reporting, Baumgartner and Ebner (2010) developed a profile for corporate sustainability strategies that included key sustainability issues which must be addressed in order to reach defined sustainability goals. They first identified four types of sustainability strategies taken by corporations: 1) introverted – a risk mitigation strategy focusing on legal and other external standards, 2) extroverted – a legitimating strategy focusing on external relationships, 3) conservative – an efficiency strategy focusing on eco-efficiency and cleaner production, and 4) visionary – a holistic sustainability strategy focusing on sustainability issues within all business activities in order to gain competitive advantages from differentiation and innovation leading to stakeholder benefits.

They identified aspects of sustainability that can be ranked to assess a company's strategy. They propose a four-level ranking system made up of "beginning", "elementary", "satisfying", and "sophisticated/outstanding" (p. 81). The aspects are summarized below in Table 2-1 Relevant Sustainability Aspects sorted by Dimensions of Sustainability (Baumgartner & Ebner, 2010). For a complete list of descriptions, see Appendix A: Corporate Sustainability Aspects by Baumgartner and Ebner (2010).

Table 2-1 Relevant Sustainability Aspects sorted by Dimensions of Sustainability (Baumgartner & Ebner, 2010)

Aspects in the Economic Dimension	**Aspects in the Ecological Dimension**	**Aspects in the Social Dimension (Internal)**	**Aspects in the Social Dimension (External)**
Innovation and technology	Resources	Corporate governance	Ethical behavior and human rights
Collaboration	Emissions into the air	Motivation and incentives	No controversial activities
Knowledge management	Emissions into the water	Health and safety	No corruption and cartel
Processes	Emissions into the ground	Human capital development	Corporate citizenship
Purchase	Waste and hazardous waste		
Sustainability reporting	Biodiversity		
	Environmental issues of the product		

Adaptive Quadruple Bottom Line Scorecard

Another model, working from the basis of the Balanced Scorecard (Kaplan & Norton, 1996) and the Triple Bottom Line (Elkington, 1997), is the Adaptive Quadruple Bottom Line Scorecard (AQBLSC). It was proposed by Firestone (2006) and further developed by him and several colleagues who

recognized traditional scorecards as narrowly focused and "dealing with a limited set of stakeholders" (Firestone, Hadders, & Cavaleri, 2009, p. 126). By adding distinctions between operational performance and intelligence (or creative learning) performance; by drawing a distinction between outcomes and impacts; and by aligning the perspectives with sustainability, the model was evolved. The scorecard progression is summarized below in Table 2-2 Progression of Scorecard Reports (adapted from Hadders, n.d.).

Table 2-2 Progression of Scorecard Reports (adapted from Hadders, n.d.)

Level	Model	Author (Year)
0	Financial Measures	NA
1	Balanced Scorecard (BSC)	Kaplan and Norton (1996)
2	Adaptive Scorecard / Adaptive Maturity Model (AMM)	Firestone (2006a)
3	[Advanced] Adaptive Scorecard	Firestone (2006b)
4	Adaptive Quadruple Bottom Line Scorecard (AQBLSC)	Hadders (n.d.)

The AQBLSC is "a tool for connecting organizational learning and innovation with corporate social responsibility and sustainability" (Hadders, n.d., p. 14). This tool is unique in that it provides visibility to the distinction between performance drivers and the satisfaction, outcomes, and impacts experienced by stakeholders. Additionally, for company executives, it is intended to provide a "more dynamic knowledge-based framework that accounts for more of the core

competencies and sustainability sources of competitive advantage that organizations are currently seeking to leverage" (p. 15). The diagram of this model is illustrated below in Table 2-3 The Adaptive Quadruple Bottom Line Scorecard (AQBLSC) (redrawn from Firestone et al., 2009, p. 128).

Table 2-3 The Adaptive Quadruple Bottom Line Scorecard (AQBLSC) (redrawn from Firestone et al., 2009, p. 128)

Business Processing **(BP)** Business Management **(BM)** Knowledge Processing **(KP)** Knowledge Management **(KM)**		**Operational Performance Measures**				**Intelligence Performance Measures**			
		BP		**BM**		**KP**		**KM**	
		Outcome	Impact	Outcome	Impact	Outcome	Impact	Outcome	Impact
Financial Bottom Line									
Environmental Bottom Line	Internal Stakeholders								
	External Stakeholders								
Social Bottom Line	Internal Stakeholders								
	External Stakeholders								
Economic Bottom Line	Internal Stakeholders								
	External Stakeholders								

Corporate Sustainability Grid

The claim made by Callado and Fensterseifer (2011) was that the methods proposed or utilized to date "can only be used for individual performance control"

of an organization and they do not represent "an appropriate tool for comparing companies of different industrial sectors or different companies of the same sector" (p. 45). For this reason, they proposed a tool called the Corporate Sustainability Grid, a model that "integrates the environmental, social, and economic dimensions into a unified metric" (p. 45).

In this model, a set of sustainability indicators were selected. Callado and Fensterseifer (2011) selected 54 sustainability indicators in each of the three dimensions of sustainability: economic, social, and environmental. Next, those indicators were used to calculate a partial sustainability score for each dimension. The partial sustainability scores were then ranked based on the range of values established as the minimum, median, and maximum score for each dimension. The ranking yielded either a one or zero with equal or greater than average (satisfactory performance) receiving a one and below average (unsatisfactory performance) receiving a zero. The corporate sustainability score was calculated as the sum of those three rankings and the companies were positioned on the grid according to the value and content of their scores as indicated below in Table 2-4 Corporate Sustainability Grid (Callado & Fensterseifer, 2011).

Table 2-4 Corporate Sustainability Grid (Callado & Fensterseifer, 2011)

Partial Sustainability Score			Corporate Sustainability Score	Corporate Sustainability Grid Position
Economic	**Social**	**Environmental**		
0	0	0	0	I
0	0	1	1	II
1	0	0	1	III
0	1	0	1	IV
1	1	0	2	V
0	1	1	2	VI
1	0	1	2	VII
1	1	1	3	VIII

Each position in the Corporate Sustainability Grid was defined to allow for ready comparison of organizations across industries and organizational size. These descriptions were listed as follows:

- Position I represents companies with low economic performance which do not have good social interactions and are not committed to environmental issues;
- Position II represents companies with low economic performance that have good social interactions but are not committed to environmental issues;
- Position III represents companies with good economic performance that do not have good social interactions and are not committed to environmental issues;

- Position IV represents companies with low economic performance that do not have good social interactions but are committed to environmental issues;
- Position V represents companies with good economic performance and good social interactions but are not committed to environmental issues;
- Position VI represents companies with low economic performance but that do have good social interactions and are committed to environmental issues;
- Position VII represents companies with good economic performance that do not have good social interactions but are committed to environmental issues;
- Position VIII represents companies with good economic performance, good social interactions, and are committed to environmental aspects; this is the position that corresponds to sustainable companies. (Callado & Fensterseifer, 2011, p. 51)

Concluding Remarks on Corporate Sustainability

"Organizations have a crucial role to play in helping societies become more sustainable and competitive" (Hadders, n.d., p. 1). For businesses, sustainability reporting and participation in standardized programs can be

challenging. However, most companies find that they already collect the majority of the data needed and the benefits of systematically collecting and reporting in this fashion far outweigh the costs (Savitz & Weber, 2006). These developments in corporate sustainability have caused all levels of management to reevaluate operations and their measures of success. Priorities have shifted from simple profit motives to Triple Bottom Line imperatives. Business leaders have recognized that achieving minimum standards of regulatory compliance is not the best value proposition for business. Instead, corporate leaders are embracing their ecological, economic, and social responsibility – ever aware that measuring success involves "delivering value and being accountable to their employees, their customers and the communities in which they operate" (Edwards, 2005, p. 74).

The progress in corporate sustainability reporting was summarized by Herremans & Herschovis (2006) with a timeline marking the movement. This timeline is provided below in Table 2-5 Progress in Sustainability Reporting (redrawn from Herremans & Herschovis, 2006, p. 21).

Table 2-5 Progress in Sustainability Reporting (redrawn from Herremans & Herschovis, 2006, p. 21)

1970s & 1980s	Mid-1990s	Late 1990s	Early 2000s	Future
ENVIRONMENTAL	ENVIRONMETAL AND SOCIAL	ENVIRONMENTAL, SOCIAL, AND ECONOMIC	ATTESTATION	COMPARABILITY
Companies reported what was available in their information systems	Companies asked stakeholders what should be reported	Companies began to use reporting standards	Companies began to ask third parties to verify what was reported	Companies will see the benefit of more rigorous benchmarked performance
1970s and 1980s: Reporting was mostly qualitative, as companies found that their systems contained little data on either environmental or social performance.				
1990s: More rigorous environmental reporting developed as companies used sets of indicators to help report their environmental performance; companies were just gaining experience in reporting social performance; environmental reports included more discussion and analysis of results.				
2000s: Some indicators and reports have evolved to a sufficiently high standard that external verification or attestation can be done; work still needs to be done to provide benchmarks by which to compare performance against other industry or nonindustry members.				

For protecting the future of the global environment, sustainability is important, but as a business driver "it can also be viewed as an investment in the future, and a pathway to innovation and creative thinking" (Cowan et al., 2010, p. 525). Further, as the demand increases for sustainable products and services, companies will be forced to compete not only on their business effectiveness, but on their environmental and social responsibility as well (Cowan et al., 2010).

Sustainability in the Public Sector (Local Government Sustainability)

Attention will now turn from sustainability in the private sector to sustainability in the public sector, specifically sustainability as addressed by local governments in an urban setting. In the formative book, *The Ecology of Place: Planning for Environment, Economy, and Community*, Beatley and Manning (1997) called for a new vision for America that "recognizes that questions of ecological sustainability are fundamentally and inextricably tied to patterns of human settlement – to metropolitan regions, cities, towns, and villages" (p. 2). They cast a vision for "creating places citizens can be proud of – and places of enduring value that people are not ashamed to leave to their descendants…[ones that aim] to protect, sustain, and restore the environment [and] create livable, inspiring, enduring, and equitable places" (p. 2).

According to *The World Factbook* (CIA, 2009), there are more people living in urban settings than in rural settings worldwide and in the U.S. The urban areas are home to 82% of the U.S. population. This makes the urban environment a particularly appropriate place to implement sustainability, particularly in the U.S. Roseland, Cureton, and Wornell (1998) stated that "cities provide enormous, untapped opportunities to solve environmental challenges and local governments must and can pioneer new approaches to sustainable development and urban management" (p. 22). This sentiment was explained further by Saha (2009) when she wrote,

> In the U.S. context, cities are the right geographical entity to promote sustainable development. Although the national and international debate on sustainable development is important, the "rubber hits the road" at the local level. Problems caused by imbalances between the environment and economy often result in resource drains at the local level, leaving local government officials to devise solutions to address such imbalances. Cities also provide opportunities for direct local involvement since it is much easier for citizens to get involved in decision-making. Local governments are closer to their citizens as opposed to the state or federal government and more distant from powerful lobbies. (p. 20)

Beatley and Manning (1997) stated, "cities and urban developments have tremendous ecological impacts, and the seriousness of the environmental crisis to which they contribute suggests the need for a fundamentally new governance and management approach – one that acknowledges and implements a new ecological paradigm" (p. 27). As both the most significant source of, and solution to, the sustainability problem facing our world and its citizens, cities are the most appropriate setting for sustainability action.

The new ecological paradigm has been evolving in the 15 years since Beatley and Manning's writing – though this country and most others around the

world are still arguably very far from a fundamentally new governance and management approach that would deliver U.S. cities to a new state of sustainability. The reason, suggested by Norton (2003), is that "much of the current work on sustainable development has been promoted by officials at the international and national levels as something to be taken up and applied at the state and local levels" (p. 5). This is significant to note because "these concepts need to make their way into local planning and policy-making processes in order to significantly change patterns of development, and little such change appears to be happening" (Norton, 2003, p. 5).

The literature related to urban planners identifies these professional as having a pivotal role to play in the public sector shift toward sustainability. Local and regional planning is a practice dating back to the 19th century when industrialization led to the need for coordinated governance to deal with rapid urban growth, overcrowding, and increased demand for public services. City planning historian, Peter Hall (1996), labeled the late-19th century industrial city as "The City of Dreadful Night" in the title for Chapter 2 of his book, *Cities of Tomorrow: An Intellectual History of Urban Planning and Design in the Twentieth Century*. The urban setting has long been the subject of local, national, and intentional efforts aimed at identifying and supporting means to effectively shelter, employ, transport, and engage citizens.

The history of urban planning is a tale of the various efforts to improve the quality of life for those in the city. Ebenezer Howard, Patrick Geddes and Ildefons Cerdà were visionaries "applying broad and holistic styles of thought to urban problems" (Wheeler, 2004, p. 11). The work of Geddes and Howard can be viewed as "foreshadowing current approaches to sustainability planning" (Wheeler, 2000, p. 135). Relevant to the sustainability definitions discussed previously is Geddes' notion of an intrinsic and inseparable connection between one's physical environment, economic activity, and social/familial engagement. This is rooted in a simple phrase by French sociologist, Frederic Le Play, "lieu, travail, famille," which Geddes translated as "place, work, folk" (Geddes, 2006, p. 49).

The sprawling, automobile-dependent development that took root in the U.S. from the 1920s to the 1980s – and to a great extent remains the dominant model of urban development today – yielded a significantly less sustainable pattern of development. Recognizing the short-falls of this development pattern and implementing more sustainable plans for local communities and for our world is the task now at hand. "In many respects, the agenda of sustainable places is the next natural progression in the evolution of planning history" (Beatley & Manning, 1997, p. 18).

The literature reveals general agreement regarding the placement of sustainability and sustainable development in the planning arena. Conroy (2006) explained:

> Characteristics of planning make it a natural venue for sustainability goals and activities. Specializations addressing environment and land use, housing, economic development, and transportation elements of urban and regional planning are able to promote all three of the fundamental goals of sustainability. (p. 19)

Friedmann (1993) stated that the "constituent concepts that compose sustainability are…most applicable at the same level at which most planning occurs and on which it is most focused, that is, the local and regional level" (Friedmann, 1993, as cited by Jepson, 2001, p. 5). Jepson (2001) was unambiguous about the connection. He wrote, "the reasons why sustainability and the field of planning are inextricably linked and mutually relevant are numerous and persuasive" (p. 505). In support of this statement, and as further evidence of a literary consensus, Jepson (2001) cited four key reason why sustainability is rightly the function of local and regional planners:

> First, the important ecosystem effects are those that occur nearest to the ecosystem (Rees & University of British Columbia, 1989); second, the types of "global" problems being encountered vary

> according to local circumstances, thus requiring a local policy response (Dubos, 1981); third, political responsiveness is highest at the local level (Rees, 1995); and fourth, the strong conviction that is necessary for the achievement of sustainability goals and objectives can only emerge in people who are directly and personally involved in policy formation (Voisey, Beuermann, Sverdrup, & O'Riordan, 1996). (p. 505)

The placement of sustainability within the purview of planning is not without its challenges. While agreeing that the profession of planning is the right field for sustainability, Conroy (2006) identified one such major challenge for the practice. She wrote, "because planning is an inherently future-oriented practice, it captures the intergenerational component of the [sustainability] concept…the challenge for planners is to reconcile the often conflicting expansionist and ecological interests inherent in planning for sustainable development" (p. 19).

Jepson (2001) cast this challenge as one of integration. He explained that a central conceptual challenge of both sustainability and planning is that they both involve integration across disciplines, across diverse actors, across values, and across institutions. This, too, is expressed by Campbell (1996) who stated that "planners need to combine both their procedural and their substantive skills and thus become central players in the battle over growth, the environment, and social justice" (p. 297). Finally, Godschalk (2004) acknowledged the challenges

writing, “planners are working on the frontiers of sustainability and livability practice, without benefit of a profession-wide consensus on standards and methods,” a practice he likens to “acrobats without a net” (p. 5).

Tools for Measuring and Reporting on Local Government Sustainability

Consensus in the literature indicated that sustainability planning is a task central to the urban planning profession, that sustainability application is necessary at the local/regional/urban level, and that sustainability actions are needed to address the “Three Es” of environment, economy, and equity. However, the availability of tools and resources for local governments to measure and report on sustainability efforts and outcomes is severely lacking. Though there are efforts to establish such tools and programs, there are currently no widely adopted and consistent benchmarking models to guide the public sector in this endeavor.

Various state, regional, and local programs exist across the country, but they fail to provide the broad-based consensus that allows for national best-practice models to be established. The lack of literature in this area illustrates a clear need for additional research and development in the area of local government sustainability measurement and reporting tools. This is in stark contrast to the more rapid development of such resources in use within the private sector.

STAR Community Rating System

The most promising planning and benchmarking tool for local government sustainability is one developed by ICLEI – Local Governments for Sustainability [formally known as the International Council for Local Environmental Initiatives]. The program is called the STAR Community Rating System (STAR). This program initiative was started by ICLEI in collaboration with the U.S. Green Building Council (USGBC), National League of Cities (NLC), and the Center for American Progress (CAP) and involved "160 volunteers representing 130 organizations, including 50 cities and 10 counties, state and federal agencies, non-profit organizations, national associations, universities, utilities, and private corporations" (ICLEI, 2010, p. 3).

In 2010, 10 beta cities were selected to pilot this program. The wider release of the program was announced in October, 2012. The STAR Community Rating System:

> is the nation's first voluntary framework for evaluating and quantifying the sustainability of U.S. communities. The STAR Community Rating System uniquely combines: a framework for sustainability that covers the social, economic and environmental dimensions of community; a rating system that drives continuous improvement and fosters competition; and an online system that gathers, organizes, analyzes, and presents information required to

> meet sustainability goals. STAR's goals help define local sustainability, and present a vision of how communities can become more healthy, inclusive, and prosperous. (STAR Communities, 2012)

The release of this program is a significant development in the field of sustainable cities. It is the first community-level sustainability index and it is expected to gain momentum now that it has reached its official release. As the program is adopted beyond the pilot group, additional research will be required to gauge its contributions.

Alternative Models for Measuring and Reporting on Local Government Sustainability

While there remains a lack of concurrence and adoption of a standardized measuring and reporting tool, there are a variety of models that have been proposed as a means of promoting a more robust understanding of sustainability and encouraging appropriate action among public sector organizations. Six models (or paradigms) are revealed by the literature and are included in this section. They are: (1) Sustainable Places – Beatley and Manning (1997) placed sustainability squarely in the realm of planning the physical places of regions, cities, and towns; (2) The Planner's Triangle – Campbell (1996) illustrated the conflicts experienced among participants and priorities when engaging in that

planning process; (3) The Sustainability/Livability Prism – Godschalk (2004) extended Campbell's illustration to more strongly connect it to urban places by introducing livability into the model; (4) Environmentally Sustainable Economic Development – Bithas and Christofakis (2006) suggested an ecosystem model in which beneficial outcomes, such as economic breakthroughs and innovative social/cultural dynamics, receive greater consideration; (5) An Assessment of Sustainability – McGranahan and Satterthwaite (2003) defined multiple goals for judging sustainability in urban areas; and (6) Just Sustainability Paradigm – Agyeman (2008) called for a new paradigm to merge the modern movements of environmental stewardship and environmental justice. Each of these models is examined below.

Sustainable Places

The second chapter of *The Ecology of Place* (Beatley & Manning, 1997) outlined a model of sustainability by identifying the characteristics of sustainable places. The subheadings of this chapter revealed a methodology for sustainability that is repeatedly echoed by numerous subsequent writers. The headings read:

- Sustainable Places Acknowledge Fundamental Ecological Limits
- Sustainable Places are Restorative and Regenerative
- Sustainable Places Strive for High Quality of Life
- "Place" Matters in Sustainable Places

- Sustainable Places are Integrative and Holistic
- Sustainable Place Implies a New Ethical Posture
- Sustainable Places Strive to Be Equitable and Just
- Sustainable Places Stress the Importance of Community
- Sustainable Places Reflect and Promote a Full-Cost Accounting of the Social and Environmental Costs of Public and Private Decisions

Beatley and Manning (1997) concluded that "the principles articulated here suggest a better model for planning and managing in the future, and vast improvement over our current way of thinking about communities" (p. 39). They were well aware that they were expressing a paradigm that is "both social and environmental" as well as "necessarily normative – that is, it explicitly expresses certain values and ethical responsibilities, including duties to live within ecological limits, to consider generations yet to come, to value the equity of our current relationships, and to rise to the demands of community" (p. 39).

The Planner's Triangle

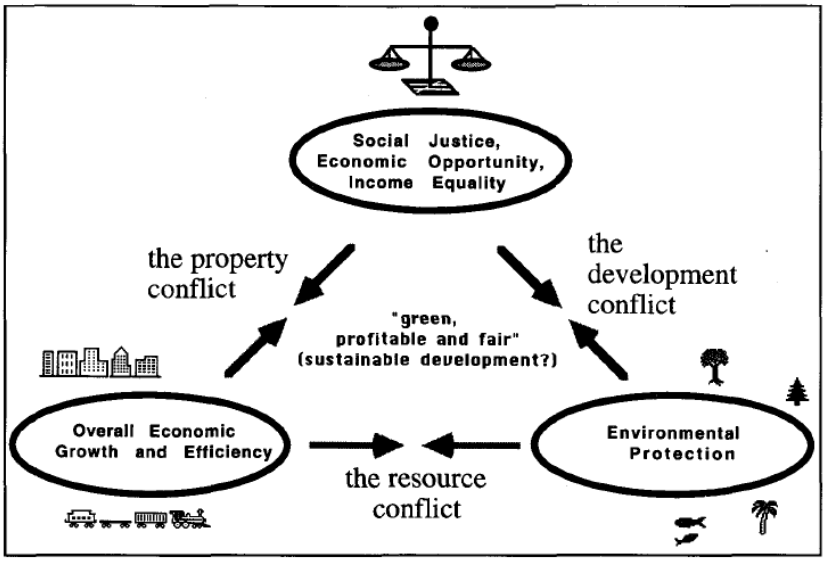


Figure 2-3 The Planner's Triangle of Conflicting Goals (Campbell, 1996)

Campbell (1996) proposed "The Planner's Triangle: Three Priorities, Three Conflicts" aiming "to focus planners not only on green cities and growing cities, but also on just cities" (p. 297). This model is illustrated above in Figure 2-3 The Planner's Triangle of Conflicting Goals (Campbell, 1996). At the corners of the triangle are the "Three Es" and in the middle of the triangle is sustainable development. As this model is applied to urban planning, the city is viewed from the environmental corner as a consumer of resources and a producer of wastes – it is in competition with nature. From the corner representing the economy, the city is the location where production, consumption, distribution, and innovation take place – it is in competition with other cities. Finally, at the equity corner of the triangle, the city is viewed as "a location of conflict over the distribution of

resources, services, and opportunities…the competition is within the city itself" (p. 298). Campbell (1996) further explained that within this "triangle of conflicting goals for planning…planners define themselves, implicitly, by where they stand on the triangle. The elusive ideal of sustainable development leads one to the center" (p. 298).

Along each axis of Campbell's triangle are the three conflicts. "The first conflict – between economic growth and equity – arises from completing claims on and uses of property. The conflict defines the boundary between private interest and the public good" (Campbell, 1996, p. 298). The second conflict is the "resource conflict" between the environment and the economy. Here, business resists any regulation of its exploitation of nature, but that regulation is needed to preserve enough resources to continue to operate in the future. What is contested is often "how much is 'enough'" (p. 299). Additionally, in this conflict, "the conceptual essence of natural resources is the tension between their economic utility in industrial society and their ecological utility in the natural environment" (p. 299).

Along the third axis is the most elusive conflict, the "development conflict," which lies between the poles of social equity and environmental preservation. "This may be the most challenging conundrum of sustainable development: how to increase social equity and protect the environment simultaneously, whether in a steady-state economy or not" (Campbell, 1996, p.

299). It is in this conflict that the poor are subjected to "no-win" choices between economic survival and environmental quality. In all of this, the role for planners is "to manage and resolve conflict and promote creative technical, architectural, and institutional solutions" (Campbell, 1996, p. 305).

Sustainability/Livability Prism

By considering the "two beguiling visions" of sustainable development and livable communities, Godschalk (2004) extended the work of Campbell, creating a three dimensional model he called the "Sustainability/Livability Prism". The prism is comprised of a base triangle with the "Three Es" at each corner and livability at the pinnacle of the prism as shown below in Figure 2-4 The Sustainability/Livability Prism (Godschalk, 2004).

The additional gaps in the lines of the prism represent other conflicts that arise for planning professionals in local government. They are the "growth management conflict" between livability and economic growth; the "green cities conflict" between livability and ecology; and the "gentrification conflict" between livability and equity. "At the prism's heart lies the elusive, perhaps utopian, perfectly realized sustainable and livable urban area" (Godschalk, 2004, p. 8).

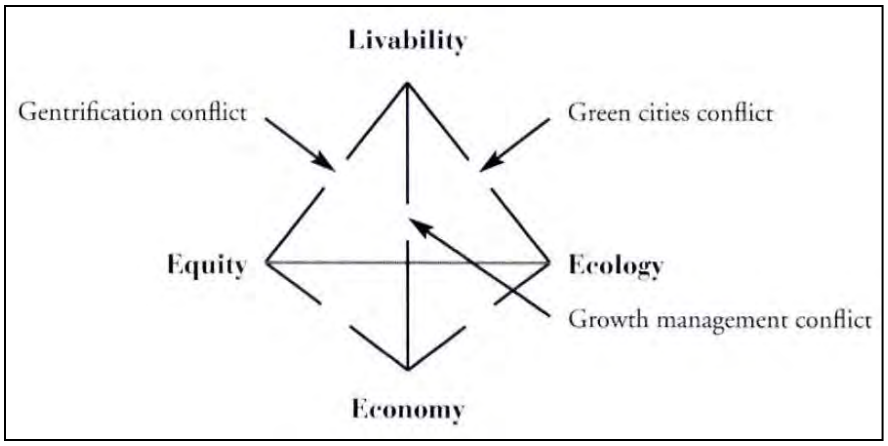


Figure 2-4 The Sustainability/Livability Prism (Godschalk, 2004)

The idea of livability is subjective and one that perhaps cannot be clearly defined. Livability is, however, an area that Godschalk identified as ripe for improvement. He indicated that the tenets of New Urbanism and Smart Growth (although sometime at odds) fall under this concept of livability, though he noted that in considering these concepts, "planning must encompass a more comprehensive set of concerns than any one of these approaches provides" (Godschalk, 2004, p. 12).

Godschalk (2004) proposed viewing the "relationships among people, plans, and places as an ecology of plans" in which the "inputs of planning (community values), the planning process (plan making), and the land use pattern outcomes (sustainable and livable places)" all function together as a complete system (p. 9). In considering this planning ecology within various metropolitan settings, Godschalk suggested utilizing his conceptual Sustainability/Livability Prism model to "access the conflicts and locate the gaps…[then] pick elements

from sustainable communities, New Urbanism, and Smart Growth approaches to fill the gaps" (p. 13). Given the limited experience, observation, and research, there remains a lack of empiricism associated with this model.

The Urban System Model

Rooted in the objectives set forth by the Brundtland Commission, Bithas and Christofakis (2006) utilized a systems model for evaluating urban areas in terms of environmentally sustainable economic development. This model is illustrated in Figure 2-5 The Physiology of the Urban System (Bithas & Christofakis, 2006). They called for a measurement of the sustainability of cities that takes into account both the positive and negative effects of the city's function. They suggested that while urban areas cannot be strictly environmentally sustainable (that is, they must acquire input resources from outside their ecosystem and they contribute negative impacts beyond their immediate ecosystem), the positive social outcomes of the city are often overlooked.

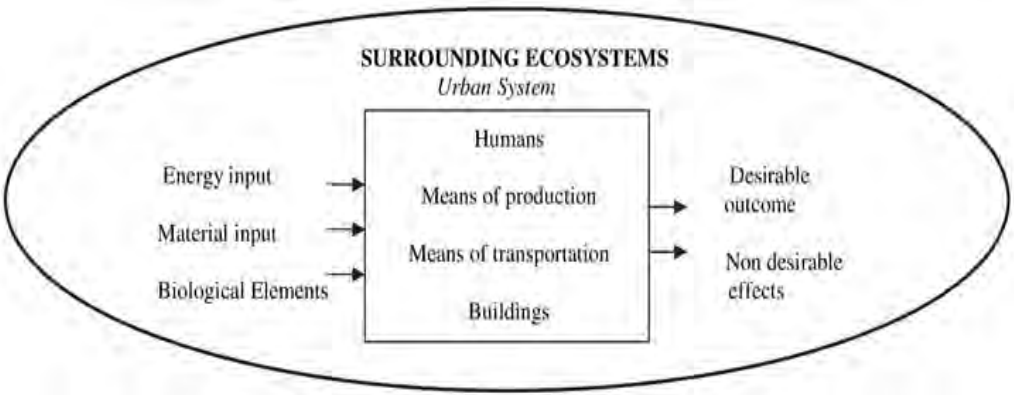


Figure 2-5 The Physiology of the Urban System (Bithas & Christofakis, 2006)

They suggested that cities are the source of the "emergence and promotion of evolutionary economic breakthroughs…which result in high productivity…and create crucial economic surplus…[to] initiate innovative cultural and other social dynamics" (p. 185). They concluded that "the positive outcome of this role is not spatially restricted to the geographical boundaries of the urban system…[and thus] one may assert now that the non-sustainability of cities is a result of their special function in terms of social evolution and their material composition necessitated by this function" (p. 185). As such, urban system sustainability must be looked at with a wider view than just that of the physical urban area and in doing so the sustainability of the entire system can be more appropriately assessed.

Multiple Goals of Sustainable Development as Applied to Cities

Working from the premise that sustainable development is about reconciling development with the environment, McGranahan and Satterthwaite (2003) focused on urban centers in their quest to assess sustainability. They asserted that the world is becoming "increasingly urbanized," that "urban centers concentrate more of the world's economic activities," and that "much of the world's middle- and upper-income groups live and work in urban centers" (p. 244). They explained that it is the "demand for goods and services that underpin most of the rural and urban resource demands and waste outputs from production worldwide" (p. 244). In order to advance sustainable development worldwide,

they summarized multiple goals for cities. The goals they proposed are captured below in Table 2-6 Sustainable Development Goals (McGranahan & Satterthwaite, 2003).

Table 2-6 Sustainable Development Goals
(McGranahan & Satterthwaite, 2003)

Meeting the needs of the present…	**…without compromising the ability of future generations to meet their own needs**
Economic needs – including access to an adequate income/livelihood or productive assets; and economic security when unemployed, ill, disabled, or otherwise unable to work.	***Minimizing use or waste of nonrenewable resources*** – including minimizing consumption of fossil fuels in housing, commerce, industry, and transport plus substituting renewable resources where feasible; minimizing waste of scarce mineral resources; preserving irreplaceable (thus nonrenewable) cultural, historical, and natural assets within cities.
Environmental needs – including accommodation that is healthy and safe with adequate provision for piped water, sanitation, and drainage; home, workplace, and living environment protected from environmental hazards; provision for recreation and for children's play; and shelters and services to meet the specific needs of children and adults responsible for child rearing.	***Sustainable use of finite renewable resources*** – cities drawing on freshwater resources at levels that can be sustained; keeping to a sustainable ecological footprint in terms of land area on which city-based producers and consumers draw for agricultural, forest products, and biomass fuels.
Social, cultural, and health needs – including health care, education, and transportation; needs related to people's choice and control (including homes and neighborhoods that they value and where social and cultural priorities are met).	***Biodegradable wastes not overtaxing capacities of renewable sinks*** – such as the capacity of a river to break down biodegradable wastes without ecological degradation.

Table 2-6 Sustainable Development Goals
(McGranahan & Satterthwaite, 2003) (cont.)

Meeting the needs of the present…	**…without compromising the ability of future generations to meet their own needs**
Political needs – including freedom to participate in national and local politics and in decisions regarding management and development of one's home and neighborhood within a broader framework that ensures respect for civil and political rights and the implementation of environmental legislation.	***Non-biodegradable wastes/emissions not overtaxing (finite) capacity of local and global sinks to absorb or dilute them without adverse effects*** – such as persistent organic pollutants, greenhouse gases, and stratospheric ozone-depleting chemicals.
	Social/human capital needed by future generations – including institutional structures to support human rights and good governance and, more generally, to receive each nation's or social group's rich cultural heritage, knowledge, and experience.

Just Sustainability

Many attempts to move urban areas toward sustainability place a greater focus on the environmental aspects of sustainability while little attention is given to the economic and equity elements of the Three Es of sustainability. This imbalance was noted and addressed by Agyeman (2008) who stated that it is "only through a just sustainability focus that the true potential of sustainability and sustainable development can be reached" (p. 755).

Agyeman, Bullard, and Evans (2002) defined sustainability as "the need to ensure a better quality of life for all, now and into the future, in a just and

equitable manner, whilst living within the limits of supporting ecosystems" (p. 78). This emerged from the observed problem that much of the theorizing and activity on sustainability is environmentally focused – doing a good job of focusing on future generations, but doing little to address equity or social justice in the present. This resulted in an "equity-deficit environmentalism…[and] two paradigms: the New Environmental Paradigm and the Environmental Justice Paradigm" (Agyeman, 2008, p. 752), which yielded two very different movements.

These movements can be seen most strikingly in discussions of global sustainability, though they certainly exist in the U.S. as well. They are characterized by the people most often found engaged in them – that is, the sustainability movement, an outgrowth of the New Environmental Paradigm, is comprised largely of people who are white, educated, and middle class while the environmental justice movement is largely driven by low-income, people of color. On the world stage, the richer countries of the global north discuss the sustainability movement – the "'green' agenda of environmental protection, biodiversity, and the protection of the ozone layer" while the poorer countries in the southern hemisphere "are proponents of a 'brown' agenda of poverty alleviation, infrastructure development, health, and education" (Agyeman, 2008, p. 753).

Consequently, Agyeman proposed to bridge the gap by replacing the two separate paradigms with one new "Just Sustainability Paradigm." This new paradigm has four focal areas of concern, all of which are not represented by any one of the former paradigms. The four focal areas are: (1) Quality of Life; (2) Present and Future Generations; (3) Justice and Equity; and (4) Living within Ecosystem Limits (Agyeman, 2008).

Empirical Research on Sustainable Cities

While the theoretical writing regarding urban sustainability is mounting, the body of empirical research on the application of sustainability within the public sector is still very small. This section calls attention to the work of key researchers involved in measuring urban sustainability.

The first major research effort to observe the application of the sustainable cities movement was conducted by Berke and Conroy (2000). They examined the influence of the sustainable development concept on city and county plans, looking to answer two basic questions:

1) Are plans that use sustainable development as an organizing concept more likely to promote sustainability principles than plans that do not?

2) Do plans achieve balance by supporting all sustainability principles, or do plans narrowly promote some principles more than others? (p. 21-22)

From the 10 plans studied that contained the values of sustainability as an organizing principle and the 20 high-quality plans that did not, they found "the concept had no effect on how well plans actually promoted sustainability principles" (p. 30). The second finding was that the selected plans did not "take a balanced, holistic approach to guiding development and moving toward sustainability…they focused narrowly on creating livable built environments" (p. 30).

Along with advocating for further research, Berke and Conroy (2000) concluded with three recommendations:

1) Community sustainability…should be incorporated as a fundamental aspect of planning education…and should be an axiom of planning (Lucy, 1994, as cited by Berke & Conroy, 2000, p. 30).
2) States should adopt planning mandates that require community plans to support principles of sustainability (p. 31).
3) Planners [should] examine the linkage between plans, implementation efforts, and the sustainability of outcomes (p. 31).

The significant research studies of urban sustainability that followed were similar in approach and objective. They were conducted by Portney (2003; Portney & Berry, 2010), Jepson (2004a, 2007), and Conroy (2006). Portney focused on small set of large cities with identifiable sustainable development programs. Jepson's (2004a) research included a much wider sample of cities from across the U.S. Conroy (2006) focused on smaller towns in Indiana, Kentucky, and Ohio. They each used a different set of indicators to draw conclusions about the status of urban sustainability. A summary table of indicators developed by Saha (2009) is located in Appendix B: Sustainability Indicators in Studies by Portney, Jepson, and Conroy.

Portney (2003) set out to answer the question: "How seriously are cities taking the pursuit of sustainability?" (p. 2). He decried the need for a single index, but having none, established his own set of 34 measures in 7 categories to use as the metric to address his research question. He identified 24 cities with explicit sustainable development programs. At the close of this research effort, cities' scores ranged from six to 30 with the higher number indicating the city was more serious about sustainability. In assessing these results, Portney concluded that "all cities and towns feel the need to pursue economic growth and engage in economic development…sustainable cities tend to see development as a means to an end, a means to achieving a particular type and level of quality of life" (p. 100). He generally found that in most cities, equity issues did not appear to be an

"integral part of a cities' definitions of sustainability" (p. 175) and that cities generally "come up short" with regard to the participatory aims of sustainability (p. 155), a topic he would take up in later writings (see Portney & Berry, 2010). In 2012, Portney expanded his criteria to include 38 indicators and ranked the 54 largest cities in the U.S. (Portney, 2012)

In 2001, Jepson (2004b) utilized a list of 39 "techniques and tools that can contribute to the achievement of sustainable development at the local level" (p. 230). He found that sustainable development had been adopted through a wide range of policies and techniques in cities of varying sizes and in all parts of the country. While he noted progress across the spectrum of sustainable development objectives, his research revealed the most action in areas related to land development and land use planning.

In 2005, Jepson (2007) conducted a follow-up survey in the five cities with the highest scores and the six cities with the lowest scores from his 2001 research. A survey was sent at random to 500 residents in each of the 11 cities and another 135 public officials, each of whom was officially associated with one of the 11 cities as a planning representative or elected official. Jepson was seeking to gain from the survey "not just demographic characteristics, but also specific community conditions, capacities, and opinions and attitudes" (p. 435). Jepson concluded that "the adoption of sustainable development policies among communities remains essentially inexplicable…[however] as the general public

becomes more educated and the use of indicators becomes more sophisticated and widespread, interest in sustainable development will grow" (p. 446).

Conroy (2006), asserting that sustainable development can succeed as a paradigm shift only if it resonates as a worthwhile undertaking with planning practitioners across the U.S. and the world, surveyed 436 planning directors or other representative responsible for planning-related practices in Indiana, Kentucky, and Ohio. Conroy compared the indicators, techniques, and tools used by Portney and Jepson to arrive at her own set of 16 sustainability-related activities which became the focus of her survey. Her research resulted in three findings. First, survey respondents were familiar with the concept of sustainability, but reported that the familiarity with sustainability was not shared throughout the organizations they served. Second, many of the activities that promote sustainability goals are being adopted, but they are ones long associated with good planning practice. And third, sustainability remains a buzzword concept that has not established itself as a distinct planning paradigm. (p. 25)

Conroy and Iqbal (2009) conducted further analysis on Conroy's earlier research data and found "the most consistent factor that significantly influences the performance of a [sustainability] activity is population" (p. 115). They also found that more affluent communities were more likely to be engaged in sustainability activities. (p. 115) Finally, they discovered that sustainability

activities outside the influence of demographic variables did not appear to have a common connection. (p. 118)

Finally, in a slightly different mode of research, Budd, Lovrich, Pierce, & Chamberlain (2008) added to the studies by considering the impact of culture on urban sustainability. They reviewed sustainability literature and identified five distinct dimensions of sustainability: (1) public health; (2) environmental quality; (3) economic vitality; (4) countermeasures to urban sprawl; and (5) official planning activities and policies directly supportive of sustainability. They scored 49 cities on each of the five dimensions using publicly available data, and then correlated that data with various urban political cultures including: historical legacy political culture, social capital, and creative class culture. They concluded that "the most progress to-date has come in cities where social capital resources have been mobilized to promote sustainability, and where moralistic political culture heritage serves as an important facilitator of progress toward this goal" (p. 265). They recommended that "local leaders endeavoring to promote the goal of sustainability must develop strategies in the context of the particular character of the prevailing local political culture" (p. 266).

Literature Review Conclusion

The existing literature and empirical research is advancing the sustainability movement. Yet the field still struggles from a lack of clear

definition, confusion regarding best actions, and inadequate reporting tools to benchmark performance. It is evident in the literature that private organizations have outpaced public entities in the formalization of sustainability pursuits. To fully realize the aims of sustainability requires adoption by both private- and public-sector organizations. Yet, to date, a consensus between and within corporations and local governments on the goals, objectives, and practices of sustainability does not exist.

Campbell (1996) stated, "In the battle of big public ideas, sustainability has won: the task of the coming years is simply to work out the details, and to narrow the gap between its theory and practice" (p. 301). However, the task of "simply" working out the details is, in practice, very far from simple. It is a formidable undertaking and certainly one that has yet to be accomplished in the years since Campbell wrote those words. Conroy and Iqbal (2009) found:

> There is little understanding of the implementation of sustainability initiatives across the country. This gap between practice and theory with respect to sustainable development will likely expand without a better understanding of both what elements of the paradigm are being adopted at the local level and the characteristics of communities adopting sustainability practices. (p. 109)

This statement conveyed the need for increased action and additional research. What has become clear is that "to achieve complete sustainability across all sectors and/or all places…requires such complex restructuring and distribution that the only feasible path to global sustainability is likely to be a long, incremental accumulation of local and industry-specific advances" (Campbell, 1996, p. 304).

Given the difficulty of achieving sustainability and the long timeline for seeing results from individual and community action, maintaining the motivation for continued support of sustainability initiatives is a critical challenge. The objective to achieve sustainability goals is one that falls, at least in large part, on the shoulders of planning professionals. Unfortunately, "planners are working on the frontiers of sustainability and livability practice, without benefit of a profession-wide consensus on standards and methods" (Godschalk, 2004, p. 5) and "there are limited examples of successful implementation which are complicated by the ambiguity of what constitutes 'success'" (Conroy & Iqbal, 2009, p. 110).

Progress toward sustainability goals have been achieved by both private- and public-sector organizations. The research, literature, and visible actions are evidence that sustainability has emerged as a modern paradigm. Determining the next steps to advance the field of practice and achieve greater sustainability is the current challenge, and one that will likely never be fully complete. Vos (2007)

expressed this clearly when he stated, “Sustainability must be viewed as a journey, not a fixed destination” (p. 336). If sustainability is to move beyond theory to become a new paradigm in action, then these challenges, complications, and ambiguities cannot deter continued action.

Chapter 3

Research Methodology and Approach

Sustainability is an emerging field of study. In reviewing the literature on sustainability, significantly more information was available on sustainability within the private sector as opposed to the public sector. From this it appeared that public-sector organizations lag behind private-sector organizations in their pursuit or achievement of sustainability goals. The purpose of this study was to better understand: 1) key factors driving public and private organizations to embrace sustainability; 2) convergences, divergences, and potential points of collaboration between private- and public-sector organizations related to sustainability; and 3) best practices that could advance standardized measuring and reporting tools for public-sector sustainability efforts. To accomplish this objective, the motivators, barriers, actions, and results reporting related to sustainability initiatives of both private- and public-sector organizations in the U.S. were compared and contrasted to yield relevant results and findings.

This study sought to answer the following five research questions: 1) Will research data regarding the sustainability motivators, actions, barriers, and results reporting by private- and public-sector organizations support or challenge a research hypothesis that local governments lag behind private corporations in the pursuit of sustainability? 2) What are the motivators and barriers to sustainability actions for corporate organizations and local governments? Which are shared in

common and which are distinct? 3) What are the sustainability actions taken by corporate organizations and local governments? Which are shared in common and which are distinct? 4) What differences exist between corporate organizations and local governments in how sustainability results are measured and reported? 5) Could best practices be shared between corporate organizations and local governments to advance the implementation of sustainability? This research project used a combination of qualitative data collection and quantitative data analysis to answer the key research questions proposed.

This study included survey information gathered from 375 respondents representing both the private and public sectors. There were 160 valid responses from the private sector (43%) and 215 from the public sector (57%). The results and findings of the survey are presented in Chapter 4, Data Analysis and Findings Report. This chapter includes discussion regarding the research sample; description of the information needed to address the research questions; details related to the methods of research design; descriptions of data collection and data analysis methods; and explanations or acknowledgements concerning the ethical considerations, trustworthiness, and limitations of the study.

Research Sample

Research participants targeted for this study consisted of relevant personnel in both private and public organizations. Given the field of

sustainability is relatively new, identifying sustainability professionals within private and public organizations was challenging. Rather than limit the research sample only to those whose primary focus is sustainability, this study reached out to a broader range of leaders within private industry and government. The survey's cover letter requested the survey be routed accordingly if there was another staff member more suited to complete the survey. This allowed for responses to be received from organizations regardless of whether or not they had a dedicated member of their staff charged with leading sustainability initiatives.

Utilizing two primary sources, a mailing list was compiled consisting of 4,485 recipients within the U.S. Survey packets were distributed by U.S. Postal Service to each recipient. The survey packet included a cover letter, a paper survey, and a postage-paid business reply envelope. (See Appendix C: Cover Letter and Survey.) Of the 4,485 surveys distributed, 2,958 were sent to private-sector respondents and 1,530 to public-sector respondents. More surveys were sent to private corporation representatives because a lower response rate was anticipated. Eleven surveys packets were returned as undeliverable to the intended recipient, seven from private corporations and four from public entities. Surveys were received from 380 respondents; however five of them were invalidated for various reasons explained later in this chapter. This resulted in 375 valid surveys. Of those, 160 were from respondents in private-sector organizations while 215 were from the public sector. This amounted to an overall

response rate of 8.38% (5.42% among private-sector respondents and 14.09% among public-sector respondents).

The private-sector mailing list of 2,958 potential respondents was purchased from PinPoint Technologies (www.pinpoint-tech.com). It included employees of companies with more than 100 employees and with one of three possible job classifications or titles (Director of Environmental Affairs, Environmental Engineer, and Environmental Manager) from 20 different industry types based on the Standard Industry Classification (SIC) codes of the U.S. Census Bureau. The mailing list contained the largest representation from companies within the following industries: food and kindred products (SIC 20), chemical and pharmaceutical manufacturing (SIC 28), fabricated metal products (SIC 34), and industrial and commercial machinery (SIC 35). The most prevalent job classification or title was Environmental Manager. (See Appendix D: Mailing List Providers and Information.)

The public sector mailing list of 1,530 potential respondents was generated by the International City/County Management Association (ICMA). It included the chief or assistant chief administrative officer for municipalities or counties within the U.S. with a population of 50,000 or greater. The list consisted of leaders from 672 municipalities (or independent cities) and 858 counties. The most prevalent job tiles were Chief Administrative Officer, City Manager, or

County Administrator. (See Appendix D: Mailing List Providers and Information.)

The International Society of Sustainability Professionals (ISSP) also featured the survey in a monthly newsletter and encouraged newsletter recipients to complete the survey online. No information is available regarding the quantity or demographics of the newsletter recipients and any participation generated from this source was not distinguished from the other survey respondents.

Information Needed

This study was conducted to gather information related to sustainability within private- and public-sector organizations. To understand and interpret the results of this study, it was important to understand the context of the research setting, the perceptual aspects resulting from the research approach, and the theoretical framework that governed this study. This section will address each of these topics sequentially.

This study involved employees of organizations in the U.S. It sought information about sustainability which is still an emerging field in this context. The research was designed to allow for a comparison of private- and public-sector organizations in the U.S. Private-sector organizations include both for-profit and not-for-profit corporations. They also included both privately held for-profit corporations and publically-traded for-profit corporations. Public-sector

organizations include such organizations as municipalities, cities, townships, villages, counties, parishes, state governments, federal government, tribal nations, governmental (or quasi-governmental) regional or metropolitan planning organizations, or combined-jurisdiction collaboratives comprised of such entities as these.

Organizational information was utilized to target private corporations with more than 100 employees and public organizations representing more than 50,000 citizens. Private-sector respondents were asked to indicate the size of their company based on the number of employees by selecting from four categories: 1) less than 50 employees; 2) 50-100 employees; 3) 101-500 employees; or 4) more than 500 employees. Of the 160 private-sector respondents 16 were from organizations with 100 or fewer employees, 89 were from organizations with 101-500 employees, and 53 were from organizations with more than 500 employees. Public-sector employees were asked to indicate the type of public organization they represent from this list of four options: 1) local or municipal government; 2) regional government or planning organization; 3) state government; or 4) national government. Of the 215 public-sector respondents, 206 were from local or municipal governments.

This survey-based research relies on the perceptions of respondents. The questions require responses that are based upon the individual's opinion of the organization, of citizens or customers, and of the topic of sustainability. The

multi-disciplinary nature of sustainability, the lack of clear definitions within the field, and the complex organizational structures represented by the respondents all impact the perceptions that influence the survey responses.

With regard to the theoretical framework for this study, the epistemological view is that of objectivism, which asserts that "meaning, and therefore meaningful reality, exists as such apart from the operation of any consciousness" (Crotty, 1998, p. 8). The theoretical framework of this study is rooted in positivism as established by Auguste Comte, the French philosopher credited as the founder of sociology and the propagator of positivism. Comte's method of grasping meaning – whether in nature or society – involved the direct methods of "observation, experiment, and comparison" (Crotty, 1998, p. 22).

This research is positivist in that the data derived from the qualitative, perceptual survey is analyzed logically and mathematically as empirical evidence. Further, positivism plays a role in that the study is expected to yield findings that will assist in advancing sustainability as a field of science, producing quantitative outcome measures that can be used in comparison and improvement endeavors while recognizing sustainability as a field inseparable from sociology both in its applications and impacts.

Given that sustainability is a sociological endeavor as well as a scientific one, this study also emerges from a trajectory of social theories that include structural functionalism, cultural capital, and social capital. Structural

functionalism (based on the works of early sociologist, Emile Durkheim and Max Weber) views society as a complex organism seeking stability (i.e.: sustainability) through the structure provided by norms, traditions, and institutions. The basis of this social theory shares a common foundation with the field of sustainability. Sustainability, as a theory, also views society – and the entire ecosystem – as a complex organism seeking stability. Further, proponents of sustainability rely on norms, traditions, and institutions to promote the advancement of sustainability, and thus stability.

Research Design

Based on an initial review of literature regarding sustainability within the U.S. context, a lag was identified based on the quantity of academic and popular publications related to public-sector sustainability. Considerably more resources, research, and literature was found related to private-sector sustainability. This discovery prompted the development of the research questions that guide this study. The overarching question originally formulated was: "What factors contribute to the lag by local government organizations in pursuing sustainability?" As the remainder of the research questions became formalized and the research planning began, this question was revised to align with the refined research objectives and the achievable outcomes expected from this study. The new question providing guidance and direction to the study was: "Will

research data regarding the sustainability motivators, actions, barriers, and results reporting by private- and public-sector organizations support or challenge a research hypothesis that local governments lag behind private corporations in the pursuit of sustainability?" To answer this question, and the four other research questions posed by this study, the survey was created.

This survey-based, qualitative inquiry into the motivators, actions, barriers, and results reporting of organizations was designed to reach employees within private- and public-sector organizations who would have some level of knowledge of, and responsibility for, sustainability-related activities within their organization. This survey design approach was selected for its potential to reach a large cross-section of sustainability professionals who could provide insight on a diverse sample of organizations.

To gather information that would assist in answering the research questions posed in this study, a single survey was created and distributed to both private- and public-sector organizations. The survey requested that recipients rank a predetermined list of motivators for pursuing sustainability, actions supporting sustainability goals, and barriers to sustainability efforts, as well as provide information regarding the frequency and characteristics of their organization's measuring and reporting of sustainability results. Utilizing a single survey for both sectors provided comparable data to determine convergences and

divergences between private and public entities and aided in identifying areas where best practice sharing could be most beneficial.

The survey began by requesting respondents rank each of five motivating factors to indicate the degree to which each served as a driver of organizational sustainability efforts. The five motivators were: 1) *citizen or customer expectations*; 2) *direction or goals set by executive-level leadership*; 3) *economic factors (reducing costs or increasing incomes)*; 4) e*nvironmental impacts (natural resource conservation)*; and 5) *societal benefits (community strengthening)*. These factors were included in the survey to determine who (citizens, customers, and/or leaders) and/or what (economic, environmental, and/or societal concerns) motivated organizations to engage in sustainability. These motivators were ranked by participants on a five-point scale consisting of: 1) not a driver; 2) weak driver; 3) moderate driver; 4) significant driver; or 5) primary driver.

The largest section of the survey addressed sustainability actions. A list of 24 action areas were grouped into three categories – environmental, economic, and societal – corresponding with the three frequently-referenced pillars or spheres of sustainability. The 24 action areas selected did not represent a comprehensive list of possible sustainability actions, rather a condensed list based on a review of relevant literature and activity reporting tools utilized by private and public organizations including the STAR Community Rating System, the Global Reporting Initiative, the Dow Jones Sustainability Index, and various lists

of key performance indicators found in the literature. A table cross-referencing the survey actions selected and the sources that contain similar references is located in Appendix E: Table of Actions and Sources.

Listed below is each action along with additional descriptive or exemplar information. Note the additional descriptive information was not provided to survey respondents so they were able to respond based on whatever actions they considered to fall within the action area. This meant the action areas were subject to interpretation by the survey respondent.

Environmental Sustainability Actions

- *Air quality initiatives* – reduce greenhouse gas emissions and other air pollutants, monitor and report on air quality, improve indoor and/or outdoor air quality
- *Water resource conservation* – reduce the use and eliminate the waste of water resources, preserve and protect natural water resources
- *Water resource quality improvement* – improve the quality of water distributed to consumers, returned for processing, or discharged into the environment
- *Land conservation and maintenance* – protect or restore natural environments such as forests, wetlands, marshes, grass lands, or native deserts

- *Biodiversity preservation or restoration* – maintain or improve the abundance and diversity of organisms (plants, animals, and microorganisms), prevention and control of invasive, non-indigenous species
- *Ambient noise or light management* – prevent noise or light pollution, guard against hazards caused by noise or light
- *Waste minimization or recycling* – implement waste reduction (zero waste) initiatives, reuse of resources, closed loop (or net-zero) processes, product lifecycle management, resource recycling
- *Sustainability consideration for built infrastructure* – utilize sustainable practices [such as those identified by the U.S. Green Building Council including Leadership in Energy and Environmental Design (LEED)] for the construction, maintenance, and operation of buildings and other built structures
- *Transportation initiatives* – congestion relief, traffic flow management, mass transit or alternative transit strategies
- *Alternative energy* (clean and renewable) – use or development of wind, solar, hydro (various types), or geothermal energy
- *Energy use reductions* – equipment efficiency, process improvements.

Economic Sustainability Actions

- *Neighborhood or community economic development* – invest in community resources that benefit residents and spur economic development
- *Local sourcing of goods and supplies* – reduce the negative impacts of transportation, build local competencies and economies
- *Land redevelopment or revitalization* – repurpose abandoned, obsolete, or contaminated land to improve the productivity of the property
- *Equitable employment* (benefits, rights, living wages) – provide employment opportunities that: include affordable health, retirement and other benefits; protect all workers' rights; and ensure wages are sufficient to afford workers and their families a decent standard of living (including housing, transportation, and other needs without public subsidies)
- *Comprehensive workforce development planning* – invest in employees and community workforce resources, workforce training and development including technical and personal skills that enable successful employment.

Societal Sustainability Actions

- *Educational opportunities and investments* – provide high-quality educational opportunities to support all community members, suitable facilities for learning, or invest in the education of underserved communities
- *Active support of arts, culture, and diversity* – engage with the community to support diverse arts and cultural experiences in order to address social, environmental, educational, and economic development issues
- *Promotion of civic and community engagement* – remove access barriers and encourage meaningful participation in civic life, invest in civic literacy to empower citizens to make informed choices
- *Health, safety and emergency preparedness* – implement comprehensive programs to promote the health and safety of the community, develop emergency preparedness plans for all members of the community, and ensure they are understood and can be properly implemented by all community members
- *Active lifestyle programs* – promote the integration of recreation and physical activity into the daily lives of community members
- *Transparency in organizational governance* – implement policies and procedures that allow for informed engagement by everyone

impacted including citizens, customers, employees, shareholders and other stakeholders

- *Environmental justice* (equitable distribution of positive and negative environmental impacts) – operate with a sense of "justice for all" when considering which communities bear environmental impacts either positive (e.g.: improvements to natural resources) or negative (e.g.: pollution or community disruption)
- *Initiatives addressing national or global issues* – increase awareness of or take actions to address topics such as national/global public health, national/global hunger, national/global obesity epidemic, national/global poverty, or global climate change.

The next section of the survey asked respondents to consider a list of possible barriers and indicate the degree to which each barrier has been a hindrance to their organization's overall sustainability efforts. The rating scale for this section was: 1) not a hindrance; 2) manageable issue; 3) moderate challenge; 4) difficult to overcome; or 5) unyielding barrier. As with the questions regarding motivators, the listed barriers sought to reveal "who" or "what" hindered success. The first three barriers correlated closely to the first three motivators in this survey. These barriers were *lack of management support*, *lack of citizen or customer support*, and *budgetary restrictions*. The remaining

five barriers addressed common management challenges including human resource issues, establishing and gaining agreement on sustainability program goals and objectives, and quantifying the outcomes of sustainability initiatives. These were: *inadequate quantity of personnel resources*; *insufficiently skilled personnel*; *unclear sustainability objectives (scope, goals, etc.)*; *lack of consensus regarding the action plan*; and the *challenge of quantifying the value of sustainability actions*.

The final section of the survey addressed the issue of results, specifically the frequency with which results are measured and reported. For each question in this section, respondents were asked to rank frequency on the following scale: 1) never; 2) rarely; 3) sometimes; 4) often; or 5) consistently. The first question, though more directly related to actions than results, inquired, "*How frequently does your organization take actions that are considered within your organization to be related to sustainability goals?*" This question was intended to help determine the prevalence of sustainability as an organizing idea within private- and public-sector organizations. This question differs from the inquiry about motivators (why sustainability is pursued) and actions (how sustainability is pursued), in that it was designed to gauge the degree to which sustainability is a goal of the organization.

The second question of this section was: "*How frequently does your organization measure the results of the organization's sustainability actions?*"

Again, this question involved actions, but the focus was on the results of those actions, specifically the frequency with which those results are measured. The issue of measuring results is critical to the advancement of the sustainability field. Mathematician and Physicist, William Thomson (also known as Lord Kelvin) is attributed with the following statement:

> When you can measure what you are speaking about, and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meager and unsatisfactory kind; it may be the beginning of knowledge, but you have scarcely in your thoughts advanced to the stage of science. If you cannot measure it, you cannot improve it. (Kelvin, 1883)

This sentiment is often shortened to the axiom, "What gets measured, gets managed." For sustainability to rise from a concept to a scientific field, it must be measured so it can be managed and improved. This survey question sought insight regarding the degree to which sustainability is acted upon as a science – observed, measured, and compared – within private and public organizations.

The third and fourth questions of the results section asked, "*How frequently does your organization report its sustainability actions and results to*: a) *employees* and b) *the public?*" This information was requested to better understand how often sustainability reporting is conducted, as well as the intended

audience for sustainability reporting. A better understanding in this area could indicate whether this is a good field for additional research that might facilitate best practice sharing to improve not only reporting quality and consistency, but also sustainability actions and results.

The final question of this section was "*How often does your organization benchmark (compare) its sustainability performance with other similar organizations?*" This was included to provide information about benchmarking as another critical area that can advance the field of sustainability. Once standardization of key indicators, measuring parameters, and reporting expectations are achieved, organizations will be able to benchmark their performance on sustainability goals, thus advancing the field of practice.

The closing question to the survey asked whether the respondent thought that increased sharing of sustainability best practices between private- and public-sector institutions would be beneficial to their own organization. This question was designed to help determine if identifying best practices would be a valuable endeavor and which sector (private or public) would be most receptive to learning from the sharing of best practices.

This survey also included limited opportunities for respondents to reply to open-ended questions. In each of the first three survey sections (motivators, actions, and barriers) space was available for respondents to add items that were listed as an option in the survey. Respondents were asked to list and rank any

additional significant responses. In the final section (results), space was available for respondents to list any standardized tools used by their organization to measure or report on sustainability actions and results. This information was not factored into the quantitative analysis of listed survey items, but relevant information was included in the survey results. The write-in text was treated as illustrative and useful information to further explain study findings or inform the contemplation of future studies. For a summary of survey results including a complete list of write-in comments, see Appendix F: Summary Reports of Survey Results.

The research design allowed for anonymous survey responses. However, an email address was requested if a respondent wanted to receive the survey results. Fifty-two private-sector respondents and 87 public-sector respondents requested this information and provided an email address. The summary reports from SurveyMonkey were provided by email to the 139 survey participants who requested the information.

Data-Collection Methods

Data was collected via both online (SurveyMonkey) and paper surveys. A total of 380 responses were received, however, five of the surveys (one online and four paper) did not provide sufficient or clear identification of their industry sector and were therefore eliminated from the analysis. Recipients of the survey

packet were provided a link to the online survey so they could enter their responses electronically through SurveyMonkey. The link to the survey was also distributed in the electronic newsletter of the International Society of Sustainability Professionals (ISSP). Newsletter recipients could access the survey directly from the email or from the ISSP website. The total number of recipients of the newsletter was unknown. A total of 127 surveys were completed online (34%) and 248 (66%) were returned by mail.

In the online submissions, 13 respondents aborted the survey before completion by either closing their internet browser or by selecting the "Exit this survey" link. SurveyMonkey determined these were "partial" entries because the "Done" link at the end of the survey was not selected. One survey was aborted prior to selecting a sector and one survey was aborted immediately after indicating a sector, not providing any reportable data. These two surveys were invalidated and were not included in the data analysis. One survey was aborted after entering the Actions section and the remaining 10 partial surveys (77%) were aborted prior to entering the Actions section. All partial data entered from these surveys was included in the data analysis. The online survey would allow respondents to leave an entry blank but would not allow for more than one entry per line.

Paper surveys were returned in the postage-paid, business reply envelope provided. One survey was scanned and emailed directly to the researcher and

printed off for inclusion in the paper responses. To ensure all data was captured in a single location, data from the paper surveys was entered into the SurveyMonkey tool by two research assistants employed by The University of Texas at Arlington, Division for Enterprise Development. One junior assistant entered a total of 60 paper surveys. A senior assistant entered 188 surveys.

When entering paper survey data, some decisions had to be made regarding values to be entered. Three paper surveys did not indicate a sector and were invalidated on that basis. Six respondents marked both the private- and public-sector areas of the survey. Five respondents indicated that they were "Local Government" and "Not-for-Profit" organizations while one respondent did not indicate a profit sector. All these surveys were entered as "Local Government".

If a respondent marked more than one response per line on the paper survey, a decision had to be made regarding how that response should be handled. In this case, the response was invalidated and the field was left blank because it was not possible to determine the respondent's intent. On three surveys, respondents indicated they were either "not sure" of a response, "not sure" of the question, or the item was "not an issue" for their organization. In all cases, the affected field were left blank. Any lines where the respondent did not provide an entry were also left blank.

Decisions also had to be made in deciphering the write-in comments. Data was entered as provided in the survey, however spelling and punctuation errors were corrected. Email addresses that were not completely legible were attempted to be confirmed by searching the internet to find the address and validate proper spelling.

There were two differences between the online survey and the paper survey. When the paper survey was printed, the response for ">500 employees" was inadvertently omitted. Twenty-two respondents manually indicated that their organization fell into this category by either writing in "> 500" or writing in the number of total employees. In these cases, the "Number Of Employees" field was entered as "> 500 Employees" in SurveyMonkey. The second difference involved the amount of write-in space available for additional motivators, actions, and barriers. The paper survey provided three lines allowing for additional entries whereas the online survey only allowed for two. In the three cases where paper respondents had three write-in items, two of the write-ins were combined into a single line in SurveyMonkey. In all cases, there was a match on the ranking of the items so the ranking indicated by the respondent was not compromised.

Both online and paper surveys allowed for blank responses. Excluding the 10 partial entries discussed above, a total of 123 surveys had a missing response. The missing response fields were tabulated to identify any questions that might not have been well understood or that might not have been easy to rank on the

response scale. Twenty-five surveys had a blank response in multiple sections of the survey.

The most commonly bypassed motivator was *economic factors*, however it was only bypassed by five respondents, a negligible quantity. One hundred-three surveys did not include responses to all the actions, with 46 missing responses to more than one action. By far, the most commonly bypassed action areas were *environmental justice* (bypassed by 26 respondents) and *initiatives addressing national or global issues* (bypassed by 25 respondents). This could indicate a lack of understanding or clarity of these action area terms.

Twenty-two people did not respond to all the barriers, with five bypassing only one barrier. The most commonly bypassed barriers were *unclear sustainability objectives* (bypassed by 9 respondents) and *challenges of quantifying the value of sustainability actions* (bypassed by 8 respondents). These missed fields represent a small percentage of responses and thus do not serve as a strong indicator of any misunderstanding related to these factors.

Eight people did not respond to all the results, with four not responding to any question in the results area and the remaining four missing only one response. The most commonly bypassed questions of the results section were: 1) *How frequently does your organization report its sustainability actions and results to the public?* and 2) *How frequently does your organization benchmark (compare) its sustainability performance with other similar organizations?*. These

omissions did not indicate misunderstanding or lack of clarity. Twenty-four respondents did not answer the closing question regarding the benefits of best practices sharing. It could not be determined why this question was bypassed by 6.4% of the respondents.

Paper survey data was manually added to SurveyMonkey using a single-entry method. Data was validated by cross-checking selected paper surveys with the data in SurveyMonkey. A total of 138 (55.6%) of the 248 paper surveys were reviewed for data entry errors. All 60 of the entries made by the junior research assistant and 78 (41.5%) randomly selected surveys entered by the senior research assistant were included in the validation process. Of the 138 surveys validated by this means, 10 surveys (7.3%) contained a data error. Each of the survey had a total of 58 data entry fields resulting in 8,004 data fields validated. Among all the fields validated, 25 field errors were found. Six of the errors were omissions and the remaining 19 had an incorrect rating entered. This calculated to a field-level error rate of 0.3%. All errors found were corrected in SurveyMonkey prior to data analysis. All write-in comments were reviewed and an additional 10 surveys were updated for spelling, punctuation, or interpretation errors of write-in comments or updates of email addresses. These edits were not considered as a part of the error rate. The potential errors of data entry were not considered significant to the study results.

Data Analysis and Synthesis Techniques

To begin analysis, survey data was first filtered by organization type (private or public sector). Results were normalized by determining the percentage of responses for each ranking on each survey question. This yielded comparable data regarding the frequency with which each organizational type selected a given rating and allowed for direct comparisons across sectors. Responses were also averaged so a single figure (with a possible range from 1-5) was determined for each question. This average rating also provided comparable data across sectors. When a response was not provided to a question, the response frequency percentage and average rating were figured based only on the number of responses received for that question.

The following chapter provides a summary of all survey results and identifies five key findings. Survey responses were evaluated and results presented in alignment with the survey structure. Overarching findings were drawn from survey results and presented with explanation to support the finding statements.

Ethical Considerations and Study Trustworthiness

This research was conducted under the supervision of a three-member academic dissertation committee. The dissertation proposal included an introduction, literature review, and planned research methodology. It was

presented and successfully defended prior to further research planning. This research was also conducted in compliance with all requirement of the Institutional Research Board (IRB) of The University of Texas at Arlington. The IRB reviewed all survey documentation including the cover letter, the statement of informed consent, the paper survey and the online survey (provided in paper form). Participation in this research was both voluntary and anonymous. Participants had the right to refuse to participate or to decline to answer any question without consequence or impact on any associations, affiliations, or employment. No personally identifiable information was required, although participants could voluntarily provide their email address to request a copy of the survey results. Potential survey respondents were only contacted once to solicit their participation in this study.

An estimated 400 survey responses were expected (375 valid responses were received). To incentivize study participation, a two dollar ($2.00) donation was pledged to one of two possible non-profit organizations. Respondents were asked to direct the contribution made on behalf of their participation to either: 1) the Arbor Day Foundation or 2) the American Red Cross Disaster Relief Fund. Of valid responses, 124 directed support to the Arbor Day Foundation and 226 directed support to the American Red Cross Disaster Relief Fund. Contributions of $248.00 and $452.00 were made to the respective charities in appreciation for these survey responses.

Paper surveys were returned to the office of the Division for Enterprise Development at The University of Texas at Arlington. They were collected in a designated area within the office until they were retrieved for data entry. Although the surveys contained no confidential information, they were kept secure in a staff-only area with access limited to those individuals with an understanding of the proper survey handling expectations.

These ethical considerations, along with use of academically-accepted research methods, established the trustworthiness of this research project. Additionally, the integrity of the respondents was assumed. Given the survey was voluntary and anonymous, survey respondents had little or no motive to provide any answers other than those that were true and correct to the best of their knowledge. Further, given the cover letter requested the survey be redirected to the person best suited to answer the questions, surveys returned were likely completed by the person within the organization with the most knowledge of the subject area.

Finally, with a fairly balanced return of private and public responses (43% and 57%, respectively) and with an overall response rate of 8.38% for a field as broad and new as sustainability, the results of this study remain relevant. The study provided sustainability information and characteristics that are applicable across a wide range of organizations. As such, these research results are a valuable addition to this emerging field of study.

Study Limitations

Among the limitations of this study was the multidisciplinary nature of sustainability and the relative recent emergence of sustainability as a field of study. Consensus has not been reached as to a single definition of sustainability. The issue is one with many complexities and interactions, making outcomes and unintended consequences often difficult to identify and quantify. As a new field, the standards of practice are still emerging. The field also suffers from an insufficient quantity of clearly-identified thought-leaders to cast a vision of the future, establish goals, and track progress related to sustainability.

This study was also limited by the knowledge and participation of the respondents. Survey participants were asked to provide their opinion regarding the sustainability efforts of the organization for which they work. While their responses have been accepted as valid information about their organization, the response for any given organization could be different if another person were to complete the survey. No additional verifying data was requested to bolster the validity of the information provided by the respondents.

Finally, the study was limited by the content of the survey. Choices were made regarding which questions would be asked and what rating choices would be provided. The methodology for making these selections was not based on any one particular set of leading motivators, actions, barriers, or results reporting protocols, but rather was developed by the researcher relying on a variety of

literary sources. Even the choice to address sustainability by studying these four areas limited the study's subject matter.

Research Methodology and Approach Conclusion

The research methodology and approach for this study supported the research objectives. This chapter provided details about the research sample; information needed to understand the research results; research design and survey content; data collection methods; data analysis and synthesis techniques; and matters of ethical consideration, trustworthiness, and study limitations. The next chapter will provide the data analysis and findings report that resulted from the survey information gathered from 375 valid responses from individuals representing both the private and public sectors.

Chapter 4

Data Analysis and Findings Report

This chapter includes a presentation of research results with references to relevant literature. Results are presented by category (motivators, actions, barriers, and results) with particular attention paid to the commonalities and differences identified between private- and public-sector organizations. Also presented in this chapter are five key findings identified as an outcome of this research.

In accordance with the research methods and approach described in Chapter 3, Research Methodology and Approach, the following study results are based on 375 valid surveys returned from employees engaged in sustainability within either private- or public-sector organizations. Survey results were collected through both online and paper responses. Responses were tabulated using a Likert scale and analyzed through statistical methods.

Response data generally supported a research hypothesis that public-sector organizations lag behind private-sector companies in their pursuit of sustainability goals. This was initially evident by the responses to the following question: *How frequently does your organization take actions that are considered within your organization to be related to sustainability goals?* Among public organizations, 42.9% of respondents – the most frequent response – indicated that sustainability-related actions are taken "sometimes". This is compared to 69.8% of private-

sector respondents who report engaging in sustainability-related actions "often" (36.5%) or "consistently" (33.3%). Multiple factors could account for this single-question survey result, some of which are identifiable based on specific results of this study. The following sections of this chapter explore the study results in greater detail and conclude with a report of five overarching findings from this study.

Motivators for Pursuing Sustainability

Understanding why organizations pursue sustainability is vital to knowing how best to advance the field of sustainability and improve sustainability outcomes. The results of this study indicate that the significant motivators for both private and public organizations are similar. The most significant drivers of sustainability efforts, as indicated by respondents among both sectors, are *direction or goals set by executive-level leadership*, followed closely by *economic factors*. Greater than 72% of all respondents rate these drivers as a "significant" or "primary" motivating driver. *Environmental impacts*, followed by *citizen or customer expectations*, were the following two most prevalent drivers ranging from 51.9% to 65.6% of respondents identifying these factors as "significant" or "primary". Finally, in spite of a growing consensus regarding the equal importance of all three pillars or spheres of sustainability – environmental, economic, and societal – *societal benefits* was rated most frequently as only a

"moderate" driver of sustainability efforts for both private and public organizations.

Based on the study results, the private-sector respondents indicated that *direction or goals set by executive-level leadership* is far more often a "weak driver" or "not a driver" of sustainability pursuits (private – 10.7%; public – 3.8%). The results for *societal impacts* were similar (private – 34.0%; public – 13.5%). This indicates that private organizations were less motivated by these factors. Conversely, *citizen or customer expectations* was more frequently considered a "weak driver" or "not a driver" by public entities (private – 10.7%; public – 15.0%), indicating that *citizen expectation* are less of a motivation for public entities than *customer expectations* are for private entities. Table 4-1 Comparison of Motivating Drivers for Private and Public Organizations summarizes the survey results for each of the motivating factors included in this survey. A summary of all survey results is located in Appendix F: Summary Reports of Survey Results.

Table 4-1 Comparison of Motivating Drivers for Private and Public Organizations

Motivating Factor	Not a Driver or Weak Driver		Moderate Driver		Significant or Primary Driver	
	Private	*Public*	*Private*	*Public*	*Private*	*Public*
Citizen or customer expectations	10.7%	15.0%	23.8%	28.0%	65.6%	57.1%
Direction or goals set by executive-level leadership	10.7%	3.8%	14.4%	18.8%	75.0%	77.5%
Economic factors	8.1%	6.6%	18.1%	20.8%	73.8%	72.6%
Environmental impacts	16.3%	9.8%	26.3%	38.3%	57.5%	51.9%
Societal benefit	34.0%	13.5%	34.0%	43.0%	32.1%	43.4%

In addition to the motivators listed in the survey, respondents were allowed to list additional significant motivators. Eighty responses (private – 35; public – 45) were submitted. An analysis of these text-based answers revealed that both organizational types were significantly motivated by compliance with regulations or voluntary standards (reported by 9 private-sector respondents and by 11 public-sector respondents). Both groups had six representatives who reported their organization was motivated to pursue sustainability because of a sense of moral imperative often described as "the right thing to do." Other phrases that conveyed this sentiment included: community stewardship, cultural

preservation, honesty, integrity, expectations of future generations, setting a good example, and moral imperative. Private organizations were also motivated by employee expectations or employee safety and health (9 responses) and by various motivators that equate to benefits or advantages for the company (9 responses). Public organizations were also motivated by elected officials (9 responses); grants or incentives from the Federal or State government (7 responses); pressures from sustainability activities in surrounding areas or from employees (6 responses); and cost savings (4 responses). These write-in responses pose no challenge to results indicating the most prevalent motivators for both private- and public-sector organizations were *direction or goals set by executive-level leadership* and *economic factors*.

Sustainability Actions (Environmental, Economic, and Societal)

The results for sustainability actions are reported in four subsections below. The first subsection provides an overarching look at the action areas that are most frequently and least frequently considered or implemented across both private- and public-sector organizations. The following three subsections cover the results for the remaining environmental sustainability actions, economic sustainability actions, and societal sustainability actions, respectively.

In addition to the sustainability action areas listed in the survey, respondents were also provided an opportunity add other actions not included

among the options provided in the survey. While there were 30 actions added by respondents (private – 12; public – 18), most actions could be considered as part of a broader action area within the survey. However, since the responses were entered by respondents separately, they were also reported on separately in the survey results presented below. Two actions added by respondents, however, are worth mentioning for the sake of future studies. These were "regional development planning" and "strategic (smart) growth policies and strategies", each was listed by a different public-sector respondent and both represent sustainability actions not otherwise included in the list of possible action areas.

Overarching Sustainability Actions (most and least considered/implemented)

Three specific actions were found to be the most frequently implemented for both private and public organizations and represented areas of convergence. The three areas were: *waste minimization or recycling*; *health, safety, and emergency preparedness*; and *energy use reductions*. Results are summarized below in Table 4-2 Most Frequently Implemented and Highly Convergent Sustainability Actions between Private- and Public-Sector Organizations.

The greatest convergence among these sustainability actions were in the areas of *waste minimization or recycling* and *health, safety, and emergency preparedness*. Of the 157 private industry respondents, 89.8% (141) indicated their organization had "implemented" *waste minimization or recycling* programs with 72.6% reportedly having "achieved positive benefits". This correlates with

85.5% (176) of the 206 question respondents in public organizations who report their organization had "implemented" *waste minimization or recycling* programs with 68.0% reportedly having "achieved positive benefits".

The numbers are actually slightly higher for the implementation of *health, safety, and emergency preparedness* – 91.1% (143) of respondents from private industry and 88.6% (179) from the public sector reported having "implemented" actions in this area. The widespread implementation of *health, safety, and emergency preparedness* actions is likely influenced by the robust regulatory requirements in this area from the U.S. Department of Labor, Occupational Safety and Health Administration. Moreover, of the organizations that implemented *health, safety, and emergency preparedness* actions, 81.8% in private-sector and 73.7% in public-sector organizations report having "achieved positive benefits" from this endeavor.

The third most prevalent sustainability action undertaken by both private and public organizations was *energy use reductions* with 85.3% of private and 84.6% of public organizations reporting this action area as "implemented" and, of those, the vast majority (private – 77.3%; public – 78.4%) reported that their organization had "achieved positive benefits" as a result.

Table 4-2 Most Frequently Implemented and Highly Convergent Sustainability Actions between Private- and Public-Sector Organizations

Convergent Sustainability Actions	**Not Considered or Undertaken**		**Planned, but not yet Implemented**		**Implemented***	
	Private	*Public*	*Private*	*Public*	*Private*	*Public*
Waste minimization or recycling	3.4%	6.8%	5.7%	7.8%	89.8%	85.5%
Health, safety, and emergency preparedness	6.4%	5.5%	2.5%	5.9%	91.1%	88.6%
Energy use reductions	10.0%	9.0%	4.7%	6.4%	85.3%	84.6%

*Includes responses for both "implemented" and "implemented with positive benefits achieved."

Convergence was also found on three actions more frequently rated as "not considered" by both organizational types. These were: *biodiversity preservation or restoration*; *initiatives addressing national or global issues*; and *environmental justice*. Table 4-3 Sustainability Actions Most Frequently Not Considered by Private- and Public-Sector Organizations provides a summary of this data. It is possible that these actions could have been less understood by survey respondents than other action areas, thus contributing to the lower response ratings. *Initiatives addressing national or global issues* and *environmental justice* were the two actions most frequently left blank by survey respondents. Any lack of understanding in this area is, nonetheless, indicative of the low degree of consideration given to the action area.

Table 4-3 Sustainability Actions Most Frequently Not Considered by Private- and Public-Sector Organizations

Sustainability Actions (most frequently reported as "not considered" by public- and/or private-sector organizations)	**Not Considered**		**Considered or Planned**		**Implemented***	
	Private	*Public*	*Private*	*Public*	*Private*	*Public*
Biodiversity preservation or restoration ^	53.6%	33.2%	25.5%	33.7%	20.9%	33.2%
Initiatives addressing national or global issues ^	42.7%	47.9%	18.7%	28.4%	38.7%	23.7%
Environmental justice ^	38.8%	38.0%	16.3%	34.4%	44.9%	27.6%
Land redevelopment or revitalization +	55.8%	7.5%	21.4%	25.3%	22.7%	67.2%
Active support of arts, culture and diversity +	34.6%	11.9%	19.6%	22.4%	45.7%	65.7%
Equitable employment ++	15.7%	35.8%	11.7%	22.9%	72.5%	41.3%
Ambient noise and light management ++	30.1%	32.2%	22.8%	28.2%	47.0%	39.6%

*Includes responses for both "implemented" and "implemented with positive benefits achieved."
^Shared among the five actions most often "not considered" by both private and public organizations.
+Remaining among the five actions most often "not considered" by private organizations.
++Remaining among the five actions most often "not considered" by public organizations.

Biodiversity preservation or restoration is perhaps more commonly understood, but still received little consideration. Biodiversity is an important sustainability issue because it is an indicator of the ecosystem's health and its ability to sustain human life. Kim and Byrnes (2006) explain that "the diversity

of living plants, animals, and microorganisms is an essential resource for humans because other organisms provide food, medicine, clean water and air, places for recreation, and other such ecosystem services. They add that a loss of biodiversity "compromises the stability of ecosystem services and our ecological life-support system" (Kim & Byrne, 2006, p. 794). While the most frequent response by both organizational types is that *biodiversity preservation or restoration* was "not considered" by their organization, a greater percentage of public institutions (66.8%) versus private corporations (46.4%) have "considered", "planned", or "implemented" *biodiversity preservation or restoration*.

Initiatives that address national or global issues are also frequently "not considered" by both private and public organizations. These types of initiatives include addressing topics as national/global public health, hunger, obesity, poverty, or climate change. While large percentages of respondents reported this topic as "not considered" by their organization (private – 42.7%; public – 47.9%), significantly more private organizations (38.7%) than public organizations (23.7%) reportedly having "implemented" *initiatives addressing national or global issues*. Though this study does not provide an explanation, this may be the result of the financial ability of private corporations to act more philanthropically or to be engaged in multi-national operations. It is also likely that local

governments are necessarily more focused on local needs than those of the global community.

Environmental justice is the third topic most commonly reported as "not considered" by both private and public organizations. *Environmental justice* is the equitable distribution of positive and negative environmental impacts. For this action area, 38.8% of private-sector respondents and 38.0% of public-sector respondents reported this as an area "not considered" by their organization. However, the private sector leads the public sector in the implementation of *environmental justice*. The percentage of respondents whose organization had "implemented" this sustainability action was 44.9% from the private sector versus 27.6% from the public sector. This could be the result of the greater accountability standards and liability concerns of corporations as discussed in the literature review (Laine, 2009; Spence, 2009; Gray et al., 1996). These factors have increased the visibility and reporting of the environmental justice issues facing corporations. Local governments do not have the same scope of operation and have not been held similarly accountable for reporting on matters of environmental justice.

The two remaining areas most frequently rated as "not considered" among private organizations were *land redevelopment or revitalization* and *active support of arts, culture and diversity*. Perhaps not surprisingly, *land redevelopment or revitalization* was a topic that was widely "not considered" by

private organizations (55.8%) yet extensively "implemented" by public entities (67.2%) and with "positive benefits achieved" (38.3%). This result was expected given that the land management and land-use is vastly regulated by the public governing entity within their jurisdictional boundaries. This result was also in line with the results of research by Jepson (2004a) in which he found that most of the sustainability actions of cities were related to land development and land use planning. Further, redevelopment or revitalization initiatives are largely led by public organizations or by dedicated public-private partnerships and, while commercial developers execute much of the actual land redevelopment and revitalization work, this industry segment is relatively small in comparison to the private sector overall.

Similarly, though not as stridently, the *active support of arts, culture and diversity* was "implemented" in much greater percentages in the public sector (65.7%) than in the private sector (45.7%). Further, this sustainability action is far more often "not considered" by the private sector (34.6%) than by the private sector (11.9%).

The two remaining topics of the top five most frequently rated as "not considered" among public entities were *equitable employment* and *ambient noise and light management*. Regarding *equitable employment*, it is possible that public governance carries a presumption of equitability and, as such, fewer initiatives or overt actions are taken in this area, leading to a lower reporting percentage among

public-sector respondents. Conversely, within the U.S., greater attention has been given to the obligation of private corporations to proactively demonstrate they are equitable employers and that they provide equitable benefits and wages. Regarding *ambient noise and light management*, there are only minimal differences in the percentages across the scale from "not considered" to "implemented with positive benefits achieved", thus no leading or lagging indicators are evident. Environmental Sustainability Actions

Environmental Sustainability Actions

Of the remaining environmentally-focused sustainability actions not covered by the section above, there were notable differences in the areas of *air quality initiatives* and the use of *alternative energy*, the former being adopted more frequently by private organizations and the later more frequently by public entities. The survey revealed that *air quality initiatives* were "planned" or "implemented" by 76.9% of private corporations compared to only 54.6% of public organizations reporting activity in this area. This is likely the result of the existence of environmental regulations governing air emissions that compel private industries, who generate greater emissions that private-sector entities, to adopt *air quality initiatives* in greater numbers.

The development or use of *alternative energy*, conversely, was more prevalent in the public sector. Of the study's respondents, 53.7% of public-sector respondents indicated their organization had "implemented" an *alternative energy*

strategy compared to only 32.2% among private-sector organizations. This difference could be explained by the implementation of Federal incentives and policies to promote the use of renewable and alternative energy among public entities.

A program to provide Clean Renewable Energy Bonds (CREBs) was made available by the U.S. Department of Energy to provide funding for local governments, state governments, tribal governments, municipal utilities, and rural electric cooperatives to develop alternative power sources including those from solar thermal, photovoltaic, landfill gas, wind, biomass, hydroelectric, geothermal, municipal solid waste, hydrokinetic, anaerobic digestion, tidal, wave, and ocean thermal. The private sector has been encouraged to develop alternative energy resources, but private corporations have not been comparably incentivized.

Support for this dynamic as a possible explanation was found in the write-in fields of the survey. One public organization representative referenced the Energy Efficiency and Conservation Block Grant (EECBG) Program, funded for the first time by the American Recovery and Reinvestment Act (ARRA) of 2009. Additionally, two other respondents listed ARRA as a motivating factor for the pursuit of sustainability efforts. These program funds were not available to private corporations and no such incentives were mentioned by any private-sector respondent.

Three other areas largely led by public organizations were *transportation initiatives*, *land conservation and maintenance*, and *sustainability consideration for the built infrastructure*. *Transportation initiatives* were "planned" or "implemented" by 82.2% of public-sector organizations versus only 52.3% of private corporations. As with *land redevelopment or revitalization* this might be an issue that was viewed predominantly as a one governed by the public sector given that the vast majority of roadway and mass transit infrastructures are funded, built, and maintained under the leadership of public entities. Still, while 32.3% of private-sector respondents indicated their organization had "not considered" *transportation initiatives*, more than half (52.3%) of the private-sector respondents had "planned" or "implemented" *transportation initiatives* as a sustainability action with more than a third of those (35.8%) reporting "positive benefits achieved" by these actions.

Land conservation or maintenance was similarly led by the public sector. Among public-sector respondents, 74.7% indicated their organization had "planned" or "implemented" *land conservation or maintenance* compared to 52.3% of private-sector respondents. This, too, might be an issue of the predominance of public-sector governance regarding land use. Again, in this area, while 31.8% of private organizations reportedly had "not considered" this environmental sustainability action, the majority (52.3%) had "planned" or

"implemented" *land conservation or maintenance* with 41.8% of those reporting that "positive benefits" were achieved.

Sustainability considerations for the built infrastructure was the third environmental action led by public organizations, with 80.1% having "planned" or "implemented" initiatives in this area. This area, however, was also taken up by the majority of private organizations, with 54.9% having "planned" or "implemented" this action and 37.3% of those reporting "positive benefits" were achieved. The lead by the public sector in this area could be attributed to two key factors. First, there is an emphasis (or occasionally a requirement) within the Federal government to pursue building construction certification under the LEED program offered by the USGBC. This criterion, while targeted to the Federal level, has been adopted by many local and regional governments as a priority. Further, many government buildings are owner occupied, meaning the government has a fiscal incentive to ensure the long-term efficiency of the built infrastructure. This is often not true of the buildings occupied by private-sector corporations.

The two remaining environmental sustainability results were *water resource quality improvements* and *water resource conservation*. The former was an area where some divergence were evidenced by the data. *Water resource quality improvements* were "implemented" by 67.2% of public entities. This was indicative of the local government oversight of drinking water quality and

typically public control of water resources. However, once again, the majority (55.7%) of private organizations had also "implemented" *water resource quality improvements*. With regard to *water resource conservation* the percentage of organizations in both the private and public sector that have "achieved positive benefits" from implementing this sustainability action was near 50% (private – 48.7%; public – 49.8%) with only 11% or fewer organization (private – 11.0%; public – 6.8%) that had "not considered" action in this area.

Economic Sustainability Actions

Of the sustainability actions that tied to economics, the results for *land redevelopment or revitalization* and for *equitable employment* were discussed earlier as actions most frequently "not considered" by private or public entities. Of the three remaining economic sustainability actions included in this study, *local sourcing of goods and supplies* received the most similar responses between private-sector and public-sector organizations. The majority of both organization types (private – 53.3%; public – 53.5%) reportedly had "implemented" this action.

Neighborhood or community economic development was an initiative that was most frequently reported as "implemented with positive benefits achieved" by public entities (44.6%) while it was most frequently reported as "not considered" by private corporations (31.4%). This may be a sustainability area primarily led by the public sector; however, a large percentage (41.2%) of private

sector respondents reported their organizations had implemented *neighborhood or community economic development* actions.

The results for the implementation of *comprehensive workforce development planning* indicated that this action was more prevalent in the private sector than in the public sector. In fact, private sector respondents most frequently reported that *comprehensive workforce development planning* had been "implemented with positive benefits achieved" (36.8%) while public-sector respondents most frequently reported this area as one "not considered" (23.6%).

Societal Sustainability Actions

Of actions related to social or societal sustainability, results from four areas were discussed previously as overarching sustainability actions. These were: *active support of arts, culture and diversity*; *health, safety and emergency planning*; *environmental justice*; and *initiative addressing national or global issues*. The results of the four remaining actions indicate that both private- and public-sector organizations frequently "implemented" and "achieved positive benefits" from these efforts. These actions were: *educational opportunities and investments*; *promotion of civic and community engagement*; *active lifestyle programs*; and *transparency in organizational governance*. This last area provides the most divergent results of these remaining four societal sustainability actions. In this category, 22.4% of private-sector respondents indicated that their organization had "not considered" taking action related to *transparency in*

organizational governance while 27.6% had "implemented" this action with "positive benefits achieved." This result is somewhat surprising given the transparency requirements imposed on corporations by the Sarbanes–Oxley Act of 2002. In comparison to the private-sector results, only 3% of public entities had "not considered" *transparency in organizational governance* and 59.5% had "implemented" this action with "positive benefits achieved."

Barriers to Pursuing Sustainability

When considering the potential barriers to sustainability among private- and public-sector organizations, the frequency of the various items listed showed similarity. The barrier that was most frequently identified by both private- and public-sector organizations as "unyielding" (private – 8.9%; public – 13.2%) or "difficult to overcome" (private – 30.4%; public – 45.1%) was *budgetary restrictions*. However, the frequency was greater among respondents from public entities as opposed to private companies, indicating *budgetary restrictions* were a greater challenge within the public sector.

Among the potential barriers included in this study, the *lack of management support* was reported most frequently by public institutions to be "not a hindrance" to the organization's overall sustainability efforts (private – 44.9%; public – 50.5%). The potential barrier of *lack of citizen or customer support* was reported as "not a hindrance" most frequently by private institutions

(private – 47.5%; public – 33.7%). The barrier of *inadequate quantity of personnel resources* was primarily reported to be a "moderate challenge" by both private and public organizations (private – 39.2%; public – 37.7%). Three potential barriers were reported most commonly as "manageable issues" by both organizational types. These were: *insufficiently skilled personnel*, *unclear sustainability objectives*, and *lack of consensus regarding the action plan*.

The final potential barrier, the *challenge of quantifying the value of sustainability actions*, was most frequently reported as a "moderate challenge" among public institutions (39.8%) while it was most frequently reported as a "manageable issue" by private corporations (29.5%). A greater percentage of private company respondents reported the *challenge of quantifying the value of sustainability* at the ends of the response scale as either "not a hindrance" or as a barrier that was "difficult to overcome" or "unyielding." Responses from public organizations for this barrier were more evenly spread across the rating scale.

Participants were asked to list any additional significant barriers regarding their organization's pursuit of sustainability. The most prevalent comments (8 out of 27) involved the lack of a clear understanding of sustainability. These were:

- Lack of knowledge [regarding] what to do
- Lack of common understanding of the high priority of sustainability by citizens compared to the state of the economy, unemployment, poverty, etc.

- Diverse opinions on sustainability (breadth of definition controversial)
- Unclear definition of sustainability that has caused us to develop working definition
- Competing communications [and] messages
- No central responsibility for sustainability
- Each region has local priorities
- Lack of standard sustainability accounting methodologies

These comments validated the need for continued study and advancements in the field of sustainability. The other prevalent barriers added through the write-in fields were related to the challenges of politics and regulations. These would both be recommended areas to include in future research.

Measuring and Reporting Results

Survey responses in this area provided an overarching perspective from private- and public-sector organizations regarding the measurements and reporting related to sustainability goals. As stated in the introduction to this chapter, according to these survey results, private sector organizations more frequently *take actions that are considered within their organization to be related to sustainability goals*. Private corporations also more frequently *measure the results of sustainability actions* and *report those results to employees*. In fact, the

highest response from private-sector organizations among this series of questions was that results were "consistently" *measured* (35.3%) and "consistently" *reported to employees* (27.6%). The paradigm is flipped when asked, "*How frequently does your organization report its sustainability actions and results to the public?*" In this area, public institutions led the way with the foremost response among public institution being "sometimes" (37.3%) compared to the foremost response among private organizations of "rarely" (29.0%).

On the last question of this section, "*How frequently does your organization benchmark (compare) its sustainability performance with other similar organizations?*", the greatest number of both public and private organizations report they only benchmark their sustainability performance "sometimes" (private – 29.9%; public – 38.5%). However, among those who "often" or "consistently" benchmark their sustainability performance, private organizations outpace public organizations at more than double the rate (private – 31.8%; public – 15.6%). This indicated a lag of the public sector behind the private sector in the field of sustainability benchmarking.

Participants were asked to list any standardized tools used to measure or report sustainability actions and results. The response to this area of the survey provides more support to the position that public organizations lag behind private corporations with regard to benchmarking and standardized reporting. In this area of the survey, more responses were received from private sector respondents even

though they represented a smaller percentage of the overall surveys submitted. This is an important result because it supports the research premise that private organizations are more advanced in their pursuit of sustainability and that public organizations lag, particularly with regard to measuring, reporting and benchmarking sustainability results. Further in support of this research premise, private-sector respondents listed more standardized tools, including some of those discussed in the literature review section of this study. The tools listed were: Global Reporting Index (GRI), International Standards Organization (ISO) 14001 (and others), various Environmental Management Systems (EMS) or Environmental, Health and Safety (EHS) Management Systems (typically supported by a software package), Dow Jones Sustainability Index (DJSI), Higg Index (apparel industry), Forest Stewardship Council (FSC), and other specialized tools for reporting on key performance indicators (KPIs) and generating organizational scorecards.

Among public-sector responses, the list of formalized programs was much smaller. The ICLEI – Local Governments for Sustainability was mentioned most frequently (6 of 45 comments). Additionally, some programs by the Department of Energy and the Environmental Protection Agency for reporting energy use and emissions were mentioned, however these programs are limited in scope and do not address sustainability as a whole. Of the remaining responses, the local strategic plan, sustainability action plan, or general city plan were mentioned as

means of providing standardized reporting of actions and results and are worth considering in future research.

One final indication of a public-sector lag is found in the results of the concluding question of the survey, "*In your opinion, would the increased sharing of sustainability best practices between the private and public sectors be beneficial to your organization?*" The vast majority of all respondents indicated the sharing of best practices would be of benefit. However, 92% of respondents in the public sector thought their organization would benefit from such collaboration with the private sector, while only 74% of private-sector respondents anticipated similar benefit from collaboration with the public sector. Additional research is needed to understand the causes for this difference. However, it could indicate an acknowledgement by public organizations that they recognize their organizations would benefit from cross-sector best practice sharing whereas private corporations, because of their more advanced tools and resources, think they would not benefit as much from such sharing.

On the paper version of the survey, in the space below this final question, five private-sector respondents and one public-sector respondent added additional comments related to the topic of best practice sharing. The public sector comment was that the sharing of best practices could not be undertaken until the "budget crisis is over." One comment from a private-sector respondent was that best practice sharing "is being done voluntarily." Three of the private-sector

respondents who indicated that best practices should not be shared, added the following comments:

- Private and public sectors often have different goals and objectives that do not have the same metrics.
- Public does not share, they regulate and mandate.
- Get the government off our back and out of free market. Government is a burden to society.

The fifth comment added by a private-sector respondent, who also indicated that the sharing of best practices would not benefit his/her organization, reflected a slightly different view of the role of government, one to incentivize sustainability pursuits. The respondent wrote: "Agency incentives and quicker ROIs [return on investments] are keys to making larger leaps forward."

Findings

In reviewing the relevant literature, considering the research questions, and evaluating all the results of this study, five key findings were identified. For reference purposes, the research questions were as follows:

1) Will research data regarding the sustainability motivators, actions, barriers, and results reporting by private- and public-sector organizations support or challenge a research hypothesis that local

governments lag behind private corporations in the pursuit of sustainability?

2) What are the motivators and barriers to sustainability actions for corporate organizations and local governments? Which are shared in common and which are distinct?
3) What are the sustainability actions taken by corporate organizations and local governments? Which are shared in common and which are distinct?
4) What differences exist between corporate organizations and local governments in how sustainability results are measured and reported?
5) Could best practices be shared between corporate organizations and local governments to advance the implementation of sustainability?

The five findings relate to one or more of the research questions above. Each finding is presented below along with discussion in support of the finding. Note that the survey utilized a Likert scale of 1-5 with the numbers corresponding to the different rating options for each category.

Finding #1: Public-sector organizations (local governments) lag behind private-sector organizations (corporations) in measuring, reporting, and benchmarking sustainability results.

Based on a review of relevant literature, a research hypothesis was made that public entities lag behind private corporations in pursuing sustainability. The initial research question was to determine if study data regarding the motivators, actions, barriers, and results reporting by private- and public-sector organizations would support or challenge this hypothesis. The most striking finding in support of this hypothesis of an existing lag was found in survey responses related to the organization's measuring and reporting of results. The study data revealed that private corporations more frequently *measure the results of their sustainability actions* (private – 69.8%; public – 37.1%), *report their results to employees* (private – 53.9%; public – 24.9%), and *benchmark their sustainability performance with other similar organizations* (private – 31.8%; public – 15.6%). This finding was based on the combined data for respondents who reported their organization took the above actions "often" or "consistently".

Public organizations had a marginal lead in the area of *reporting of sustainability actions and results to the public*, as revealed by an overall average rating of 3.0 points for public organizations versus 2.8 for private organizations on a 5.0 point scale. This minor difference in the average rating is primarily a result of public-sector respondents more often reporting that their institutions report to the public "sometimes" (Likert score of "3") whereas the most frequent reply by private-sector respondents was "rarely" (Likert score of "2"). However, in looking at which sector reports to the public "often" or "consistently", the

percentage are almost identical with the public sector at 29.4% compared to 29.1% for the private sector. This indicated that there was little difference in the frequency with which each organizational type reported sustainability results to the public.

This finding was somewhat surprising given that the public – the citizens of a city – are key stakeholders for public entities and thus communicating sustainability-related information to this primary audience should arguably be much more frequently done by public entities. In reality, less than one-third of public-sector respondents indicated that these communications were a priority for their organizations. This further confirmed a lag of public institutions behind private organizations in the area of measuring, reporting, and benchmarking sustainability results.

Finding #2: Public institutions plan and implement more sustainability actions than private organizations, but less frequently consider their actions to be related to the pursuit of sustainability goals.

The study data revealed that numerous sustainability actions were being planned or implemented by both sectors but the public-sector reported having planned and taken more sustainability-related actions than did the private sector. Based on a comparison of the overall average rating for the sustainability action areas included in this survey, public institutions (3.5 average rating) reported

planning and implementing sustainability actions more frequently than private organizations (3.3 average rating). In this section of the survey, a Likert score of "3" represented a response that the action area was "planned, but not yet implemented" whereas scores "4" and "5" indicated an action had been "implemented" and "implemented with positive benefits achieved", respectively. Additionally, among public organization responses, only five sustainability actions had an average rating below 3.0. This compared to 10 actions with an average rating below 3.0 among private companies. These results indicated a higher level of sustainability action planning and implementation in the public sector as opposed to the private sector, thus challenging the research hypothesis that the public sector lags behind the private sector in the pursuit of sustainability.

However, despite taking the lead in action planning and implementation, public-sector respondents were less likely than their private-sector counterparts to view these actions as being related to sustainability goals. This is based on the result that more than half (51.7%) of the public-sector organizations reported that their organization only "rarely" or "sometimes" *take actions that are considered within the organization to be related to sustainability goals*. By comparison, only 28.2% of private-sector respondents had this same response. This result indicated that there is a gap within local governments between sustainability actions (which are being planned and implemented) and organizational

sustainability goals (which may not be clearly defined, planned, and executed within a sustainability strategy).

It is possible the gap in the connection between actions and goals exists because, as discussed in Chapter 2, the public-sector lags behind the private-sector in the use of standardized tools that establish sustainability goals and identify sustainability-focused actions. Based on the literature, trends within the private sector, and study results related to sustainability barriers, there is evidence that the use of such tools can aid organizations in establishing a sustainability strategy that provides clear goals, identifies goal-oriented actions, and establishes expected outcomes that are reported routinely to key stakeholders. The study results presented below also support such a claim. Framed as barriers, several questions on the survey were included to gain understanding into basic management challenges related to sustainability programs. These barriers included *unclear sustainability objectives (scope, goals, etc.)*, *lack of consensus regarding the action plan*, and *challenge of quantifying the value of sustainability actions*. According to the results of this study, private-sector respondents view each of these as a less significant barrier to their sustainability program than do public-sector respondents. Providing tools for local governments would advance the field of sustainability and encourage increased pursuit of shared sustainability goals among public-sector organizations and between the private and public sectors.

Finding #3: The role of stakeholders is marginalized in the sustainability pursuits of public organizations.

The importance of stakeholders is greatly emphasized in the literature and research on private-sector sustainability. This stakeholder view is no less relevant to public-sector institutions, yet it is given far less attention. Support for this finding was based on three key components: 1) the abundance of stakeholder literature related to the private sector compared to the lack of comparable literature related to the public sector; 2) the degree to which public-sector *citizen expectations* (versus private-sector *customer expectations*) serve as a motivator and the degree to which the *lack of citizen support* (versus a *lack of customer support*) serve as a barrier in an organization's pursuit of sustainability; and 3) the difference in the frequency and characteristics of sustainability reporting between the private and public sectors.

First, there is a significant difference in the volume of private-sector versus public-sector literature and research discussing the stakeholder view. The stakeholder view of a firm has a robust set of literature unto itself (Donaldson & Preston, 1995; Clarkson, 1995; Post, Preston, & Sachs, 2002; Perrini & Tencati, 2006). The stakeholder view, as a framework for the pursuit of sustainability, arose from the corporate setting. However, this view has not been similarly

applied to the public sector's pursuit of sustainability. This is an indicator that the stakeholder view is given less consideration in public organizations.

Next, survey results indicated that *customer expectations* were a stronger motivator for private-sector organizations than *citizen expectations* were for public-sector organizations. The private sector reported that customer expectations were either a "significant" or "primary" driver more frequently (65.6%) than public institutions did for citizen expectations (57.1%). This result indicated that citizen expectations received less consideration and that citizens exert less influence over the sustainability initiatives of local governments than customers do over private companies. The stakeholder view emphasizes the importance of stakeholder relationships (Perrini & Tencati, 2006). Customer stakeholders appear to have a greater voice in the sustainability decisions and actions of corporations. The stronger stakeholder relationship of private organizations to customers seems to translate into fewer barriers for private entities. The survey results indicated that *lack of customer support* was less of a barrier for the private sector (47.4% – "not a hindrance") than *lack of citizen support* was for public-sector respondents (33.7% – "not hindrance").

Finally, a major tenet of the stakeholder view is effective, stakeholder-focused communication. The need to communicate sustainability information to stakeholders was a major impetus for the development of sustainability reporting tools in the private sector (Kaplan & Norton, 1996). Based on the results related

to sustainability reporting, as discussed in the first finding of this study, the lag in reporting is another indicator that stakeholders are given less consideration in the sustainability pursuits of public organizations and further highlights the need for measurement and reporting tools in the public sector.

Finding #4: The motivating drivers and potential barriers are largely the same for both private- and public-sector organizations.

Of the motivators and barriers included in this study, there were striking overall convergences between the responses of private- and public-sector representatives. Both sectors reported that their leading driver was *direction or goals set by executive-level leadership* and their leading barrier was *budgetary restrictions*. This commonality, along with other mutual motivators and barriers, indicated that private- and public-sector organizations have shared experiences in their pursuits of sustainability goals. These common experiences provide a solid foundation for best practice sharing.

While *direction or goals set by leadership* was identified as the leading driver for both sectors, it is not surprising, given the current economic environment, that *economic factors (reduce cost or increase income)* was a very close second among the motivators for sustainability for both private and public organizations. In fact, for private industry, the average rating number was the same for the top two motivators, however, more respondents indicated that

direction or goals set by leadership was a "primary driver" of sustainability. Of course, these motivators are not mutually exclusive as economic factors certainly inform executive leadership as they set goals and directions for organizations. Further, while *economic factors* were identified as a key motivator, *budgetary restrictions* were also reported as the most significant barrier to sustainability pursuits for both organizational types.

The most notable difference among the motivators was in the area of *societal benefits (community strengthening).* This was more prevalently reported as a "moderate", "significant", or "primary" driving factor for public organizations (86.4%) as opposed to private corporations (66.1%). The most notable difference among the barriers to sustainability was in the area of *consensus regarding a sustainability action plan* which, as discussed above, appears to be a greater challenge in the public sector than in private sector. These areas might represent prime opportunities for knowledge transfer and best practice sharing. Corporations could learn from public institutions about the value of sustainability to the society at large and public institutions could achieve better sustainability outcomes through the utilization of transferrable action plan models that exist in the private sector.

Finding #5: Both private- and public-sector organizations would benefit from best practice sharing in the field of sustainability.

Of all survey participants, 84.3% responded that an increased sharing of sustainability best practices between the private and public sectors would be beneficial to their organization. The perceived benefit from increased sharing of best practices was higher among public organizations than among private companies, 92% compared to 74% respectively. The difference could indicate that the public sector respondents sense they have a greater need to improve and to learn from the private sector in order to advance their organization's sustainability pursuits.

Best practices would most likely arise from sustainability actions and results reporting, though certainly there would be benefits to further dialogue regarding shared sustainability motivators and barriers. The benefits of best practices sharing would likely exist on every sustainability action addressed by this study. The sustainability action areas where there exists a significantly different implementation level between private- and public-sector organizations could be key areas for best practice sharing. Based on the differences in the overall rating for each sustainability action, the following six areas (including the top three with the greatest difference led by private organizations and the top three with the greatest difference led by a public entity, listed respectively) might be very well suited for best practice sharing: *air quality initiatives*, *equitable employment*, *comprehensive workforce development*, *neighborhood or community economic development*, *land redevelopment or revitalization*, and *transparency in*

organizational governance. With economics being such a major factor – both as a driver and barrier – for sustainability efforts, it is fitting that four of these six actions are categorized as economic sustainability actions (all except *air quality initiatives* and *transparency in organizational governance*). Collaboration in these areas could yield significant economic gain for both private and public organizations, as well as result in positive overall sustainability benefits.

Data Analysis and Findings Report Conclusion

This chapter described some of the detailed study results on private- and public-sector sustainability efforts. This included data regarding the motivators, actions, barriers, and results reporting activity by both organizational types. Results were based on 375 valid survey responses from professionals who reported on the sustainability efforts of their organization. The survey population was comprised of 215 (57%) public-sector respondents with 96% representing local or municipal governments and 160 (43%) private-sector respondents primarily comprised of companies with 100-500 employees (56%) or companies with more than 500 employees (34%). Based on these results, five findings were identified and each was explained in this chapter. For reference, the findings are also listed below in Table 4-4 Table of Findings.

Table 4-4 Table of Findings

#1	Public-sector organizations (local governments) lag behind private-sector organizations (corporations) in measuring, reporting, and benchmarking sustainability results.
#2	Public institutions plan and implement more sustainability actions than private organizations, but less frequently consider their actions to be related to the pursuit of sustainability goals.
#3	The role of stakeholders is marginalized in the sustainability pursuits of public organizations.
#4	The motivating drivers and potential barriers are largely the same for both private- and public-sector organizations.
#5	Both private- and public-sector organizations would benefit from best practice sharing in the field of sustainability.

Chapter 5

Interpretations, Recommendations, and Conclusions

This final chapter takes into consideration the entire breadth of this study, including the literature review, the survey results, and the findings, in an effort reach a greater understanding of the sustainability field. Specifically, this chapter will explore some critical "what?" questions: What does this study say about society, about private corporations, about public institutions?; What does it encourage us to do as local and global citizens?; What does the study mean for urban planning professionals? This chapter also includes interpretations of findings and recommendations based on the outcomes of this research.

Interpretation of Findings

This study has provided insight into the field of sustainability within both the private- and public-sector settings. It has yielded five key findings that contribute to the body of knowledge for this field. The findings both support and challenge the research hypothesis that public institutions lag behind private corporations in their pursuit of sustainability. In general, it can be stated that the first three study findings can be attributed to the lack of organizing models and reporting tools targeted to the public sector. The final two findings reflect the common journey towards sustainability found among both private- and public-

sector organizations. In this section, the connection between the research findings and the literature reviewed will be discussed.

The first three study findings are directly tied to the lack of standardized public-sector models and tools revealed by the literature. Finding #1 is that public-sector organizations (local governments) lag behind private-sector organizations (corporations) in measuring, reporting, and benchmarking sustainability results. This finding is well supported by the literature which highlights the fact that the availability and use of comprehensive sustainability reporting tools among the private sector far surpasses those of the public sector. Additionally, the private-sector tools have a significantly broader reach. The Global Reporting Initiative gathers reports from over 1,800 companies; the Dow Jones Sustainability Index is used by 340 of the 2,500 largest companies in the world; and the ISO 14001 is utilized by approximately 250,000 organizations (some of which are public entities but the vast majority are private companies). By comparison, the primary organization focusing on public-sector sustainability, ICLEI, has an association of approximately 500 U.S. member cities. ICLEI has provided support resources to assist local governments in their sustainability pursuits but they have only recently launched the first comprehensive measuring and reporting tool for local governments, the STAR Community Rating System. This system has, to-date, only been utilized by a pilot group of 10 beta cities.

Finding #2 is that public institutions plan and implement more sustainability actions than private organizations, but less frequently consider their actions to be related to the pursuit of sustainability goals. Again, this finding can be tied to the lack of organizing models of sustainability for the public-sector. The first component of this finding, that public institutions plan and implement more sustainability actions than private organizations, challenges the research hypothesis that public-sector organizations lag in their pursuit of sustainability because they reported performing more sustainability-related actions. The public-sector sustainability literature demonstrates that the depth and breadth of actions routinely engaged in by public-sector organizations are extensively consistent with the objectives of sustainability and this finding supports that view. This is supported by the work of researchers such as Portney (2003), Jepson (2004a), and Conroy (2006) who assessed the sustainability efforts of cities.

However, the second part of Finding #2 is that public-sector respondents less frequently consider their actions to be related to the pursuit of sustainability goals. This again reflects the fact that there is no organizing model or tool that combines these actions into a sustainability framework for public entities. A review of Appendix E: Table of Actions and Sources reveals that in the public-sector literature, the bulk of the actions are tied to the environmental and economic spheres of sustainability. Aside from the inclusion of *promotion of civic and community engagement* and *active lifestyle programs*, the other social

sphere actions included in this study are conspicuously absent from the earlier public-sector sustainability studies and thus missing from the overall sustainability framework. However, with the release of the new STAR Community Rating System model, this is poised to change. The STAR model contributed eight additional sustainability action areas to the public-sector framework of sustainability used in this study. The inclusion of these actions expanded the opportunities for public-sector respondents to connect their efforts to a sustainability model, allowing public institutions the opportunity to report the implementation of more sustainability-related actions. Without a comprehensive sustainability framework, public sector organizations seldom considered their actions to be related to the pursuit of sustainability goals.

Finding #3 is that the role of stakeholders is marginalized in the sustainability pursuits of public organizations. The consideration of stakeholders in this study was initiated by the large volume of private-sector literature that used stakeholder management as a driving and organizing theme. However, in the public-sector literature reviewed for this research, there was little to no mention of stakeholders or the stakeholder view. There is doubtlessly recognition and inclusion of stakeholders in public-sector organizations, however, based on this study, stakeholder management is certainly less considered in the public sector than it is in the private sector. The emphasis on corporate social responsibility in the private-sector literature is a key difference in this area. Corporate social

responsibility reporting is driven by the stakeholders' needs and demands to understand the companies with which they engage. This reporting allows stakeholders to hold private organizations accountable for their actions, including their consumption and treatment of natural resources and their contributions to society. Public institutions have not been similarly compelled by citizens to monitor and report on their social responsibility.

The need to communicate with stakeholders, as advocated by Kaplan and Norton (1996), is a core factor in the development of private-sector sustainability models and reporting tools. From this perspective, the marginalization of stakeholders in the public-sector is rooted in the lack of similar demands for information, resulting in the lagging development of public-sector tools for measuring, reporting, and bench-marking sustainability results. This finding presents a call for increased research regarding the applicability of the stakeholder view for public organizations and potential incorporation of the stakeholder view into future theories and models for public-sector sustainability.

The remaining two findings of this study reflect the common journey organizations in both sectors share in their pursuits of sustainability. Finding #4 is that the motivating drivers and potential barriers are largely the same for both private- and public-sector organizations. While the study identified some differences between private- and public-sector sustainability efforts, there are substantial commonalities among most organizations that are pursuing

sustainability objectives. This finding points to the common roots of sustainability and it indicates that the overarching idea of sustainability, as presented in a wide variety of literature, is fairly commonly understood and serves as the central organizing foundation for sustainability pursuits. While multiple definitions of sustainability exist in the literature, the history of the sustainability movement, the various sustainability actions, and the related literature has fostered a collective acceptance of the central objectives of sustainability. This finding also reinforces the fact that organizations, irrespective of sector, share common management challenges. Thus, the factors that drive organizational objectives, motivate actions, and present organizational barriers are understandably similar.

Finding #5 is that both private- and public-sector organizations would benefit from best practice sharing in the field of sustainability. The notion of best practice sharing is implicit in the literature based on the fact that standardized models and tools exist. The development of these models and tools is an explicit declaration that best practices can be identified, standardized, shared, and benchmarked. However, to date, best practice sharing has only been achieved *within* organizational sectors, not between sectors. While public-sector best practice sustainability models lag behind private-sector endeavors, the quest to develop and implement similar models in the public-sector reflects the realization that organizations can, and should, learn from one another. This study has raised

the question of whether or not best practices, based on common sustainability objectives and challenges, can benefit organizations across sectors. Study results indicate that professionals in the field decisively think so.

The interpretation of these finding reveals a supportive connection between this research and the foundational literature. This research, and these findings, also adds to this body of literature and identifies some areas for further research, development, and action related to sustainability within private and public organizations. The next section will provide recommendations based on the interpretation of these research findings.

Recommendations

In an effort to connect this academic study with practical implementations, this section includes recommendations for stakeholders, organizational leaders, and urban planners. These recommendations also speak to the roles of corporations, local governments, and educational institutions in advancing sustainability. Finally, this section includes recommendations for future research.

Stakeholders

This study revealed that citizens and customers, as key stakeholders of corporations and local governments, do drive the sustainability efforts of these organizations. Because sustainability is important to stakeholders, sustainability is important to organizations. This awareness should embolden citizens and

customers to call for increased numbers of sustainability initiatives and for improved means of evaluating the sustainability programs of the companies and cities with whom they are engaged.

To accomplish this, benchmarking tools are needed to supply citizens, customers, and other stakeholders with the knowledge necessary to make informed decisions about where to live, where to do business, what services to utilize, which products to buy, and where to buy them. Accurate and successful benchmarking relies on the identification of appropriate key performance indicators with outcomes that can be quantified, measured, and reported. Despite numerous tools having been implemented in the private sector, this remains a key area of opportunity for both private and public organizations. Improvement in the creation of stakeholder-focused education and communication could reap significant benefits for the field of sustainability as stakeholders become more engaged in the topic and demand, with accountability, sustainability-related initiatives from corporations and government.

Organizational Leaders

A more substantial motivator of sustainability efforts for both private- and public-sector entities comes from organizational leadership. The study revealed that this smaller subset of society is the greatest driver of an organization's sustainability efforts. Thus, for sustainability to become a more integrated objective of organizations, leaders must become more informed in the topic of

sustainability and become better equipped to make business decisions with a focus on their organization's sustainable future.

To provide organizational leaders with a clear roadmap toward sustainability, increased clarity is needed in the definition of sustainability and sustainability-related actions, along with the development of structured sustainability models to facilitate executive engagement. The development and use of summary reports, such as dashboards that convey sustainability performance at a glance, including Return on Investment (ROI) data, will be greatly beneficial in providing actionable data for organizational leaders. The availability and implementation of these standardized tools is needs.

Sustainability and Urban Planning Professionals

These important advancements in the field of sustainability represent a call for more sustainability professionals to serve these societal demands and organizational needs. Urban planning professionals need greater understanding of this field to assist public organizations in bridging the gap between their actions and the framework of sustainability. Sustainability within local government relies on urban planning professionals. These individuals must be equipped to fill all four roles of technician, incremental facilitator, transitive facilitator, and progressive advocate, as described by Jepson (2004b).

In this, educational institutions have a pivotal role to play in advancing the field of sustainability through formalizing its study. Further academic research

and private/public collaboration can be facilitated by educational institutions to yield meaningful findings and shape standardization. Academic education for sustainability professionals can create a more qualified workforce to assist both private and public entities in achieving measurable sustainability outcomes that will benefit stakeholders and result in overall improvements for society. Continuing education to enhance the knowledge of professionals such as key managers, planners, and environmental specialists will enrich the existing workforce to further support overall sustainability objectives. Youth education to embed the importance of sustainability among the next generation of leaders will ensure that continued and long-lasting benefits are achieved.

Opportunities for Future Research

As an emerging field, there are significant opportunities for further research that would advance the sustainability efforts and outcomes by both private- and public-sector organizations. Three primary areas of research are: 1) further identification and exploration of best practices; 2) assessing and advancing public-sector sustainability through the use of the stakeholder view; and 3) effectiveness of the STAR Community Rating System and application of the model to private-sector organizations. Each of these research opportunities is discussed briefly below.

Both private corporations and public institutions are motivated to engage in sustainability because of economic factors, environmental impacts, and societal

benefits. Many of the sustainability actions are being pursued by both organizational types. With such a broad base of shared motivations and comparable actions, collaboration between private- and public-sector organizations is possible. However, additional research is needed to determine the most beneficial areas for best practice sharing.

Research is also needed to clearly identify sustainability actions, to effectively measure sustainability outcomes, and to responsibly report on sustainability results. Future research is recommended related to the stakeholder view as applied to sustainability within public-sector organizations. Research and action in this area would likely bring about advances in the public sector similar to those that have been achieved by corporate organizations.

Finally, research should continue related to the standardized set of key indicators and measures, particularly for reporting public-sector sustainability efforts. This includes extended research and assessment of the STAR Community Rating System that has been recently released (October, 2012) by ICLEI – Local Governments for Sustainability. Given this research identified this model as one that could be effective across organizational sectors, research should be conducted to ascertain if the model could be adopted by the private-sector and if any modifications would be needed to foster wide use of such a cross-sector sustainability measurement and reporting tool.

Final Conclusion

At its most basic level, sustainability is about finding ways to ensure the viability and harmony of all living things. From this vantage, however, sustainability is merely altruistic. In practicality, there are countless decisions to be made every day and each decision has a set of consequences, some of which are unforeseen. This perhaps makes sustainability an unattainable goal, yet one worth striving for. Over the past 40 years, great strides in the field of sustainability have been made. From early discussions regarding the ongoing viability of the Earth in the 1970s, the field has evolved to the point where the concept of sustainability is ingrained in the global culture.

Yet there are challenges that remain and much work is left to do to weave sustainability into the fabric of daily life. The work begins with further refining the definition of the term "sustainability" and clearly specifying the actions that contribute to a sustainable future. Because of their broad reach and significant impact on the lives of people across the globe, private corporations and local governments must become champions of the sustainability movement, ever mindful and inclusive of the people they impact. To do so, they must have access to standardized measurement, benchmarking, and reporting tools that enable them to set sustainability goals, accomplish sustainability actions, evaluate outcomes, and report results. The key stakeholders of organizations, customers and citizens, must become educated in the field of sustainability and must be kept informed on

the progress being made so they can continue to demand that sustainability remains on top of mind for the organizations with which they are engaged.

The scope of this study was very ambitious in its attempt to better understand sustainability from the perspectives of both private- and public-sector organizations. It sought to uncover both what motivated and inhibited organizations from pursuing a sustainability agenda. It also attempted to gain insight into the various actions being taken and the reporting strategies used to communicate the outcomes of those actions. Finally, it sought to identify best practices that could be shared between organizations to further advance the field because sustainability is most effectively and successfully achieved when people work together to accomplish it. It is hoped that the results and findings of this study aid in advancing the sustainability work that is being carried out across the globe and that the information gathered will provide a jumping off point for further inquiry in the field.

Appendix A:

Corporate Sustainability Aspects by Baumgartner and Ebner (2010)

Corporate Sustainability Aspects by Baumgartner and Ebner , (2010)

Table A-1 Economic Aspects of Corporate Sustainability

Indicator	Description
Innovation and technology	Effort in sustainability related R&D in order to reduce environmental impacts in new products and in business activities. Use of BAT (best available techniques) and integrated environmental technologies, concentration on cleaner production and zero-emission technologies.
Collaboration	Good cooperation and active collaboration with various business partners (e.g. suppliers, R&D institutions, universities, …). Working in common programs and networks on innovative products and technologies. Exchange of information and knowledge.
Knowledge management	Activities and approaches to keep sustainability related knowledge in the organization. Methods to plan, develop, organize, maintain, transfer, apply and measure specific knowledge and to improve the organizational knowledge base.
Processes	Clear processes and roles are defined so that business activities are efficiently conducted and that every employee knows what the organization expects from him or her (also concerning sustainability). Adaptation of process management on sustainability necessities to implement corporate sustainability systematically. Integration of sustainability into daily business life.
Purchase	Consideration of sustainability issues in purchase. Awareness and consideration of sustainability related issues in the organization as well as alongside the supply chain. Relationship with suppliers focusing also on sustainability.
Sustainability reporting	Consideration and reporting of sustainability issues within company reports, either in a separate sustainability report or integrated into the corporate one.

Table A-2 Ecological Aspects of Corporate Sustainability

Indicator	Description
Resources (materials, energy) including recycling	Use of renewable and non-renewable resources and energy through the company including recycled resources
Emissions into the air	Emissions into the air due to corporate activities
Emissions into the air	Emissions into the water due to corporate activities
Emissions into the ground	Emissions into the ground due to corporate activities
Waste and hazardous waste	Waste and hazardous waste due to corporate activities
Biodiversity	Impact on biodiversity due to corporate activities
Environmental issues of the product	Environmental aspects of the product over the whole life cycle

Table A-3 Internal Social Aspects of Corporate Sustainability

Indicator	Description
Corporate governance	Transparency in all its activities in order to ameliorate relationship towards its stakeholders. Giving insight into all relevant data; following rules of (stock) markets on corporate governance and defining responsibilities and behavior of the board.
Motivation and incentives	Active involvement and exemplary function of management on sustainability topics for employees. Awareness of needs, claims and motivation factors of employees in order to implement sustainability sufficiently into the organization due to support of management for acting in sustainable way (e.g. time, money, resources). Development of incentives and reward systems (monetary, non-monetary).
Health and safety	Guarantee that no health and safety risks occur when working in/for the organization. No negative impact of employees' physical health at any time. Operation of programs for employees to prevent dangers and to stay generally fi t and healthy (e.g. in developing countries).
Human capital development	Development of human capital for sustainability related issues through specific programs such as permanent education, mentoring or training. Broad cross-working education (job enrichment, job enlargement) in order to become aware of the different challenges and issues of corporate sustainability.

Table A-4 External Social Aspects of Corporate Sustainability

Indicator	Description
Ethical behavior and human rights	Ethical behavior towards sustainability consisting of well established, basic assumptions and principles relating the cooperation within an organization and the behavior towards (external) stakeholders. Regarding sustainability, important elements are a culture of respect, fair rules and behavior within an organization (and between its subsidiaries) and fair wealth/profit allocation, as well as serious consideration of stakeholders' ideals and needs. No harm of employees, either concerning their religious belief, gender, nationality or color or concerning people who are handicapped or aged.
No controversial activities	No holding of shares on organizations that are mostly defined as not sustainable (e.g. uranium mining). No use or sale of own assets and goods for nonsustainable activities.
No corruption and cartel	Behaving fairly on the market and avoiding manipulating business practices. This includes no rule-breaking, no price-fixing or joining a cartel and no corruption for gaining advantage.
Corporate citizenship	Being a good corporate citizen on a national level; conservation of subsidiaries in the country and establishment of economic power of a country as well as an increase in society's lifestyle. Support of stakeholders (and others) and their issues on regional level; participation or creation of sustainability related activities for the local community. Orientation on future generations without exploiting the present (or nature).

Appendix B:

Sustainability Indicators in Studies by Portney, Jepson, and Conroy

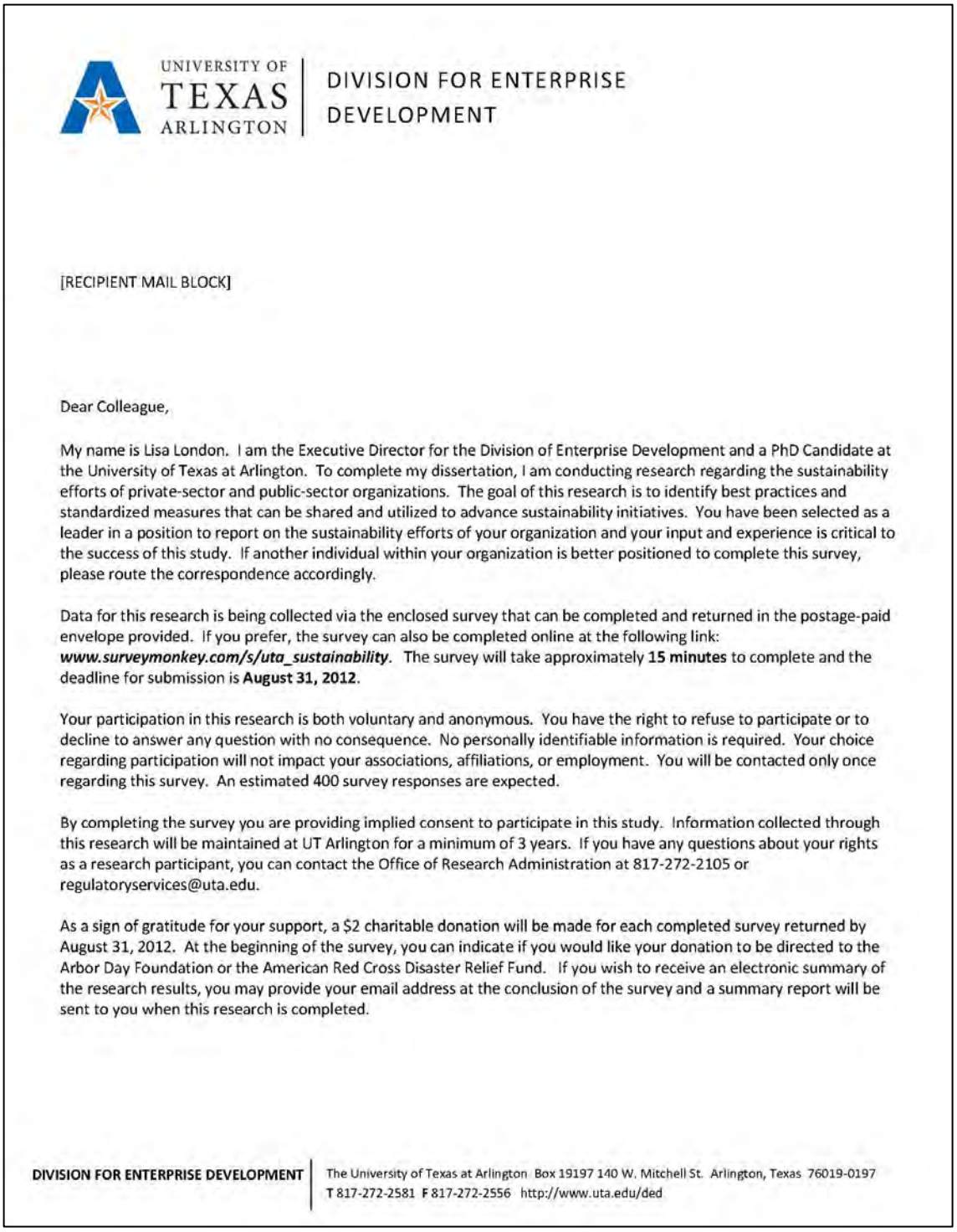
Sustainability Indicators in Studies by Portney, Jepson, and Conroy

Portney (2003)	Jepson (2004)	Conroy (2006)
Indicators project active in last 5 years	Agricultural district provisions	Affordable housing
Indicators progress report in last 5 years	Agricultural protection zoning	Brownfield reuse or infill
Does indicators project include "action plan" of policies/programmes?	Bicycle access plan	Conservation of natural resources
Eco-industrial park development	Brownfield reclamation	Dispute resolution
Cluster or targeted economic development	Community indicators programme	Encouraging local employment
Eco-village project or programme	Community gardening	Energy conservation
Brownfield redevelopment (project or pilot project)	Cooperative housing	Environmental constraints
Zoning used to delineate environmentally sensitive growth areas	Eco-industrial park	Green building efforts
Comprehensive land use plan that includes environmental issues	Ecological footprint analysis	Mixed use or compact development
Tax incentives for environmentally friendly development	Environmental site design regulations	Pedestrian-oriented development
Operation of inner-city public transit (buses and/or trains)	Green building requirements	Polluters pay
Limits on downtown parking spaces	Green procurement	Promoting alternative transport
Car pool lanes (diamond lanes)	Green maps	Public participation
Alternatively fuelled city vehicle programme	Green print plans	Recruiting green industries
Bicycle ridership programme	Greenways development	Recycling and waste minimization
Household solid waste recycling	Heat island analysis	Regional coordination
Industrial recycling	Import substitution	
Hazardous waste recycling	Incentive/inclusionary zoning	
Air pollution reduction programme (i.e. VOC reduction)	Infill development	
Recycled product purchasing by city government	Life-cycle public construction	
Superfund site remediation	Living wage ordinance	
Asbestos abatement programme	Low-emission vehicles	
Lead paint abatement programme	Neo-traditional development (also known as traditional neighbourhood development and smart development)	
Green building programme	Open space zoning	
Renewable energy use by city government	Pedestrian-oriented	
Energy conservation effort (other than Green building programme)	Pedestrian access plan	
Alternative energy offered to consumers (solar, wind, biogas, etc.)	Purchase of development rights	
Water conservation programme	Rehabilitation building codes	
Single governmental/non-profit agency responsible for implementing sustainability	Right-to-farm legislation	
Part of a city-wide comprehensive plan	Solar access protection regulations	
Involvement of city/county/metropolitan council	Solid waste life-cycle management	
Involvement of mayor or chief executive officer	Tax base/revenue sharing	
Involvement of the business community (e.g. Chamber of Commerce)	Transfer of development rights	
General public involvement in sustainable cities initiative (public hearings, "visioning" process, neighbourhood groups or associations, etc.)	Transit-oriented development	
	Transportation demand management	
	Urban growth boundary	
	Urban forestry programme	
	Urban ecosystem analysis	
	Wildlife habitat/green corridor planning	
	Wind energy development	

Figure B-1 Sustainability indicators in studies by Portney, Jepson, and Conroy (Saha, 2009, p. 26)

Appendix C:

Cover Letter and Survey



UNIVERSITY OF TEXAS ARLINGTON | DIVISION FOR ENTERPRISE DEVELOPMENT

[RECIPIENT MAIL BLOCK]

Dear Colleague,

My name is Lisa London. I am the Executive Director for the Division of Enterprise Development and a PhD Candidate at the University of Texas at Arlington. To complete my dissertation, I am conducting research regarding the sustainability efforts of private-sector and public-sector organizations. The goal of this research is to identify best practices and standardized measures that can be shared and utilized to advance sustainability initiatives. You have been selected as a leader in a position to report on the sustainability efforts of your organization and your input and experience is critical to the success of this study. If another individual within your organization is better positioned to complete this survey, please route the correspondence accordingly.

Data for this research is being collected via the enclosed survey that can be completed and returned in the postage-paid envelope provided. If you prefer, the survey can also be completed online at the following link: ***www.surveymonkey.com/s/uta_sustainability***. The survey will take approximately **15 minutes** to complete and the deadline for submission is **August 31, 2012**.

Your participation in this research is both voluntary and anonymous. You have the right to refuse to participate or to decline to answer any question with no consequence. No personally identifiable information is required. Your choice regarding participation will not impact your associations, affiliations, or employment. You will be contacted only once regarding this survey. An estimated 400 survey responses are expected.

By completing the survey you are providing implied consent to participate in this study. Information collected through this research will be maintained at UT Arlington for a minimum of 3 years. If you have any questions about your rights as a research participant, you can contact the Office of Research Administration at 817-272-2105 or regulatoryservices@uta.edu.

As a sign of gratitude for your support, a $2 charitable donation will be made for each completed survey returned by August 31, 2012. At the beginning of the survey, you can indicate if you would like your donation to be directed to the Arbor Day Foundation or the American Red Cross Disaster Relief Fund. If you wish to receive an electronic summary of the research results, you may provide your email address at the conclusion of the survey and a summary report will be sent to you when this research is completed.

DIVISION FOR ENTERPRISE DEVELOPMENT | The University of Texas at Arlington Box 19197 140 W. Mitchell St. Arlington, Texas 76019-0197
T 817-272-2581 F 817-272-2556 http://www.uta.edu/ded

Figure C-1 Survey Cover Letter

Thank you in advance for your participation in this important study. Your valuable input is appreciated and will assist both sustainability professionals and local communities in their pursuits to sustain environmental, economic, and societal resources.

If you have any questions about this research, please contact my Faculty Advisor, Dr. Fred Forgey, at forgey@uta.edu or contact me at 817-272-0913 or llondon@uta.edu.

Respectfully,

Lisa London
Executive Director, Division for Enterprise Development
PhD Candidate, School of Urban and Public Affairs
The University of Texas at Arlington

Survey Cover Letter (cont.)

Survey of Public and Private Sector Organizations Regarding Sustainability

To complete this survey online go to: www.surveymonkey.com/s/uta_sustainability

In appreciation of your survey response, a $2 donation will be made to (select one): ☐ Arbor Day Foundation ☐ American Red Cross

If you would like to receive information on the results of this survey, please provide your email address below:

_____

Please provide this general information about your organization.

Public Sector (check one):	Private Sector (check one from each column):	
☐ Local or Municipal Government	☐ For-profit	☐ < 50 Employees
☐ Regional Government or Planning Organization	☐ Not-for-profit	☐ 50-100 Employees
☐ State Government		☐ 101-500 Employees
☐ National Government		☐ > 500 Employees

Please answer the following rating scale questions about the motivators, actions, barriers, and results of the sustainability efforts engage in by your organization.

Motivators

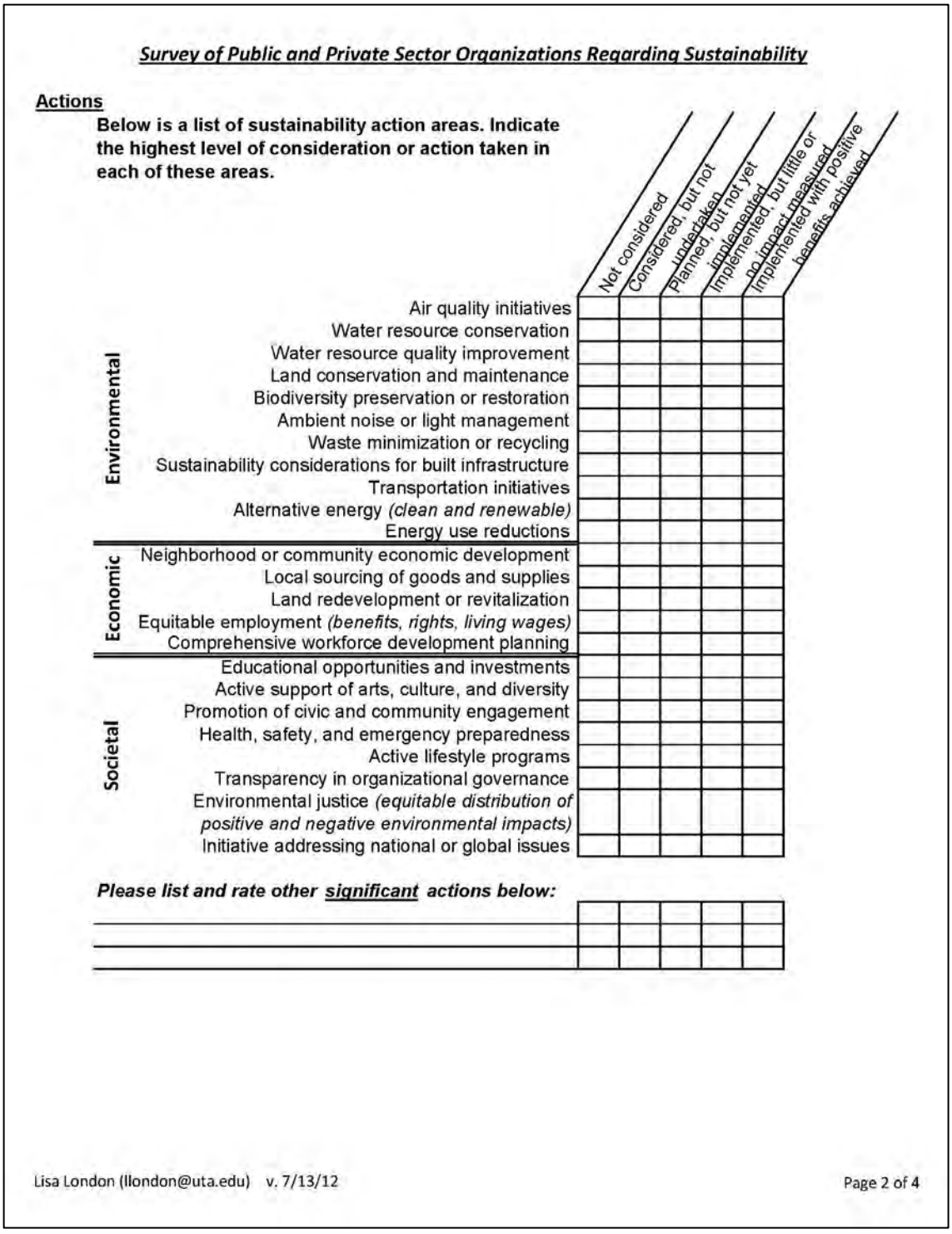
Rank each of the factors below to indicate the degree to which they served as a motivating driver of your organization's sustainability efforts.

	Not a driver	Weak driver	Moderate driver	Significant driver	Primary driver
Citizen or customer expectations					
Direction or goals set by executive-level leadership					
Economic factors *(reduce costs or increase income)*					
Environmental impacts *(natural resource conservation)*					
Societal benefits *(community strengthening)*					

Please list and rate other <u>significant</u> motivators below:

_____					
_____					
_____					

Figure C-2 Survey (paper version)



Survey of Public and Private Sector Organizations Regarding Sustainability

Actions

Below is a list of sustainability action areas. Indicate the highest level of consideration or action taken in each of these areas.

		Not considered	Considered, but not undertaken	Planned, but not yet implemented	Implemented, but little or no impact measured	Implemented with positive benefits achieved
Environmental	Air quality initiatives					
	Water resource conservation					
	Water resource quality improvement					
	Land conservation and maintenance					
	Biodiversity preservation or restoration					
	Ambient noise or light management					
	Waste minimization or recycling					
	Sustainability considerations for built infrastructure					
	Transportation initiatives					
	Alternative energy *(clean and renewable)*					
	Energy use reductions					
Economic	Neighborhood or community economic development					
	Local sourcing of goods and supplies					
	Land redevelopment or revitalization					
	Equitable employment *(benefits, rights, living wages)*					
	Comprehensive workforce development planning					
Societal	Educational opportunities and investments					
	Active support of arts, culture, and diversity					
	Promotion of civic and community engagement					
	Health, safety, and emergency preparedness					
	Active lifestyle programs					
	Transparency in organizational governance					
	Environmental justice *(equitable distribution of positive and negative environmental impacts)*					
	Initiative addressing national or global issues					

Please list and rate other <u>significant</u> actions below:

Lisa London (llondon@uta.edu) v. 7/13/12

Page 2 of 4

Figure C-2 Survey (cont.)

Survey of Public and Private Sector Organizations Regarding Sustainability

Barriers

Of the potential barriers listed below, indicate the degree to which each has been a hinderance to your organization's overall sustainability efforts.

	Not a hindrance	Manageable issue	Moderate challenge	Difficult to overcome	Unyielding barrier
Lack of management support					
Lack of citizen or customer support					
Budgetary restrictions					
Inadequate quantity of personnel resources					
Insufficiently skilled personnel					
Unclear sustainability objectives *(scope, goals, etc.)*					
Lack of consensus regarding the action plan					
Challenge of quantifying the value of sustainability actions					

Please list and rate other significant barriers below:

_____					
_____					
_____					

Figure C-2 Survey (cont.)

Survey of Public and Private Sector Organizations Regarding Sustainability

Results

Answer the following questions using the scale provided.

	Never	Rarely	Sometimes	Often	Consistently
How frequently does your organization take actions that are considered within your organization to be related to sustainability goals?					
How frequently does your organization measure the results of the organization's sustainability actions?					
How frequently does your organization report its sustainability actions and results to employees?					
How frequently does your organization report its sustainability actions and results to the public?					
How frequently does your organization benchmark *(compare)* its sustainability performance with other similar organizations?					

Please list any standardized tools your organization uses to measure or report sustainability actions and results:

_____

_____

_____

_____

In your opinion, would the increased sharing of sustainability best practices between the private and public sectors be beneficial to your organization?

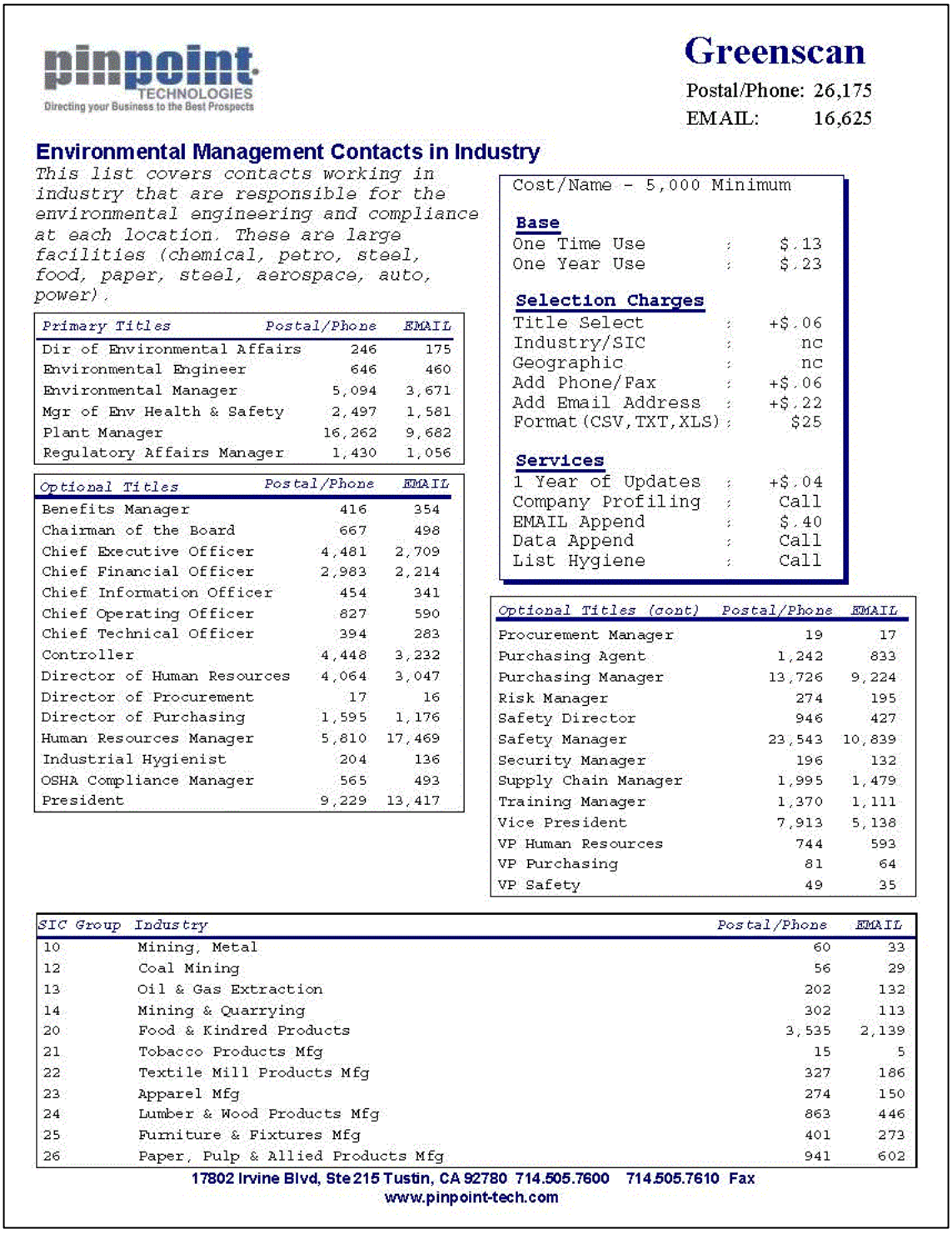
□ Yes □ No

Thank you for participating!

Figure C-2 Survey (cont.)

Appendix D:

Mailing List Providers and Information



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Postal/Phone: 26,175
EMAIL: 16,625

Environmental Management Contacts in Industry

This list covers contacts working in industry that are responsible for the environmental engineering and compliance at each location. These are large facilities (chemical, petro, steel, food, paper, steel, aerospace, auto, power).

Primary Titles	Postal/Phone	EMAIL
Dir of Environmental Affairs	246	175
Environmental Engineer	646	460
Environmental Manager	5,094	3,671
Mgr of Env Health & Safety	2,497	1,581
Plant Manager	16,262	9,682
Regulatory Affairs Manager	1,430	1,056

Optional Titles	Postal/Phone	EMAIL
Benefits Manager	416	354
Chairman of the Board	667	498
Chief Executive Officer	4,481	2,709
Chief Financial Officer	2,983	2,214
Chief Information Officer	454	341
Chief Operating Officer	827	590
Chief Technical Officer	394	283
Controller	4,448	3,232
Director of Human Resources	4,064	3,047
Director of Procurement	17	16
Director of Purchasing	1,595	1,176
Human Resources Manager	5,810	17,469
Industrial Hygienist	204	136
OSHA Compliance Manager	565	493
President	9,229	13,417

Cost/Name - 5,000 Minimum

Base

One Time Use	:	$.13
One Year Use	:	$.23

Selection Charges

Title Select	:	+$.06
Industry/SIC	:	nc
Geographic	:	nc
Add Phone/Fax	:	+$.06
Add Email Address	:	+$.22
Format(CSV,TXT,XLS)	:	$25

Services

1 Year of Updates	:	+$.04
Company Profiling	:	Call
EMAIL Append	:	$.40
Data Append	:	Call
List Hygiene	:	Call

Optional Titles (cont)	Postal/Phone	EMAIL
Procurement Manager	19	17
Purchasing Agent	1,242	833
Purchasing Manager	13,726	9,224
Risk Manager	274	195
Safety Director	946	427
Safety Manager	23,543	10,839
Security Manager	196	132
Supply Chain Manager	1,995	1,479
Training Manager	1,370	1,111
Vice President	7,913	5,138
VP Human Resources	744	593
VP Purchasing	81	64
VP Safety	49	35

SIC Group	Industry	Postal/Phone	EMAIL
10	Mining, Metal	60	33
12	Coal Mining	56	29
13	Oil & Gas Extraction	202	132
14	Mining & Quarrying	302	113
20	Food & Kindred Products	3,535	2,139
21	Tobacco Products Mfg	15	5
22	Textile Mill Products Mfg	327	186
23	Apparel Mfg	274	150
24	Lumber & Wood Products Mfg	863	446
25	Furniture & Fixtures Mfg	401	273
26	Paper, Pulp & Allied Products Mfg	941	602

17802 Irvine Blvd, Ste 215 Tustin, CA 92780 714.505.7600 714.505.7610 Fax
www.pinpoint-tech.com

Figure D-1 PinPoint Technologies - Greenscan Data Sheet

pinpoint TECHNOLOGIES
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Greenscan

Postal/Phone: 26,175
EMAIL: 16,625

27	Publishing & Printing	892	641
28	Chemical & Pharma Mfg	3,056	1,998

SIC Group	Industry	Postal/Phone	EMAIL
29	Petroleum Refining	736	475
30	Rubber & Plastics Mfg	1,471	928
31	Leather & Leather Products Mfg	60	40
32	Stone, Clay, Glass & Concrete Products Mfg	973	563
33	Primary Metals Industries	969	628
34	Fabricated Metal Products Mfg	2,541	1,708
35	Industrial & Commercial Machinery Mfg	2,442	1,678
36	Electronic, Computer & Electrical Components Mfg	1,517	1,154
37	Automotive & Aerospace Mfg	1,070	703
38	Medical, Scientific, Eng & Measuring Device Mfg	907	709
39	Misc Manufacturing	453	293
46	Pipelines - Petroleum	48	30
49	Public Utilities & Services	1,934	904
91	Public Works Office - City & County	130	65

Additional List Options

Description	Postal/Phone	EMAIL
Plantscan - Facility, Engineering, Maintenance Contacts in Mfg	79,137	46,476
Techscan - Information Technology Management Contacts in Industry	20,767	12,907
Safescan - Safety Management Contacts in Industry	43,821	20,248
Prodscan - Production, Process, Operations Contacts in Mfg	48,956	34,083
Adscan - Human Resources Management Contacts in Industry	37,722	24,976
Pubscan - Public Utilities/Municipalities - Power, Water, Wastewate	29,531	11,180

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www.pinpoint-tech.com

Figure D-1 PinPoint Technologies - Greenscan Data Sheet (cont.)

ICMA Leaders at the Core of Better Communities

777 North Capitol Street, NE ■ Suite 500 ■ Washington, DC 20002-4201

Academic researchers—Do you have plans to conduct a survey?

If you plan to survey local governments or local government personnel in the United States, ICMA is now offering electronic label files to academic researchers. Whether you want to mail to local governments in one state, in one region, in a population range, or to all places with a population of 2,500 and above in a specific region, ICMA has electronic files of mailing labels custom-tailored to your needs.

SAMPLE OPTIONS

Your selections criteria can be limited or as broad—you decide. Choose municipalities, counties, or both; then select population, states, and position titles. You control the sample.

Population *as of 03/15/2012*

You can select from population groups or specify a particular population range.

Population groups	Municipalities	Counties	Total
Total	7,516	3,037	10,554
Over 1,000,000	9	28	37
500,000 - 1,000,000	23	63	86
250,000 - 499,999	36	110	146
100,000 - 249,999	180	274	454
50,000 - 99,999	421	383	804
25,000 - 49,999	790	638	1,428
10,000 - 24,999	1,852	868	2,720
5,000 - 9,000	1,942	387	2,329
2,500 - 4,999	2,263	173	2,436
Under 2,500		113	113

Geographic division, region, or state

You can select one of more geographic divisions or regions or select specific states.

Geographic division	States
New England	Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont
Mid-Atlantic	New Jersey, New York, Pennsylvania
East North-Central	Illinois, Indiana, Michigan, Ohio, Wisconsin
West North-Central	Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota
South Atlantic	Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina,

Figure D-2 International City/County Management Association - Mailing List Data Sheet

	Virginia, West Virginia, District of Columbia
East South-Central	Alabama, Kentucky, Mississippi, Tennessee
West South-Central	Arkansas, Louisiana, Oklahoma, Texas
Mountain	Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming
Pacific Coast	Alaska, California, Hawaii, Oregon, Washington

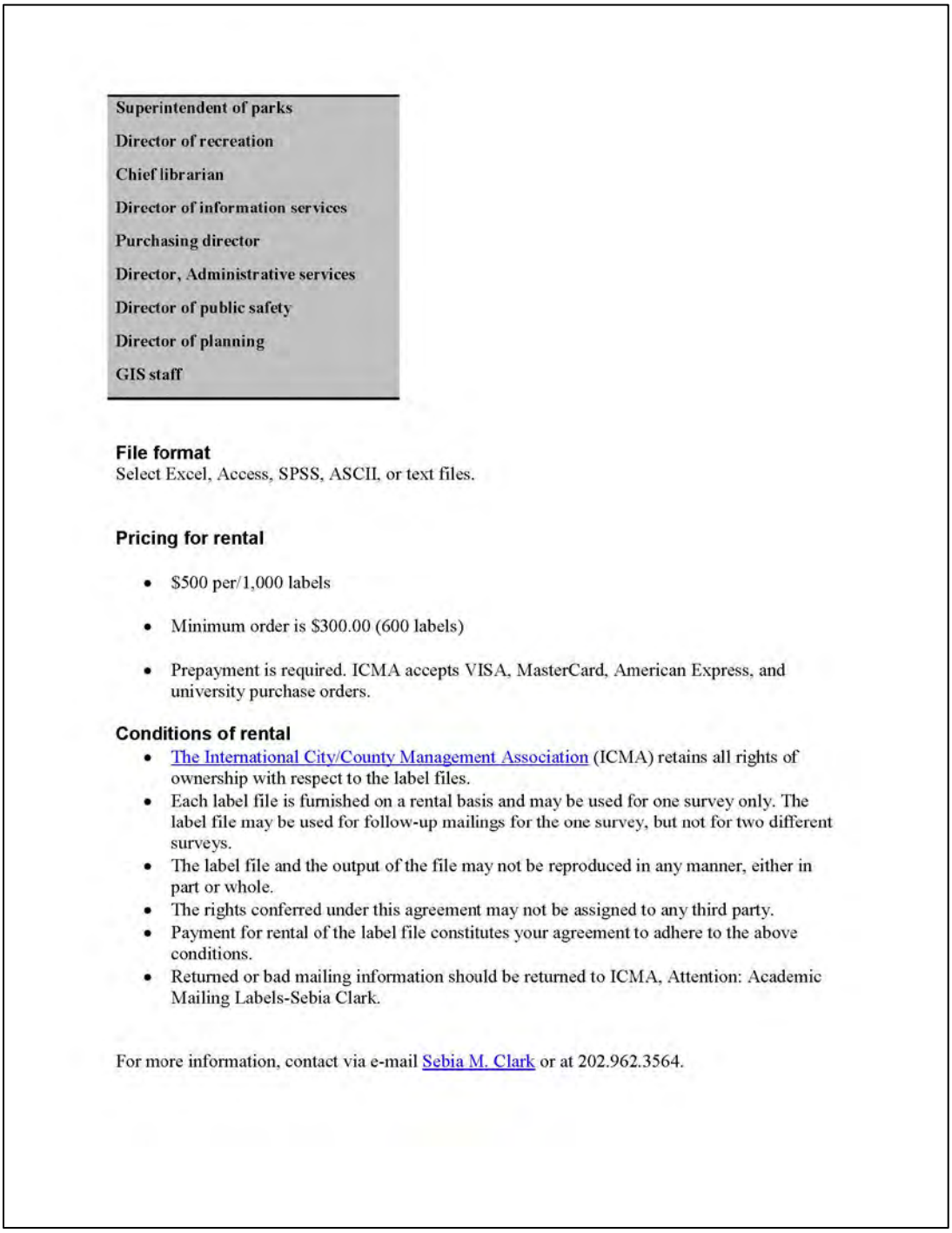
Geographic region	States
Northeast	Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont, New Jersey, New York, Pennsylvania
North Central	Illinois, Indiana, Michigan, Ohio, Wisconsin, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota
South	Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia, District of Columbia, Alabama, Kentucky, Mississippi, Tennessee, Arkansas, Louisiana, Oklahoma, Texas
West	Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming, Alaska, California, Hawaii, Oregon, Washington

Position title

You can select a particular title from the list below. We will provide names where we have them. If we do not have name for a particular position, we will provide the title. Some jurisdictions may not have a position, but have someone who fills those responsibilities.

Generic title
Chief elected official
Chief administrative officer
Assistant chief administrative officer
Clerk
Chief financial officer
Health officer
Treasurer
Director of public works
City or County engineer
Director of welfare/human services
Chief law enforcement official
Fire chief
Director of economic development
Personnel director
Risk manager
Director of parks and recreation

Figure D-2 International City/County Management Association - Mailing List Data Sheet (cont.)



Superintendent of parks
Director of recreation
Chief librarian
Director of information services
Purchasing director
Director, Administrative services
Director of public safety
Director of planning
GIS staff

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For more information, contact via e-mail Sebia M. Clark or at 202.962.3564.

Figure D-2 International City/County Management Association - Mailing List Data Sheet (cont.)

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Appendix E:

Table of Actions and Sources

Table E-1 Table of Actions and Sources

	Private-Sector Literature			Public-Sector Literature			
Actions:	**GRI**	**DJSI**	**CSG**	**Portney**	**Jepson**	**Conroy**	**STAR**
Air quality initiatives	✓	✓		✓	✓	✓	✓
Water resource conservation	✓	✓	✓	✓		✓	✓
Water resource quality improvement	✓		✓				✓
Land conservation and maintenance	✓			✓	✓	✓	✓
Biodiversity preservation or restoration	✓	✓			✓	✓	✓
Ambient noise or light management							✓
Waste minimization or recycling	✓	✓	✓	✓	✓	✓	✓
Sustainability considerations for built infrastructure	✓			✓	✓	✓	
Transportation initiatives	✓			✓	✓	✓	✓
Alternative energy (clean and renewable)			✓	✓	✓		✓
Energy use reductions		✓	✓	✓	✓	✓	✓
Neighborhood or community economic development	✓			✓	✓	✓	✓
Local sourcing of goods and supplies	✓				✓		✓
Land redevelopment or revitalization				✓	✓	✓	✓
Equitable employment (benefits, rights, living wages)	✓	✓	✓		✓		✓
Comprehensive workforce development planning	✓	✓	✓				✓

Table E-1 Table of Actions and Sources (cont.)

Actions:	Private-Sector Literature			Public-Sector Literature			
	GRI	DJSI	CSG	Portney	Jepson	Conroy	STAR
Educational opportunities and investments	✓	✓	✓				✓
Active support of arts, culture, and diversity		✓					✓
Promotion of civic and community engagement		✓		✓	✓	✓	✓
Health, safety, and emergency preparedness	✓	✓	✓				✓
Active lifestyle programs					✓	✓	✓
Transparency in organizational governance	✓	✓	✓				✓
Environmental justice (equitable distribution of positive and negative environmental impacts)	✓						✓
Initiative addressing national or global issues	✓		✓				

Legend:
GRI – Global Reporting Initiative (2012)
DJSI – Dow Jones Sustainability Index (Sustainable Asset Management USA, 2012)
CSG – Corporate Sustainability Grid (Callado & Fensterseifer, 2011)
Portney – K.E. Portney (2003)
Jepson – E. J. Jepson, Jr. (2004a)
Conroy – M. M. Conroy (2006)
STAR – STAR Community Rating System (ICLEI, 2012)

Appendix F:

Summary Reports of Survey Results

Summary of Private-Sector Responses

Table F-1 Private-Sector Motivators

Rate each of the factors below to indicate the degree to which they served as a motivating driver of your organization's sustainability efforts.							
Answer Options	**Not a driver**	**Weak driver**	**Moderate driver**	**Significant driver**	**Primary driver**	**Rating Average**	**Response Count**
Citizen or customer expectations	1.9% (3)	8.8% (14)	23.8% (38)	37.5% (60)	28.1% (45)	3.81	160
Direction or goals set by executive-level leadership	3.8% (6)	6.9% (11)	14.4% (23)	44.4% (71)	30.6% (49)	3.91	160
Economic factors (reduce costs or increase income)	2.5% (4)	5.6% (9)	18.1% (29)	46.3% (74)	27.5% (44)	3.91	160
Environmental impacts (natural resource conservation)	3.8% (6)	12.5% (20)	26.3% (42)	48.1% (77)	9.4% (15)	3.47	160
Societal benefits (community strengthening)	10.1% (16)	23.9% (38)	34.0% (54)	27.7% (44)	4.4% (7)	2.92	159

Table F-2 Private-Sector Write-in Motivators

Additional significant motivators (write-in text)	Category Code*
Obeying the laws and regulations and seeing that others also do so	1
Comply with regulations	1
ISO 14001	1
Legal and other obligations	1
State government -- CA not business friendly	1
Regulations	1
American Chemistry Council Responsible Care	1
Liability minimization	1
Emerging regulatory climate	1
Employee concerns	2
Employee expectations	2
Health and safety	2
Safety	2
Safety	2
Employee expectations	2
Employee safety	2
Operating a safe working environment with employee involvement	2
Employee/staff interest and desire	2
Stock market	3
Keep on par with larger competitors	3
Company image/reputation	3

Additional significant motivators (write-in text) (cont.)	Category Code*
Increase in efficiency	3
Shareholders/third party group's expectations	3
Image	3
Benchmarking competitors	3
Customer relationships	3
Product innovation opportunities	3
Honesty	4
The right thing to do	4
Community stewardship	4
Awareness of the historical environmental impacts of the particular industry we're working in	4
Integrity	4
Expectations of future generations	4
Generation Y	X
Management support	X

***KEY** (categorization by researcher for reporting purposes)	Code (n)
Legal aspects	1 (9)
Employee safety and health	2 (9)
Benefit to the company	3 (9)
Right thing to do	4 (6)
Not coded - undeterminable	X (2)

Table F-3 Private-Sector Environmental Sustainability Actions

Below is a list of ENVIRONMENTAL sustainability action areas. Indicate the highest level of consideration or action taken in each of these areas.							
Answer Options	**Not considered**	**Considered, but not undertaken**	**Planned, but not yet implemented**	**Implemented, but little or no impact measured**	**Implemented with positive benefits achieved**	**Rating Average**	**Response Count**
Air quality initiatives	13.5% (21)	9.7% (15)	6.5% (10)	18.1% (28)	52.3% (81)	3.86	155
Water resource conservation	11.0% (17)	13.6% (21)	5.2% (8)	21.4% (33)	48.7% (75)	3.83	154
Water resource quality improvement	25.2% (38)	14.6% (22)	4.6% (7)	19.9% (30)	35.8% (54)	3.26	151
Land conservation and maintenance	31.8% (48)	15.9% (24)	7.3% (11)	23.2% (35)	21.9% (33)	2.87	151
Biodiversity preservation or restoration	53.6% (82)	15.7% (24)	9.8% (15)	8.5% (13)	12.4% (19)	2.10	153
Ambient noise or light management	30.1% (46)	16.3% (25)	6.5% (10)	17.6% (27)	29.4% (45)	3.00	153
Waste minimization or recycling	2.5% (4)	1.9% (3)	5.7% (9)	17.2% (27)	72.6% (114)	4.55	157
Sustainability considerations for built infrastructure	27.8% (42)	17.2% (26)	15.2% (23)	19.2% (29)	20.5% (31)	2.87	151
Transportation initiatives	32.3% (50)	15.5% (24)	14.2% (22)	19.4% (30)	18.7% (29)	2.77	155
Alternative energy (clean and renewable)	26.5% (41)	32.3% (50)	9.0% (14)	11.6% (18)	20.6% (32)	2.68	155
Energy use reductions	4.7% (7)	5.3% (8)	4.7% (7)	19.3% (29)	66.0% (99)	4.37	150

Table F-4 Private-Sector Economic Sustainability Actions

Below is a list of ECONOMIC sustainability action areas. Indicate the highest level of consideration or action taken in each of these areas.							
Answer Options	**Not considered**	**Considered, but not undertaken**	**Planned, but not yet implemented**	**Implemented, but little or no impact measured**	**Implemented with positive benefits achieved**	**Rating Average**	**Response Count**
Neighborhood or community economic development	31.4% (48)	17.0% (26)	10.5% (16)	18.3% (28)	22.9% (35)	2.84	153
Local sourcing of goods and supplies	20.8% (32)	16.2% (25)	9.7% (15)	27.3% (42)	26.0% (40)	3.21	154
Land redevelopment or revitalization	55.8% (86)	13.6% (21)	7.8% (12)	11.0% (17)	11.7% (18)	2.09	154
Equitable employment (benefits, rights, living wages)	15.7% (24)	6.5% (10)	5.2% (8)	24.8% (38)	47.7% (73)	3.82	153
Comprehensive workforce development planning	19.1% (29)	8.6% (13)	11.8% (18)	23.7% (36)	36.8% (56)	3.51	152

Table F-5 Private-Sector Societal Sustainability Actions

Below is a list of SOCIETAL sustainability action areas. Indicate the highest level of consideration or action taken in each of these areas.							
Answer Options	**Not considered**	**Considered, but not undertaken**	**Planned, but not yet implemented**	**Implemented, but little or no impact measured**	**Implemented with positive benefits achieved**	**Rating Average**	**Response Count**
Educational opportunities and investments	18.4% (29)	8.2% (13)	5.7% (9)	26.6% (42)	41.1% (65)	3.64	158
Active support of arts, culture, and diversity	34.6% (53)	12.4% (19)	7.2% (11)	22.2% (34)	23.5% (36)	2.88	153
Promotion of civic and community engagement	15.4% (24)	13.5% (21)	5.1% (8)	22.4% (35)	43.6% (68)	3.65	156
Health, safety, and emergency preparedness	5.1% (8)	1.3% (2)	2.5% (4)	16.6% (26)	74.5% (117)	4.54	157
Active lifestyle programs	17.1% (27)	10.8% (17)	4.4% (7)	24.1% (38)	43.7% (69)	3.66	158
Transparency in organizational governance	22.4% (34)	6.6% (10)	13.2% (20)	30.3% (46)	27.6% (42)	3.34	152
Environmental justice (equitable distribution of positive and negative environmental impacts)	38.8% (57)	12.2% (18)	4.1% (6)	20.4% (30)	24.5% (36)	2.80	147
Initiative addressing national or global issues	42.7% (64)	12.7% (19)	6.0% (9)	12.7% (19)	26.0% (39)	2.67	150

Table F-6 Private-Sector Barriers

Of the potential barriers listed below, indicate the degree to which each has been a hindrance to your organization's overall sustainability efforts.							
Answer Options	**Not a hindrance**	**Manageable issue**	**Moderate challenge**	**Difficult to overcome**	**Unyielding barrier**	**Rating Average**	**Response Count**
Lack of management support	44.9% (70)	28.2% (44)	16.0% (25)	7.7% (12)	3.2% (5)	1.96	156
Lack of citizen or customer support	47.4% (74)	23.1% (36)	20.5% (32)	7.7% (12)	1.3% (2)	1.92	156
Budgetary restrictions	6.3% (10)	23.4% (37)	31.0% (49)	30.4% (48)	8.9% (14)	3.12	158
Inadequate quantity of personnel resources	10.1% (16)	23.4% (37)	39.2% (62)	21.5% (34)	5.7% (9)	2.89	158
Insufficiently skilled personnel	26.3% (41)	30.8% (48)	26.9% (42)	12.2% (19)	3.8% (6)	2.37	156
Unclear sustainability objectives (scope, goals, etc.)	28.4% (44)	31.0% (48)	21.3% (33)	15.5% (24)	3.9% (6)	2.35	155
Lack of consensus regarding the action plan	29.1% (46)	32.3% (51)	22.8% (36)	12.7% (20)	3.2% (5)	2.28	158
Challenge of quantifying the value of sustainability actions	14.7% (23)	29.5% (46)	28.2% (44)	22.4% (35)	5.1% (8)	2.74	156

Table F-7 Private-Sector Results

Answer the following questions regarding results using the scale provided.							
Answer Options	**Never**	**Rarely**	**Sometimes**	**Often**	**Consistently**	**Rating Average**	**Response Count**
How frequently does your organization take actions that are considered within your organization to be related to sustainability goals?	1.9% (3)	9.6% (15)	18.6% (29)	36.5% (57)	33.3% (52)	3.90	156
How frequently does your organization measure the results of the organization's sustainability actions?	4.5% (7)	9.6% (15)	22.4% (35)	28.2% (44)	35.3% (55)	3.80	156
How frequently does your organization report its sustainability actions and results to employees?	8.3% (13)	13.5% (21)	24.4% (38)	26.3% (41)	27.6% (43)	3.51	156
How frequently does your organization report its sustainability actions and results to the public?	20.0% (31)	29.0% (45)	21.9% (34)	12.3% (19)	16.8% (26)	2.77	155
How frequently does your organization benchmark (compare) its sustainability performance with other similar organizations?	16.2% (25)	22.1% (34)	29.9% (46)	17.5% (27)	14.3% (22)	2.92	154

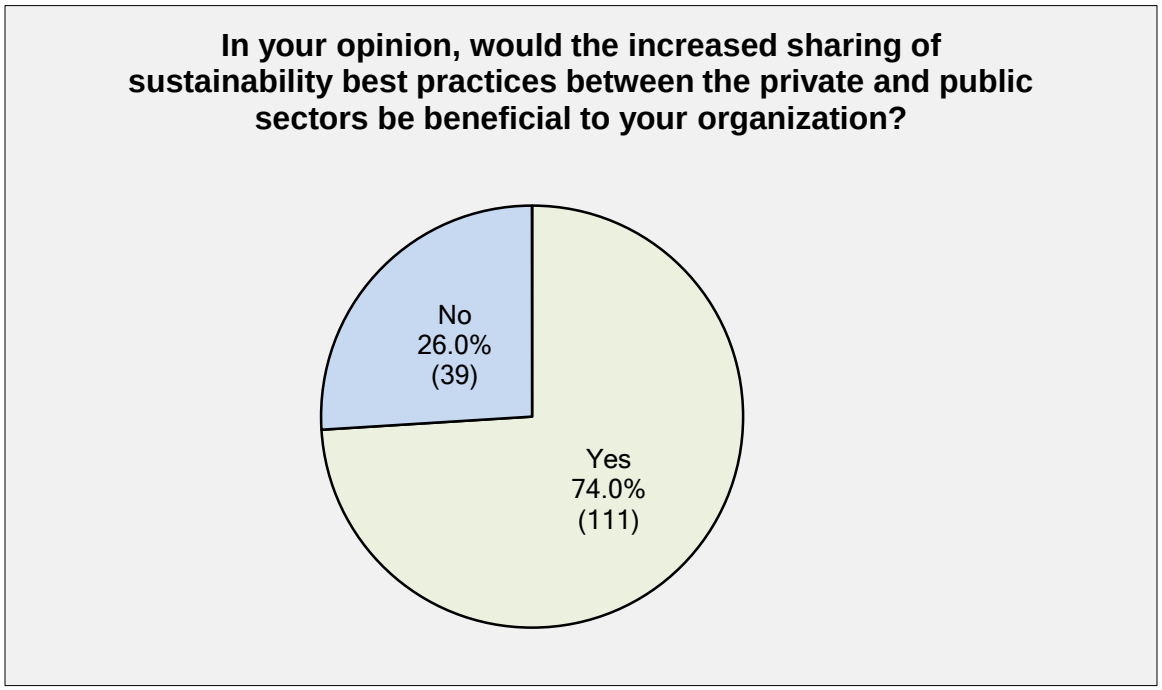

Figure F-1 Private-Sector Response to Best Practice Sharing

Table F-8 Private-Sector Write-in Actions and Barriers

Additional actions (write-in text)
Member World Business Council Sustainable Development
We are a handtool mfg. with drop hammers which by nature are extremely loud. We have adapted and implemented light management.
Forced environmental laws -- but NO BENEFIT
Operational efficiency and Green/Lean manufacturing efforts aka Six Sigma
Galvanized apparel industry to create standardized environment impact assessment tool. 30% of apparel dollars globally on board.
Investment in responsible use of natural renewable forest resources
Air Quality - We have a Title V permit - we have not reduced VOC because of volume, but it is measured.
Stormwater management & reductions
Promotion of marine conservation
Protection of human health
Signatory to UN Global Compact
Responsible Care Company

Additional barriers (write-in text)
Competing communications/messages
No central responsibility for sustainability
Legal holds
Little to no public support
A plan that integrates all related activities
We only remain in business to be a driver for reducing environmental inputs
Governmental regulations
Cultural barriers. Multi-national company. Each region has local priorities.
State and Federal regulatory programs (New Source review, NAAQS, etc.)
Lack of standard sustainability accounting methodologies
Limited resource recovery options

Table F-9 Private-Sector Write-in Standardized Tools

Standardized tools to measure or report sustainability actions and results (write-in text)
We have a protocol based on GRI to report our footprint. Not currently reporting through CDP. Internally, have a tool to track sustainability projects and projected benefits. Internal tool for collecting footprint data.
Report/track number of environmental releases and permit deviations
HOSHIN; ISO 14001; Third Party Reporting
Currently working with NSF International to develop a sustainability standard for dimension stone. http://www.nsf.org/business/sustainability/standards_improved.asp
Not that I am aware of.
Individual task efficiency. Free access to standardized work procedures.
Lean Six Sigma training for efficiency and process control, training, and online Power Steering system to guide decision making.
Power usage
Quarterly reviews; All hands meetings; Weekly staff meetings; Weekly program reviews.
GRI
Energy use; water use; customer satisfaction; continuous improvement actions
Basic normalization per 100 wt. of products produced; online metrics which are updated monthly and reported quarterly
ISO 14001 certification and audits; Customer audits and benchmarking; Local, state, and national environmental Performance Sustainability Award.
Water usage, natural gas and electrical usage, recyclable amounts.
Changes and accomplishments are reported in monthly company newsletter and on company website. Certifications are listed in National Association's websites.
Management systems have proven to be an essential tool which helps to drive our sustainability program. Our organization has implemented ISO9001, ISO14001, ISO50001, and MSE50221, OSHAs18001. Integrating our sustainability objectives into these programs gives the organization an organized mechanism to promote desired change for our journey to sustainable operation.
Gensuite EHS Management System
EHS Manager software
Perillon EMS Software
Management systems
ISO 9001 Quality Standard; ISO 14001 Environmental Standard
Training on sustainability objectives, provide benchmark reference to measure success, scheduled goal review to measure and track success, and individual and group recognition on success and support in failures.
GRI Reporting

CDP Reporting; Annual sustainability report
KPI charts posted for recycle stream and environmental performance. Daily review of chemical inventories, daily production/scrap meetings, weekly chemical use per machine hours.
100% employee leadership in EHS; Stop Light charting measurement tools; Accountability boards both leadership and employees; Project driven teams for improvement in environmental and safety programs
We have daily, monthly and yearly reports
We created the coalition that just launched the Higg Index for measuring environmental and social/labor impacts of apparel and footwear across the entire value chain.
Participation in spare the air days, number of people who sign up for carpool days, number of pounds people lose during "health month", hours charged on electric vehicle pump
Global Reporting Initiative Indicators
Power Steering is tool green belt certified users can state a problem and work through developing a solution with team members. There are tools used such as action item logs, input/output models, checklists, flow charts, etc. to ensure accountability and long-term sustainability. Projects can be to streamline, save money, change resources or suppliers, or have positive environmental impact.
Risk Analysis, Safety Committee, and safety/environmental alerts
Annual Sustainability Report
Internal KPI; Most metrics are normalized, by production volume and sales.
Our company has an online database that houses waste data and energy use data for each facility. It is currently just a data collection tool at this point. Rarely are objectives set and rarely is the data rolled up and used for comparison and as a gage for continual improvement.
1) Annual Forest Stewardship Council (FSC) chain-of-custody certification audit conducted by the Rainforest Alliance. 2) Metrics on waste-to-landfill, corrugated cardboard recycling, paper recycling, electricity usage in plant, aluminum recycling, and recycled plastic reported to the Facility Conservation Team at the monthly meeting.
The company uses GRI Indicators and reports annually at a B level in the company's Sustainability Report. GHG emissions are calculated using WRI protocols.
We will be releasing our first GRI report at B level for the last 2 fiscal years. We've also been working with Brown-Flynn in establishing our goals, initiatives and programs.
Best Practices
DJSI
Targets & Objectives, ECO checklists, Environmental Performance Index
Scorecards – Including: measurements for energy savings, renewable energy sources/$'s spent, water usage, landfill, waste to energy, hazardous waste, compost, etc.
Global HSE metric database; global policies and procedures
Internally we look at our KPI's or Key Performance Indicators using basic spreadsheets and graphs. These are displayed on 3 touchscreens within the facility which are always available to all employees as well as the public during tours.

ComCheck; Seminars/Lectures; Meetings
Spreadsheets and public conversion factors for carbon footprint

Summary of Public-Sector Responses

Table F-10 Public-Sector Motivators

Rate each of the factors below to indicate the degree to which they served as a motivating driver of your organization's sustainability efforts.							
Answer Options	**Not a driver**	**Weak driver**	**Moderate driver**	**Significant driver**	**Primary driver**	**Rating Average**	**Response Count**
Citizen or customer expectations	1.9% (4)	13.1% (28)	28.0% (60)	39.3% (84)	17.8% (38)	3.58	214
Direction or goals set by executive-level leadership	0.5% (1)	3.3% (7)	18.8% (40)	49.8% (106)	27.7% (59)	4.01	213
Economic factors (reduce costs or increase income)	1.4% (3)	5.2% (11)	20.8% (44)	46.2% (98)	26.4% (56)	3.91	212
Environmental impacts (natural resource conservation)	1.9% (4)	7.9% (17)	38.3% (82)	42.1% (90)	9.8% (21)	3.50	214
Societal benefits (community strengthening)	2.3% (5)	11.2% (24)	43.0% (92)	34.1% (73)	9.3% (20)	3.37	214

Table F-11 Public-Sector Write-in Motivators

Additional significant motivators (write-in text)	Category Code
State and Federal laws	1
ICMA emphasis	1
State government legislation	1
State-driven rules and laws	1
CA State legislation and policy, e.g., AB 32 and SB 375	1
Environmental compliance	1
State law/legal mandate	1
State statutes	1
Dept. of Land/Water Management	1
Federal or state regulatory requirements	1
Dept. of Parks	1
City Council directives/strategic plan	2
Re-election of officials	2
Direction set by elected officials	2
Business goals and objectives	2
City Council priorities	2
Direction or goals set by elected officials	2
City Council interest	2
Direction from elected officials	2
Elected officials support	2

Additional significant motivators (write-in text)	Category Code
Purchase products and services that offer the lowest life-cycle costs	3
Overall cost	3
Cost	3
Long term cost savings	3
Federal ARRA grant funds	4
Federal funding under ARRA, best investment they made in the stimulus program	4
State incentives	4
Federal funds that are available for sustainable planning	4
Energy Champion	4
Federal Leadership	4
Federal or state regulatory grant conditions	4
Regional pressure	5
Collective bargaining	5
Staff or employee expectations	5
Initiatives prompted by neighboring municipalities	5
US Council of Mayors	5
Desire to obtain respect of peers in executive roles at other jurisdictions	5

Table F-12 Public-Sector Write-in Motivators (cont.)

Additional significant motivators (write-in text) (cont.)	Category Code
Moral imperative - The right thing to do for future generations	6
Cultural preservation	6
Developing a good physical and quality of life environment for business and overall citizens	6
Setting a good example / saving taxpayer dollars	6
Organizational ethics and social responsibility of the city organization	6
Quality of life which translates to a desire to be here.	6
We have not been very motivated.	X
Man/woman workforce	X

***KEY** (categorization by researcher for reporting purposes)	Code (n)
Legal considerations	1 (11)
Elected officials	2 (9)
Cost savings	3 (4)
Grants or incentives	4 (7)
Pressure	5 (6)
Right thing to do	6 (6)
Not Coded - Undeterminable	X (2)

Table F-13 Public-Sector Environmental Sustainability Actions

Below is a list of ENVIRONMENTAL sustainability action areas. Indicate the highest level of consideration or action taken in each of these areas.							
Answer Options	**Not considered**	**Considered, but not undertaken**	**Planned, but not yet implemented**	**Implemented, but little or no impact measured**	**Implemented with positive benefits achieved**	**Rating Average**	**Response Count**
Air quality initiatives	20.2% (40)	25.3% (50)	9.6% (19)	19.2% (38)	25.8% (51)	3.05	198
Water resource conservation	6.8% (14)	13.2% (27)	8.3% (17)	22.0% (45)	49.8% (102)	3.95	205
Water resource quality improvement	10.0% (20)	9.5% (19)	13.4% (27)	20.9% (42)	46.3% (93)	3.84	201
Land conservation and maintenance	13.9% (28)	11.4% (23)	11.9% (24)	25.7% (52)	37.1% (75)	3.61	202
Biodiversity preservation or restoration	33.2% (66)	17.6% (35)	16.1% (32)	18.6% (37)	14.6% (29)	2.64	199
Ambient noise or light management	32.2% (65)	19.8% (40)	8.4% (17)	19.3% (39)	20.3% (41)	2.76	202
Waste minimization or recycling	2.4% (5)	4.4% (9)	7.8% (16)	17.5% (36)	68.0% (140)	4.44	206
Sustainability considerations for built infrastructure	7.4% (15)	12.4% (25)	15.3% (31)	26.2% (53)	38.6% (78)	3.76	202
Transportation initiatives	7.4% (15)	10.3% (21)	17.2% (35)	26.1% (53)	38.9% (79)	3.79	203
Alternative energy (clean and renewable)	10.4% (21)	18.4% (37)	17.4% (35)	18.4% (37)	35.3% (71)	3.50	201
Energy use reductions	4.0% (8)	5.0% (10)	6.4% (13)	18.3% (37)	66.3% (134)	4.38	202

Table F-14 Public-Sector Economic Sustainability Actions

Below is a list of ECONOMIC sustainability action areas. Indicate the highest level of consideration or action taken in each of these areas.							
Answer Options	**Not considered**	**Considered, but not undertaken**	**Planned, but not yet implemented**	**Implemented, but little or no impact measured**	**Implemented with positive benefits achieved**	**Rating Average**	**Response Count**
Neighborhood or community economic development	6.4% (13)	13.4% (27)	8.4% (17)	27.2% (55)	44.6% (90)	3.90	202
Local sourcing of goods and supplies	13.4% (27)	20.8% (42)	12.4% (25)	29.2% (59)	24.3% (49)	3.30	202
Land redevelopment or revitalization	7.5% (15)	11.4% (23)	13.9% (28)	28.9% (58)	38.3% (77)	3.79	201
Equitable employment (benefits, rights, living wages)	35.8% (72)	18.4% (37)	4.5% (9)	18.4% (37)	22.9% (46)	2.74	201
Comprehensive workforce development planning	23.6% (48)	15.3% (31)	16.7% (34)	20.7% (42)	23.6% (48)	3.05	203

Table F-15 Public-Sector Societal Sustainability Actions

Below is a list of SOCIETAL sustainability action areas. Indicate the highest level of consideration or action taken in each of these areas.							
Answer Options	**Not considered**	**Considered, but not undertaken**	**Planned, but not yet implemented**	**Implemented, but little or no impact measured**	**Implemented with positive benefits achieved**	**Rating Average**	**Response Count**
Educational opportunities and investments	17.1% (34)	13.6% (27)	14.1% (28)	21.1% (42)	34.2% (68)	3.42	199
Active support of arts, culture, and diversity	11.9% (24)	12.9% (26)	9.5% (19)	22.9% (46)	42.8% (86)	3.72	201
Promotion of civic and community engagement	4.5% (9)	8.9% (18)	10.4% (21)	28.2% (57)	48.0% (97)	4.06	202
Health, safety, and emergency preparedness	2.0% (4)	3.5% (7)	5.9% (12)	23.3% (47)	65.3% (132)	4.47	202
Active lifestyle programs	9.0% (18)	12.4% (25)	12.4% (25)	29.9% (60)	36.3% (73)	3.72	201
Transparency in organizational governance	3.0% (6)	3.0% (6)	5.5% (11)	29.0% (58)	59.5% (119)	4.39	200
Environmental justice (equitable distribution of positive and negative environmental impacts)	38.0% (73)	21.4% (41)	13.0% (25)	16.1% (31)	11.5% (22)	2.42	192
Initiative addressing national or global issues	47.9% (91)	20.5% (39)	7.9% (15)	14.2% (27)	9.5% (18)	2.17	190

Table F-16 Public-Sector Barriers

Of the potential barriers listed below, indicate the degree to which each has been a hindrance to your organization's overall sustainability efforts.							
Answer Options	**Not a hindrance**	**Manageable issue**	**Moderate challenge**	**Difficult to overcome**	**Unyielding barrier**	**Rating Average**	**Response Count**
Lack of management support	50.5% (103)	21.1% (43)	17.6% (36)	9.8% (20)	1.0% (2)	1.90	204
Lack of citizen or customer support	33.7% (68)	27.2% (55)	26.2% (53)	11.4% (23)	1.5% (3)	2.20	202
Budgetary restrictions	0.5% (1)	9.3% (19)	31.9% (65)	45.1% (92)	13.2% (27)	3.61	204
Inadequate quantity of personnel resources	14.2% (29)	16.7% (34)	37.7% (77)	26.0% (53)	5.4% (11)	2.92	204
Insufficiently skilled personnel	24.8% (50)	30.2% (61)	29.7% (60)	13.4% (27)	2.0% (4)	2.38	202
Unclear sustainability objectives (scope, goals, etc.)	23.9% (48)	33.8% (68)	26.4% (53)	13.4% (27)	2.5% (5)	2.37	201
Lack of consensus regarding the action plan	19.7% (40)	31.5% (64)	29.1% (59)	14.8% (30)	4.9% (10)	2.54	203
Challenge of quantifying the value of sustainability actions	12.4% (25)	26.9% (54)	39.8% (80)	17.4% (35)	3.5% (7)	2.73	201

Table F-17 Public-Sector Results

Answer the following questions regarding results using the scale provided.							
Answer Options	**Never**	**Rarely**	**Sometimes**	**Often**	**Consistently**	**Rating Average**	**Response Count**
How frequently does your organization take actions that are considered within your organization to be related to sustainability goals?	0.0% ()	8.8% (18)	42.9% (88)	32.7% (67)	15.6% (32)	3.55	205
How frequently does your organization measure the results of the organization's sustainability actions?	2.0% (4)	23.9% (49)	37.1% (76)	25.9% (53)	11.2% (23)	3.20	205
How frequently does your organization report its sustainability actions and results to employees?	6.3% (13)	34.6% (71)	34.1% (70)	19.5% (40)	5.4% (11)	2.83	205
How frequently does your organization report its sustainability actions and results to the public?	5.4% (11)	27.9% (57)	37.3% (76)	20.6% (42)	8.8% (18)	3.00	204
How frequently does your organization benchmark (compare) its sustainability performance with other similar organizations?	15.1% (31)	30.7% (63)	38.5% (79)	12.2% (25)	3.4% (7)	2.58	205

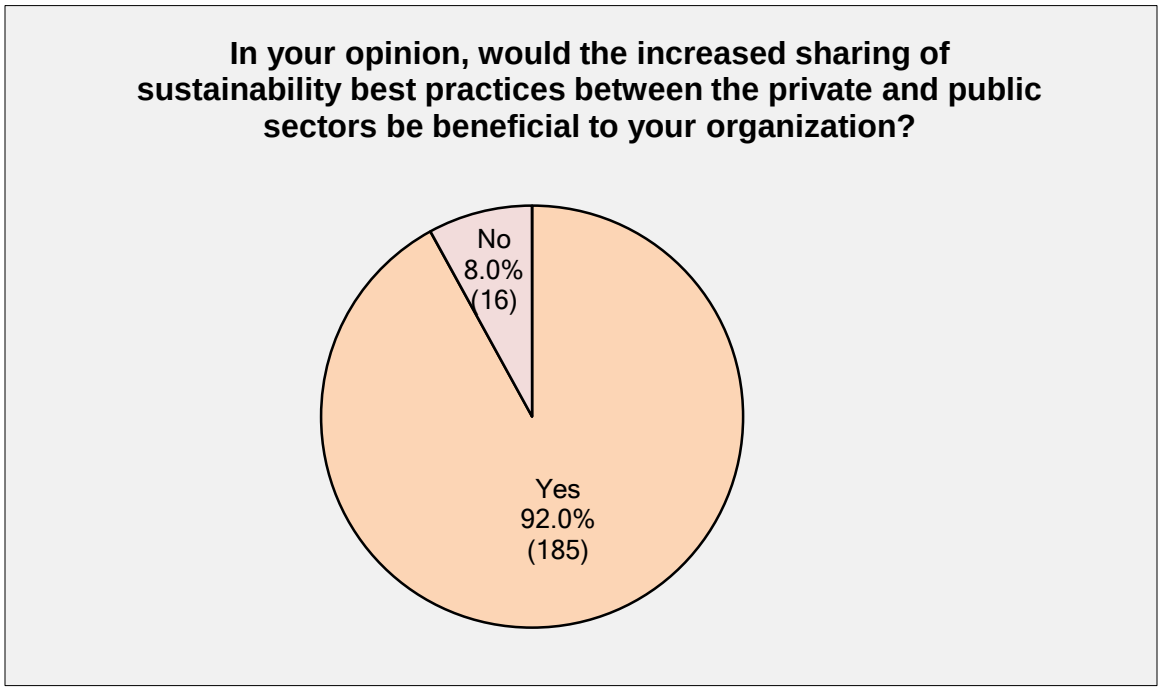

Figure F-2 Public-Sector Response to Best Practice Sharing

Table F-18 Public-Sector Write-in Actions

Additional actions (write-in text)
Stormwater management and education
Active grant funding obtained for related projects
Light fixture upgrades
Major emphasis on locally grown/raised produce and livestock to be distributed both locally and regionally.
Landfill methane gas recovery - CNG
Local food market
Regional development planning
DOE Grant EECBG
Constructed LEED Platinum Environmental Education Center
Regional Development Planning
Beginning to implement strategic (smart) growth policies, strategies re. infill development and infrastructure
Business initiatives and certifications
Just want to note that the "little to no impact measured" is because policies are so new it is too early to measure success, not because there hasn't been any.
Economic Development (promoting private business opportunity in green industry)
Active legislative participation on sustainability issues
Fuel efficient vehicles
Alternate fuel vehicles - CNG
Community gardens

Additional barriers (write-in text)
Unfunded mandates
Often the product "Du Jour" is not the best product in terms of sustainability and cost.
Lack of knowledge what to do
Lack of common understanding of the high priority of sustainability by citizens compared to the state of the economy, unemployment, poverty, etc.
Tea Party politics -- Republican party locally opposes sustainability
Uncertainty with regard to future use of land for hydraulic fracturing (natural gas) and potential impacts --> expected to be a major impact, but impact currently unknown
DOE grant restrictions EECBG
Lack of elected official support
Competition from other priorities
Political support for Carbon Footprint as measurement standard
Changing leadership priorities with new leaders initially suspicious of Sustainability
Diverse opinions on sustainability (breadth of definition controversial)
Lack of state/federal funding
Utilities rebate program
Organized opposition from out-of-state PACs
Unclear definition of sustainability that has caused us to develop working definition

Table F-19 Public-Sector Write-in Standardized Tools

Standardized tools to measure or report sustainability actions and results (write-in text)
Strategic Plan as a goal specifically related to environmental stewardship and sustainability. This goal has key performance measures or KPIs that are measured and reported to management on a quarterly basis.
We post our performance scorecard on our website.
Annual presentation of benchmark to Commission
Online monitoring of renewable energy installations/production; Progress w/ development of GHG emissions data collection; Measured reduction in energy usage year to year.
CACP 2009 - Clean Air and Climate Protection software; City Sustainability Report - energy efficiency and resource conservation measures (annual report); Microsoft Excel- several individual reporting modules and graphs
CACPS software by ICLEI; Energy Star
EPA's Portfolio Manager
Still working on them
Bi-weekly city-stat meeting where all supervisory staff report of defined tasks before the group
Yearly energy consumption tracking and report monitoring.
DOE Portfolio Program 69 buildings tracked; 11 buildings Energy Star certified; Designing and building LEEDs certified buildings.
We have adopted Quality of Life measures. Search Truckee Meadows Tomorrow for more info.
ICLEI's Greenhouse Gas Calculator
State of the Environment Report (Annual); City Budget Message (Annual)
ICLEI CACP software; EnergyStar Model Portfolio used for City buildings; Participant in the US DOE Better Building Challenge (use model portfolio to measure).
Portfolio Manager
Mostly comparison with other 6th class counties through data available from CCAP (County Commissioners Association of PA)
Community-wide GHG Emission Inventory
Baseline GHG Inventory completed. Each of the 43 initiatives in New Rochelle's Sustainability Plan has clear metrics to measure progress.
LEED Buildings

This survey assumes a standardized definition of "sustainability" amongst all of the polled organizations. I believe all municipalities strive to "sustain" their ability to provide services (water, sewer, roads, fire, police, parks, etc.) to citizens; however, the terms "eco-friendly" or "carbon footprint" or "social responsibility" may not always enter the conversation. In my jurisdiction, the terms "government efficiency" and "cost effective" are far more common, albeit still related to "sustainability." You may want to consider providing your own standardized definition of "sustainability" otherwise you are relying on many different perceptions of the concept.
TBL Report, Sustainability Plan, Quarterly reports for Sustainability Targets, Budget outcomes
Reporting on progress at monthly tribal council meetings and with annual written reports
Sustainability Progress Report (annually); Business Plan Measures (annually)
US EPA Portfolio Manager; ICLEI
Through grant funding reporting requirements
ICLEI CACP Software; EnergyCAP
We use Benchmarking agencies to help us evaluate ourselves
Climate Registry; Portfolio Manager; Utility Management software/hardware
Annual Green Initiatives Report
We are one of the few, if not only communities that has created a comprehensive "Sustainability Strategic Plan" for our City. This was done through the assistance of a professional consultants and significant public dialogue and input.
Greenhouse gas emissions monitoring tool; Resource Management System and biennial summary report to track status of resources and make recommendations for timely actions; General Plan Annual Report to track progress in implementing the General Plan and meeting housing goals
Our sustainability Commission has developed sustainability indicators which are local but speak to state and federal numbers. They are evaluated yearly. We also have a Sustainable Action Plan that has action items with required reporting to the Board of County Commissioners every year. There is also a Comprehensive Energy plan which is also reported on yearly to the Board. Furthermore, we have completed greenhouse gas emissions inventories for 2007 and 2010 which keep track of energy use and emissions for the county operations and the county as a whole.
ICLEI
GHG emissions inventory tools from the WRI.
Again, the responses above are based on the fact that most of these initiatives are still in the process of being implemented/approved and it is too early to measure and report any results.
Data
Energycap - the state energy data base helps us track energy use of county owned buildings; Energy Performance Contracting - using a firm to decide on ECMs to implement.
Sustainability Action Plan (SAP plan); Management Accountability Performance Plan (MAP plan)

CACP 2009 - Clean Air and Climate Protection Software; Microsoft Excel - Several individual reporting modules and graphs; Sustainability Report - Annual Comprehensive Report for sustainability measures
Power usage
Utilities consumption levels for all county facilities are recorded using Excel spreadsheets every month. The recorded data is converted to charts and graphs. The charts and graphs are incorporated into PowerPoint presentations in public meetings regarding the results of the investment in the program.
We have a sustainability action plan with goals, indicators, and actions that will be reported on quarterly by the various muni departments. Implementation of the action portion of the Plan is set to begin within the next 6 months, that said, many of the reporting items covered in the questions above will be changed to consistent at that time. As we speak we are reporting on an annual basis on disjointed efforts from different departments on their sustainability efforts and we are hoping the Plan will pull these all together into a more structured reporting format.
5 Year Sustainable Action Plan for Pima County Operations; Annual report card for the action plan.
We have undertaken significant energy saving measures in our facilities, with approx. 20% decrease in energy usage. We are also in the process of installing a solar field that will generate about 55% of our energy usage at our main county complex.

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