

**LOCAL GOVERNMENT SUSTAINABLE DEVELOPMENT:
A THEORETICAL PARADIGM OR A PLAN FOR
ACTION?**

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Key Words: sustainability, local government, environmental protection, economic development, social equity

JEL Codes: G18, H7, O1

Abstract

Local governments are a vital component in the national effort to promote sensible methods for community development, growth and social justice. The benefits and challenges of sustainable development have become apparent as more local governments initiate programs to address economic, environmental and social equity issues. This research investigates county and municipal government efforts toward sustainable development using survey information for local governments in the southern United States.¹ Survey responses were analyzed to examine whether local governments “practice what they preach” in terms of actually implementing the sustainable policies proclaimed to be important to their operations. Overall, results suggest local governments do place these policies into action for environmental and social justice issues. In addition, the analysis explores the impact of population

¹ Survey data are available through the International City/County Management Association.

size, geographic area and form of government on sustainable development. Measuring the implementation of sustainable policies in terms of dollars, however, proves difficult because there is no consistency among municipalities with regard to reporting the amount of dollars (federal or local) spent in support of sustainability efforts.

INTRODUCTION

While sustainability efforts initially began on the global stage, the paradigm now is understood at the federal and the local level. In October of 2009, President Obama signed an Executive Order that sets sustainability goals for federal agencies. As part of that Executive Order, specific goals were set to reduce waste, increase efficiency, conserve water and support sustainable efforts in local communities. Local communities are further supported by organizations such as the International City/County Management Association which has an extensive Center for Sustainable Communities (*Center for Sustainable Communities* 2012) and the National Association of Counties (National Association of Counties 2010) which offers tools and research on green practices.

According to the 2012 Census of Governments there are an estimated 89,004 units of local government in the United States (United States Census Bureau 2012). Local governments are a significant part of the U.S. economy with 2010 revenues of 3.2 trillion and expenditures of 3.1 trillion dollars (Barnett and Vidal 2010) The impact that local governments have on society, the environment and the economy cannot be overstated.

Sustainable development research at the local level is important for several complimentary reasons. First, most local governments in the United States can or have implemented policies pertaining to sustainable development. Clearly, a significant amount of consumption, waste generation and production is occurring at the local level (Lewis 2000). Second, research can provide economic information and best practices for local governments and the communities they serve. Finally, the research

is important to local government leaders, policy makers, researchers and others who have an interest in formulating or perpetrating sustainability at the local level.

Interestingly, there is no consistency among local governments in reporting sustainability expenditures on the Comprehensive Annual Financial Reports. This is not to say that the local governments are not funding green efforts. Clearly, local governments are receiving federal grants and spending local tax dollars in support of sustainability efforts. However, spending is not identified as supporting sustainable efforts in environmental protection, economic development or social equity, in spite of the global effort to promote green practices.

Global recognition of sustainable development and a focus on local sustainability efforts began in earnest in Rio de Janeiro, Brazil in 1992 at the United Nations Conference on Environment and Development (UNCED).² The first Earth Summit, as it became known, resulted in the passage of a resolution called Agenda 21. Contained within Agenda 21 is Article 28 and it is this article that initially recognizes that promoting local sustainable development will further goals toward global sustainable development (The Origin of UN Commitment to Sustainable Development 2012; Finding consensus: The 1992 Earth Summit and Agenda 21 2012).

A number of local governments have implemented sustainability programs in recent years including towns in West Virginia, Arkansas, North Carolina, Connecticut and Massachusetts (United States Department of Transportation 2012). The breadth and depth of these programs varies widely and depend on specific local priorities and circumstances (Lewis 2000). The question as to whether or not sustainable development is undertaken to further professional or political careers (i.e. get re-elected), to assuage eco-conscious constituents or undertaken

² The U.N. held the Conference on Human Environment in 1972 and the World Charter for Nature in 1982, but neither of these resulted in a “a blueprint” for sustainable development in the same way as the 1992 Conference.

because supporting sustainable development is currently politically correct is unclear.

Nevertheless, there has been a fundamental shift in the methods that local and state governments use to plan for community growth and development. Planning for growth and the responsible use of community resources has been redefined over the last decade due to an increasing awareness of the importance of sustainable development (United States Office of Environmental Justice and Office of Sustainable Communities 2010). Central to this shift is the recognition that sustainable development is not an abstract notion or a temporary problem due to political climate or economic recession, but a practical model which can be used as a guide to preserve the environment, encourage economic development and to promote social justice (Campbell 1996).

Measuring local government commitment to sustainable efforts in terms of dollars spent on programs is a worthwhile goal. According to USAspending.gov, there are over 1,080 federal commissions, agencies, departments, centers, services, administrations, offices and programs that offer billions of dollars of federal grants to eligible local governments. These include programs to support sustainable efforts. The Environmental Protection Agency, for example, which has 31 offices, the Department of Housing and Urban Development, which has 39 offices and the Department of Transportation that has 33 offices each offer funding for local communities and sustainability efforts. Other than the required “single audit” of federal grant receipts that are greater than \$300,000, local governments do not provide details about sustainable grant dollars received or spent. It is certain that taxpayer dollars are being spent to support green efforts, but a record of how much is being spent is nonexistent.

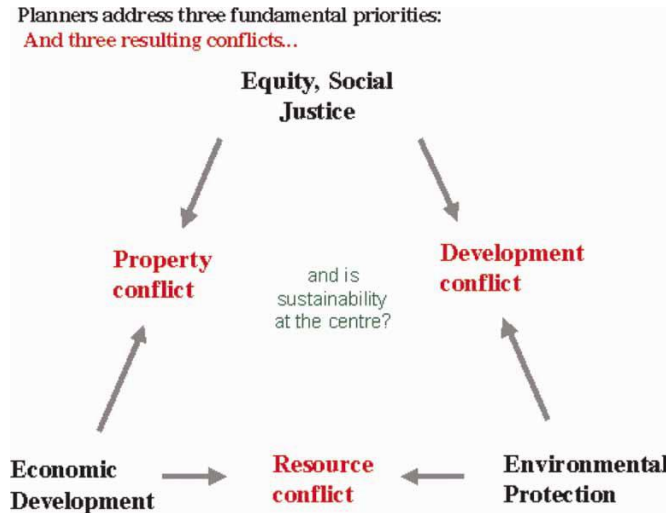
When Campbell (1996) wrote “Green Cities, Growing Cities or Just Cities” he introduced a model that refers to the “Three E’s” of sustainable development, environmental protection, economic development and social equity. The concept of sustainable development is difficult to define, perhaps because the

concept is broad and narrow, local and global, and tangible and intangible. Environmental issues, such as waste management, conservation and water and air quality have traditionally been the focus of sustainability efforts at the local and national level. Economic development is usually deemed a primary objective of local government, but sustainable economic growth, bounded by environmental and social justice concerns is a more contemporary philosophy.

Social equity, perhaps the most difficult of the Three E's to address, is becoming an objective of some sustainability efforts within local communities. Social equity includes property rights and usage, resource allocation, quality of life and social awareness issues. For example, the ICMA and the U.S. Department of Housing and Urban Development (HUD) are currently conducting case study evaluations of two projects under the "Choice Neighborhoods Transformation Plans". The projects are conducted over a three year period with a grant from the ICMA and support from both the ICMA and the HUD and will help determine factors that will turn "neighborhoods of concentrated poverty" into functioning and sustainable neighborhoods with proper services, transportation, jobs and schools.

Campbell (1996) introduced the "Planner's Triangle" to demonstrate the three fundamental priorities of urban planning (Figure 1). The model proposes that the concept of sustainable development has three priorities and three inherent conflicts. The priorities for developing communities and planning for growth are economic development, environmental protection and equity (social justice). The conflicts result from the tension created between the three priorities.

Figure 1. Campbell's Planners Triangle



For example, the property conflict arises as a result of efforts to stimulate economic development while trying to achieve social equity (Campbell 1996). These two goals are at odds because where a finite set of resources are allocated to economic development there are simply less to be dedicated to social justice. Similarly, the development conflict is characterized by the need to provide social equity (e.g., jobs, housing) and the need to protect the environment. The third conflict arises because of the tension between environmental protection and economic development because protecting the environment (e.g., disallowing hydraulic fracturing “fracking”) can result in loss of jobs and a slow-down of economic growth that diminishes both social equity and economic development efforts. The issue for state and local government is the degree to which balance is achieved between the three priorities and the degree to which the conflicts are minimized.

LITERATURE REVIEW

In general, researchers agree that social equity (social justice), environmental protection and economic development are the three fundamental goals of sustainable development in local government (Lewis 2000). While the majority of research to date has focused on environmental protection, researchers recognize that social equity and economic development cannot be disentangled from environmental protection.

Municipal managers must spend taxpayer dollars to support programs and policies that promote sustainable efforts. For example, recycling, energy efficiency (i.e. the purchase of electric vehicles or solar equipment) mass transit, bike lanes, land conservation programs and affordable housing each require financial resources. The ICMA survey used in this study indicates that some local governments have dedicated staff specifically for sustainability efforts. However, only 90 of the 625 responses indicate that there is a budget developed for sustainability efforts. Perhaps this explains why sustainable spending is not clearly identified on the Comprehensive Annual Financial Reports (CAFR) of most local governments.

Saha (2009) evaluated existing research on local government's sustainability practices in the U.S. and gaps in the current research. He identifies three categories prevalent in local government sustainability research (Saha 2009). The first category is the theoretical and conceptual foundation and planning process, the second category is case studies of innovative sustainable practices and the third is measuring the progress of sustainability efforts in the United States. Saha (2009) discusses several gaps in the current local government sustainability research. There is one gap that Saha does not discuss and that is local government expenditures in support of sustainability initiatives.

Portney (2003) investigated what factors made some local governments take sustainability efforts more seriously than others

did. He developed a sustainability index based on sustainable program elements and assigned scores to 24 different cities (Portney 2003). Another study defined sustainability using 39 policies that can be adopted and found that most communities focus on land development and land use planning at the expense of economic development and alternative energy development (Jepson 2004). Conroy (2006) polled local governments regarding their sustainability efforts and discovered that most did not consider sustainability an agenda item. One recent study focused on the factors that affect sustainability reporting in a group of Australian Local Councils (Sciulli 2011). The author found that population and urban growth into mandated green space and climate change were primary considerations when thinking about sustainability reporting. Sciulli also found that sustainability reporting is not in the accounting or finance department of local governments and that those departments remain focused on budget and cash flow reporting.

METHODOLOGY

This study utilizes standard data from a survey of local governments conducted in 2010 by the International City/County Managers Association (ICMA). The survey measured local government commitment to sustainable development in the Southern Region of the United States (see Appendix I). The survey contained questions about local government sustainability policies and programs.

The survey was distributed to 2,696 local governments across three regions. The regions included the South Atlantic (Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia, and District of Columbia), East South-Central (Alabama, Kentucky, Mississippi, Tennessee) and West South-Central (Arkansas, Louisiana, Oklahoma, Texas). Of those surveyed, 625 responded resulting in a 23.2% response rate. The survey was analyzed and survey questions were classified as

reflecting one of the three “E’s” environmental protection (ENV), economic development (ECO) or social justice (SJ).

Variable Definition

The ICMA survey is composed of a series of 26 numbered questions. Responses were provided in one of four formats. The formats included yes or no response, check all applicable, check only one, and an open-ended response. Some adjustments were made to standardize the survey data and to obtain a broad perspective of the specific programs implemented. It was necessary to ensure that all were equally represented for each category (ENV, ECO and SJ) so that an average could be calculated.

The yes or no responses were originally coded 1 for yes and 2 for no. The yes or no responses were recoded 1 for yes and 0 for no in order to be consistent with the remainder of the questionnaire, which uses a higher value to connote the existence of a program.

Most questions in the survey were the check all applicable format. These are easily represented as a dichotomous variable, as the lettered items under the sub-heading in the survey require a response of 1 for a situation where the government has instituted the policy in question and a 0 where they have not. As a result, the maximum score for each line item is 1. However, questions 11 and 24 have more than one choice for each lettered line item. The data show that question 11 could have a score as high as 3, while question 24 could have a score of 2. Questions 11 and 24 were modified so that no line item response could be greater than one (where there were two choices per line item each was 0 or 0.50, where there were three choices per line item each item was 0.33). For the remainder of the check no applicable questions had to be modified.

The check only one format applies only to question number 1 which was categorized as a policy variable. Question 1 was composed of eight lettered policy action questions. The policy variables, environmental protection (ENV P), economic

development (ECO P) and social justice (SJ P) were created from this question. Question number one required selecting one of four ranked choices. The choices included selecting if the policy was not a priority (1), somewhat a priority (2), priority (3) and high priority (4). These are distinct from the remainder of the survey in that the results could range from 1 to 4 and because the local government was required to place a quantitative assessment on their overall philosophy on the environment, climate change, green jobs, energy conservation, public transit, social justice, housing for all income groups and the economy.

Next, the survey questions had to be categorized into one of the three sustainable development categories, environmental (ENV), economic (ECO) or social justice (SJ). See Appendix II for questionnaire categorization.

In terms of categorizing question 1 variables, five of these were classified as ENV, two as SJ, and the remaining question as ECO (see Appendix II). Responses to these questions were considered the *policy* variables as local governments were asked to choose one of four attributes to describe the extent to which the variable is a priority in their jurisdiction. As a result, the degree to which a local government places priority on environmental policies (ENV P) was defined as an average of 5 response ratings, the emphasis placed on economic policies (ECO P) was the answer to the economic policy question and the emphasis on social justice policies (SJ P) was the average of the two SJ P questions.

After the first policy question, the ICMA questionnaire continues with specific questions regarding the existence of targeted programs to promote ENV, SJ and ECO (questions 2 through 26). The remaining questions were used to estimate the action variables. Action variables are the focus of this research because they measure the extent to which local governments have implemented environmental, economic and social justice priorities (ENV ACT, ECO ACT, and SJ ACT).

From the Appendix II questionnaire categorization, it can be seen that the survey is heavily weighted toward environmental

priorities. This was as expected since sustainable development frequently has an environmental focus. Since many of the questions had lettered sub-headings, 106 environmental action questions are averaged for ENV ACT, one economic question represented ECO ACT and 10 social justice questions made up SJ ACT.

Respondents were also required to provide other descriptive variables. Of these, population size (POP), geographic area (GEO) and form of government (FOG) were examined for potential relationship to sustainable development. POP was the reported population of the local government, GEO related to the South Atlantic, East South-Central and West South-Central regions, respectively and FOG was one of eight types of government and is discussed in detail in the hypotheses development. Table 1 includes the descriptive statistics for each variable. Hypotheses suitable for testing were developed and are presented in the following sections.

Table 1
Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
ENV P	625	.0000	4.0000	2.226240	.6764937
ECO P	625	0	4	3.60	.788
SJ P	625	.0	4.0	2.365	.8490
ENV ACT	625	.0000	.6634	.173958	.1203429
ECO ACT	625	0	1	.03	.176
SJ ACT	625	.0000	1.0000	.191680	.2214345
POP	625	2556	1623018	62451.80	163382.612
GEO	625	5	7	5.69	.872
FOG	625	1	8	2.85	2.272
Valid N (listwise)	625				

Action or Theoretical Paradigm

The extent to which local governments actually implement the three E's is central to this research project. Do local governments "walk the talk" or "practice what they preach".

To this end, research questions are focused on the description of local governments that implement environmental, economic and social justice programs. The following hypotheses detail each independent variable being examined to explain the action variables.

To explore whether or not the espoused environmental, economic and social justice priorities of local governments are actually carried out, hypotheses (*in alternative form*) were developed to examine the relationship between policy and action variables. Local governments do not support the following sustainable development policies with the implementation of actual programs:

H1: Environmental protection policies are not supported with the implementation of actual programs.

H2: Economic development policies are not supported with the implementation of actual programs.

H3: Social justice policies are not supported with the implementation of actual programs.

Three previous studies that attempted to measure sustainability initiatives of local governments examined the various initiatives that each government employed with mixed results (Saha 2009).

An indirect relationship between policy variables and action variables would indicate that local governments do not follow through and implement the policies rated to be important. In

such situations, the alternative hypotheses above would be accepted and the null hypotheses of implementation of policies would be rejected.

Population Effect on Sustainable Development Elements

As mentioned previously, population growth was cited as a major area of concern in a 2011 study of factors that affect sustainability reporting (Sciulli 2011). Based on this research a hypothesis was formulated to determine if larger local governments were more likely to focus on sustainable development. Using population to represent size, hypotheses (*in alternative form*) were developed. Local governments in more densely populated areas are more likely to implement the following sustainable development policies:

H4: Environmental protection programs are more likely to be implemented.

H5: Economic development programs are more likely to be implemented.

H6: Social justice programs are more likely to be implemented.

A direct relationship between population and the action variables would suggest that local governments in more densely populated areas are more likely to implement environmental, economic and social justice programs. In such situations, the alternative hypothesis should be accepted and the null rejected.

Geographic Effect on Sustainable Development Elements

The next hypotheses were formulated to explore whether or not geographic location plays a role in the inclination for a local government to implement sustainable development programs. The following hypotheses (*in alternative form*) were developed:

H8: Local governments in the South Atlantic region are more likely to implement programs in environmental protection, economic development and/or social justice.

H9: Local governments in the East South-Central region are more likely to implement programs in, environmental protection, economic development and/or social justice.

H10: Local governments in the West South-Central region are more likely to implement programs in environmental protection, economic development and/or social justice.

A positive relationship between the geographic variable and the sustainable development variables would indicate the West South-Central region implements more programs and therefore places a higher priority on sustainable development than East South-Central, followed by South Atlantic.

Form of Government Effect on Sustainable Development Elements

The next hypothesis was formulated to determine if the form of government (FOG) has an impact on a local government's commitment to implement sustainable development as reported in the survey. Previous research suggested that strong, centralized leadership is imperative in the areas of social and environmental issues (Sciulli 2011). There were eight different types of local government reported in the survey. The form of government (FOG) was represented with a variable of 1 (most centralized) through 8 (least centralized) to represent each form of governance. The Mayor is considered the most centralized form of government. The least centralized form of government is a council elected executive and is represented by a variable of 8. Table 2 identifies the form of government and associated variable.

Table 2

Form of Government	Variables
Mayor-council	1
Council Manager	2
Commission	3
Town Meeting	4
Representative Town Meeting	5
Commission	6
Council Administrator	7
Council-elected executive	8

H11 (*in alternative form*): More centralized local governments are more likely to implement programs in environmental protection, economic development and/or social justice.

An indirect relationship between the form of government variable and the sustainable development variable would indicate the more centralized forms of government place a higher priority on sustainable development. This result would suggest that the alternative hypotheses in was valid and should be accepted and the null hypothesis rejected.

RESULTS

To explore the extent to which local governments actually implement environmental, economic and social justice programs, bivariate correlations were calculated for all the estimated variables. Results are shown in Table 3.

Variables within each category of sustainable development found significant in the explanation of each of the action variables are included in bold. For the environmental category, a 1% relationship is evident between ENV ACT, ENV P, POP, GEO and FOG. For the social justice category, a relationship significant at 1% is also shown between SJ ACT, SJ P, POP, GEO and FOG. ECO ACT was not found to be related to ECO P, POP, GEO or FOG. Using this information, the following multivariate equations were estimated to explain both ENV ACT and SJ ACT.

Action or Theoretical Paradigm

The first three hypotheses address whether local governments implement the policies they espouse to be important. To investigate these hypotheses, the relationship between action variables and policy variables were examined. Results in Table 3 suggest that in terms of the environmental and social justice policy, local governments follow through with action by implementing related programs. There is a statistically significant and positive relationship between action and policy variables in the bivariate correlations shown in Table 3. Policy variables were then included to explain the action variables and the continued significance of both is further evidence that local governments “practice what they preach”. This results in the rejection of alternative hypotheses 1 and 3 and a failure to reject the related null hypotheses.

Table 3
Bivariate Correlations

		ENV P	ECO P	SJ P	ENV ACT	ECO ACT	SJ ACT	POP	GEO	FOG
ENV P	Pearson Correlation	1	.332**	.582**	.508**	.160**	.376**	.285**	-.173**	.158**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000	.000
	N	625	625	625	625	625	625	625	625	625
ECO P	Pearson Correlation	.332**	1	.324**	.105**	.046	.185**	.051	-.069	.116**
	Sig. (2-tailed)	.000		.000	.009	.253	.000	.204	.084	.004
	N	625	625	625	625	625	625	625	625	625
SJ P	Pearson Correlation	.582**	.324**	1	.221**	.125**	.342**	.178**	-.078	.095*
	Sig. (2-tailed)	.000	.000		.000	.002	.000	.000	.052	.018
	N	625	625	625	625	625	625	625	625	625
ENV ACT	Pearson Correlation	.508**	.105**	.221**	1	.228**	.563**	.464**	-.207**	.114**
	Sig. (2-tailed)	.000	.009	.000		.000	.000	.000	.000	.004
	N	625	625	625	625	625	625	625	625	625
ECO ACT	Pearson Correlation	.160**	.046	.125**	.228**	1	.212**	.053	-.050	.000
	Sig. (2-tailed)	.000	.253	.002	.000		.000	.186	.215	.999
	N	625	625	625	625	625	625	625	625	625
SJ ACT	Pearson Correlation	.376**	.185**	.342**	.563**	.212**	1	.345**	-.106**	.230**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000	.008	.000
	N	625	625	625	625	625	625	625	625	625
POP	Pearson	.285**	.051	.178**	.464**	.053	.345**	1	-.040	.330**

	Correlation								
	Sig. (2-tailed)	.000	.204	.000	.000	.186	.000	.315	.000
	N	625	625	625	625	625	625	625	625
GEO	Pearson	-.173**	-.069	-.078	-.207**	-.050	-.106**	-.040	1
	Correlation								
	Sig. (2-tailed)	.000	.084	.052	.000	.215	.008	.315	.000
	N	625	625	625	625	625	625	625	625
FOG	Pearson	.158**	.116**	.095*	.114**	.000	.230**	.330**	-.227**
	Correlation								
	Sig. (2-tailed)	.000	.004	.018	.004	.999	.000	.000	.000
	N	625	625	625	625	625	625	625	625

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

* Correlation is significant at the 0.05 level (2-tailed).

Table 4

Multivariate Model – ENVIRONMENTAL ACTION					
Variable	B	SE	β	t	Sig.
Constant	0.135	0.032		4.259	0.000
ENV P	0.069	0.006	0.391	11.807	0.000
POP	2.817E-7	0.000	0.383	11.161	0.000
GEO	-0.021	0.004	-0.149	-4.580	0.000
FOG	-0.006	0.002	-0.107	-3.154	0.002
Model Adjusted R²=0.391					

Table 5

Multivariate Model – SOCIAL JUSTICE ACTION					
Variable	B	SE	β	t	Sig.
Constant	0.038	0.062		0.618	0.537
SJ P	0.074	0.009	0.282	7.788	0.000
POP	3.874E-7	0.000	0.257	6.737	0.000
GEO	-0.013	0.009	-0.050	-1.363	0.173
FOG	0.010	0.004	0.107	2.760	0.006
Model Adjusted R²=0.210					

The survey did not provide sufficient data to reach any conclusions regarding economic development. Economic development action items included only one question on the survey where local governments are specifically asked if they established

any energy reduction programs targeted to small businesses. Therefore, while economic development policy is ranked as a high priority by most local governments, the survey does not offer a means to evaluate whether local governments implement these policies with economic development activities. As a result, discussion of economic development hypotheses will be excluded from the remainder of the result analysis and this has been identified as a limitation of the study.

Population Effect on Sustainable Development Elements

With regard to the contention that larger local governments would be more likely to implement environmental and social justice policies, the null hypotheses were rejected and the alternatives accepted. Bivariate correlations show a significant, positive, direct relationship between the environmental (ENV ACT) and social justice action (SJ A) variables and the population variable (POP). The multivariate equations in Tables 4 and 5 provide further evidence of a statistically significant relationship between variables.

Geographic Effect on Sustainable Development Elements

To explore the existence of any differences between the three geographic territories (South Atlantic, East South-Central and West South-Central), hypotheses 8 and 10 were evaluated with regard to ENV and SJ action variables. From the results of bivariate testing, it appears that the null hypotheses should be rejected and the alternative accepted, as the South Atlantic Region and the East South-Central appear to place a higher priority on the implementation of environmental and social justice programs than West-South Central region. This is evidenced by the indirect relationship between ENV A and SJ A variables and the GEO variable in the Table 3 bivariate results. Additional evidence is the significance and the negative sign of the GEO variable in the multivariate equations explaining ENV A and SJ A in Tables 4 and 5, respectively.

However, since GEO is comprised of three ranked variables, the results do not reveal which region tends to implement more action programs. Results do suggest, however, that GEO is a defining factor and the West South-Central appears to implement the fewest programs.

Form of Government Effect on Sustainable Development Elements

Finally, the results were examined to resolve hypothesis 11 regarding any relationship between the form of government FOG and the implementation of environmental and social justice programs. Bivariate and multivariate results between FOG and the implementation of environmental action programs (ENV A) and social justice programs (SJ A) suggest a failure to reject the null hypotheses and a rejection of the alternative. This was based upon the positive, significant relationship that emerged in the bivariate testing in Table 3 for both action variables. The significance and positive sign of FOG in the multivariate equations in Tables 4 and 5 further support for this result. Since the most centralized form of government is Mayor followed by a Council Manager, the direct relationship suggests a less centralized government is related to a higher implementation rate.

As outlined earlier in Table 2, FOG was represented with a variable of 1 for mayor (i.e., greater centralization) on a continuum to the lesser centralization in a council elected executive represented by a variable of 8. While the diversity of choices may not seem to increase directly and dramatically with level of centralization, a mayor (1) is considered more centralized than a council manager (2). A frequency distribution of the FOG variable in Table 6 shows that nearly 79 percent of the respondents to the survey indicated either Mayor (1) or Council Manager (2) as their form of government. Since an overwhelming majority of the variable is described by the first two choices, the positive

relationship between the FOG and action variables does seem to suggest less centralized government implements more environmental and social justice policies.

Table 6
Form of Government Frequency Distribution

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
1	144	23.0	23.0	23.0
2	347	55.5	55.5	78.6
3	6	1.0	1.0	79.5
6	1	.2	.2	79.7
7	97	15.5	15.5	95.2
8	30	4.8	4.8	100.0
Total	625	100.0	100.0	

Limitations of the Study

An overall limitation of the study is the use of a standardized questionnaire. First, the questionnaire was significantly skewed to concentrate on environmental data. While this was expected, the social justice question had only a limited number of variables to include and there was insufficient data to make any conclusions on the economic development facet of the sustainable development question.

The format of the data also resulted in some limitations in the estimation of the independent variables. For example, GEO was composed of the three regions included in the Southern Region overall (South Atlantic, East South-Central and West South-

Central). These were coded as 5, 6 and 7 so these values were used in order to include a continuous variable. A negative relationship emerged with a relationship between ENV A and SJ A. Since these were not separable, however, it is difficult to conclude exactly which region implemented action programs.

Another limitation of the data was the estimation of the available form of government (FOG). This variable in the survey was included to explore any relationship between the centralization of government and the implementation of sustainable development programs. While FOG was the only available measure to depict the centralization of government, this was considered a limitation because the 8 different categories may not increase directly and dramatically with level of centralization. However, since the lowest ranking was assigned to the most centralized form of government with Mayor measured by “1”, and most respondents chose “1” or “2”, the suggestion that the least centralized governments implemented more environmental and social justice programs appears to still be plausible.

Finally, the policy variable includes an inherent degree of subjectivity. Local governments may be inclined to inflate the degree to which they place environmental, economic and social justice concerns as a priority. For example, to state that any one of these is not a priority would be perceived as unfavorable and extremely unusual. This same degree of subjectivity does not exist with the action variables, however, as local governments are unlikely to say yes to the implementation of a specific program when they did not.

The aforementioned limitations should be considered in connection with analysis of the results of the survey but are not so significant to nullify the conclusions and results suggested.

Discussion of Results

Overall, results suggest that local governments set policies and implement environmental and social justice programs. These results are summarized in Table 7. The results were not as

originally expected in connection with previous studies and intuitive ideas. Contrary to the central contention of this study, results seem to indicate that local government sustainability is indeed a plan for action rather than simply a theoretical paradigm.

Table 7

Summary of Results			
Hypothesis Number	Variables	Hypotheses (stated in the alternative)	Results
1-3	ENV ACT – ENV POL SJ ACT – SJ POL	Local governments do not put sustainable development programs into action and these policies are simply theoretical paradigms.	Failure to reject the null hypothesis – results suggests local governments do appear to implement programs to support policies.
4-6	POP compared to ENV ACT & SJ ACT	Local governments in more densely populated areas implement more sustainable development programs.	Rejection of the null hypothesis for both ENV and SJ - results suggest more densely populated areas implement more programs.
8-10	GEO compared to ENV ACT & SJ ACT	There is a difference between the implementation of sustainable development programs based on geographic region.	Rejection of the null hypothesis - results suggest there is difference between geographic regions. The indirect relationship suggests South Atlantic implements more programs and West-South Central fewer programs.
11	FOG compared to ENV ACT & SJ ACT	More centralized local governments implement more sustainable development programs.	Failure to reject the null hypothesis – the direct relationship between action variables and FOG suggests less centralized forms of government implement more environmental and social justice programs.

As expected, densely populated areas are more likely to implement sustainable development programs and differences exist between geographic areas. However, contrary to original contention, less centralized governments are more likely to implement sustainable development.

Plans for Future Research

A logical extension of the current research would be to examine the commitment of local governments to sustainable development initiatives as measured by actual funding dedicated to these projects. As mentioned earlier, however, this is a difficult proposition because there is no consistency among local governments in reporting sustainability expenditures on the Comprehensive Annual Financial Reports (CAFR). Sustainable development expenditures do not have a dedicated line item on a consistent basis to reflect amounts spent on various sustainability programs.

Another means to analyze local governments' financial commitment to sustainable development is to examine if local governments experiencing financial distress are *less* likely to participate in sustainable development initiatives. Basically, sustainable development is a luxury that struggling local governments cannot afford.

A profile of local governments likely to experience financial distress has been established in a previous study. Research suggests fiscally distressed local governments receive more intergovernmental revenues, have lower administrative expenses, higher levels of debt and less growth in revenues than local governments that are not fiscally distressed (Trussel & Patrick, 2009). Since results of the current study suggest the South Atlantic region – including Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia, and District of Columbia – was the most dedicated to sustainable development

of the three regions in the south, this is a logical choice to examine for a relationship between sustainable development and fiscal stability.

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Appendix I



Local Government Sustainability Polices and Programs, 2010

Dear Chief Administrative Officer:

ICMA is conducting a survey on local government sustainability practices. The survey was developed with the input of ICMA's Center for Sustainable Communities, the Center for Urban Innovation, Arizona State University's Global Institute of Sustainability (ASU GIOS), and others. Survey distribution is conducted through collaboration with ICMA, ASU GIOS and the Sustainable Cities Network, a multi-jurisdictional partnership. This survey is provided in a print format because the local government response rate is both higher and more scientifically representative than for an electronic survey. Please assure the success of this project by completing the questionnaire by **August 9th 2010**. You can complete the survey online at <http://Sustainability2010.questionpro.com>

Sincerely,



Robert J. O'Neill, Jr.
Executive Director, ICMA

Policy Action

1. To what extent are the following a priority in your jurisdiction?

Policy issues	Not a priority	Somewhat a priority	Priority	High Priority
a. The environment				
b. The economy				
c. Social justice				
d. Climate change				
e. Green jobs				
f. Energy conservation				
g. Housing for all income groups				
h. Public transit				

2. Please indicate which of the following actions your locality has taken related to sustainability, energy conservation, resilience, climate change, emissions reductions, or similar concerns in your community. (Check all applicable.)

Action	Local government has taken action
a. . Adoption by the governing body of a resolution stating policy goals.	
b. Adoption by the governing body a plan with specific targets or benchmarks.	
c. Establishment of a sustainability policy and/or plan by the chief executive.	
d. Appointment of a citizens committee, commission, or task force.	
e. Provided a budget specifically for the sustainability effort	
f. Dedicated staff to the sustainability effort	

3. If your local government has dedicated staff to the sustainability effort, how many FTEs are dedicated?

4. Please indicate which of the following your local government has **established** related to the environment. (Check all applicable.)

Action	Local government has established
a. Baseline greenhouse gas emissions of the local government	
b. Baseline greenhouse gas emissions of the community	
c. Greenhouse gas reduction targets for local government operations	
d. Greenhouse gas reduction targets for businesses	
e. Greenhouse gas reduction targets for multi-family residences	
f. Greenhouse gas reduction targets for single-family residences	
g. Locally initiated air pollution measures to reduce dust and particulate matter	
h. Plan for tree preservation and planting	

Recognition Programs

5. Please indicate whether your community been recognized, credentialed, or won an award for any sustainability-related initiatives undertaken by your local government or through a public-private partnership. (Check all applicable.)

Recognition programs	Local government received recognition
a. Tree City USA designation	
b. EPA Smart Growth Achievement Award	
c. Phoenix Award for Brownfields Redevelopment	
d. Historic Preservation Merit Awards	
e. Other (Please describe)	

Water

6. Is your local government responsible for water services? a. Yes b. No
 6A. Which of the following actions has your government taken to improve and protect water?

Action	Local government has taken action
a. Actions to conserve the quantity of water from aquifers	
b. Use of grey-water and/or reclaimed-water use systems	
c. Sets limits on impervious surfaces on private property	
d. Use water price structure to encourage conservation	
e. Other incentives for water conservation behaviors by city, residents, and businesses	

Recycling

7. Which of the following actions has your government taken to promote recycling?

Action	Local government has
a. Internal program that recycles paper and plastic and glass in your local government	
b. Community-wide recycling collection program for paper and plastic and glass for residential properties	
c. Community-wide recycling collection program for paper and plastic and glass for commercial properties	
d. Recycling of household hazardous waste	
e. Recycling of household electronic equipment (e-waste)	
f. Pay-As-You-Throw (PAYT) program with charges based on the amount of waste discarded	
g. Community-wide collection of organic material for composting	
h. Require minimum of 30% post-consumer recycled content for everyday office paper use	

Energy

8. Which of the following actions has your government taken to decrease its use of energy?

Action	Local government has taken
a. Established a fuel efficiency target for the government fleet of vehicles	
b. Increased the purchase of fuel efficient vehicles	
c. Purchased hybrid electric vehicles	
d. Purchased vehicles that operate on compressed natural gas (CNG)	
e. Installed charging stations for electric vehicles	
f. Conducted energy audits of government buildings	
g. Installed energy management systems to control heating and cooling in buildings	
h. Established policy to only purchase Energy Star equipment when available	
i. Upgraded or retrofitted facilities to higher energy efficiency office lighting	
j. Upgraded or retrofitted traffic signals to improve efficiency	
k. Upgraded or retrofitted streetlights and/or and other exterior lighting to improve efficiency	
l. Upgraded or retrofitted facilities to higher energy efficiency heating and air conditioning systems	
m. Upgraded or retrofitted facilities to higher energy efficiency pumps in the water or sewer systems	
n. Utilize dark sky compliant outdoor light fixtures	
o. Installed solar panels on a government facility	
p. Installed a geo-thermal system	
q. Generated electricity through municipal operations such as refuse disposal, wastewater treatment, or landfill	

9. Has your local government established any energy reduction programs targeted specifically to assist **low-income residents**?

- a. Yes
- b. No

10. Has your local government established any energy reduction programs targeted specifically to **assist small businesses**?

- a. Yes
- b. No

11. Please indicate which of the following actions your local government has taken to reduce energy consumption in the community.

Action	Direct Grant	Direct Loan	Tax Incentive
a. Energy Audit-Individual residences			
b. Weatherization- Individual residences			
c. Heating / air conditioning upgrades- Individual residences			
d. Purchase of energy efficient appliances- Individual residences			
e. Installation of solar equipment- Individual residences			
f. Energy Audit-Businesses			
g. Weatherization-Businesses			
h. Heating / air conditioning upgrades- Businesses			
i. Purchase of energy efficient appliances- Businesses			
j. Installation of solar equipment-Businesses			

Transportation

12. Please indicate whether your local government offers incentives for the local government employees to take any of the following actions:

Action	Incentive offered
a. Take mass transit to work	
b. Carpool to work	
c. Walk to work	
d. Bike to work	

13. If your local government offers employees parking, do you charge market rates for employee parking? a. Yes b. No

14. Is telework permitted for staff members in your local government? a. Yes b. No

15. Do you have a specific target for the percent of your government work force that will telework? a. Yes b. No

15A. If yes, what is it? _____% (Please enter a number.)

16. Does your local government use a compressed work week with offices closed one day? a. Yes b. No

Building and Land Use

21. Please indicate whether your land use and development policies cover any of the following:

Activity	Land use and development policies cover
a. Require all new government construction projects to be LEED or Energy Star certified	
b. Require all retrofit government projects to be LEED or Energy Star certified	
c. Permit higher density development near public transit nodes	
d. Permit higher density development where infrastructure is already in place (utilities and transportation)	
e. Incentives other than increased density for new commercial development (including multi-family residential) that are LEED Certified or an equivalent	
f. Incentives other than increased density for new single-family residential be LEED certified or the equivalent	
g. Apply LEED Neighborhood Design standards	
h. Provide density incentives for "sustainable" development (such as energy efficiency, recycling of materials, land preservation, storm water enhancement, etc.)	
i. Provide tax incentives for "sustainable" development (such as energy efficiency, recycling of materials, land preservation, storm water enhancement, etc.)	
j. Reduce fees for environmentally friendly development	
k. Fast track plan reviews and or inspections for environmentally friendly development	
l. Residential zoning codes to permit solar installations, wind power, or other renewable energy production	
m. Residential zoning codes to permit higher densities through ancillary dwellings units or apartments (such as basement units, garage units, or in-house suites)	
n. Zoning codes encourage more mixed-use development	

22. Please indicate which of the following programs your local government has.

Program	Local government has program
a. An active brownfields, vacant property, or other program for revitalizing abandoned or underutilized residential, commercial or industrial lands and buildings	
b. A land conservation program	
c. A program for the purchase or transfer of development rights to preserve open space	
d. A program for the purchase or transfer of development rights to create more efficient development	
e. A program for the purchase or transfer of development rights to preserve historic property	

Social Inclusion

23. Please indicate which of the following programs your local government has.

Action	Local government has taken action
a. Provide financial support/incentives for affordable housing	
b. Provide supportive housing to people with disabilities	
c. Provide housing options for the elderly	
d. Provide housing within your community to homeless persons	
e. Provide access to information technology for persons without connection to the internet	
f. Provide funding for pre-school education	
g. Provide after-school programs for children	
h. Report on community quality of life indicators, such as education, cultural, diversity, and social well-being	

Other Actions

24. Has your local government taken action – either through restrictions or incentives – in any of the following areas? (Check all applicable.)

Action	Restriction	Incentive
a. To use locally produced material or products		
b. To reduce the use of plastic bags by grocery or retail stores		
c. To use locally grown produce		

25. Has your local government taken action in any of the following areas? (Check all applicable.)

Action	Local government has taken action
a. Restriction on purchase of bottled water by the local government	
b. Use of public land for community gardens	
c. Support a local farmer's market	
d. Education program in the local community dealing with the environment and energy conservation	
e. Locate recycling containers close to refuse containers in public spaces such as streets and parks	
f. Green product purchasing policy in local government	

26. Please describe in the space below any additional programs or policies your local government has put in place that you think would be helpful to other local governments.

Thank you for completing the survey. Please provide your contact information in case we need to follow up with you.

First Name:

Last name:

Title:

Telephone number:

E-mail address:

Please return your completed survey to: **Evelina Moulder, Director of Survey Research, ICMA, 777 N. Capitol St., NE, Suite 500, Washington, DC 20002** surveyresearch@icma.org

Appendix II

Question Number	Questionnaire Categorization	POLICY VARIABLES			ACTION VARIABLES		
		ENVIRONMENT	ECONOMIC	SOCIAL JUSTICE	ENVIRONMENT	ECONOMIC	SOCIAL JUSTICE
1	Policy (a-h)	5	1	2			
2	General Action (a-f)				6		
3	FTE – sustainability (not used)						
4	Environment (a-h)				8		
5	Recognition Program (a-e)				5		
6	Water – (not used)						
6A	Water – (a-e)				5		
7	Recycling (a-h)				8		
8	Energy (a-q)				17		
9	Energy low income						1
10	Energy – small business					1	
11	Energy Reduction (a-j)				10		
12	Transportation (a-d)				4		
13	Employee parking				1		
14	Telework				1		
15	Telework target				1		
15A	Telework (not used)						
16	Compressed week				1		
17	Transportation (a-i)				9		
18	Rail System				1		
19	Rail – Create/expand				1		
20	Low Income						1
21	Building and Land Use (a-n)				14		

Appendix II - continued							
Question Number	Questionnaire Categorization	POLICY VARIABLES			ACTION VARIABLES		
		ENVIRONMENT	ECONOMIC	SOCIAL JUSTICE	ENVIRONMENT	ECONOMIC	SOCIAL JUSTICE
22	Program Existence (a-e)				5		
23	Social Inclusion (a-h)						8
24	Other Actions (a-c)				3		
25	Action Areas (a-f)				6		
26	Open-ended (not used)						
Total		5	1	2	106	1	10