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Green Local Governments in Florida: An Analysis of Sustainability and Green Building Policies

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Green Local Governments in Florida:
An Analysis of Sustainability and Green Building Policies

by

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A thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Science
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ABSTRACT

Sustainable development is increasingly being integrated within local government planning across United States. Many communities are attempting to translate this general principle into specific and measurable terms. The urban sustainability planning literature has mostly focused on descriptive case studies of pioneering cities that have been characterized as true innovators in their sustainability efforts. Noticeably absent from the literature, however, has been an examination of the sustainable development claims made by local governments undergoing ‘*green*’ certifications. This study evaluates the commitment and efforts of municipalities and counties of Florida within the framework of Florida Green Building Coalition’s ‘*Green Local Government*’ standard through a web-based content analysis and a mailed survey. The findings indicate that local governments that have adopted this standard demonstrate a fairly high level of commitment to sustainable development. However, the adoption of specific local initiatives towards achieving this designation was found to be ad hoc and piecemeal. The findings also indicate that although some local governments have created novel incentive programs to promote green buildings, administrative, monetary and other barriers are

preventing the growth of green building practice. Finally, the societal and economic aspects of sustainability were found to be insufficiently addressed in the local government initiatives as well as in the certification requirements.

CHAPTER I

INTRODUCTION

Introduction

With diminishing natural resources and degrading environmental quality, the importance of sustainable development is increasingly being understood and accepted globally. Cities have traditionally been associated with unsustainable growth, sprawl, inequitable development, resource depletion and environmental pollution (Egger, 2006; Rogers, 2008; Gutman, 2007; Eaton, Hammond & Laurie, 2007). However, in recent years, policy makers have realized the critical role that cities can play in promoting sustainable development (Saha & Paterson, 2008; Prugh et al. 2000; Campbell, 1996). Local governments across the world have begun to adopt policies and programs that attempt to reduce their environmental footprints and ensure a sustainable quality of life for their residents (Betsill, 2001; Conroy, 2006; Krizek & Power, 1996; Maclaren, 1996). This new paradigm of attempting to address global challenges by taking concrete action at the local level is aptly depicted in the expression adopted at the United Nation's Conference on the Human Environment (1972): '*Think Global, Act Local*'.

Although environmentally sound community planning is not itself a new phenomenon, local governments have only recently begun to embrace the wider understandings of sustainable development, especially the triple notion of environmental protection, sustainable economic development and environmental equity. Adoption of community indicators and '*green*' certification systems are some ways by which local governments are attempting to translate their commitment to sustainability into specific

actions. The Green Local Government standard, developed by the Florida Green Building Coalition (FGBC), is one such certification system that attempts to help the Florida local governments adopt sustainable development. Its popularity can be judged by the growing number of cities and counties within the state that are pursuing this designation.

Particularly important within an urban setting is the built environment which has significant impacts on the natural habitats and human health. Incorporating ecological values in construction activities and thereby trying to lower the ecological footprint of the urban human environment is the construction industry's attempt to address ecological problems (Burnett, 2007). With growing awareness of the benefits realized through green buildings, governments too are encouraging, and in some cases mandating, the adoption of green building standards for public and private buildings (Vasenda, 2004).

My research is an attempt to evaluate the commitment of local governments in Florida to the three dimensions of sustainable development as well as an analysis of local green building policies within the Green Local Government planning framework.

This thesis begins with a concise problem statement and is followed by the research questions that I have attempted to answer through this study. The rest of this thesis is organized into four chapters. Chapter II provides a brief background on the concepts of sustainability and sustainable development as well as a review of the local sustainability planning literature. Chapter III describes the research methodology adopted by me. Chapter IV presents a discussion of my research findings and the concluding chapter revisits the significance of my research in light of my findings.

Problem Statement

A review of urban sustainability planning literature revealed that although there have been quite a few attempts to evaluate the sustainable development efforts of local governments in the United States, a majority of these studies were either restricted to a few early pioneer cities (eg., Krizek & Power, 1996) or included surveys of a large number of cities throughout the country (eg., Saha & Paterson, 2008; Jepson, 2004). While the former were too narrowly focused on cities that were already known to have championed sustainability, the latter were too broad in their scope to be able to account for regional geographic, climatic, cultural or political realities. Further, most of the survey-based evaluations were based on a set of sustainable development criteria subjectively arrived at by the researchers or by their peers, and were not based on any of the sustainability standards that are increasingly being adopted by communities and local governments. Additionally, none of the studies reviewed focused on local government experiences in instituting green building policies. Finally, my review of academic literature did not reveal any comprehensive evaluation of local sustainability efforts specifically within the State of Florida.

Florida is currently facing enormous developmental pressures resulting from population growth, rapid urbanization and its effects on agricultural lands, changing land uses, air and water pollution, and destruction of natural habitats. Furthermore, given its large coastline, the state is also expected to face significant effects of global climate change in terms of rising sea levels, erosion of coastal lands, rise in the number of unpredictable weather events, increased salinity in underground water sources and loss of land. In light of these ecological and geographical realities, coupled with its political

realities, Florida's local governments are uniquely positioned in ushering in the age of sustainable development.

The fact that the green local government certification and green building standards are fairly new phenomena and that governments have only recently begun to adopt these frameworks to meet their sustainability goals may be possible reasons for the absence of any such studies in the existing literature. Given the growing popularity of these certifications among Florida cities and counties, a review of their performance is imperative. The present study is an attempt to address this void in the environmental policy research as well as to review the rising grassroots-level sustainability action in Florida.

Research Questions

The purpose of this study is to evaluate the commitment of local governments in Florida to the principles of sustainable development in their planning practices as well as their performance within the Green Local Government framework. Further, considering the significant role of green buildings in urban sustainability, my research also delves into the experiences of Florida local governments in adopting green building policies. The assessment, limited to only those Florida municipalities and counties that have adopted this Green Local Government standard, was carried out through an internet based content analysis of local government websites and the distribution of a mailed survey to city and county government officials. Specifically, my research attempts to answer the following four questions:

- 1) Are the Green Local Governments of Florida adopting sustainable development as an overarching development framework?
- 2) To what extent do certified local governments fulfill the sustainability criteria of the Green Local Government standard?
- 3) Do the sustainability initiatives being adopted by the Green Local Governments equally address the environment, economy and equity dimensions (also referred to as the 'Three Es') of sustainable development?
- 4) Are the Green Local Governments promoting green building practice, and what are the major obstacles they face in adopting local green building policies?

CHAPTER II

LITERATURE REVIEW

This chapter presents a brief background on the various concepts relevant to my research as well as an outline of the review of existing literature performed by me. The various concepts described include the definitions and meanings of sustainability and sustainable development, significance of sustainable development in the modern urban setting, adverse environmental impacts of the built environment, and the concept of sustainable construction. This is followed by a review of local sustainability planning literature. I then describe the Florida Green Building Coalition's Green Local Government standard and the growing trend of local governments in Florida pursuing this designation. It is within the framework of this standard that I have evaluated local sustainability efforts of Florida local governments. Finally, I review the green building movement and green building standards prevalent in Florida.

Defining Sustainability

The concepts of sustainability and sustainable development have been discussed and debated extensively in the literature. Worster (1993, p. 144) has traced the roots of the word *sustainable* to the late nineteenth-century "sustainable yield" forestry practices in Germany; however, its first use in reference to modern human development was probably made in the hugely popular account of global resource use, *The Limits to Growth* (Wheeler, 2000). While describing the potential catastrophic effects of continued population and resource trends at that time, the authors stated 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, Meadows, Randers & Behrens, 1972, p. 24). Several international events during that period of time, including the United Nations Conference on the Human Environment held at Stockholm in 1972 as well as the 1973 energy crisis, also contributed to understanding the importance of long-term development trends (Wheeler, 2000).

There is general agreement that the concept of sustainability gained widespread prominence in scientific and political discussions only with the publication of the Brundtland Report by the World Commission on Environment and Development (WCED) in 1987. This report, entitled *Our Common Future*, defined sustainable development as:

“The development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development, 1987, p. 43).

As is evident, this definition places a major emphasis on intergenerational equity, implying fairness to future generations (Berke & Conroy, 2000). Although sharp differences have since arisen over the interpretations of this definition, my review of relevant academic literature revealed a general consensus over the importance of Brundtland Commission’s role in bringing the sustainability discussion into the mainstream internationally (e.g., Wheeler, 2000; Berke & Conroy, 2000).

The concept of sustainable development came under the spotlight and renewed debate at the 2002 World Summit on Sustainable Development in Johannesburg and the United Nations 2005 World Summit in New York City. At these global meetings, the

original definition of sustainable development, as presented by the Brundtland Report, was further built upon to include the dimensions of economic and social development – as reflected in the strapline ‘*people, planet, prosperity*’ (Eaton, Hammond & Laurie, 2007).

Hammond (2004) has represented this tripartite notion (popularly referred to as the *Three Pillars* model) as a Venn diagram (shown in Figure 1), wherein sustainability is depicted as the central point of convergence of societal, economic and environmental resources – all of which are essential in ensuring the welfare of the present and future generations (Glavic & Lukman, 2007). The convergence of these values, sometimes referred to as the “three Es” of sustainable development, point to the need for making the “conventional economic imperative” of maximizing economic output to be accountable to both an “ecological imperative” to protect nature, and a “social equity imperative” of ensuring human justice (Berke & Conroy, 2000, p. 22). Campbell (1996, p. 297) has described this as a triangular model – the “planner’s triangle” – that represents the confluence of conflicts and opportunities provided by the disparate languages of these three components. The participation of internationally oriented environmentalists as well as some ethicists and economists in the early discussions of sustainability further helped in making this “reconciliation of economic, environmental, and social justice needs” an “enduring theme” of sustainable development (Wheeler, 2000, p. 134).

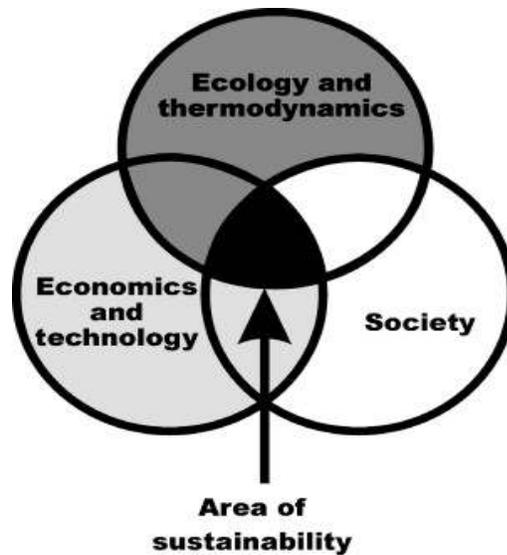


Figure 1: Venn diagram representing the ‘Three Pillars’ model (Hammond, 2004, p. 615).

Subsequently, a large number of formal definitions for sustainable development have appeared in scientific literature (Eaton et al., 2007), but in principle, they remain similar to the Brundtland concept presented in 1987. Glavic and Lukman (2007) added a fourth dimension of politics, observing that political situations will play a crucial role in applying the sustainable development paradigm at local, regional, national and international levels. The volume of international literature on this subject grew rapidly and several guides to this literature have also been published (Mitlin, 1992; Beatley, 1995; Wheeler, 1996).

Yet, in spite of a general consensus on the underlying principles, the concept remains contested and carries a wide range of meanings with regard to the practical implementation of these principles (Egger, 2006). Broad definitions of sustainable development, such as that of the Brundtland Report, have often been criticized for not being specific and practical enough, and for being open to various, often conflicting,

interpretations that typically reflect the political and philosophical position of the proponents (Burnett, 2007). For example, Wheeler (2000, p. 134) has criticized the Brundtland definition as being anthropocentric and involving the “highly subjective” concept of “needs”. Other definitions that involve the notion of *carrying capacity*, although recognized as having important educational value, have been criticized because of the apparent difficulty in calculating nature’s carrying capacity at any level. Similarly, the definitional approaches involving the economic concept of *natural capital* have been faulted for relying too heavily on economics for valuing non-economic values (Wheeler, 2000).

Currently prevalent definitions vary widely in their intent and scope, touching upon disciplines as diverse as planning, architecture, ethics, business, agriculture and psychology; and although the debate over its specific meanings continue, sustainability practitioners have been able to agree upon the three major goals of the ‘three Es’ (Berke & Conroy, 2004).

Some researchers have sought to study different definitions and identify common themes. For example, Berke and Conroy (2000) have identified four key characteristics of sustainable development from the existing literature: continuous *reproduction* of the system to ensure long-term self-revitalization; *balance* among environmental, economic and social values; *linking local to global* concerns; and a *dynamic process* for continuous action, evaluation and evolution.

Although this literature review is not intended to be a compilation of all sustainability definitions, listed below are two working definitions of sustainable

development as applied to urban planning that have been adopted by some of the studies that I reviewed for my research design (methodology):

- “development that improves the long-term health of human and ecological systems” (Wheeler, 2000, p. 134).
- “dynamic process in which communities anticipate and accommodate the needs of current and future generations in ways that reproduce and balance local social, economic, and ecological systems, and link local actions to global concerns” (Berke & Conroy, 2000, p. 23).

More recently, attempts have been made to develop region-specific variations of the concept with clearly defined practical steps and strategies towards achieving sustainability (Renn, Goble & Kastenholz, 1998). Another recent trend is the development of quantifiable, long-term sustainability targets and indicators to track the progress towards achieving those targets (Graedel & Klee, 2002; Hammond, 2006). The use of indicator-based and standardized approach in measuring sustainable development performance is discussed in the literature review.

Here, it is important to make distinction between the terms *sustainable development* and *sustainability*. According to Parkin (2000) and Porritt (2000), sustainable development can be thought of as a *process* or *journey* towards the *destination* of sustainability. Thus, whereas the former is an on-going evolution, the latter can be interpreted to be an ideal. However, it is pertinent to note that this *ideal* has been argued by some as not being easily definable from a scientific perspective and that setting up ‘system conditions’ for measuring sustainability is more about making a political and ethical statement, and lacks any real scientific consensus (Upham, 2000).

The Need for Urban Sustainability

Central to the understanding of sustainability and sustainable development is human population, the numbers and actions of which have been proven to significantly impact the global environment (Egger, 2006). In recent times, the concepts of *carrying capacity* and *ecological footprint* have been used to understand the challenges posed by increasing human population, growing urbanization and consumptive lifestyles on the natural environment. As explained by Egger (2006, p. 1236), “the global impact of humanity on the planet is a function of the total number of people and their collective behavior”. It is a well-documented fact that with increasing human population and degrading environmental quality, the human ecological footprint is increasing dramatically and the Earth’s carrying capacity is shrinking rapidly.

Growing urbanization and expanding cities around the world are central to present day ecological challenges. Whereas almost two-thirds of humanity lived in rural areas in 1950, today, towns and cities are home to half the global human population, according to the United Nations Center for Human Settlements – Habitat (United Nations Center for Human Settlements, n.d.). In the past several decades, cities have become centers of manufacturing and service industries, employment, higher learning and trade, economic hubs and information portals. These are being fed by, and result in, massive rural to urban population shifts across the developed and developing nations. According to United Nations estimates, by 2030, three-quarters of the world’s population will live in urban areas. The growth of cities is predicted to further continue to a population of 9 billion by the year 2050 (UNCHS, n.d.).

Rees and Wackernagel (1996, p. 223) have pointed out that cities, by being “nodes of energy and material consumption”, are “causally linked to accelerating global ecological decline” and that they by themselves are not sustainable. Rogers (1998) has compared cities to huge parasites by the virtue of the fact that they consume three-quarters of the world’s energy and cause three-quarters of global pollution. Wackernagel and Rees (1996) have also described how modern cities survive on ecological goods and services appropriated from natural flows and commercial trade from all over the world. It is therefore not surprising that cities have been found to be unsustainable - their ecological footprints exceeding their actual biocapacities, according to some studies, by as much as 15-150 times (Doughty and Hammond, 2004).

As Egger (2006, p. 1236) pointed out, cities are not merely “physical containers storing people, goods and knowledge”, but complex systems. Also, the scale of impact on the environment and the pattern of waste flow through the cities is what differentiate them from other kinds of ecosystems present on the Earth (Egger, 2006). The ‘Extended Metabolism Model’ developed by Newman and Kenworthy (1999) describes the city as a system that operates by way of balancing resource inputs with waste and liveability outputs, in a manner very similar to biological ecosystems; the major distinction being that the city systems do not necessarily absorb back all its waste.

Although it has been sufficiently proved that modern day cities and urban areas are unsustainable and cause global ecological decline, scientists have also argued that cities and their inhabitants can play an important role in achieving global sustainability (Rees and Wackernagel, 1996). Eaton et al. (2007) notes that although the concept of sustainable cities might seem ‘utopian’, cities do have the potential to conserve energy

and reduce their environmental impact. Sustainable cities have been defined as “beautiful, compact, creative, diverse, promoting an equitable and just distribution of amenities and resources, and facilitates ease of contact and mobility” and as systems that “ensure resource efficiency, minimize environmental impact, and provide a safe infrastructure, where the built form and landscape are balanced” (Eaton et al., 2007, p. 16). This idea of sustainable cities has been depicted in the *circular metabolism* concept (see Fig. 2-B) by Girardet (1992, 1999), wherein the cities can move towards sustainability by minimizing new inputs and maximizing recycling, unlike the *linear metabolism* model in which cities consume and pollute at a high rate (see Fig. 2-A).

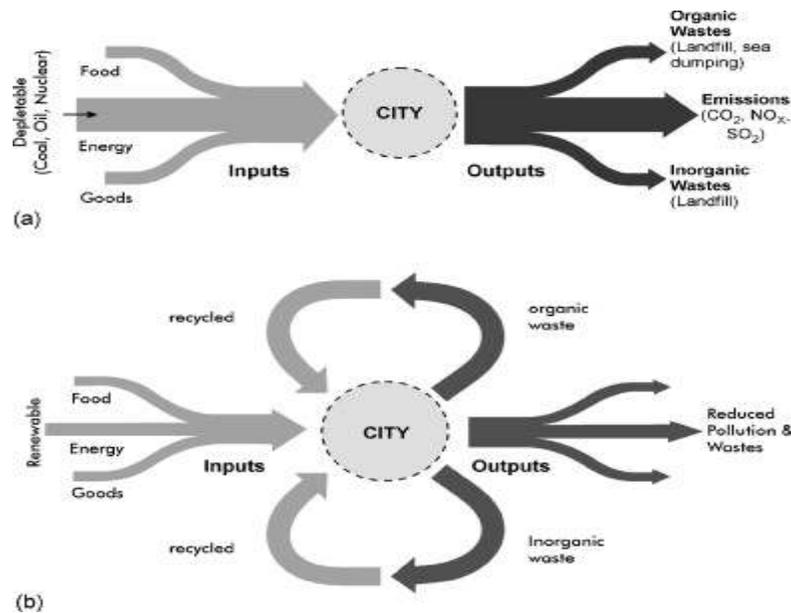


Figure 2: The ‘metabolism’ of cities: towards sustainability A) Linear metabolism B) Circular metabolism (Doughty and Hammond, 2004, p. 615).

Researchers studying various aspects of urban sustainable development have argued for the implementation of sustainability policies at a local level rather than at higher levels of government. For example, Prugh, Costanza and Daly (2000, p. xv) argue that:

“Despite appearances, [sustainability] is not primarily global. To be sure, the world’s the stage; a sustainable community or nation surrounded by unsustainable neighbors is a brave failure... But we believe communities are the primary locus of responsibility for creating a sustainable world. The admonition ‘To Think globally, Act Locally’ retains its wisdom despite years of bumper-sticker over-exposure” (Prugh, Costanza and Daly, 2000, p. xv).

Based on a case study of three metropolitan areas in North America, Wheeler (2000) proposed that many aspects of sustainable development, including landuse, transportation, air quality, water quality, ecosystem protection, affordable housing and social equity are suitable to be addressed at the local or regional levels in order to better leverage active community participation and bottom-up planning.

Berke and Conroy (2000) have used their working definition of sustainable development to derive a set of six basic and comprehensive principles with respect to evaluating local (i.e. city) level planning policies of thirty communities across the US. These principles are: harmony with nature, livable built environments, place-based economy, equity, polluters pay, and responsible regionalism. Their study also showed that these concepts can be more effectively put into practice at the local planning level (Berke and Conroy, 2000).

Urban Sustainability Planning in the U.S.

The early history and evolution of sustainable planning as well as current policy trends in the US have been well documented in the planning literature. Wheeler (2000)

presents a review of the historical evolution of metropolitan planning from its origin in the nineteenth century when regional government structures were required to meet the rapid growth and service demands of industrial cities, to the active efforts of governments to shape the spatial form of metropolitan regions and coordinate land use with public transportation in the years immediately following the second World War.

However, towards the last few decades of the twentieth century, the needs shifted to providing services to growing urban areas, promoting social equity and halting central-city decline. These issues began to be addressed by local planning programs, which although being only partially successful, were nevertheless driven with impulses very similar to the current urban sustainability objectives (Wheeler, 2000). Wheeler's (2000) study has also documented the rise in the number of metropolitan sustainable-related initiatives in spite of the perceived lack of political will, institutional capacity, weak planning structures and lack of incentives at the regional and local levels.

According to Chifos (2007), the concept of sustainable development began to be integrated in policy making and planning in the United States subsequent to its participation in the 1992 United Nations Conference for Environment and Development (UNCED) in Rio de Janeiro. Between 1993 and 2000, the federal government led the integration of the concept into federal-level policy and programs, creation of new federal institutions, new funding for research, and reorganization of offices, strategies and agency missions. The federal government's efforts offered legitimization, inspiration, funding and technical support to lower levels, thus giving rise to a grassroots sustainable movement (Chifos, 2007).

This growing grassroots enthusiasm for sustainable development closely followed the efforts by planners and academicians to explore the role of sustainability in planning theory and practice (Chifos, 2007). The concept of sustainable development is increasingly being acknowledged and put into practice inspite of the presence of numerous definitions, debates and uncertainty about implementation techniques; the question of “how?” is gradually replacing the questions of “why?” and “should we?” in the literature (Chifos, 2007, p. 436).

Chifos (2007) has reviewed three federal-level sustainable community programs with a view of examining the application of sustainability principles at the community planning level and evaluating the potential for federal partnerships for community development. These three programs were the Center of Excellence for Sustainable Development (CESD) in the Department of energy, the Sustainable Development Challenge Grant (SDCG) created by the EPA, and the Transportation, Community and System Preservation Program (TCSP) created by Department of Transportation. This study revealed some inherent barriers and challenges faced in the process of implementing local level sustainable planning, such as a conflict between economic and ecological uses of natural resources, and budget reductions due to politicization of sustainability (Chifos, 2007).

Noting that although the United States has never adopted a comprehensive sustainable community policy or strategy, the initial movement at the federal level that began with the creation of the President’s Council on Sustainable Development (PCSD) by the Clinton-Gore administration, did set the stage for potential federal-local partnerships for implementing the sustainability agenda (Chifos, 2007). However, the

lack of strong federal leadership provided opportunities for state and local organizations to lead sustainability efforts.

Wheeler (2000) observed that although there was little focus on cities and urban development by sustainability advocates in the early 1990s, grassroots efforts at the municipal levels began appearing in the 1990s internationally. While some of these efforts were initiated by state and national governments, others were supported by international bodies such as the European Community, the World Bank as well as the UN agencies (Wheeler, 2000). Some other semi- and non-governmental organizations that have developed local sustainability planning programs or are working in partnership with local governments across the United States and internationally are: the International Council for Local Environmental Initiatives (ICLEI), Redefining Progress, The U.S. Conference of Mayors and the Mayors Climate Protection Center, the Sustainable Communities Network, and the National League of Cities.

Sustainable development is becoming an integral part of urban design and planning and this fact is validated by the various international consensus documents such as the Earth Summit's Agenda 21, UN Habitat Agenda, Ahwahnee Principles, the Charter of New Urbanism as well as publications of the European community and President's Council on Sustainable Development (Wheeler, 2000). These and other documents present a wide variety of urban sustainability objectives which address not only the long-held concerns of creating humane and environmentally sensitive landscapes, but also recent developmental trends of suburban sprawl and rising inequities between central cities and suburbs (Wheeler, 2000).

In the year 2000, Wheeler (2000) documented a rising trend of sustainability policy being adopted by local planners, however the study also noted that these plans were in very early stages almost everywhere in North America and that very few of them were being systematically implemented (Wheeler, 2000). A growing number of communities across the United States are adopting sustainability principles and applying them into specific policies.

The growing threat of global climate change and vigorous international discussions on reductions in greenhouse gas emissions in recent years have renewed the need for urgent government policies that are based on sustainable development principles. Although climate change is usually perceived as a global issue, many researchers have argued that city governments will play a crucial role in addressing these challenges and that countries will be unable to meet international climate change commitments without action at the municipal level (Betsill, 2001).

The barriers and opportunities that are inherent in attempting to promote sustainability locally are also well documented in the literature. Wheeler (2000) has attempted to identify the challenges and opportunities faced in sustainability planning at regional and local government levels in his study of planning experiences of three North American metropolitan regions viz. Portland, Toronto and San Francisco Bay metropolitan areas. Some of the obstacles identified were increasing jurisdictional fragmentation of urban areas, declining political power of cities and absence of infrastructural tools and effective institutional mechanisms.

Interestingly, the study also revealed several local factors that contributed to successful local sustainable planning in the study areas: the presence of strong

government and non-governmental institutions, communicative planning and consensus building through active stakeholder involvement, and a long history of citizen activism, public education and social learning (Wheeler, 2000).

Another very important factor in successful urban sustainability initiatives is the creation of a “dramatic metropolitan vision or plan” that explicitly or implicitly promotes sustainability and has a strong governmental commitment. As demonstrated in Wheeler’s (2000) study, such a vision document outlining a city’s sustainability goals may be developed by the city administration (such as the 2040 Framework Plan by Portland-area’s Metro Council), by city-based non-profit organizations (example San Francisco Bay Area-based Greenbelt Alliance’s “Towards the Sustainable Metropolis” report) or by a partnership between the public and private bodies (Wheeler, 2000). However, it is important to note that the presence of such a vision or plan is not alone likely to come to fruition if organizational efforts are not supported by coordinated participation of all government offices/agencies and an active pressure from social movements, nongovernmental organizations and grassroots activism (Wheeler, 2000).

Berke and Conroy (2004) have carried out a similar survey-based study of forty-four communities across the United States to identify and analyze factors that support a successful sustainable development plan implementation. Their study evaluated three factors that were expected to influence the success of sustainable development plans of the surveyed cities: political support within communities, efforts designed to support public participation, and resources committed to plan preparation (Berke and Conroy, 2004). The results of this study indicate that both state planning mandate and participation breath have a positive impact on the success of local sustainable

development policies. However, the survey also revealed that mere inclusion of sustainability concepts in a city's planning documents without a follow-through in the actual policies typically tend to result in poor performance (Berke and Conroy, 2004). The authors also recommend that to ensure better sustainability implementation, local governments should continue public education efforts, encourage public participation emphasize translating ideals into practice through effective policies.

The literature has extensively addressed not only the characteristics of a sustainable community, but also the process by which a sustainable community is developed and the conflicts that are encountered in this process (for example, Beatley, 1995; Campbell, 1996; Rees, 1995; Berke and Conroy, 2000; Blowers, 1993). These conflicts are both "inherent" and "necessary" as they reflect the complex decision-making environment required for pursuing and balancing of the three main goals of sustainability (Berke and Conroy, 2004).

Researchers have stressed upon the importance of collaboration and stakeholder involvement in the planning process, arguing that a community-based planning process is not only the best way to address the conflicts but that it also promotes a sense of community, equity and empowerment (Berke and Conroy, 2004; Innes, 1996). Participation research has also clearly shown that when people are involved in the decision making process, they are more likely to support the plan implementation (Grant et al, 1996; Potapchuk, 1996).

Research has also focused on the important factor of resource commitment in the successful implementation of community-level sustainability plans. The term "resource" has a wide meaning here and refers to anything from local technical and funding

capacities, political and community support (Berke and Conroy, 2004). Finally, the presence of state planning mandates has also been identified as a crucial factor that positively affects the outcome of local sustainability plans. Studies have shown that communities in the US states that mandate local environmental planning have higher quality plans and successful implementation (Berke and French, 1994; Berke et al, 1996; Dalton and Burby, 1994).

Wheeler (2000) also makes the case for a strong multipurpose regional government that offer both effective incentives and mandates between existing institutions at state, regional and local levels. He also maintains that sustainability initiatives are more effective and prone to be successful when the goals are established at higher levels of government to have the much-necessary broader perspective, and when the implementation is done locally to maximize grassroots involvement and avoid “heavy-handed top-down planning” (Wheeler, 2000).

Part of the challenge facing urban sustainable planning locally is the manner in which metropolitan regions have grown in size and complexity in the last few decades and the lack of existing regional/local government structures and mechanisms to address growth/sustainability issues in a coordinated and comprehensive manner (Wheeler, 2000). Furthermore, the absence of equity considerations at many government levels and competitions for local tax base among local governments significantly undermines any effective planning program (Wheeler, 2000).

Betsill (2001) studied the experience of seventy-five cities that participated in Cities for Climate Protection (CCP) campaign sponsored by the International Council for Local Environmental Initiatives (ICLEI). ICLEI is an international association of local

governments that provides support for sustainable development action at the local level, and has over 1075 cities, town and counties and local associations as its members (International Council for Local Environmental Initiatives, 2008). The study revealed many opportunities and obstacles faced by the participating local governments in meeting the CCP program's sustainability goals.

The institutional barriers encountered by city governments identified in this study were the often limited jurisdiction and mandates available, limited administrative capacity in terms of skilled manpower and funding, significant upfront investment costs and limited control of local utilities and other institutions (Betsill, 2001).

The study also made the interesting observation that although a growing number of municipal governments are taking action to negate climate change and control local greenhouse gas emissions, the primary driving force behind such action was not climate change in most cases. Rather, overall sustainability and emissions control were "co-benefits" of local programs and policies that were primarily intended to address other objectives, such as reducing local air pollution, enhancing alternate transport, save money and increasing the general liveability of their communities (Betsill, 2001, p.402).

Because of the concern that cities may report emissions savings over existing policies and thus not move beyond "business-as-usual", the CCP program encourages cities to look for new opportunities, specify 'existing' and 'pending' measure, and submit annual reports on the progress made (Betsill, 2001, P.402). In order to be truly effective, local sustainability efforts should be supported and complemented by state, regional and federal regulations, encourage active community participation, and focus on applying

globally relevant concepts to solve local problems in order to avoid larger broader debates over climate change (Betsill, 2001).

Warner (2002) conducted a web-based research of thirty-three of the largest US cities to evaluate their local sustainability efforts from the environmental justice perspective. This research revealed that only five communities from the entire sample appeared to have built environmental justice into their local definition of sustainability and implemented it into practice through various policies and programs; only one project seemed to establish measurable indicators for environmental justice component of their local plan (Warner, 2002). This study concluded that although communities are beginning to incorporate environmental justice, these efforts are at best fragmented, and at worst, symbolic. The author recommends a closer collaboration between communities and organizations active in this field in order to develop a stronger political base for the justice movement (Warner, 2002).

The issue of environmental justice has been covered extensively in the sustainability, planning and social sciences literatures. Warner (2002) considers the signing of Executive Order 12898 on 'Federal actions to address environmental justice in minority populations and low-income populations' (<http://www.epa.gov/oswer/ej/html-doc/execordr.htm>) in February 1994 a "watershed" when "environmental justice became an official public concern to be incorporated into the mission of all federal agencies" (Warner, 2002, p. 36). The scope of environmental justice has been described too in the literature. According to Warner (2002, p. 36), its scope "goes beyond how toxic and environmental risks are distributed. Issues of social, economic and racial equity should be incorporated not only into our relationship with 'nature', but also into the ways we create

and manage our built environments”. Further, according to Agyeman et al. (2003, p. 2), “a truly sustainable society is one where wider questions of social needs and welfare, and economic opportunity are integrally connected to environmental concerns”.

Jepson (2004) has similarly carried out a survey-based research of 390 cities across the United States to evaluate their local policies with respect to the three core elements of sustainability, namely, environmental protection, promotion of social equity, and the achievement of place-based economic development. The evaluation was carried out using thirty-nine policy criteria that comprehensively contribute to sustainable development, and were identified based on a review of sustainability literature (Jepson, 2004). The results of this study were quite different than that of other similar studies. The reasons for poor local performance were identified to be low public interest, inappropriateness, and lack of knowledge rather than political or institutional incapacity (Jepson, 2004). Interestingly, this study revealed that most cities appear to adopt sustainable development not as their development framework but rather they select certain policies in a piecemeal fashion, possibly for reasons other than achieving overall sustainability. Also, the analysis showed that all communities have an equal potential to implement sustainable development policies without regard to differences in their size, regional location or educational attainment; instead, the active participation of planning offices and strong local leadership appear to be important factors in determining local sustainability performance (Jepson, 2004).

Saha and Paterson (2008) have carried out a similar evaluation of local sustainable development initiative of 216 medium to large cities in the United States using a set of thirty-six indicators that represents sustainability performance across the

three Es. The findings were similar to that of Conroy's (2006) in that sustainable development has not emerged as a planning paradigm for most cities surveyed. Rather than adopting sustainability principles in their overall developmental framework, most cities were found to adopt individual policies in a piecemeal fashion and for reasons other than achieving sustainable development. These other reasons range from cost effectiveness, political expediency and initiatives being perceived as analogous to traditionally good planning practices (Saha and Paterson, 2008).

The other major factor impacting the local performance was identified to be the bureaucratic structure of local governments wherein the administration is divided into specialized departments with narrow individual mandates and little or no interaction amongst them, which precludes a holistic approach to adopting sustainable development (Saha and Paterson, 2008).

My review of sustainability literature revealed that all research carried out to study sustainability initiatives at the local level in the United States comprised of case studies of a few pioneering cities and surveys of cities across the country. While the sustainable development model of a few large cities can certainly be an inspiration for others, it might not necessarily work for smaller communities due to a variety of factors. Also, these big cities tend to be unique case studies and their individual performances fail to reflect the overall sustainable development trends in communities across the country or in a specific geographic region. On the other hand, although studies that employ nationwide surveys better reflect the general ways in which communities are adopting sustainability in their planning process, they fail to account for the regional differences in geo-political, cultural, climatic and other factors that either directly or indirectly play a

role in how a city deals with the challenges of climate change and incorporate the principles of sustainability into its practices.

Green Local Governments

Local governments are increasingly adopting sustainable initiatives that are both specific and measurable. These efforts typically involve the development of suitable community indicators that can track sustainability and provide an objective measure of performance:

“Community Indicators are measuring systems designed, developed, and researched by the community members themselves. They are like instrument panels that provide citizens with clear and honest information about past trends and current realities, and assist them in steering their communities on their desired course” (Redefining Progress, Tyler Norris & Sustainable Seattle, 1997, p. 1).

The growing trend of cities employing sustainability indicators that can measure progress towards sustainable development goals has been documented by Wheeler (2000). Such indicators typically serve multiple purposes – they are an efficient way of developing consensus on goals, effective way to measure and demonstrate performance, and are can also be used as a public relations and educational devices (Maclaren, 1996). Indicators or performance standards have in a limited way been widely in use with good success. Some examples are state and federal air and water quality standards, traffic measurements and ridership figures, and average residential density numbers (Wheeler, 2000). However, more comprehensive sets of indicators that better reflect the growing definition of sustainability and that attempt to address modern-day developmental challenges have

only recently been employed by local governments (some examples of big US cities employing their own community indicators/checklists).

Although a few large, pioneering cities in the United States have developed their own set of community sustainability indicators, other communities are increasingly adopting the certification approach in order to incorporate and demonstrate their sustainability efforts. Although a review of current non-academic literature indicates that a number of privately developed certification systems for sustainable communities have recently been developed across the country, the scope of this research and literature review is limited to the ‘Green Local Government’ standard developed by the Florida Green Building Coalition (FGBC).

FGBC is a Florida based non-governmental organization that has developed technical standards for a variety of green practices with an aim of providing independent third-party verification for green project planning in Florida. The portfolio of green standards developed by FGBC consists of five separate standards targeting green buildings, green development and green local governments. The ‘Green Local Government’ standard is meant for local governments that display conformance to a standardized checklist of sustainable development initiatives across a broad range of criteria that includes many types of green activities, and is organized in terms of local government department function (Appendix A). Each criteria in this checklist is assigned a point value, and local governments that incorporates a sufficient number of criteria such that they meet or exceed a minimum total point value are ‘certified’ or ‘registered’ as a Green Local Government. This way, the standard recognizes city and county

governments that have demonstrated “outstanding environmental stewardship” (FGBC Green Local Government Standard, n.d.).

According to FGBC (FGBC Green Local Government Standard, n.d.), the expected benefits of being certified a green city or county include gaining recognition and publicity for one’s environmental stewardship, better internal communication within the government, cost reductions, and effective risk and asset management. Although the standard primarily targets the environmental practices done ‘in-house’ within the various city and county government departments, the hope is that these actions will have a greater impact by way of making the entire community more sustainable. FGBC also stresses upon the “flexibility” of the certification process, wherein local governments are allowed to choose their own environmental targets and leverage existing programs to gain credits (FGBC Green Local Government Standard, n.d.).

This thesis represents the first comprehensive study of the use of FGBC Green Local Government standard in Florida.

Green Buildings

The built environment has a profound, complex and long-lasting impact on our natural environment. It is estimated that in the United States alone, buildings account for 70 percent of electricity consumption, 40 percent of raw material use and 30 percent of total waste output (U.S. Green Building Coalition Research, 2008). Also, the production and manufacture of building components as well as the construction process itself involves the extraction and movement of almost 6 billion tons of raw materials annually in the United States (Kibert, 2008).

Apart from the huge amount of wastes generated, the built environment is also responsible for emission of large quantities of carbon dioxide (a global warming gas) into the atmosphere through construction and related activities, and also by way of faulty urban planning and developmental practices that encourage automobile use. This way, buildings not only contribute to pollution and climate change, but also create a very high demand for energy and resources. They also impact human health and degrade environmental quality. Burnett (2007) has stressed the centrality of the built environment in the sustainable development debate because of its huge impacts on the environmental, economic and social dimensions of our society.

The green building movement has become popular due to concerns about diminishing resources, energy crisis and a growing realization of the ecological impacts of the built environment. In recent times, a new set of vocabulary has emerged in connection to the advent of sustainable construction: *high-performance construction*, *energy-efficient construction*, *green building*, *eco-design*, etc. - words that are often being used interchangeably. According to Kibert (2008, p. 6), the term *sustainable construction* is the most comprehensive and has been defined by the Conseil International du Batiment (CIB) as “creating and operating a healthy built environment based on resource efficiency and ecological design”.

The American Society for Testing and Materials (ASTM) defines green building as “building that provides the specified building performance requirements while minimizing disturbance to and improving the functioning of local, regional, and global ecosystems both during and after its construction and specified service life”. Further, it specifies that “a green building optimizes efficiencies in resource management and

operational performance; and, minimizes risks to human health and the environment” (ASTM, 2001, p. 2).

In particular, sustainable design aims at increasing the efficiency with which buildings and their sites use resources, and at reducing impacts on human health and the environment through better siting, design, construction, operation, maintenance, and removal i.e. the complete building life cycle. Green buildings usually make use of the concept of *whole-building design* or *systems thinking*, wherein all of a building’s components are integrated into a high-performing whole – a building that is ideally economical, resource efficient and provides a pleasant and healthy indoor environment to its users with a minimum environmental impact. Kibert (2008) notes that despite the prevalent use of the terms *ecological design*, *ecologically sustainable design*, and *green design*, truly sustainable green buildings are rare; instead, most of the existing green buildings incorporate incremental improvements over traditional construction methods, thereby charting a gradual evolution towards achieving complete sustainability.

Although it is generally accepted that green buildings can be cost effective by being resource-efficient, there is an ongoing debate over whether or not initial building costs outweigh the long-term savings and benefits. However, several recent studies indicate that the cost of green construction has come down in recent years and that there is a definite potential to save significant sums of money in the long-run (see Smith, 2003). These savings are typically achieved through lower resource consumption, and lower operations and maintenance costs. Improvement in employee/resident health and increased productivity can also lead to potential further savings on a long-term basis.

As pointed out by Kibert (2008), the green building movement has a long history in the United States. Events as diverse as the publication of the landmark book *Silent Spring* in 1962 and the Brundtland Report in 1987, the oil crisis of the early 1970s as well as the increasing awareness of global environmental issues such as ozone depletion and climate change have all led to a high level of public interest in energy efficiency and conservation. The World Congress of Architects of 1993 organized by the International Union of Architects (UIA) and American Institute of Architects (AIA) was a landmark event that brought the notion of sustainable construction under national spotlight. In the *Declaration of Interdependence for a Sustainable Future* that was released at this World Congress, architects recognized the importance of sustainability in the built environment and pledged to make sustainable practices a part of their professional responsibilities (Kibert, 2008).

Several energy-efficient building projects emerged in the U.S. during the 1980s and 1990s. Also appeared during this time some important pioneering green building resource guides, such as the *Environmental Building News* (first published in 1992), *Environmental Resources Guide* published by AIA in 1994, *Guiding principles for Sustainable Design* by the National Park Service in 1994, *Sustainable Building Technical Manual* produced by the U.S. Department of Energy in 1995, and *A Primer on Sustainable Building* by the Rocky Mountain Institute in 1995. Internationally, the British green building rating system BREEAM was developed in 1992 and two task groups on ‘Sustainable Construction’ and ‘Building Assessment’ created by CIB held important international conferences in Florida and in the U.K. These international efforts greatly influenced the creation of the U.S. Green Building Council (USGBC) in 1993 and the

earliest versions of its Leadership in Energy and Environmental Design (LEED) Standard as well as the American Society for Testing and Materials' (ASTM) green building standards.

In recent years, several building assessment and rating tools have been developed internationally and in the U.S. These systems provide measurable/quantitative performance indicators for green design aspects and typically express a building's comprehensive performance in terms of stars or standardized rankings (Ding, 2008). According to Burnett (2007), the relative 'greenness' of a building can be explained by the extent to which it achieves performance and sustainability standards, meets regulatory requirements, and improves over prevailing benchmarks of building environmental performance. This study focuses on local green building policies based on green building standards developed by two U.S. organizations – USGBC and Florida Green Building Coalition (FGBC). Both are briefly described below.

USGBC is a non-profit organization that develops green building rating and certification systems for various building types. The LEED green building rating system, developed by the USGBC, is a suite of voluntary, consensus-based national rating systems for developing high-performance, sustainable buildings. Each individual LEED product targets specific types of buildings. Currently, LEED systems are available for eight different building categories: new construction, existing buildings, commercial interiors, core and shell, schools, retail, healthcare, homes and neighborhood development (USGBC LEED Rating Systems, 2008). LEED emphasizes five key elements in design: 1) sustainable sites, 2) water efficiency, 3) energy and atmosphere, 4) material and resources, and 5) indoor environmental quality. The LEED tool is a third-

party verification system wherein designers and contractors supply project information that is subsequently verified by the USGBC. The Council then rates a project on one of four levels - certified, silver, gold, or platinum, based on the material submitted and on total points awarded (Sullivan, 2007).

Recent studies show that LEED rating system and green design in general has rapidly gained wide acceptance in the U.S. construction industry. The membership of USGBC has increased to more than 17,000 and includes corporations, governmental agencies, non-profit organizations etc. According to data available from USGBC, over 3.6 billion square feet of commercial building space is involved with the LEED certification system. The total number of LEED certified projects is 1,753 and that of LEED registered projects is 14,390 spanning across all 50 states and 69 countries, and an estimated \$464 million worth of construction registers with LEED every business day.

The FGBC has also developed three Florida-specific green building standards – for new and existing homes, high rise residential buildings, and non-residential construction respectively. A major advantage of state-specific standards over national standards is that the former are expected to take into account regional differences (climate, water, sun, energy resources, geology etc.) that play a vital role in construction practices. For this reason, the FGBC standards have been very popular within Florida and a number of local governments have implemented FGBC based regulations (FGBC Members, n.d.).

An unprecedented level of government initiatives, increased residential demand for green construction and improvements in sustainable materials are all factors believed to be driving the green building movement (USGBC Green Building Facts, 2008). The

fact that 18 states have adopted, mandated, or reviewed aspects of LEED for large state projects demonstrates that the LEED program has earned a strong political and administrative support across the nation. Also, all branches of the armed services as well as the U.S. General Services Administration have incorporated various features of sustainable design in their building program guidelines (Sullivan, 2007).

A preliminary literature review shows that numerous efforts have recently been made to promote this growing trend in green building both in the public and private sectors. The White Paper on Sustainability published by *Building Design and Construction* in 2003 (Building Design and Construction, 2003) lists a summary of several important green building policy initiatives at the federal, state and local levels. A similar, though more comprehensive and updated list of LEED based initiatives is maintained by the USGBC (USGBC LEED Initiatives, 2008). A brief perusal of this listing shows that numerous state and local governments have instituted a variety of measures aimed at encouraging LEED certification. Such policy measures include incentives for private developers, regulations encouraging or requiring adherence to LEED rating system, stricter building and energy codes, and mandatory requirements for public buildings. It is thus evident that states, cities and federal government are potential key players in this growing trend.

Another major initiative on the national level is the 'Resolution on Energy Efficiency Measures in Buildings' adopted by the Council of State Governments in 2006. The Council recognizes the fact that buildings account for a substantial portion of both the national energy consumption and carbon emissions, and that they have significant impacts on the environment. The Council further believes that energy efficiency in state

buildings can be realized through various funding mechanisms at very little or no upfront cost. The resolution adopted by the Council encourages the states to implement energy saving measures in all existing state buildings and build all new state buildings according to LEED or similar high performance building standards (The Council of State Government Resolution, 2006). Although this resolution does not mandate the states to any specific action, it does set the overall policy direction at the interstate level. Sustainable construction practices and green building certification are included also in the U.S. Conference of Mayors Climate Protection Agreement and the ‘Energy and Environment Best Practices’ (The U.S. Conference of Mayors, 2008).

The State of Florida too has made significant progress in this direction. Green building policy initiatives have appeared in several Governors Executive Orders, such as the Order No. 07-126 (‘Establishing Climate Change Leadership by Example: Immediate Actions to Reduce Greenhouse Gas Emissions from Florida State Government’) which mandates the Department of Management Services to adopt LEED standards for all new and existing buildings owned by the state of Florida (Florida Governor, n.d.). According to USGBC, several local governments (cities and counties) in Florida have enacted LEED based policy measures (USGBC LEED Initiatives, 2008). Similarly, six counties and fifteen cities in Florida have been certified by FGBC as ‘Green Local Government’ (FGBC Certified Green Projects, n.d.) and numerous other projects have been certified by FGBC under other categories.

Although it is generally accepted that green buildings have a lower environmental footprint and can save money by using resources more efficiently, debate has continued over the additional initial investment and risk involved in building green (Vasenda,

2004). Ding (2008) and Burnett (2007) have studied the overall market penetration of green building standards and have observed several barriers to the widespread adoption of green buildings. Some of the major barriers identified were perception that building green requires a substantial additional initial investment, lack of financial incentives and regulations for building green as well as a lack of communication, interaction and recognition between green building promoters and traditional construction market leaders (Ding, 2008 and Burnett, 2007).

The lack of local regulatory incentives is especially expected to be a major factor in Florida because of the fact that the state has adopted a uniform statewide building code and that local governments within the state are not allowed to unanimously amend the state code. Florida originally had a system of locally-administered building codes and building code compliance and enforcement. However, after Hurricane Andrew caused an enormous destruction of buildings in the state, it was realized that building codes and their administration was a statewide issue, with statewide implications. This resulted in the creation of the Florida Building Commission and the development and implementation of a uniform Florida Building Code that serves as the sole document incorporating all building standards across the state. Although the law still allows for differences in standards in different locales, such differences are allowed only based on “compelling differences in physical conditions” and strive for overall consistency across the state and prevention of unwarranted local amendments (Florida Building Commission, 2004).

As noted earlier, a review of academic literature so far did not reveal any study that sought to survey and analyze the efforts of Florida local governments to promote

green buildings. This study also attempts to identify the barriers to building green in the local context as well as determining if the introduction of the new uniform Florida Building Code has any impact on the local governments' ability to promote green buildings.

CHAPTER III

RESEARCH METHODOLOGY

This chapter elaborates on the research methods employed by me to evaluate the overall sustainability efforts of Florida local governments within the framework of Florida Green Building Coalition's Green Local Government standard. Specifically, my methodology consisted of a web-based archival research, distribution of a mailed survey to local government officials, and a review of Green Local Government Application Tool document completed by green certified local governments. Unless otherwise specified, the term 'local governments' in this chapter refers to local governments that have adopted the FGBC Green Local Government standard.

Web-based Archival Research

The first phase of my research comprised of performing an internet based search of sustainability initiatives undertaken by local governments in Florida. This archival research was limited to studying the information available on the websites of municipal and county governments. Prior experience of researching on the web had revealed that information on community and government sustainability efforts is typically available on a variety of websites, including those of local media, non-governmental organizations and online environmental discussion forums. However, the strategy to include only government websites in my archival research was adopted for two reasons – to ensure that all information so obtained is official and thus validated, and to gauge the level of importance local governments attach to their sustainability initiatives by way of displaying such information on their websites. Further, a review of government websites

also helped me understand local administrative structures and in determining the target recipients for my survey questionnaire (discussed in the next section).

Since the performance of local governments was to be evaluated, at least partly, within the framework of the Green Local Government standard, the study sample was limited to only those communities within Florida that had demonstrated their commitment to pursue this designation. A review of the FGBC website revealed that a total of 26 local governments in Florida were in various stages of getting certified as a 'Green Local Government' (FGBC Certified Green Projects, n.d.). Out of these 26, 20 were municipalities and the remaining 6 were counties. Furthermore, a review of the USGBC website revealed that a total of 6 Florida local governments have demonstrated the implementation of various USGBC green building certification-based policy initiatives locally (USGBC LEED Initiatives, 2008). These 6 localities comprised of 3 municipalities and 3 counties. Out of these, 3 cities and 1 county were also found to be pursuing the FGBC designation; hence the total number of local governments that had adopted either of the two frameworks (FGBC or USGBC) was 29, comprising 21 municipalities and 8 counties. These 29 formed the entire study sample for my research.

The websites of all 29 local governments were accessed and studied extensively to gain information on the sustainability efforts undertaken by these communities as presented on their websites. The websites were searched for specific local policies and programs that incorporated or promoted the principles of sustainable development. All such initiatives found on the websites were duly noted, irrespective of whether they fulfilled any of the two certification requirements. The presence of a dedicated environmental or sustainable development department, office, team or personnel as well

as the existence of a vision or strategic document, master plan, or similar policy statements that outlines the environmental or sustainability commitment of the local government was also noted. Finally, the websites were searched for references to whether the local governments were incorporating stakeholder participation and addressing the three dimensions of sustainability (i.e. environmental protection, social equity and economic development) within their sustainability planning.

Since the websites of some of the larger cities and counties were expected to be extensive and contain voluminous information, a systematic approach for studying the websites was adopted. First, the presence of an environmental or sustainability department or office was checked. If found, the webpage of such a department or office was presumed to contain the links to all the information relevant to my research. In case such a dedicated webpage was not found, the webpages of other offices / departments that were presumed to carry out functions pertaining to the environment were searched. Some examples of such offices / departments include Solid Waste, Planning, Community Affairs and Neighborhood Development, Growth Management, Economic and Urban Development, etc. Finally, the government websites were searched for information on local initiatives by specifying the words “sustainability”, “sustainable development”, “green”, “environment” and “green buildings” in the ‘Search’ function on all websites that provided this option. This strategy was assumed to identify all pertinent information from the websites.

Survey Development and Implementation

In addition to the web-based content analysis, a survey was employed to elicit information about the sustainability efforts from all 29 local governments under study. The survey was intended to help supplement the sustainability-related data expected to be found or readily available online on the city and county websites. Also, the information received in response to the survey was expected to be more recent and updated than that uploaded on the internet. Furthermore, the survey was utilized to gain an insight into the local perspectives of sustainability and green buildings through administering a few open-ended questions.

The questionnaire used for the survey comprised of a total of eight questions divided into two sections (See Appendix A). The first section consisted of two questions and was designed to compile specific local green building programs and policies within the surveyed communities. Respondents were asked to provide the information in a tabular format that included a list of titles of each such initiative, its objectives, initiation date and history, target audience (wherever applicable), and a brief summary describing how each listed program relates to the government's overall sustainability goals. Respondents were requested to attach to the completed survey all available electronic copies of supporting documents for each initiative. A separate question asked whether local governments had instituted amendments to the statewide Florida Building Code to include green building provisions. If such provision(s) were made, an electronic copy of all such amendments as well as the date these were passed by the city/county was requested.

The second part of the survey questionnaire consisted of six questions that were designed to gain insight into the institutional dimensions of local sustainability planning as well as local government perspectives on sustainability principles. Responding municipalities and counties were asked whether they have adopted a vision statement, strategic plan, or other similar policy document that formally outlines their environmental or sustainability commitment. Respondents were asked to provide the date of formal adoption as well as an electronic copy of any such document. This was followed by a few open-ended questions that inquired whether the surveyed governments have identified benefits of and barriers to the adoption of green construction practices and identified stakeholders in formulating green building policies or programs. Finally, respondents were asked to briefly explain how sustainability and green building initiatives can address the ‘three Es’ of sustainability (i.e. environment, economy and equity) at the local planning level.

As required by the University of South Florida guidelines about research on human subjects, the questionnaire was accompanied by a short statement explaining the informed consent and voluntary nature of the survey. The survey was attached to an explanatory e-mail message and sent to the administrative head of each local government (Mayor or Manager for municipalities, County Administrator for counties) with a request to be forwarded another member of the administrative staff for completion. In all cases, the positional affiliation of the individual completing the survey was recorded, as this information would provide some information about the administrative structure in regard to sustainability. Respondents were requested to return the completed survey and any additional supporting documents electronically within fifteen days. At the end of that

period, a short e-mail reminder was sent to everyone who did not respond within the first fifteen days. In a few cases, telephone calls were made in lieu of electronic reminders when respondents had provided their contact information in their e-mail replies.

Analysis of Green Local Government Application Tool

All 26 local governments pursuing the Green Local Government designation were separately sent a request to provide an electronic copy of the certification's 'Application Tool' if they have already made this submission to FGBC. The Application Tool is a document that contains a summary of all the criteria requirements as well as the credit points earned and actions taken across a variety of government departments towards achieving the certification. Although the request to furnish this document was sent out to all the municipalities and counties under study, only those local governments that have completed the certification process were expected to have a completed Application Tool.

Geographical Setting

The study area of my research encompasses 29 local governments within the state of Florida. Of these, 21 are municipalities and 8 are counties. Figure 3 presents the location of the 21 municipalities and Figure 4 depicts the 8 counties within the greater Florida Peninsula. It is evident from these maps that most of the communities studied are along the east and west coasts and are located within some of the most developed and urbanized metropolitan regions of the state. Ten out these 21 municipalities are located with three counties that are also part of the study. Three of these municipalities are designated as towns while others are cities.

A GIS-based approach, utilizing the ESRI ARC GIS 9.2 software package was used to represent the Florida local governments under study. Two vector data sets, ‘City Limits Derived from Parcel Data 2007’ and ‘Florida County Boundaries Statewide’, were utilized for this purpose. Both data sets were obtained from the Florida Geographic Data Library (FGDL) website (<http://www.fgdl.org>). The former data set contains the city limits for the State of Florida and was compiled of data compiled by using tax code boundaries as defined in 2006 county parcel data from the Florida Department of Revenue (FDOR). The latter consists of the boundaries of all 67 counties in Florida. Using various vector analysis tools, both datasets were processed to obtain the maps of municipalities and counties surveyed by me.

The county governments are generally headed by an elected board of county commissioners, which is vested with legislative and administrative authority over county departments, except those headed by independently elected officials. Most counties with charters have provisions for various elected officials including a professional county administrator, who is in charge of daily administrative functions. Municipalities, usually incorporated and chartered by an act of the state legislature, provide a wider range of local services and its ordinances overrides county laws, unless if a county charter specifies otherwise. With rapid expansion of populations beyond municipal boundaries and resulting issues of overlapping and uncoordinated service, municipal and county governments are increasingly reaching agreements with each other for consolidation of services and addressing problems of greater than local concern, such as land management, resource management, and economic development (City-Data, n.d.).

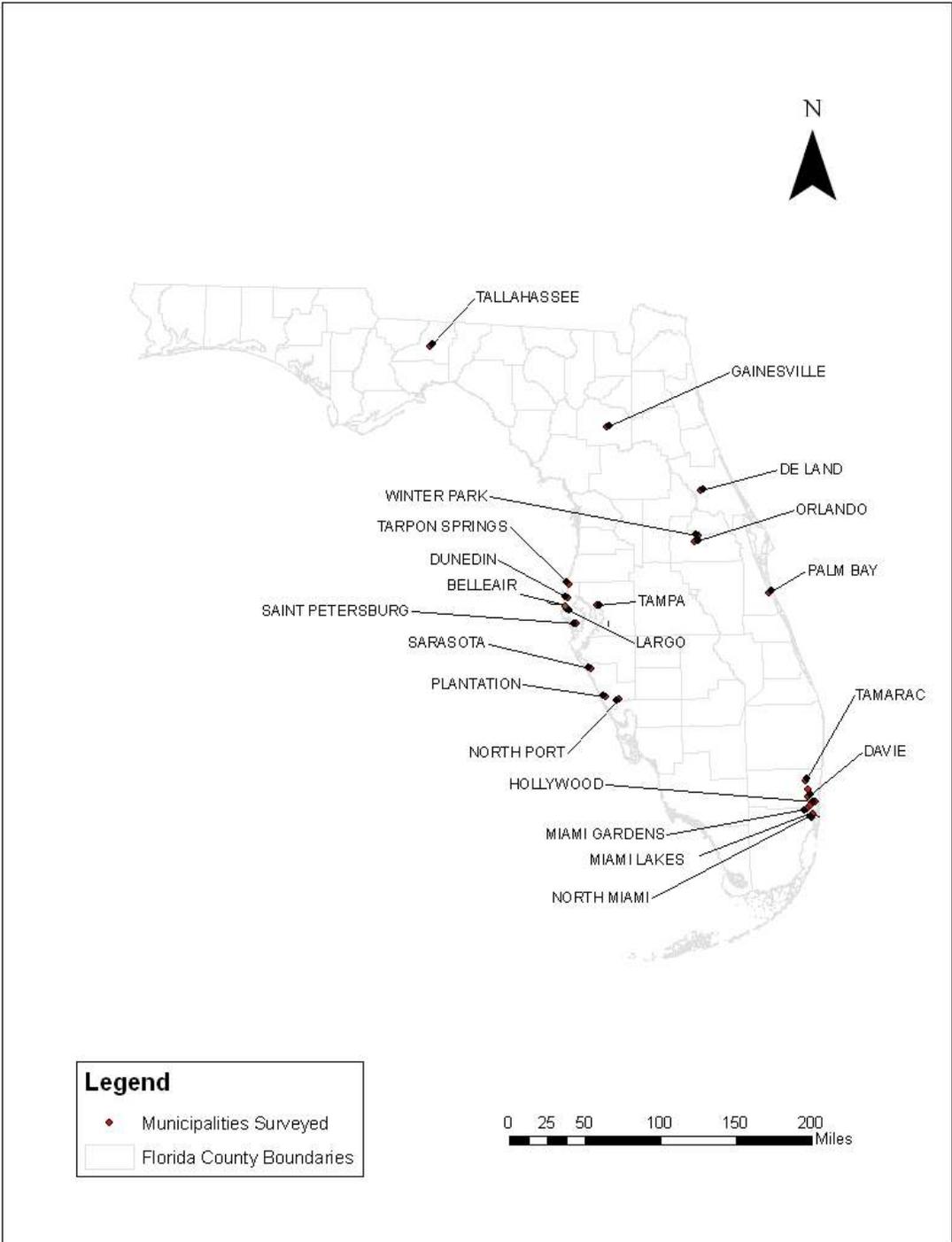


Figure 3: Map of Florida Municipalities Surveyed.

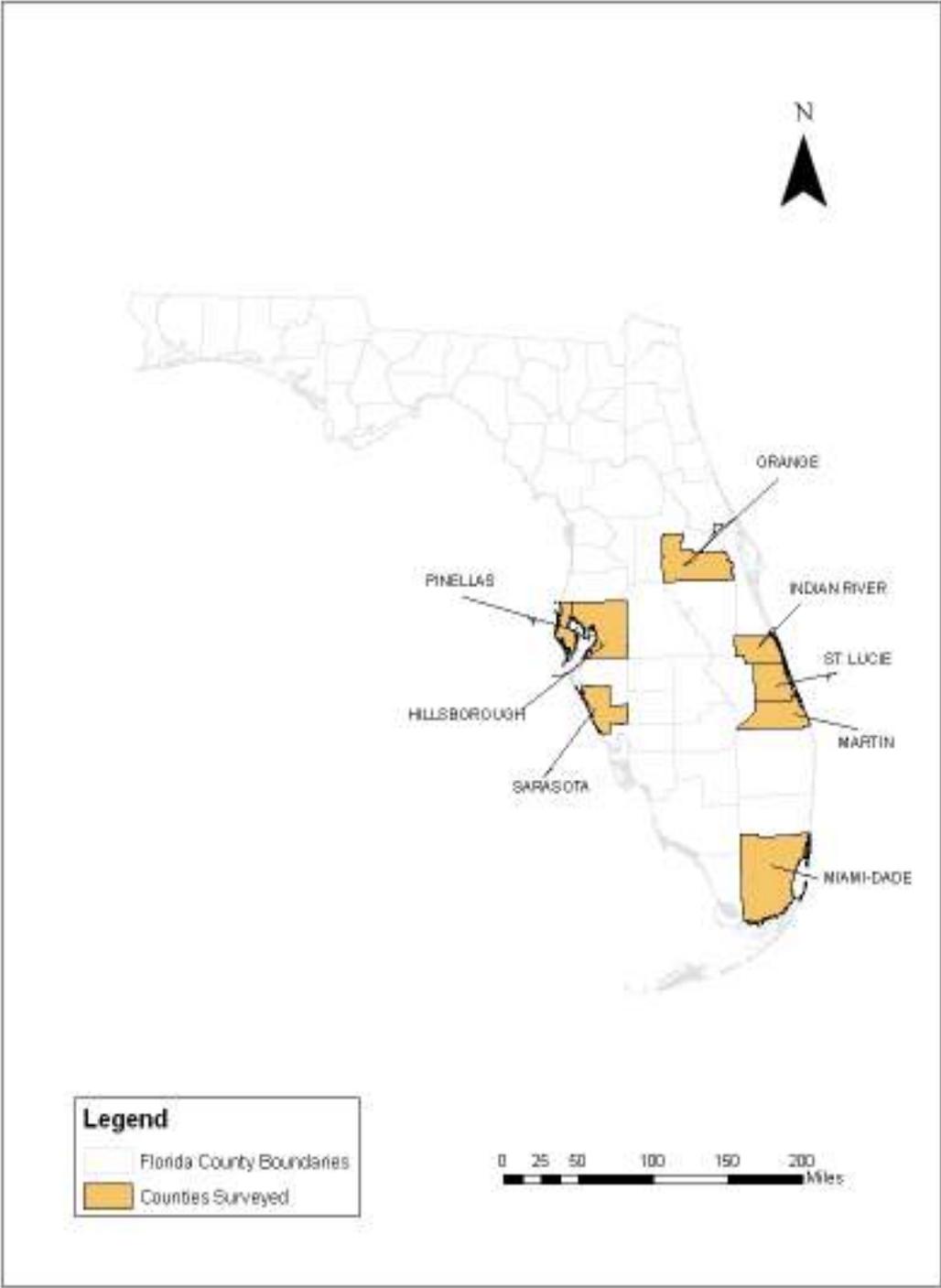


Figure 4: Map of Florida Counties Surveyed.

Table 1 presents the names of all municipal governments along with their municipal type, county they belong to, date of incorporation, population figures for the year 2000 (U.S. Census) and 2007 (Population Estimates) as well as population density (based on Census 2000). Table 2 provides similar data for the 8 counties. The 2000 U.S. Census and 2007 Population Estimates figures for municipalities and counties were obtained from the U.S. Census website (<http://www.census.gov/popest/estbygeo.html>); the population density figures for Census 2000 were also found on the U.S. Census website (<http://www.census.gov/population/www/censusdata/density.html>).

Although by number, the municipalities surveyed represent just about 5 percent of the total number of incorporated places in Florida (21 out of 410), the total population within the study area comprises about 11.23 percent of the total population of Florida and about 22 percent of the population living in the state's incorporated places. Similarly, the eight counties surveyed constitutes about 35 percent of the state's total population (comprised of a total 67 counties), and about 70 percent of the state's total population living in the incorporated places. The municipalities showed considerable contrast in their population densities – while North Miami had the highest density of 7080 people/sq. mile, North Port showed the least density of only 304.9 people/sq. miles. Local governments under study consisted of small towns such as Davie to big metropolitan cities such as Tampa. Also, while some cities such as Tallahassee were established a long time ago, while such as Miami Lakes and Miami Garden were very recently incorporated. Counties too show a similar contrast in size, population, population density and the extent of urban development. Pinellas County showed the highest density of 3292 people/sq. mile and Indian River County had only 224.4 people/sq. miles, indicating that while some

regions of the state are observing an urban sprawl, other regions are witnessing a dense growth pattern. The sample thus shows distinct inherent heterogeneity in their size, population and population density variables.

Table 1: Population Figures of Surveyed Municipalities

Municipality	Municipality Type	County	Date of Incorporation	Population (Census 2000)	Population Estimate (July, 2007)	Population Density (/sq. mile) (Census 2000)
Belleair	Town	Pinellas	1925	4067	4102	2265.8
Davie	Town	Broward	1960	75,720	90,329	2265.2
DeLand	City	Volusia	1882	20,904	26,883	1317.1
Dunedin	City	Pinellas	1899	35,691	36,285	3438.1
Gainesville	City	Alachua	1869	95,447	114,375	1981.0
Hollywood	City	Broward	1925	139,357	142,473	5097.2
Largo	City	Pinellas	1905	69,371	73,298	4429.1
Miami Lakes	Town	Miami Dade	2000	22,660	21,783	3806.4
Miami Gardens	City	Miami Dade	2003	100,515	97,286	6673.3
North Miami	City	Miami Dade	1926	59,880	56,185	7080.0
North Port	City	Sarasota	1959	22,797	54,308	304.9
Orlando	City	Orange	1875	185,951	227,907	1988.9
Palm Bay	City	Brevard	1960	79,413	100,116	1247.7
Plantation	City	Broward	1953	82,934	84,370	3815.2
Sarasota	City	Sarasota	1902	52,715	52,488	3539.8
St. Petersburg	City	Pinellas	1903	248,232	246,407	4163.1
Tallahassee	City	Leon	1825	150,624	168,979	1573.8
Tamarac	City	Broward	1963	55,588	59,668	4879.8
Tampa	City	Pinellas	1855	303,447	336,823	2707.8
Tarpon Springs	City	Pinellas	1887	21,003	23,544	2297.1
Winter Park	City	Orange	1887	24,090	27,947	3281.6

Table 2: Population Figures of Surveyed Counties

County	Date of Incorporation	Population (Census 2000)	Population Estimate (July, 2007)	Population Density (per sq. mile) (Census 2000)
Hillsborough	1834	998,948	1,170,518	950.6
Indian River	1925	112,947	131,446	224.4
Martin	1925	126,731	138,790	228.1
Miami-Dade	1915	2,253,362	2,382,961	1157.9
Orange	-	896,344	1,063,979	987.8
Pinellas	1911	921,482	914,444	3292.0
Sarasota	1921	325,957	370,871	570.3
St. Lucie	1905	192,695	260,090	336.6

Limitations

My research design is bound by the following limitations:

- 1) My evaluation of local sustainability efforts was limited only to those local governments within Florida that have chosen to adopt the Green Local Government standard; hence my study sample is not a full representation of the entire state. Indeed, there may be local governments that have undertaken significant sustainability efforts but chosen not to pursue the Green Local Government designation. However, the underlying aim of my research was to essentially evaluate the local government performance within the framework of this standard, and hence this sample selection.
- 2) The only two sources of information I used for collecting data for my research were local government websites and the survey questionnaire. Detailed interviews of local government personnel were not carried out nor were paper copies of government documents examined. It is possible that some local governments under study may not

have uploaded all pertinent information on their websites. Hence, the data obtained and used in this research may not be comprehensive.

CHAPTER IV

RESULTS AND DISCUSSION

Overview

The discussion of the results featured below first focuses on the overall commitment of local governments to the principles of sustainable development. This assessment was done by looking for the presence of dedicated sustainability office or staff, adoption of sustainability as part of local comprehensive or strategic plans, and the display of information on local sustainability efforts on local government websites. The above information was obtained through the web-based archival research as well as the responses to the mailed survey. The sustainability performance of local governments is then evaluated within the framework of Green Local Government certification criteria by assessing the extent to which governments fulfilled the criteria. Again, both web-based archival research data and the information obtained through the survey were utilized for this evaluation. Subsequently, the Application Tool document was evaluated to identify criteria that address socio-economic aspects of sustainable development as well as the extent to which these met by the certified governments. Finally, the information obtained through the web-search and survey responses was analyzed to determine how many local governments have instituted green building policies and identify the barriers they face in promoting green buildings. Unless otherwise specified, the term ‘local governments’ in this chapter refers to local governments that have adopted the FGBC Green Local Government standard.

Commitment to Principles of Sustainable Development

Beyond the adoption of specific initiatives, local government commitment to sustainable development can be gauged in several ways to ascertain whether they are adopting sustainable development as an overarching development framework or are merely choosing sustainability policies in an ad hoc manner. Some ways to measure the commitment include the creation of a sustainability plan, integration of sustainability principles in local mission or vision statements, and creation of a separate office of sustainability within the government administration. Results from my internet based content analysis and responses to my mailed survey were used to measure the commitment of Florida local governments beyond the adoption of specific policies. Saha and Paterson (2008) adopted a similar strategy to evaluate the formal and informal commitment to sustainable development among all cities with a 2000 population over 75,000 across the United States.

Out of 29 surveys sent out to local governments, 13 were completed and returned. The overall percent response rate was thus 44.82 percent. There was a significant difference between the rate of response from counties and municipalities – 7 out of 8 counties returned the survey (87 percent response rate) while only 6 out of 21 municipalities responded to the survey (28 percent response rate). With Tarpon Springs being one of the smallest city and Orlando being one of the comparatively larger cities of my study sample, the responding municipalities showed a fair amount of variability with regard to their population size.

Tables 3 and 4 show the overall results of my web-based research. As can be seen, 20 out of 29 were found to have a dedicated website devoted to displaying

information about local sustainability efforts. As expected, counties and some of the larger cities had extensive websites with a large amount of information while the smaller cities and towns displayed smaller websites with minimal content. The local governments that displayed no sustainability or environment related information on their website were some of the smallest municipalities in the study sample.

The kind of information available on all websites varied among local governments; however some common features were the definition of sustainability, brief explanation of sustainable development concepts, community goals with respect to sustainability, factsheet of local programs and policies, links to other sustainability-related websites, and environmental tips for residents. Although there may be an inherent bias in attempting to evaluate local government commitment solely based on the sustainability information available on their websites, at minimum, this review sheds light on how cities and counties are displaying their sustainability efforts on the internet.

As can be seen in Tables 3 and 4, about 65 percent (19 out of 29) local government websites contained some kind of a reference to sustainable development. Such commitment was found to be either *formal* (e.g., an ordinance, mission or vision statement, strategic plan, or comprehensive plan) or *informal* (i.e. reference to sustainable development within the information provided in the website, as opposed to that contained in official documents of any kind). As can be seen in Table 5, a majority of local governments were found to have chosen the formal route of adopting sustainability. There was only a small difference in the outcomes between counties and municipalities - while counties showed a 75 percent positive result (i.e., almost 62 percent municipalities were found to have adopted some kind of a policy resolution.

Table 3: Adoption of Sustainable Development Principles, Sustainability Website and Sustainability Office in Surveyed Municipalities

Municipality	Responded to Survey	Formally Adopted Sustainable Development	Informally Adopted Sustainable Development	Dedicated Sustainability website	Office, Staff or Personnel
Belleair			X	X	
Davie					
DeLand		X			
Dunedin	X		X	X	X
Gainesville		X		X	
Hollywood			X	X	
Largo		X			
Miami Gardens	X				
Miami Lakes					X
North Miami				X	X
North Port	X				
Orlando	X	X		X	X
Palm Bay		X			
Plantation	X		X	X	
Sarasota		X		X	X
St. Petersburg		X		X	X
Tallahassee				X	
Tamarac		X		X	
Tampa		X		X	X
Tarpon Springs	X				
Winter Park					

Table 4: Adoption of Sustainable Development Principles, Sustainability Website and Sustainability Office in Surveyed Counties

County	Responded to Survey	Formally Adopted Sustainable Development	Informally Adopted Sustainable Development	Dedicated Sustainability website	Office, Staff or Personnel
Indian River		X		X	
Martin	X	X		X	
Orange	X	X		X	
Pinellas	X	X		X	
Sarasota	X	X		X	X
St. Lucie	X			X	X
Miami-Dade	X	X	-	X	X
Hillsborough	X			X	

Table 5: Adoption of Sustainable Development as a Goal or Priority

Sustainability as goal or priority in local government's public agenda	Yes, formally	Yes, informally	Not Adopted / Not found
All local governments reviewed (<i>N</i> = 29)	15 (55.72%)	4 (13.79%)	10 (34.48%)
Only municipalities (<i>N</i> = 21)	6 (75%)	0	2 (25%)
Only counties (<i>N</i> = 8)	9 (42.85%)	4 (19.04%)	8 (38.09%)

Whereas only a few towns and cities appeared to express their commitment informally, most others have chosen to do it formally through inclusion of sustainability aspects into their long-term strategic and comprehensive plans as well as in community visioning and mission statements. Some examples of my findings listed below provide a sense of the various ways in which communities view environmental and sustainability issues and integrate it within their strategic local goals. A complete list of all formal and informal

sustainability commitment statements and strategic plans that were reviewed by me is provided in Appendix B.

In its five-year Strategic Plan for 2006-2011, the City of DeLand identified four major strategic dimensions of community, education, economy and history. Included in the focus areas is the adoption of smart growth principles, redevelopment of inner cities, walkability, greenways and public-private partnerships to maintain the appearance of communities (City of DeLand, 2006). Although the word *sustainable development* itself does not appear to have been used prominently within this document, many smart growth principles mentioned therein are consistent with sustainability principles. Similarly, Gainesville's Strategic Plan (City of Gainesville, 2008) covers a wide range of strategic goals and initiatives that includes the protection and improvement of both natural and urban environments. Social aspects of neighborhood engagement and community identity are also addressed within Strategic Principles of Largo's Plan:

“Largo includes a diverse range of neighborhoods from the historic residential areas around downtown that date back to the early 1900s... Many of these areas lack a clear sense of identity or community and are designed to isolate themselves... This isolation prohibits a common understanding of shared goals; which would begin to identify and define true neighborhoods and engage Largo's residents in the broader issues that affect their quality of life. Largo should institute a broad set of programs to engage its residents and define neighborhoods, in order to ensure the long-term stability and success of its residential areas” (City of Largo, 2009).

Similarly, aspects of a sustainable economic development are also reflected in many of these strategic plans, such as in that of DeLand's:

“Recognizing that a healthy economy promotes our success... we will an entrepreneurial environment that supports local businesses... have a sustainable

growth policy requiring the wise use of fiscal and natural resources” (City of DeLand, 2006).

On the other hand, vision statements of some cities contain a more precise and direct reference to their adoption of sustainable development principles. For example, the vision statement adopted by Dunedin in May, 2005 following a community-wide visioning study states that,

“Dunedin has respect for preserving its history and the natural environment, while planning a safe and secure lifestyle for future generations. Growth while inevitable is tailored to enhance each individual’s quality of life” (City of Dunedin, 2009).

The ‘Green Initiative’ website of the Town of Belleair, an example of informal type of commitment to sustainable development, also describes the benefits of sustainability in terms of economic activity:

“pursuing the goals of alternative energy development and cleaner air will enhance America’s energy security, improve our environment, and provide Floridians with benefits from the economic activity associated with the new energy technologies” (Town of Belleair, 2009).

Finally, the websites of some of the bigger cities and counties contained several resolutions and ordinances that were adopted with a view of fighting the impacts of climate change and incorporating sustainability principles into local planning. For example, in 2008, Tampa City Council passed a resolution for enacting and implementing measures for the goal of being designated as a ‘Florida Green Local Government’ (City of Tampa, 2009). Some others found to have passed executive orders, resolutions and

ordinances to similar effect were the cities of St. Petersburg and Tamarac as well as Pinellas and Orange counties.

It was evident from these results that local governments across Florida have chosen various means of adopting the concept of sustainable development into their planning policies. The language of such policy documents as well as the manner in which these resolutions were adopted often indicates the political, social and economic realities of those communities. Whereas the strategic plans of bigger cities often address complex issues of managing urban expansion and providing services to their rapidly increasing population, those of smaller communities were found to include preservation of nature, local community identity and aspirations of economic development. As expected, the specific issues covered within individual sustainability commitments varied widely, reflecting the local context; however, the common themes of environmental, social and economic concerns were reflected to a varying extent in all of them. Conroy (2006), in her study of survey among communities of Indiana, Kentucky, and Ohio, found that most of the sustainability activities being adopted by communities are not necessarily unique to the sustainability concept and have typically been part of the traditional planning paradigm.

Since my research is limited to studying the overall commitment to sustainability and not comparing current planning practices with the traditional ones, it is difficult to confirm or deny Conroy's (2006) claim. However, extensive references to climate change and sustainable development within the local government sustainability statements, if not their actions, do reflect the new knowledge and understandings of sustainability issues.

Another way to ascertain local government commitment to sustainability is to identify the existence of a separate office of sustainability or at the least staff devoted to carrying out sustainability activities (Saha & Paterson, 2008). Table 6 shows that only 10 percent of the local government website reviewed were found to have either a dedicated office of sustainability or a specific department that is formally responsible for sustainable activities. For example, the Office of Sustainability in Miami-Dade and Sarasota counties as well as the Office of Planning, Zoning and Economic Development in the City of Plantation were found to be exclusively responsible for carrying out the sustainability initiatives of the respective local governments.

Table 6: Presence of Office or Individual/s responsible for Sustainable Development

Office or individual/s responsible for sustainable development	Office	No office but Individual/s	No Office or Personnel
All local governments reviewed (<i>N</i> = 29)	3 (10%)	11 (38%)	15 (52%)
Only municipalities (<i>N</i> = 21)	1 (5%)	6 (19%)	14 (66%)
Only counties (<i>N</i> = 8)	2 (25%)	5 (62%)	1 (13%)

About 38 percent of all local government websites reviewed showed that there are individual/s entrusted with implementing sustainability policies in their communities. Some examples of such individual sustainability positions are Sustainability Coordinators in the cities of Plantation and North Port and a Green Officer in Tampa. Except for Tampa, other cities did not provide the detailed duties, job description or mandates of their sustainability personnel. Others featured local Sustainability or Green Teams comprising of individuals pulled together from different departments. The amount of information available on the duties of these personnel varied widely among cities and

counties, however the general impression was that the ‘Green Teams’ had a wide mandate and worked in coordination with all departments. With Indian River County being the only one where no dedicated office or individual/s were identified, counties overall performed better than municipalities. The vast majority of the municipalities (66 percent) were found not to have any clearly identifiable office or personnel responsible for sustainable development. It is important to note that this data was obtained solely from the review of local government websites and survey responses. The possibility of existence of a dedicated sustainability office or personnel not being reported on the web or survey is not denied.

Implementation of Green Local Government Criteria

This section of the results pertains to the assessment of local government performance within the Green Local Government framework, in terms of the extent to which sustainability criteria are met and the distribution of efforts across a range of government department functions. A combined review of the FGBC website, local government websites as well as the completed surveys showed that out of the total 26 Florida local governments that had expressed their intent to achieve the ‘Green Local Government’ designation, only 10 had completed the certification process and officially received the said title. Six of these certified local governments were cities, and the other 4 counties. Of the remaining, 14 local governments had submitted their pre-applications and 2 municipalities had completed their final submission and were awaiting the green designation. Tables 7 and 8 show the certification status of all local governments surveyed as well as the time-line of the various stages in the certification process. It is

evident that local governments in Florida have only very recently begun to adopt the green designation. Figure 9 depicts a sharp rise in the number of local governments that applied for the standard in 2008, which points to the growing popularity of the FGBC's Green Local Government certification.

Table 7: Certification Status and Dates - Municipalities (FGBC Certified Green Projects, n.d.)

Municipality	Municipality Type	'Green Local Government' Certification Status	Pre-Application Date	Submittal Date	Certification Date
Belleair	Town	Pending	June, 2008	August, 2008	-
Davie	Town	Presubmittal	August, 2007	-	-
DeLand	City	Presubmittal	May, 2008	-	-
Dunedin	City	Certified - Silver	October, 2006	November 2007	December, 2007
Gainesville	City	Presubmittal	November, 2008	-	-
Hollywood	City	Presubmittal	September, 2008	-	-
Largo	City	Presubmittal	August, 2008	-	-
Miami Gardens	City	Presubmittal	July, 2008	-	-
North Miami	City	Presubmittal	July, 2008	-	-
North Port	City	Presubmittal	December, 2008	-	-
Orlando	City	Presubmittal	February, 2009	-	-
Palm Bay	City	Submitted	July, 2008	January, 2009	-
Plantation	City	Presubmittal	October, 2008	-	-
Sarasota	City	Presubmittal	January, 2008	-	-
St. Petersburg	City	Certified - Silver	October, 2005	-	December, 2006
Tallahassee	City	Certified - Gold	May, 2007	November 2007	December, 2007 (Silver) January 2009 (Gold)
Tamarac	City	Certified - Silver	-	March, 2008	May, 2008
Tampa	City	Certified - Gold	June, 2008	September, 2008	January, 2009
Tarpon Springs	City	Certified - Silver	April, 2008	September, 2008	October, 2008
Winter Park	City	Presubmittal	November, 2008	-	-

Table 8: Certification Status and Dates - Counties (FGBC Certified Green Projects, n.d.)

County	'Green Local Government' Certification Status	Pre-Application Date	Submittal Date	Certification Date
Indian River	Certified – Gold	October, 2007	December, 2008	March, 2009
Martin	Presubmittal	January, 2008	-	-
Orange	Certified – Gold	July, 2006	November, 2007	February, 2008
Pinellas	Certified – Silver	August, 2006	-	October, 2006
Sarasota	Certified – Gold	July, 2005	-	September, 2008
St. Lucie	Presubmittal	September, 2008	January, 2008	-

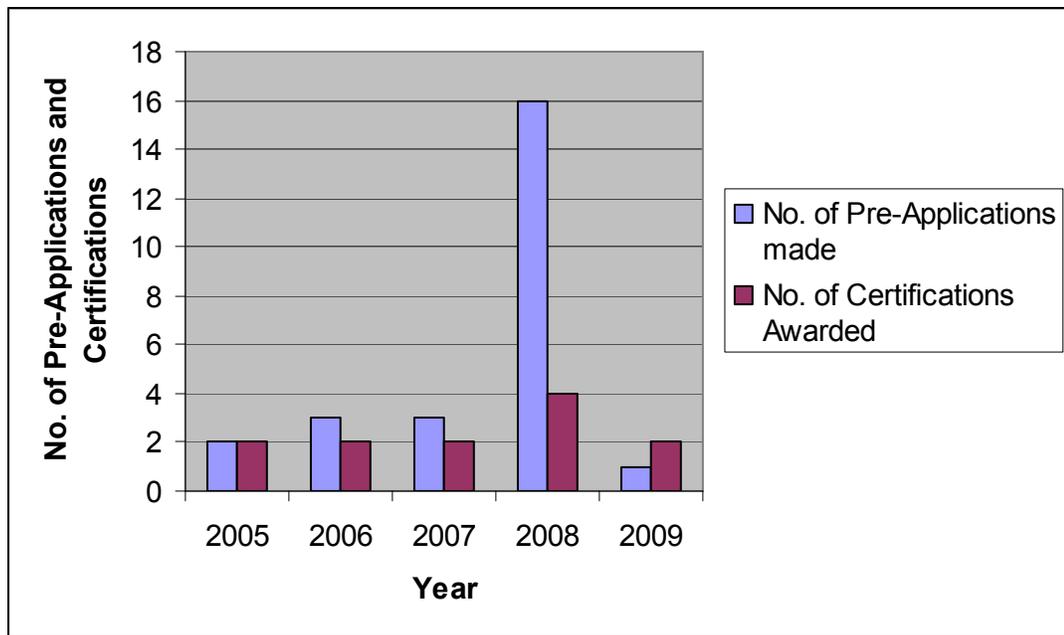


Figure 5: Green Local Government Applications and Certifications

A combined review of the FGBC website, local government websites as well as the completed surveys showed that out of the total 26 Florida local governments that had expressed their intent to achieve the Green Local Government designation, only 10 had

completed the certification process and officially received the title. Six of these certified local governments were cities, and the other 4 counties. Of the remaining, 14 local governments submitted their pre-applications and 2 municipalities completed their final submission and were awaiting the green designation. Tables 7 and 8 show the certification status of all local governments surveyed as well as the time-line of the various stages in the certification process. It is evident that local governments in Florida have only very recently begun to adopt the green designation. Figure 9 depicts a sharp rise in the number of local governments that applied for the standard in 2008, which points to the growing popularity of the FGBC's Green Local Government certification.

All 26 local governments pursuing the Green Local Government designation were separately sent a request to provide an electronic copy of the 'Application Tool' if they had already made this submission to FGBC. This document essentially contains a checklist of criteria or credit points across 19 government departments, maximum numbers of points available and applicable, as well as the actual credits achieved by the applying local government. Out of an expected 10 that had already achieved the designation, only 4 local governments provided this document. Also, Indian River County's application tool was available on its website. These 5 application tools were reviewed to assess the sustainability initiatives undertaken by governments within Green Local Government standard framework. Sustainability initiatives of the other 21 cities and counties that had not yet made their final submission to FGBC were not taken into account since the websites often did not contain specific information on policies and programs. Also, evaluation of their performance vis-à-vis FGBC requirements before

these local governments make their final submission would amount to pre-judging them and could result in incomplete and factually wrong conclusions.

Although the analysis of individual specific initiatives is beyond the scope of my research, a brief discussion on certain critical observations of the overall certification system ensues. The Green Local Government standard is unique in many ways – although it is administered through a check-list and point-based system like several other popular green certification programs, this standard differs significantly in the breadth of issues it covers as well in its target. Unlike many other green standards that typically only address individual building and development programs, the Green Local Government systems aims to increase the overall environmental performance of local governments by targeting a number of governmental department functions hence improving sustainability performance across the board. The standard is also prided for by the FGBC for the “flexibility” it offers to cities and counties in “tailoring” their own “paths to qualification”, leveraging existing programs towards the goal of being defined “green”, and accounting for unique circumstances of each community and local government. Indeed, the FGBC claims that this standard is a “one stop shop” due to its “broad scope” (FGBC – Green Local Government Standard, n.d.). Looking at the extensive list of criteria spread across departments, this claim appears to be quite justified. From a cursory look at the final submission documents of the five certified local governments, it is evident that they have indeed collectively undertaken initiatives across a wide range of government functions. The fact that many of these successful initiatives were cross-departmental in nature appears to validate FGBC’s claim that the standard promotes intra-governmental communication which in turn leads to better coordination enhanced

administrative efficiency. This observation runs counter to the findings of Saha and Paterson's (2008) survey of 216 cities across the United States which identified bureaucratic structure and poor inter-departmental communication among local government departments as a major challenge to successful sustainability planning.

However, a closer scrutiny reveals that individually the efforts are not equally addressed to all issues, as reflected by the uneven distribution of points earned across the 19 categories. It is evident that each of these 5 governments have focused more on some departmental functions and neglected others. Also, among governments, there seems to emerge some common areas of over- and under-activity. While some departments like Solid Waste, Water and Wastewater, and Natural Resources Management scored higher in almost all 5 documents reviewed, other such as Building and Development, Planning and Zoning, and Administration appeared to have been neglected.

Table 9: Credit Points Scored by Certified Local Governments Across Departments

Department	Credit Points Achieved / Maximum Applicable Points				
	Tarpon Spring	Sarasota County	Indian River County	Orange County	Pinellas County
Administration	10 / 59	45 / 59	39 / 69	23 / 59	12 / 59
Agriculture & Extension Service	2 / 27	12 / 27	8 / 31	11 / 27	10 / 20
Building & Development	1 / 39	26 / 39	11 / 23	9 / 39	4 / 39
Economic Development & Tourism	3 / 9	7 / 19	4 / 9	3 / 8	0 / 8
Emergency Management & Public Safety	5 / 13	1 / 13	6 / 13	8 / 13	3 / 12
Energy Utility	0 / 6	1 / 6	0 / 8	7 / 7	6 / 8
Housing & Human Services	0 / 26	1 / 5	16 / 26	0 / 26	10 / 24
Human Resources	2 / 9	3 / 9	6 / 10	7 / 9	2 / 9
Information Services	5 / 7	2 / 7	2 / 7	5 / 7	4 / 7
Natural Resources Management	4 / 19	11 / 19	9 / 19	9 / 16	12 / 18
Parks & Recreation	5 / 16	8 / 14	8 / 17	6 / 16	10 / 14
Planning & Zoning	2 / 14	3 / 14	16 / 30	11 / 14	5 / 14
Ports & Marinas	1 / 4	3 / 4	1 / 3	1 / 2	3 / 4
Property Appraiser & Tax Collector	0 / 1	1 / 7	2 / 7	2 / 7	1 / 7
Public Transportation	0 / 4	6 / 9	2 / 9	6 / 9	5 / 9
Public Works & Engineering	9 / 23	13 / 23	8 / 13	12 / 22	11 / 20
School Board	0 / 2	6 / 31	12 / 31	5 / 31	0 / 31
Solid Waste	8 / 17	13 / 13	7 / 18	11 / 17	9 / 17
Water & Wastewater	9 / 18	6 / 6	7 / 18	16 / 18	16 / 18
Total Points (Level)	66 / 313 (Silver)	168 / 330 (Gold)	164 / 361 (Gold)	152 / 347 (Gold)	123 / 338 (Silver)

While my research does not investigate into or hypothesize about the possible causes of this disparity in sustainability performance across governmental departments, some possible reasons for this may be: 1) the initiatives that scored higher credit points might

have already existed as part of traditional planning practices and it was thus easy to reinvent them in the new sustainability framework; 2) the activities that were carried out successfully might have been the most feasible both technologically and financially; or 3) policies and programs targeting issues that found the most public support and/or political will were the ones to be adopted the first. However, there are no in-built checks in the system to prevent under-performance in one or more categories of credit-earning criteria.

It is important to note here that a higher numerical score in one departmental category over another does not necessarily translate into a superior environmental or sustainable performance; after all, it is impossible to put comparable numeric values on individual sustainable activities. The assumption being made here is that a more homogenous distribution of credits earned across departments is more likely to reflect a comprehensive sustainable development planning.

Although there is a lot of intrinsic value in leveraging on the existing programs to get credit towards the green designation, the certification system seems to fail in appropriately encouraging local governments to break new grounds and adopt innovative strategies. This is especially true for larger cities as well as those that seek recertification. Under present rules, there is no distinction between the requirements from governments of big and small communities; the fact that some of the bigger cities might have an advantage by way of better financial, administrative and other resources over its smaller counterparts is not taken into consideration when setting the baseline or the minimum required credit achievement. Also under current rules, a government that is certified is allowed to retain its designation for a period of five years, after which it is required to reapply for the standard again. However, unlike some other popular green standards,

recertification does not require an improvement over past sustainability performance, thereby offering no incentive to local governments to improve its sustainability performance.

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Socio-Economic Dimensions of Local Sustainability Action

The Green Local Government Application Tool was further critically evaluated to identify the extent to which social and economic dimensions of sustainable development were being incorporated within local sustainable development efforts. The Green Local Government standard comprises of 230 individual credit-earning criteria, or *credit points*,

arranged within 19 categories that represent specific local government departments (see Appendix C). Each credit point was studied carefully to identify whether it advances the social and economic goals of sustainable development in any manner. When the purpose of any specific criteria was not immediately clear or fully understood, the detailed credit explanation on the FGBC website was consulted (FGBC – Green Local Government, n.d.). Two lists containing criteria that addressed the social and economic dimensions of sustainability were created. A total of 19 criteria that pertained to promoting sustainability-related economic development and 10 criteria that addressed societal benefits pertaining to sustainable development were identified (for full lists, see Tables 11 and 12).

Table 10: Credit Points Earned by Certified Local Governments in Economic Development-based Criteria

Credit Name	Department	Tarpon Springs	Indian River County	Orange County	Pinellas County	Sarasota County
Offer incentives to create organic farms, or sustainable/water efficient agriculture.	Agriculture & Extension Service		X		NA	
Offer an incentive(s) for FGBC or LEED certified commercial and institutional buildings.	Building & Development					X
Offer an incentive(s) for FGBC or Energy Star certified green homes.	Building & Development					X
Offer an incentive(s) for FGBC certified green developments.	Building & Development					X
Offer incentives for local professionals to attend green building classes offered by others.	Building & Development					
Conduct a green building awards	Building & Development		X	X		

Credit Name	Department	Tarpon Springs	Indian River County	Orange County	Pinellas County	Sarasota County
program.						
Incentives for location of green businesses within city/county.	Economic Development & Tourism			X		X
Offer special promotion for local eco-hotels	Economic Development & Tourism					
Incentives for green redevelopment.	Economic Development & Tourism			X		X
Incentives for disaster mitigation.	Emergency Management & Public Safety					
Offer distributed generation incentives.	Energy Utility	NA				NA
Commercial building incentives.	Energy Utility			X	X	
Offer incentives for construction of green affordable housing.	Housing & Human Services					
Offer incentives for location efficient affordable housing.	Housing & Human Services					
Offer local tax based or other AFV incentives	Natural Resources Management		NA			
Offer low pollution engine incentives	Ports & Marinas					
Tax incentives for certified green properties	Property Appraiser & Tax Collector	NA				
Tax incentives for lands qualifying as historic, high water recharge, greenbelt, etc.	Property Appraiser & Tax Collector	NA	X	X		
Incentives for local businesses who utilize EPP or other solid waste reduction strategy	Solid Waste		X			

Note: NA = Not Applicable
X = fulfilled/partially met criteria

Table 11: Credit Points Earned by Certified Local Governments in Societal Benefits-based Criteria

Credit Name	Department	Tarpon Springs	Indian River County	Orange County	Pinellas County	Sarasota County
Offer free or discounted green products to the public.	Agriculture/ Extension Service	X	X	X	X	X
Develop a historic preservation ordinance.	Economic Development/ Tourism	X	X			X
Develop funding mechanism to aid with historic preservation.	Economic Development/ Tourism	X	X			X
Use of AFV and/or bicycle patrol for urban/ neighborhood areas.	Emergency Management/ Public Safety	X	X	X		X
Police trained in crime prevention through environmental design.	Emergency Management/ Public Safety	X	X			
Public safety staff attends training on Healthy Street design.	Emergency Management/ Public Safety	X				
Affordable housing constructed by city/county and other parties mandated green.	Housing & Human Services					NA
Operate an environmental demonstration / learning center	Natural Resources Management		X		X	X
Maintain organic community gardens	Parks & Recreation		X		X	X
Encourage mixed-use zoning / development	Planning & Zoning	X		X	X	

Note: NA = Not Applicable
X = fulfilled/partially met criteria

The economic criteria so identified comprised about 8 percent of the total 230 criteria available in the standard, while the social criteria represented only a little more than 4 percent of the total. The above tables also show which among these social and economic

criteria have been met by the 5 'green' certified local governments whose final submission credit lists were made available to me. As is evident, an average of about 16 percent of economic criteria and about 54 percent of social criteria were met by these five local governments. The economic criteria were all more or less themed around providing incentives to sustainably committed individuals, businesses and activities including the promotion of organic farms, building green buildings and development projects, green affordable housing, and incentives for green businesses and eco-tourism.

Although the fact that these incentive-based criteria are spread across a range of departments, the overall fulfillment rate among the 5 local governments reviewed was not significant. Especially lacking were tax and other incentives for developers of green buildings and development projects. Criteria based on social issues on the other hand ranged from preservation of community historic sites and provision for alternate-fuel vehicle / bicycle neighborhood patrols to encouraging mixed-use development and running community environmental learning centers. Although these criteria have a very significant social value, no references to issues of environmental justice were found in the Green Local Government standard. Warner (2002) defines the scope of environmental justice as going beyond environmental awareness and studying the distribution of environmental risks, to also include social and racial equity in terms of equal distribution of environmental benefits to all sections of the society. References to any of these issues were not reflected in the FGBC criteria. This finding of absence of social considerations in local sustainability planning is in conformance to the findings of nation-wide community surveys carried out by Warner (2002) and Saha and Paterson (2008). It is pertinent to note that these observations were made solely within the framework of the

FGBC's Green Local Government standard and from the information provided by certified local governments in their final submission documents. The possibility of economy or socially themed sustainability activities existing within cities and counties but not covered within the certification framework is acknowledged; however, the scope of my research is limited to only studying local sustainability initiatives within this framework.

The question of whether a high score in terms of actions taken actually corresponds to a high level of commitment to sustainable as a development paradigm was also asked by Jepson (2004) in his analysis of sustainability initiatives of 390 cities in the United States. The results of his study indicated that for the most part, cities were merely choosing policies and techniques in a piecemeal fashion without placing them into the larger sustainable development framework that integrates economy, equity and environment. Although my study does not fully answer whether local governments within Florida have actually demonstrated this paradigm shift in their sustainability planning, the mere fact that a majority of the surveyed communities, at least in principle, have shown their commitment to an overarching sustainability framework in their strategic plans and mission statements show a significant improvement over local sustainability planning observations made by Jepson (2004).

Green Building Initiatives by Local Governments

Considering that buildings have enormous impacts on the natural environment and that green buildings offer significant reductions on these impacts, I chose to specifically focus on local government performance in implementing green building

policies. A combined review of local government websites, completed FGBC standard's Application Tool as well as survey responses was employed to assess the efforts of Florida's local governments to promote green building within their jurisdiction. Apart from the 29 local governments pursuing the FGBC Green Local Government designation, a city (Miami Lakes) and two counties (Hillsborough and Miami-Dade) that were recognized by the USGBC on its website for pursuing green building efforts were also included in this part of the research. A majority of these government websites contained references to local green building efforts. There was a unanimous consensus among all that pursuing sustainability principles in the built environment through adoption of LEED and/or FGBC green building standards was a significant way of decreasing our burden on the environment, fight pollution and climate change, decrease resource consumption, improve urban health quality and contributing to the overall sustainability of the community.

Criteria pertaining to green building are included in the 'Building and Development' and 'Housing and Human Services' departments of the Green Local Government standard, together comprising about 17 percent of the total 379 Maximum Possible Points. Table 12 shows the extent to which these criteria were fulfilled by the 5 certified local governments. As is evident, Sarasota County showed the highest conformance to these criteria and Tarpon Springs the least. Some of the most commonly fulfilled criteria were the enactment of tree preservation and land-clearing ordinances, landscaping ordinance for new construction, green building training for the members of staff as well as publicity for green buildings.

Table 12: Green Building Credits Earned by Certified Local Governments

Credit Name	Tarpon Springs	Indian River County	Orange County	Pinellas County	Sarasota County
Create and maintain an electronic database of all building energy code compliance.		X			
Create and maintain an electronic database of all green and energy ratings.		X			
Adopt FGBC or LEED green standards as official green standards of the city/county.					X
Offer an incentive(s) for FGBC or LEED certified commercial and institutional buildings.					X
Offer an incentive(s) for FGBC or Energy Star certified green homes.					X
Offer an incentive(s) for FGBC certified green developments.					X
Require mitigation for consumption of natural habitat or resources.					
Enact and enforce a tree preservation or land-clearing ordinance.	X		X	X	X
Regulate impervious parking surfaces.					X
Enact a septic system replacement ordinance.			X		X
Enact a rain sensor ordinance applicable to all functioning automatic irrigation systems.					X
Enact a landscaping ordinance for new construction.			X	X	X
Require key staff to complete approved course in green building on a bi-annual basis.			X		X
Offer classes to industry that detail any green incentives or regulations present.					
Offer incentives for local professionals to attend green					

Credit Name	Tarpon Springs	Indian River County	Orange County	Pinellas County	Sarasota County
building classes offered by others.					
Conduct a green building awards program.		X	X		
Publicity and case studies for green building.			X	X	X
Construct/renovate green buildings				X	
Affordable housing constructed by city/county and other parties mandated green.					
Offer incentives for construction of green affordable housing.					
Offer incentives for location efficient affordable housing.					
Remodeling of affordable housing mandated green.					
Offer orientation classes for residents of affordable housing or refer to existing courses.		X		NA	
Applicable staff complete CEU approved course in green building on a bi-annual basis.				NA	X

The review of government sustainability websites provided additional information about individual green building initiatives (see complete list in Appendix D). Faster permitting and tax incentives were two common provisions in most of these efforts. For example, Gainesville Green Building program provides 25 percent reduction in permit fees for green single family homes. According to the City of North Miami website, USGBC-LEED green building standards were adopted for all newly designed and constructed public buildings. Some other benefits to private green buildings include tax incentives, reduced parking requirements, density and height bonuses and expedited permitting.

Similarly, Tampa offers fast track review for certified green buildings. Miami-Dade County website contained the most amount of information regarding various resolutions pertaining to the adoption of green building standards for public buildings and providing incentives to green private constructors. Among the cities and counties that have undertaken green building initiatives, the overall trend seems to be to promote green features in public buildings through enacting local ordinances that mandate the minimum green standards and by providing tax and permitting incentives for green private construction projects.

Survey responses shed further light on the green building policies adopted by the local governments. A discussion of survey findings is provided below.

When asked whether the local green building policies have been modeled along any specific standards or certification system, 7 out of 13 responding governments replied in positive, two of which specified the FGBC green building standards as their preferred choice. The response from Martin County also provided a reason for their choice:

“The reason behind this decision is that [the FGBC] standard was developed here in Florida, and is considered more specific to our regional climate issues” (Martin County survey response).

Of the remaining 5, one specified USGBC-LEED as its preferred choice and four local governments responded by saying that their incentives-based green policies were flexible enough to recognize either set of green building standards. This provision of flexibility was particularly emphasized by two respondents:

“Our resolutions mention LEED and FGBC or any other comparable performance criteria” (Sarasota County survey response).

“Resolution 08-28, which waives permit fees for buildings that obtained a green building certification, USGBC-LEED and FGBC Green Home certifications are specifically mentioned, but the resolution allows for some flexibility by including other green certifications from other agencies or entities which are recognized on a state-wide basis as responsibly and legitimately granting certifications for green building techniques” (City of Dunedin survey response).

Out of the remaining six local governments that had not adopted any specific standard(s) within their green building policies, two said that such a plan was under consideration.

Table 13 provides a summary of the above findings:

Table 13: Adoption of Green Building Standards by Certified Local Governments

Inclusion of specific green building standard(s) in local policies	Either one of FGBC or USGBC-LEED	Both FGBC and USGBC	None
All local governments (N=13)	3 (23%)	4 (31%)	6 (46%)
Cities (N=6)	1 (17%)	1 (17%)	4 (66%)
Counties (N=7)	2 (28%)	3 (43%)	2 (28%)

Amending the building code to incorporate provisions for green buildings is a rising trend nationally. In order to determine whether local governments in Florida too are adopting a similar approach, the survey included a question about the existence of any local amendments. In response, all local governments stated that they had not amended the Florida Building Code. A few cities and counties also mentioned that they do not have the ability of making unilateral local amendments without State of Florida approval. However, two respondents did describe a few planned initiatives in this direction. Martin County stated that it is currently in talks with the local builders association about the idea

of whether to impose a mandate similar to the new State Statute requiring all state and local governments to adopt green standards in new and renovation public building projects. The City of North Port also mentioned that the regional association of building officials will address this issue in the near future

Further in the survey, a few open ended questions were employed to understand the perspectives of green buildings within the local context. Local governments were asked to identify existing or expected benefits as well as the real and perceived barriers to adoption of green building practices. Table 14 shows some of the major benefits and barriers identified by multiple survey respondents. The survey results not only confirmed the existence of barriers identified by the previous studies reviewed by me. The issues raised by environmental and sustainability officials provide a real sense of ground truth as opposed to mere academic understandings of green building. Significantly, the advantages of green buildings identified by respondents go beyond environmental benefits. The positive impacts of green building on green businesses and local economy as well as its potential to become sustainability role models for businesses and residents was a benefit that I had not come across in my readings of green buildings. The fact that green buildings were being considered sustainability role models in their respective communities validates the FGBC's claim that a green local government has the potential of encouraging the private sector as well as individual residents to apply the same green principles in their spheres of activity.

Survey responses also revealed some unexpected challenges and barriers to green building, prime among which are issues of funding, awareness and political action. As was evident from responses in the completed surveys, all local governments identified

their inability to unilaterally adopt local amendments in the State Building Code unilaterally as a principle barrier to mandating green building practice. This finding gives credence to Saha and Paterson’s (2008) claim that local governments cannot bring about all the change by themselves without active cooperation from higher levels of governments, especially in areas of activity that are outside the purview of local governments.

Table 14: Benefits and Barriers to Green Building

Benefits of Green Building	Barriers to Green Building
Greenhouse Gas emission reduction	Funding; lack of financial resources
Savings on utilities (water/energy)	State Building Code supersedes Local Code (hence only local incentives, no mandates possible)
Lower maintenance costs, long-term operating costs	Availability of certain green building materials
Conservation of natural resources	Unfamiliarity with green building standards
Reuse of materials; Improved resource recovery; recycling	Experience and knowledge of construction contractors
Reduced waste generation; less waste to landfill	Potential excessive premium asked by consultants to provide green building services; limited green building service providers
Local economic stimulus for building materials; Support for local green businesses	Changing how we view and approach the design, construction and performance monitoring and verification of buildings with respect to both integrated design approach and integration of capital and operating budgets
Higher quality/durable structures	Higher initial costs; long payback periods
Support for smart growth initiatives	Convincing those who do not understand the concept, or need, that although initial cost will be higher, that values will be recovered in the life cycle of green development
Role model; promote sustainability to businesses and residents	Increased up-front construction costs (3%-5% depending on the project) create a financial challenge to developers in a depressed economy / low credit in real estate
Improved indoor air quality; related productivity improvements	Additional or perceived costs resulting from green certification fees
Mitigate traffic impacts	Lack of incentives to entice builders and developers

Benefits of Green Building	Barriers to Green Building
Decreased storm water runoff; improved water quality	
Minimize extreme temperatures in highly urbanized areas; maintain open space	
More integrated design approaches to capital improvement	

The last two questions in the survey were also open-ended and dealt with the issues of stakeholder engagement in formulating green building policies as well as the on the economic and social impacts of green building policies within the surveyed communities. Some of the common stakeholders identified by respondents were builders and developers, residents and citizen groups, City and County Commissioners, local utility companies, building material manufacturers and suppliers, property managers, homeowner associations, various City and County departments, conservation organizations, architecture and engineering firms, the USGBC and FGBC, Contractor Licensing Boards, chamber of commerce and local realtors. The breadth of stakeholders identified indicates that local government administration appreciates the multi-disciplinary nature and far-reaching impacts of green building. However the success of any green building policy will depend on how these stakeholders will be actually engaged in the planning process.

Respondents expressed interesting local perspectives of green building practice in response to the last question. Some of the most direct economic impacts are expected to be on the building owners and residents who will enjoy reduced water and energy consumption and solid waste generation, as pointed out by the Dunedin's response. Many

responses also elaborated on the more indirect positive impacts of green building, such as on the construction industry:

“The local green building industry has benefited greatly from the country’s early adoption of these incentives, with local construction, architecture, engineering, and planning firms all responding to the opportunity and community demand with new staff, skills and programs to take advantage economically. Some green builders have claimed to be weathering the economic downturn better due o their niche in responding to the public demand for green building” (Sarasota County’s survey response).

Orange County’s response described how its initial sustainability effort titled ‘Orange to Green’ has now grown to ‘Green to Green’ to reflect the positive economic fallouts of their green initiatives. Reduced use of natural resources, waste reduction, recycling and reduced air emissions were identified as some environmental impacts that resulted in cost savings. Another example of economic benefits was provided by St. Lucie County, which is currently pursuing the creation of an Education and Research Park that will feature a variety of green industries and is expected to have a ripple effect in creating jobs across the social cross-section.

Many cities and counties also elaborated on the potential social impacts of adopting local green building policies. Hillsborough County’s response made a connection between in-house governmental green building practices and benefits to the community by explaining how the implementation of energy conservation methods can save money to the government, which in turn can pass these savings to its county residents by way of lowering their taxes. A more direct social impact of green buildings cited in the responses was the construction of healthier structures with lower utility bills and better indoor environmental quality for those with lower incomes. Among the

respondents that claimed to be working on creation of green, affordable housing were Orange and St. Lucie Counties and the City of Orlando. Another social equity aspect cited was the expected rise in demand for local talents which will provide new opportunity to teach emerging skill sets to disenfranchised segments of the population. The responses indicate an overall good awareness about green buildings and knowledge about its many benefits. The challenge to their successful adoption of green practices would be to overcome the barriers through effective partnership with various stakeholders and close coordination with higher level of government.

CHAPTER V

CONCLUSION

Although climate change and other major contemporary environmental problems are global in scale, the importance of addressing these issues at the local level has been sufficiently established in the scientific community. Inherent in the sustainable development paradigm is the triple notion of protecting the natural environment, promoting a sustainable economy and ensuring that the benefits are distributed equitably among various sections of the society. There is growing consensus that the environmental, economic and social aspects of sustainable development can most effectively be addressed by taking action at the grassroots level. Policy-makers and urban planners across the world have begun responding by adopting the principles of sustainable development within the local planning context. Communities across the U.S. are embracing sustainable development through adoption of various green standards pertaining to buildings and government activities. The Green Local Government standard, developed by the Florida Green Building Coalition (FGBC), is one such standard that is becoming popular among Florida local governments.

The aim of this research was to evaluate the commitment and performance of local governments in Florida with regards to the implementation of local sustainable development policies. While the study sample was limited to only those cities and counties that have adopted the Green Local Government standard, the evaluation of these local governments was done both within and beyond the certification requirements. Results of this study provide four important findings regarding local sustainability efforts

in Florida that are associated with this study's research questions outlined in Chapter I. The four research questions as well as summaries of the respective findings are presented below.

Research Question 1: Are the Green Local Governments of Florida adopting sustainable development as an overarching development framework?

Results from the survey and review of government websites provide important insight into local government efforts to create more sustainable communities. Municipalities and counties that have adopted the Green Local Government standard showed a high level of commitment to the principles of sustainable development overall. While the number of sustainability related programs adopted locally varied across the study sample, a majority of the local governments (about 65%) were found to have adopted sustainable development as an overarching planning paradigm guiding local policy making. Many localities have introduced principles of sustainable development within their strategic plans and vision documents. Wheeler (2000, p. 138) has observed that endorsing sustainability through such policy documents leads to the generation of “consensus on directions for sustainable metropolitan development, built knowledge about specific policy opportunities, inspire individuals and groups to take action, and (if backed by political authority) can actually bring about change”.

Similar change can also be brought about locally by educating communities about the importance and benefits of sustainable development in daily life. The web-based review revealed that a significant number of local governments studied were found to disseminate sustainability-related information to local communities through their

websites. While the amount of web-space devoted to sustainability information varied significantly among smaller and larger cities/counties, their efforts to educate the public and advertize local initiatives suggest a strong commitment to the idea of sustainable development. Creation of a separate office of sustainability or at the least dedicated staff devoted to carrying out sustainability activities is yet another way to ascertain local government commitment. That the creation of a dedicated office and/or staff was observed only within the larger cities and counties among the study sample indicate that such development is influenced by local financial and bureaucratic situation and may not be entirely indicative of the extent of the local government's commitment to sustainability.

Given that several other local sustainability planning studies carried out previously (see example Conroy, 2006; Saha & Paterson, 2008) did not find such high level of commitment among local governments, it can reasonably be concluded that the adoption of the Green Local Government standard was responsible for this shift in attitude of the local governments towards sustainable development.

Research Question 2: To what extent do certified local governments fulfill the sustainability criteria of the Green Local Government standard?

A review of the completed Application Tools of FGBC certified local governments led to an assessment of the extent to which cities and counties fulfill the sustainability criteria included in the Green Local Government standard through adoption of specific local initiatives. Irrespective of a broader level commitment to sustainability displayed by the local governments, their sustainability performance in terms of actual

initiatives undertaken did not appear to be comprehensive. Certified local governments were found to have just enough credit point scores to be able to make it to a particular designation level. Also, sustainability criteria were not fulfilled evenly across all the departments, with some areas of government activity being neglected. This implies that although governments did formally adopt the sustainable development paradigm, actual implementation in terms of initiatives undertaken is occurring in a piecemeal, ad hoc fashion.

Although my research did not attempt to determine why some government departments show less sustainability related activity, some possible reasons may be technological or economic infeasibility, lack of political expediency, or absence of public support/pressure for certain issues. Furthermore, the FGBC standard appears to be not agile enough to ensure that actions are comprehensive and balanced across all areas of government activities. Some possible ways to make the standard more effective would be to include built-in checks in the point system that require local governments to achieve a minimum score within each departmental category. This would ensure that local sustainability efforts are spread among all areas of government activities. Furthermore, the certification system does not currently require a certified local government to improve upon its past performance during the renewal of its certification. A requirement of achieving increasingly higher scores each time a city or county desires recertification will ensure that local governments remain committed to sustainable development and continually improve performance on an ongoing basis.

Research Question 3: Do the sustainability initiatives being adopted by the Green Local Governments equally address the environment, economy and equity dimensions (also referred to as the 'Three Es') of sustainable development?

The findings of my study show that most of the sustainability initiatives undertaken by local governments revolve around the protection of the environment, for example water-quality protection and safer waste disposal programs. Local sustainability actions did not appear to adequately address the societal and economic dimensions of the sustainable development paradigm. The neglect of the socio-economic aspects of sustainable development was found also in the certification requirements of the Green Local Government standard. This finding is consistent with Saha and Paterson's (2008) and Warner's (2002) observations that the "three Es" of sustainable development have failed to translate into reality at the local government level in the U.S. While this study does not deny the possibility of sustainability aspects being partially addressed in existing social justice programs within the surveyed communities, it is evident that any such initiatives were not included in the local sustainability discourses, which were primarily limited to the ecological dimension of sustainable development.

Research Question 4: Are the Green Local Governments promoting green building practice, and what are the major obstacles they face in adopting local green building policies?

Considering the fact that buildings have a significant ecological impact within the built environment and that the emerging concept of green buildings show a great potential of significantly decreasing this impact, my research additionally focused on the

experience of Florida local governments in adoption of green building policies. Results from the survey of officials in charge of local sustainability programs provided important insight into local government efforts and challenges within this aspect of urban sustainability.

Findings of my study reveal that the surveyed local governments are aware of the environmental benefits of green building and are highly interested in promoting green buildings within their jurisdictions. This was demonstrated through the fact that most of the municipalities and counties surveyed have either already put in place some kind of an incentive-based green building policy or is in the process of doing so. However, the survey respondents also cited several barriers in pursuing local green building efforts, confirming the findings of several previous studies (see Ding, 2008 and Burnett, 2007). A significant finding, important in Florida's context, was that a majority of the local governments surveyed listed their inability to unanimously amend the State Building Code as the major barrier to building green. The inability of municipalities and counties to promote green buildings through bringing necessary amendments in the building code gives credence to the observation made by Saha and Paterson (2008, p. 35) that, "Many activities that lead to unsustainable ways of living are outside the purview of local governments".

Based on the summary of the above findings in response to my research questions it is evident that in the context of Florida local governments, progress in establishing sustainability as a planning paradigm is at best incomplete. Although the local governments show an in principle commitment to adopting sustainable development as a local planning framework guiding local policies and activities, the actual sustainability

initiatives undertaken by them do not appear to be comprehensive across various spheres of government activities nor do they address the broader aspects of sustainable development. One possible reason could be the fact that communities are just beginning to understand sustainable development within the local perspective, and that most are also only in the very initial stages of the Green Local Government certification cycle. It is also important to realize the difficulties inherent in bringing about such a paradigm shift. As Saha and Paterson (2008, p. 35) observed, “One cannot achieve a sustainable society in a single grand leap”. Some obvious obstacles to local government action are financial, resource and bureaucratic difficulties. A long-term evaluation will be required to determine whether the Green Local Government standard is effective in bringing a permanent, comprehensive and grassroots-level sustainability approach within these communities.

The growing prevalence of the Green Local Government standard appears to be a definitive contributing factor to increasing number of sustainability initiatives undertaken locally within the state. However, determining whether it alone is the reason for the positive change in local perspective towards sustainability would require further research. Comparison of sustainability performance between communities that have adopted the standard and those that have not could shed light on its real impact.

A critical observation of the Green Local Government standard that emerges from this study is that the standard focuses largely on the environmental aspect of sustainability while the societal and economic aspects appear to be largely neglected. The standard itself does not make any claim about meeting all three dimensions. However, considering that the expanded definition of sustainable development has become almost

universally prevalent, the absence of social and economic aspects in the Green Local Government criteria undermines its outlook to local sustainability.

Finally, despite the sustainability progress being made in communities across Florida, a successful effort to bring effective changes must ultimately involve all levels of government. This is because many sustainability related activities are beyond the jurisdiction of local governments (Saha and Paterson, 2008), such as the inability of municipalities and counties in Florida to unanimously bring local amendments to the state building code which prevents them from mandating green building provisions. For the green building movement and other green initiatives to be effective, a greater coordination among the state and local governments will be necessary. To quote Saha and Paterson (2008, p. 35), “Though local government cannot bring about all the change by themselves, it is clear that they can make a meaningful contribution and must be encouraged to do so”.

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APPENDICES

Appendix A: Florida Green Local Government Policy Survey

A) RESPONDENT INFORMATION:

IMPORTANT NOTE ON HUMAN SUBJECT RESEARCH AND INFORMED CONSENT:

All research activities at University of South Florida (USF) involving human subjects are governed by the guidelines and approval of the Institutional Review Board (IRB) of this university. The purpose of IRB oversight is to assure the protection of the rights and welfare of human subjects.

The extent of human subject involvement in my research is this survey that is being sent out to the offices of twenty eight City Managers and County Administrators in Florida, to be forwarded to the appropriate office overseeing the green building/sustainability initiatives in their respective administrations. Since this study involves the collection and analysis of *existing* and *public data*, and because the survey respondents are either *appointed* or *elected public officials*, my research qualifies for an exemption certification under the IRB process. Furthermore, this research is categorized as a '*minimal risk*' study. All necessary IRB related procedures have been initiated and required documentation has been done for this study.

As per IRB guidelines, participation in this study and providing any personal information is voluntary. The personal information of the survey respondents collected below is purely for internal record-keeping, and will not be used in the final thesis or any subsequent academic publications nor will be shared with anyone. The title and the name of the respondents' office will contribute to the research objectives by helping me better understand the local government administrative structure with regard to implementation of green building and sustainability initiatives in general. In the final thesis, the green building policies identified and analyzed during this study will be linked only to the respective local government (City/County) and not with any individual public official.

NOTE: Please type your responses in the space provided. The following information is voluntary and should be *filled by the individual completing the survey*:

- 1) Name:
- 2) Title:
- 3) Positional Affiliation (Office/Department/Administrative unit):
- 4) City/County Name:
- 5) Date on which this survey was completed:

[B] GREEN BUILDING POLICY INITIATIVES:

A number of local governments across Florida are adopting policies/programs to promote sustainable ("green") construction in public and private sectors. Such initiatives include but are not limited to amendment of building codes, providing incentives for certified green buildings and certification of local green governments. Two popular non-governmental certifying bodies are the U.S. Green Building Council-Leadership in

Appendix A (Continued)

Energy and Environmental Design (USGBC-LEED) and the Florida Green Building Coalition (FGBC). According to online information available on the FGBC website, your City has been certified (or is in the process of getting certified) as a ‘Green Local Government’ by FGBC (<http://www.floridagreenbuilding.org/db/?q=node/5363>).

This section of the survey is designed to compile some very specific information regarding the green building policies/programs in your City. Questions 1 and 2 pertain to local amendments to the Florida Building Code and other policies/programs implemented by your City.

NOTE: Please type your responses in the space provided below each question (Questions 1 and 2). When returning the completed survey, please attach electronic copies of any supporting/ requested documents, emailing them to: [\[nupadhya@mail.usf.edu\]](mailto:nupadhya@mail.usf.edu).

Question 1: Local Amendments to Florida Building Code

Has your City amended the Florida Building Code to include provisions for green building features? Such provisions may include, but are not limited to, green building criteria in FGBC and/or USGBC-LEED certification systems. Please provide an electronic copy of all such amendments, highlighting the green building provisions in it. Also, please provide the date(s) on which such amendments were passed by your City.

Answer:

Question 2: Green Building Programs/Policies

Has your City enacted any programs or policies (other than amending the Florida Building Code) to promote green building practices - including but not limited to promoting USGBC-LEED and/or FGBC certification? Include policies directed at both public and private construction. Please list all such initiatives in the table below, expanding the table as necessary. Also, please attach electronic copies of any supporting document for all items listed.

Title of the Initiative/ Program	Objective	Initiation Date/ History	Target Audience, if appropriate (eg. public or private construction)	Title(s) of Supporting Documents	Highlights of this Program in relation to Sustainability

[C] LOCAL GOVERNMENT PERSPECTIVE ON GREEN BUILDINGS:

‘Sustainable development’ is commonly defined as “development that meets the needs of the present without compromising the ability of the future generations to meet their own

Appendix A (Continued)

needs". It is thus a broadly defined concept and can be addressed through a variety of ways - reducing energy and water usage, improving water and air quality, preserving critical habitats, recycling and waste management, encouraging green landscapes, increasing public awareness etc. It is expected that local governments will adopt sustainable strategies, including those pertaining to green buildings, based on local realities and objectives. This section of the survey attempts to gain an insight into your City's perspective of sustainability in terms of sustainable construction.

NOTE: Please provide very short, but descriptive answer for each of the following seven questions (Questions 3 to 8). Type the answers in the space below each question. While returning the completed survey, please attach electronic copies of any supporting documents, emailing them to: [\[nupadhya@mail.usf.edu\]](mailto:nupadhya@mail.usf.edu).

Question 3: Does your City have a formally adopted Sustainability Strategic Plan, Mission/Vision statement or a similar document outlining the aims, objectives and key strategies pertaining to sustainability? If yes, please mention the name of that document below along with the date on which it was formally adopted. Also, attach an electronic copy of this document while returning the survey.

Yes No

Name of the document:

Date on which adopted:

Question 4: Have the local green building policies of your City (listed in response to Question 2 above) been modeled along any specific green building certification system, such as USGBC-LEED or FGBC? In other words, has any particular certification system been formally adopted by your City for designing green building policies?

Yes No

If Yes, mention the name and briefly describe how the system has been incorporated:

Question 5: What have been (or are expected to be) the major benefits of green construction practices in the context of your City? Please list below all major benefits identified.

List Benefits:

Question 6: What have been (or are expected to be) the major impediments or barriers to adoption of green construction practices in the context of your City? Please list below all major barriers identified.

List barriers:

Question 7: Has your City identified the stakeholders and involved them in the process of formulating green building policies/programs? If yes, please list all major categories of stakeholders identified and briefly describe how they were (or can be) engaged in the policy making process.

Appendix A (Continued)

Yes No

If Yes, list major stakeholder categories identified:

Question 8: Sustainable development is often defined to include the three dimensions of environment, economy and equity (the “Three E’s”). Are the green building policies adopted by your City designed to promote all three aspects? Explain briefly how such policies would have positive economic and social impacts within your City.

Answer:

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