The Shaping of Sustainability Efforts in Cities

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In a report entitled *Our Common Future*, the World Commission on Environment and Development defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (1987, Chapter 2, ¶ 1). Over the last three decades, the discussion of sustainable development has shifted to *sustainability*. Beset with ambiguity, the term sustainability has no fixed meaning and can encompass anything from the design of green buildings to the reduction of carbon dioxide to the introduction of renewable energy sources. With regards to policy, sustainability can entail land use, waste management, energy efficiencies, green jobs, and local food systems.

The challenge of understanding what is meant by sustainability increases exponentially amidst local policy considerations. Hundreds of U.S. cities have at least considered sustainability to some degree. The perspectives from which to view these many local sustainability instances are countless, which makes for a complex sense-making exercise. There is no shortage of detailed information regarding what cities are doing. What is missing is a discussion that encapsulates and characterizes some of the general trends and challenges attending sustainability efforts in cities.

This paper poses the question: What are the defining factors in shaping sustainability efforts in cities and how do these factors operate? Beginning with an overview of the importance of sustainability and why it matters for cities, the paper considers the context from which the sustainability movement emerged, namely as a facet of environmental policy, and then examins the major themes within the sustainability literature. This review informs the framework that is presented for understanding tensions that shape local sustainability initiatives. Finally, the framework is applied to a case study of Kansas City and various viewpoints of sustainability efforts within the city.

Sustainability & Cities

Environmental concerns have influenced public policy since the 1970s, so one might ask, why *sustainability*? To answer this question, it is important to distinguish between environmentalism and sustainability. The "environment" has typically been conceptualized as the natural world, separate from the man-made, built environment, and environmentalism refers to those restrictions and regulations that protect the natural world from human impact and damage. *Sustainability* differs from environmentalism in that the environment includes the ecologies of both the natural and the built environments. Sustainability speaks not only to restrictions intended to protect the natural environment but also to actions that can be taken within the built environment to reduce energy consumption, replenish resources, and reshape communities in ways to enhance the quality of life for current and future generations. The problems that sustainability efforts need to address include the depletion of the Earth's resources and severe and damaging effects of climate change. According to Lester Brown of the Earth Institute (2009), an example of a huge sustainability effort on a global scale would be an 80 percent cut of net carbon dioxide emissions by 2020.

Based on present and future population growth and migration patterns, the majority of the world's people will live in cities. This means that sustainability needs to be addressed at the city level. Cities are and will continue to be centers of massive resource consumption and waste output. According to the Organisation for Economic Co-operation and Development, cities consume between 60 and 80% of the world's produced energy, and cities emit 60 to 80% of the world's carbon-dioxide (OECD, 2010). Cities are also among the regions that are most at risk from climate change effects such as rising sea levels and increasing temperatures.

Cities are at the frontline of sustainability concerns. In considering climate change and types of governance response, Bestill and Rabe (2009) quoted London Mayor Ken Livingstone

as stating, "It is in cities that the battle to tackle clime change will be won or lost" (p. 202). Slavin (2011) argued that cities need to counteract the effects of sprawl, which epitomizes the conflict between the carrying capacity of the local environment and development. Creating links between the traditionally opposing forces of economic development and emerging green economic opportunities (Slavin, 2011) can pose a monumental task for cities. Approaches to sustainability present technological, financial, policy, and management challenges. The shape that sustainability efforts take depends on how cities address these and other factors.

Three Epochs of Environmentalism

In trying to understand sustainability and what implications it holds for cities, Mazmanian and Kraft (2009) offered a structured view of environmentalism and its transformation into the many theories and practices now associated with sustainability. The authors viewed the transformations as three interconnected, somewhat overlapping, yet distinct environmental epochs: *regulation*, *regulatory reform*, and *sustainability*. These environmental epochs indicate shifts in the way society has learned to think about and respond to environmental challenges. Within Mazmanian and Kraft's framework, the epoch shifts can be broadly characterized by changes in the level of authority and responsibility in addressing environmental concerns.

Largely in response to polluted waterways, air space, and solid waste, the environmental *regulation* epoch, spanning from the late 1960s and early 1970s to the 1990s, saw the emergence of the Environmental Protection Agency and favored a top-down, federally driven approach to halting what was seen as industry-generated pollution. Running from approximately 1980 to the 2000s, the *regulatory reform epoch's* politically conservative underpinnings meant that environmentalism felt some push back from the business world. Regulatory bodies such as the EPA were expected to do more to establish baseline data by which to assess regulations. More

responsibility for monitoring regulations shifted to from federal to state levels. The third epoch of *sustainability*, which originated in the 1990s and remains in an emerging state, brings in more complex issues that include the confluence of people and the environment within the context of climate change. Mazmanian and Kraft (2009) believed that the emergence of the *sustainable development* epoch had at its core a recognition that environmental problems were not "isolated from the pace and growth of human activities" (p. 24).

The value of the three epochs is that they allow a much needed sense-making framework. Researchers have struggled with how to understand and discuss sustainability and what sustainability should look like at the local level (Krueger, 2003). One explanation for the uncertainty and ambiguity surrounding sustainability and locality within research conducted in last decade is that *sustainability* had just transitioned out of the 2nd and was moving into the 3rd epoch. Mazmanian and Kraft's idea epochs framework help chart how our society has learned and continues to learn about sustainability.

Orientations and Tensions of Sustainability

If society is in a continual learning process with regards to sustainability, what does that mean for cities? Hempel (2009) observed that "most cities have been very reluctant to tackle the challenge of sustainability" (p. 50). Having studied dozens of cities with and without sustainability initiatives, Portney (2009) commented that the "pursuit of local sustainability is a truly daunting task" (p. 237). Cities must contend with costs, technological requirements, policies, implementation, and management. Cities may have various environmental differences, some more pressing than others. The ever growing body of work related to sustainability studies speaks to the fact that more questions exist than answers and that, as of yet, there exists no one-size-fits-all approach to local sustainability. Yet, recurring and overlapping viewpoints suggest

that similar patterns of sustainability efforts are emerging in many U.S. cities. This section looks at several of these orientations as well as some of the associated tensions.

Orientations: Metropolitan Governance and the 3 E's

How should cities be approaching sustainability? Where should cities be directing attention? Hempel (2009), Maltzman and Shirley (2011) and many others have seen sustainability as encompassing the intersection of social equity, environmental, and economic spheres, or the three E's. Yet, amidst the intersection of the three E's, Hempel observed that a gap can appear between "high concept" policy and practically applied problem solving (p. 51). Researchers and practitioners alike have grappled with how to take sustainability from clouds to concrete. In a project management approach, Maltzman and Shirley (2011) called for a guiding principle of "greenality" which amounts to the pursuit of both green-sustainable as well as high quality objectives (p. 39). Identifying implementation as a feature of practicality, Mackres and colleagues (2012) argued that local governments have three ways to help implement efficient energy policies and programs: regulatory mechanisms, financial incentives, and local relationships (p. 2). The themes of managing and implementing sustainability recur in sustainability-related literature, but these practical matters require a framework that lends clarity and focus.

Hempel (2009) provided the most coherent and useful framework by identifying five main orientations in how cities tend to approach sustainability. These orientations include natural and social capital, urban design/smart growth, ecosystem management/urban ecology, metropolitan governance, and neighborhood ecovillage (pp. 42 & 43). Each of these orientations circumscribes sustainability issues in various ways, yet the concerns of this paper fall most squarely within the metropolitan governance orientation. The city presents a unit of size that is large enough to involve the three E's (ecology, economy, equity) yet small enough to engender a

sense of place (Hempel, 2009). The city stands as a metropolitan governance focal point where sustainability efforts and ecology, economy, or equity tensions converge.

Ecological Tensions

Within the metropolitan governance orientation, Hempel identifies several sources of tension that affect the local ecologies. The first is a perceived conflict between sustainability and economic development. Thinking shaped by the first two environmental epochs (regulation and regulatory reform) tends to pit traditional economic development against sustainability initiatives. Hempel observed that cities have grappled with addressing tradeoffs between environmental quality and economic growth, such as, how much pollution and waste should be allowed in the name of economic growth (2009, p. 41). Another ecological tension speaks to the question of "fair share among communities" and how decentralized communities compete as they pursue sustainability initiatives (p. 37). A third ecological tension source arises as cities set about choosing a sustainability initiative and then how it should be gauged or measured for success. Hempel argues that even though mapping, data, and indicator selection tools are available, policy making has not made much use of these information resources (p. 52).

Economic Tensions

Cities face many economic tensions that can impact sustainability efforts. From the classical economics perspective on growth, true costs, hidden costs, and costs of environmental degradation were not factored into classical economic measures of production and price. Daly (2007) argued that growth models in economics saw the world as empty and in need of filling up; economic growth would take care of that process and would do so indefinitely. Daly rejected this model and pointed out that while micro-economics have models that indicate when production needs to stop, macro-economic models do not. From an ecological economic perspective, Daly saw the world as full rather than empty, and that economies needed to focus

something other than growth in order to be sustainable. Some cities have tried to work around rather than resolve the issue by importing sustainability and exporting waste output (Hempel, 2009, p. 48). This sustainability-slight-of-hand obscures true costs such that cities can simultaneously afford to pursue sustainability and economic growth.

Brugman (2012) argued that local governments could do more to foster urban sustainable development by reducing risks and offering incentives to attract private sector partners. Largely by modifying local zoning codes, incentives could include "value capture schemes, tax increment debt financing, revolving loan funds, property-assessed clean energy financing and project guarantees" (p. 224). According to Brugman, cities could also offset risks by offering insurance plans, catastrophe bonds, and climate adaption funds. Such options might hold the economic potential needed to foster both sustainability and economic development.

A final economic consideration pertains to the question of how cities are able to address sustainability in light of reduced budgets and financial contractions. Since 2008, the nation's overall economic downturn has resulted in budget cuts at federal, state, and local levels. Faced with higher costs involved with the development and purchase of green sustainable products, energy, and services, some cities may opt to abandon sustainability initiatives and focus on other civic concerns. The National League of Cities examined related questions in a 2010 survey of 442 cities. When asked how the economic recession has affected the "willingness to invest in sustainability work" 38 percent of the participating cities responded that there had been a decrease in sustainability efforts (p. 1). Cities hit by recessions may have limited or non-existent sustainability budgets.

Equity Tensions

One concern surrounding equity based tensions stems from how citizen socioeconomic status affects citizen participation levels in sustainability initiatives and programs. In a study of

100 cities in California's Central Valley region, Lubell, Feiock, and Handy (2009) suggested city sustainability policies are linked to a city's financial health and the socioeconomic status of the residents. Financially strong cities with more affluent residents are in a better position to create and adopt sustainability policies, according to Lubell and colleagues. Portney (2010) argued that it is the level of citizen participation rather than income that influences which cities will have strong sustainability policies. What is not clear is whether economic disparities among citizens account for disparities in sustainability initiatives in different communities. O'Connell (2009) found that cities need to have good policies in place, identify appropriate stakeholders, and then invite public participation. City policy types, according to Zeemering (2009), determine the extent public involvement in sustainability initiatives. Between the aspiring, traditional development, and participatory policy types, the participatory policy type encouraged the highest level of citizen involvement. Hawkins and Wang (2012 found that for many cities, participation was limited to citizen boards, commissions, and advocacy groups.

A final source of equity tension for cities arises between the local and regional levels. One city's sustainability initiative may be negated if a neighboring municipality is not on board with the plan. Slavin and Snyder (2011) noted this phenomenon with Portland, Oregon's 2009 Climate Action Plan and that there was a question as to whether the outlying "suburban ring" would follow suit and adopt this or a similar climate strategy (pp. 39-40). The Organisation for Economic Co-operation and Development (2010) called for the necessity linking of municipal and regional sustainability approaches, arguing that a lack of cooperation between cities within the same metropolitan region presents a key obstacle to both the cities' and the region's ability to function effectively. Competition rather cooperation can increase conflicts which would likely undermine sustainability efforts.

From Shaping to Viewing

Having identified several factors that affect how sustainability efforts take shape in cities, the discussion now turns to perceptions of sustainability. From the historical perspective, sustainability—the third epoch of environmentalism—is still emerging; thus there are many ways to understand and apply sustainability. A single city may have within it several agents that have differing orientations towards sustainability. Multiple perspectives and approaches may not only occur naturally but may be necessary in providing a diversity of options needed to solve complex problems. Thus far, this paper has discussed generalized themes that may hold true for many U.S. cities. This paper will now examine one city, Kansas City, Missouri, in order to gain a more nuanced understanding of how shaping factors and multiple viewpoints affect sustainability efforts.

Kansas City and Multiple Perspectives of Sustainability

No single authority can determine what sustainability for a particular city should look like, what should be included among sustainability initiatives and programs, or what criteria should be used to assess them. The shape of sustainability efforts in the city of Kansas City, Missouri changes depending on the perspective. What follows is a look at external and internal perspectives as to what sustainability means for Kansas City.

External Views of Kansas City

In SustainLane's *2008 US City Sustainability Rankings* list, Kansas City earned 20th out of 50 cities. SustainLane, an online community and sustainability organizational resource, called its sustainability rankings list the "most comprehensive and credible benchmarking of sustainability in America" (¶ 4, http://www.sustainlane.com/about/). The rankings list used sixteen categories to assess the 50 most populous cities in the nation. (The sixteen categories were: Air Quality, City Commuting, City Innovation, Energy & Climate Change, Green

Building, Green Economy, Housing Affordability, Knowledge & Communication, Local Food & Agriculture, Metro Street Congestion, Metro Transit Ridership, Natural Disaster Risk, Planning & Land Use, Tap Water Quality, Waste Management, and Water Supply.) Interestingly, among the sixteen sustainability categories, there was nothing for "sustainability plan." The criteria for judging the sixteen categories were derived from primary and secondary research data. Rankings were then determined by aggregate scores in all the categories.

Kansas City's individual scores included 1st for tap water quality, 7th for Energy and Climate Change Policy, 20th for Green (LEED) Building, 40th for Transit, and 47th for Planning and Use. SustainLane pointed to the city's climate protection plan (*Climate Protection Plan*, 2008) as an example of good progress towards better sustainability, and sited sprawl as one of the city's biggest sustainability challenges. SustainLane's ranking process did not reduce sustainability to one green initiative but rather provided an assessment of a city's comprehensive sustainability efforts to address both natural and built environments. From this perspective, Kansas City is doing well in some areas and needs to improve in others.

Rather than assign rankings of the most populated cities, the Sustainable Cities Institute presents city profiles of US and Canadian cities of various sizes. The Sustainable Cities Institute is a resource maintained by the National League of Cities, a city advocacy organization. The city profile resource provides an "at a glance" sustainability snapshot. Kansas City is reported as having a *Climate Protection Plan* (2008), a City Sustainability Board, and a sustainability officer. The city counts as its major accomplishments the unanimous adoption of the Climate Protection Plan, conversion of the city's transportation fleet to alternative fuels, and City building energy efficiency retrofits resulting in a savings of $2 million.

The Sustainable Cities Institute profile does not directly indicate deficiencies of city sustainability efforts. But the implication is that if a city lacks something, such as a dedicated

sustainability office or a sustainability plan, then this could suggest an area that needs to be addressed. Kansas City does not have a sustainability plan, according to Sustainable Cities Institute's definition. Sustainable Cities Institute's snapshot suggests that it is important for the city to have governing bodies dedicated to sustainability and that a plan or policy of some kind is important. It is worth noting that Sustainable Cities Institute considers Kansas City's *Climate Protection Plan* (2008) the same thing as a sustainability plan. While specific sustainability actions and accomplishments are given recognition, Sustainable Cities Institute appears to place greater importance on having sustainability plans and agencies in place rather than specific, targeted initiatives.

Internal Views of Kansas City

External perspectives of sustainability in Kansas City vary and present inconsistencies. What does sustainability look like from the inside, from within Kansas City? In this next section, the paper presents a city and a regional perspective on sustainability. While the external perspectives focused more on what was accomplished, the internal city and regional perspectives place more emphasis on comprehensive visions and goals. This paper drew from artifacts and original interviews to prepare this section.

The City of Kansas City

The City of Kansas City has a Department of Environmental Quality whose vision, mission, goals, and programs focus on developing a sustainable community through conservation of resources, environmental protections, and compliance with environmental regulations. In terms of artifacts, the only document with a direct reference to sustainability comes in the form of a sustainability brochure that lists several green accomplishments but does not present a cohesive sustainability plan. Indirectly, the department's environmental improvement goals can be viewed as sustainability concerns. These include improving energy management, reducing air

emissions, introducing green solutions, and reducing illegal dumping. The most comprehensive and complex effort associated with the department is the *Climate Protection Plan*.

The *Climate Protection Plan* was prepared in 2008 and recommended short term, midterm, and long term goals for cutting greenhouse gases. The short term goal was that by 2010, the City government and the community both should have reduced carbon dioxide emission levels to 10% below year 2000 levels (City of Kansas City, 2008, p. 11). The long term goal is that by 2020, the City government and the community both are called upon to reduce carbon dioxide emission levels to 30% below year 2000 levels (City of Kansas City, 2008, p. 11). The plan calls for the City of Kansas City as well as the greater Kansas City community to conduct evaluations every five years and proposes partnerships with the Greater Kansas City Chamber of Commerce, Kansas City Power and Light, the Kansas City Green Builders Council, and other home associations (City of Kansas City, 2008, p. 15). With regards to participation, the community involvement in climate protection planning took the form of a steering committee and ten climate protection workgroups (City of Kansas City, pp. 20-21).

According to Dennis Murphey, the Chief Environmental Officer for the City of Kansas City, the *Climate Protection Plan* is a sustainability plan yet is also part of a broader sustainability vision that extends beyond reducing the city's greenhouse gases and the overall carbon footprint. To better understand the City's sustainability efforts, the discussion now turns to Hempel's (2009) idea of metropolitan governance in grappling with the three tension areas of ecology, economy, and equity. The following examples used in addressing these tension areas came from an interview with Mr. Murphey (D. Murphey, personal communication, July 3, 2012).

For Kansas City, the main ecological tension involved the perceived conflict pitting economic growth against environmental management and sustainability. Yet, by introducing the

Climate Protection Plan in 2008 and working to bridge the gap with the business community, the City was able to influence the Greater Kansas City Chamber of Commerce's understanding that sustainability efforts could be valuable to business success. Recognizing the merits that climate protection and sustainability could bring to a triple bottom line (profit, people, planet), the Chamber adopted its own climate protection plan. In turn, the Chamber influenced hundreds of local businesses and organizations to start taking steps to reducing their carbon footprints.

The recent economic downturn has not left Kansas City untouched. The main economic challenges for the City's sustainability efforts are not far down the road. The City was able to use its *Climate Protection Plan* to help secure grants from stimulus funds, and these grants have been used to develop various energy efficiency programs. Yet these funds will soon end. In addition to these fast-approaching financial contractions, the City has had a 20% reduction in staff over the past several years. The city's challenge will be how to work smarter in continuing to pursue sustainability despite diminished dollars and personnel.

With regards to equity, the City of Kansas City had to decide whether it would participate in a regional climate protection plan or do something on its own. An action in one city can affect neighboring cities in positive or negative ways. In Mr. Murphey's mind, it was important for the City to step out, create a plan, and hopefully lead the way for other cities and organizations to follow a similar path. He believes that if the City of Kansas City had not created its own Climate Protection Plan, then the city would still be waiting for a regional plan today. As it turned out, once the city's plan was published, other cities began to follow suit.

Many other examples would serve to illustrate the city's response to sustainability tensions. But rather than provide an exhaustive chronicle of every sustainability effort, it is important to call attention to an idea that emerged in this study: Sustainability does not mean the same thing for every city. Though entities such as SustainLane and the Sustainable Cities

Institute have in effect judged Kansas City, these organizations have done so based on selective assumptions about what sustainability should mean for a city. Mr. Murphey pointed out that many of these ranking systems use third party data and often do not contact cities directly to verify information or take into account how cities define sustainability.

As an example, storm water management is an important part of sustainability for Kansas City but not so much for Phoenix. The shape of public transit for a city of approximately 133 square miles (Portland, OR) differs from a city of approximately 314 square miles (Kansas City, MO) (U.S. Census Bureau, State & County Quick Facts). In other words, to look at sustainability from city to city is not necessarily comparing apples to apples. This is not to suggest that attempts at comparisons are meaningless or that a city should not try to assess its own efforts. The take away point here is that unique local conditions shape what sustainability means for a city. Sustainability criteria from external entities may not accurately define what is true for a particular city. In the process of creating sustainability plans and programs, cities are also defining sustainability from a specific context. Kansas City is currently developing its own "Star Community Index Project" which would include benchmarks and measures unique to the city's efforts (D. Murphey, personal communication, July 3, 2012).

MARC (Mid America Regional Council)

With its *Creating Sustainable Places: A Regional Plan for Sustainable Development in Greater Kansas City* (2011) MARC presents a very comprehensive vision of sustainability, not just for Kansas City, but for the greater metro region spanning nine counties throughout Kansas and Missouri. The plan's intent is to create sustainable places by adhering to principles of Economy, Society, and Environment. These principles closely echo the three E's (ecology, economy, equity) noted earlier in this paper. The desired outcomes would be places that are vibrant, connected, and green. The plan then points to several specific plans and strategies

designed to create these vibrant, connected, and green sustainable places. Each of the strategic areas articulates goals and benchmarks by which to measure progress. For example, the Smart Moves Transit Plan intends to strengthen communities by increasing various transportation options and improving public health through transit options (MARC, 2011, p. 16). Benchmarks would include increases in ridership and transit coverage, diminished traffic congestion, and improved air quality (MARC, 2011, p. 16).

Creating Sustainable Places cites the City of Kansas City's *Climate Protection Plan* as one of nine community plans that comprise MARC's regional sustainable development plan (MARC, 2011, p.3). This approach of inclusiveness can also be found in the plan's long list of Creating Sustainable Places Partners, which includes over thirty local governments, eight nonprofit organizations, seven equity and engagement organizations, four universities, and many other partners (MARC, 2011, p. 27). The partnerships will be essential to bringing the regional plan into fruition.

Much of what MARC envisions for the Kansas City metro has yet to unfold. But MARC has already begun to grapple with several barriers. MARC's Sustainability Planning Project Manager, Jeff Hirt, identified ecological, economic, and equity barriers that could affect the implementation of programs proposed in MARC's regional plan. First, ecological tensions can be characterized by sprawl which originates from regulations. Zoning codes created thirty to forty years ago emphasized single family homes, large lots, and non-mixed land use. MARC is trying to develop new models for zoning codes designed to created multiuse areas where people can live/work/play with minimal car usage (J. Hirt, personal communication, July 3, 2012).

Economic tensions arise out of two conflicting market-based views. In one camp, are those who maintain that sustainable development is not economically feasible in the Kansas City metro region. Yet, a number of economists have suggested to MARC that there is an increasing

demand for better transit options, walkable communities, and diverse housing choices. MARC's approach will be to study different market and economic impacts of non-sustainable and sustainable approaches. MARC will augment these studies with educational campaigns to promote sustainable development (J. Hirt, personal communication, July 3, 2012).

Finally, MARC has identified a source of equity tension in the form of underrepresented populations in planning decisions. MARC has not always had equity engagement integrated into planning processes. According to Mr. Hirt, MARC plans to move to a new engagement paradigm where communities of color and low income will be able to shape decisions and outcomes. There will be many strategies to increasing engagement. To facilitate better online engagement, for example, MARC has hired a group called Mindmixer to develop a crowd sourcing tool, which acts as a form of online town hall discussions and idea exchanges (J. Hirt, personal communication, July 3, 2012).

Though MARC and the City of Kansas City share many similar views, particularly in placing importance on larger, more comprehensive sustainability plans, the two diverge on the question of locality or region. The City of Kansas City chose to create its own Climate Protection Plan, believing that it would be a long wait for a regional plan to emerge. Mr. Hirt at MARC noted that cities could certainly move more quickly in going alone on sustainability efforts. Yet, he also felt a local approach means a city would lose out on additional resources and collaboration opportunities that would arise within a regional approach.

Conclusion

Many books, articles, and websites have chronicled the hundreds of localized sustainability efforts taking shape throughout the country. Yet there is no single source that provides an overall framework from which to understand what is happening in cities and why. This paper has attempted to explore these matters and suggests that sustainability efforts in cities

can be understood as part of a larger historic shift known as the sustainability epoch in which sustainability takes the form of initiatives, programs, and plans that can be part of a comprehensive approach and can include varying levels of local participation. The challenges cities face with sustainability efforts can generally be characterized as ecological, economic, or equity based tensions. Beyond this framework, however, there remains no uniform, standardized, or preferred approach to sustainability. A city must arrive at its own definition of sustainability based on local conditions and then find appropriate responses to ecological, economic, and equity based tensions.

While cities may each define sustainability differently, they must all find ways to address ecology, economy, and equity tensions at a local level. This paper explored global themes and local applications of sustainability, but there are many opportunities for further study. The question of whether a regional or local sustainability approach is more effective warrants further investigation. Also worth deeper consideration is how cities go about establishing measures and setting benchmarks by which to evaluate the effectiveness of local sustainability efforts. Finally, a more nuanced examination and comparison of sustainability efforts in multiple cities could be used in attempting to understand how cities' localized sustainability efforts are relevant when viewed from a global perspective.

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