How do local officials conceptualize sustainability as practiced in their communities? An examination of U.S. cities

The definitive published version of this article is:

Hofmeyer, S. L., Hawkins, C. V., Krause, R. M., & Park, A. (2024). How Do Local Officials Conceptualize Sustainability as Practiced in Their Communities? An Examination of US Cities. Journal of the American Planning Association, 1-13. 10.1080/01944363.2024.2312941

About the Authors:

Sarah L. Hofmeyer, Doctoral Candidate, University of Kansas, sarahhofmeyer@ku.edu
Sarah Hofmeyer is a doctoral student at the School of Public Affairs and Administration at the University of Kansas, studying urban policy and the agri-food system.

Dr. Christopher V. Hawkins, University of Central Florida, christopher.hawkins@ucf.edu
Chris Hawkins is a professor in the UCF School of Public Administration. He studies urban policy and political institutions.

Dr. Rachel M. Krause, University of Kansas, rmkrause@ku.edu
Rachel M. Krause is a Professor at the School of Public Affairs and Administration at the University of Kansas and researches local sustainability and climate policy.

Dr Angela Park, KDI School of Public Policy and Management, angelapark@kdischool.ac.kr
Angela Park is an Assistant Professor at KDI School, specializing in local sustainability management and governance research.

The data that support the findings of this study are available from the corresponding author upon reasonable request.

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This article is based on work supported by the US National Science Foundation under Grants No. 2021044 and 2020904. Any opinions, findings, and conclusions expressed are those of the authors and do not necessarily reflect the views of the National Science Foundation.

How do local officials conceptualize sustainability as practiced in their communities? An examination of U.S. cities

Abstract

Problem, Research Strategy, and Findings: Although they play a key role in shaping local efforts, there is limited research on how city officials define sustainability as it is practiced in their communities. To address this limitation and contribute to planning research, we leveraged a unique nation-wide dataset of sustainability definitions provided by the sustainability lead in over 400 U.S city governments. Our study's qualitative analysis of these statements complemented existing research by exploring emerging themes around how sustainability is perceived and practiced at the local level. Results indicated that practitioners' conceptualizations reflect five general orientation categories - action, aspiration, emotion, process and organization, and progress. We evaluated the association of these general orientation categories with cities' administrative arrangements, political environments, resources, and capacities. Findings suggest that supportive contexts are associated with city sustainability staff defining sustainability in aspirational terms, as opposed to emphasizing progress or discrete actions.

Takeaway for Practice: This research examined how city sustainability leaders characterize its practice, using their own words provided in response to an open-ended survey question. We found that organizational context, including the presence of a sustainability budget, staff, and political support, was associated with differences in the fundamental nature of the responses provided. This is important because these local government officials influence how the broad objective of sustainability is practiced in their communities. Overall, this research adds value to the planning profession by assessing how sustainability professionals define sustainability with

greater nuance than previous studies and establishes a departure point for explaining why such differences exist.

Keywords: city sustainability, sustainability planning, qualitative analysis, national survey

Introduction

Sustainability is an umbrella concept under which discourse on environmental quality, resource conservation, climate change, economic health, and equity all have occurred (Purvis et al. 2019). Due to the numerous technical, normative, and political meanings that have emerged around it, sustainability has become a term that is hard to pin down (Scoones 2016; Robinson 2004). Its differential application across research disciplines has further contributed to a lack of common language for describing current practices and prescribing future actions (Brink, Hengeveld, & Tobi 2020). This has led some scholars to critique sustainability as lacking adequate operationalization (Santillo 2007; Anderiees, Folke, Walker, & Ostrom 2013; Purvis et. al 2019) and to question the implications of the gap observed between its conceptual discourse and planning practice (Berke 2016).

How sustainability is conceptualized underlies and implicitly directs both research and practice. While the discourse about what sustainability means has often occurred at the broad intersection of philosophy, ethics, and science, we argue that municipal officials' place-based conceptualizations of sustainability have been important for advancing its on-the-ground planning and implementation. How these individuals broadly perceive sustainability—including

whether they view it as, for example, an overarching goal, a political ambition, or a discrete set of tasks—can shape how they carry out their relevant professional roles and responsibilities.

Local governments have played an essential role in efforts to advance sustainability (Keith et al. 2022). Although heterogeneous in their size, capacities, and priorities, a significant number of municipalities have adopted sustainability as an explicit objective (Jepson 2004; Portney 2013; Svara et al. 2013) and have either created dedicated sustainability positions or tasked existing employees with associated responsibilities (Krause & Hawkins 2021). However, there is little information about how the officials who are charged with advancing their city's sustainability agenda describe it. These individuals are the on-the-ground implementers of sustainability initiatives, and their perceptions of how it is practiced in their city warrant attention.

The multi-dimensional and value-laden nature of sustainability has given rise to a range of local narratives that differ in how they are translated into actions (Sala et al. 2015). As such, despite advancements in research, there have remained questions about whether a unifying definition of sustainable cities has been—or can be—developed (Cohen 2017). We do not attempt to develop or corroborate a single definition here, but rather, provide new insight into how it is understood at the local level. We add value to research on planning practice by leveraging a unique dataset of definitions provided, in 2020, by the sustainability lead in over 400 U.S. cities. Two overarching questions drove this research: (1) How do local officials characterize sustainability as it is practiced within their jurisdiction? (2) What characteristics of local governments are associated with different characterizations of sustainability?

Our analysis coupled the benefits of using context-driven qualitative data with descriptive statistics to identify emerging themes. It directed us towards three key areas. First, local

sustainability managers describe sustainability, as it is practiced locally, using one of five distinct perspectives, each of which reveals a fundamentally different approach to the topic and reflects variation in underlying values, priorities, or preoccupations. Second, we note patterns in the dimensions of sustainability these officials incorporated into their definitions. Finally, we demonstrate how the orientation of the definitions provided appears to associate with different local contexts, which we proxy by local staff and fiscal capacities, the presence of a specialized lead unit, and the perceived level of support received from city leaders and the public.

The next section of the paper provides a brief review of relevant literature. It then describes the data collection and coding processes employed and presents a descriptive assessment of the three elements previously highlighted. The paper concludes by discussing practitioner attention to actions, processes, and emotions and the importance of resources (financial and human), and supportive contexts (general public and local officials) in relation to how local leaders perceive their city's sustainability practice and execution of its related initiatives.

Sustainability's Conceptual Development in Research and Local Practice

A Multiplicity of Interpretations

Explicit global attention to sustainability can be traced to the 1972 United Nations Conference on the Human Environment (Huang, Wu, Yan 2015, p. 1176). Decades after entering the policy lexicon, sustainability has remained a conceptually contested objective. Michael Lorr (2012) illustrated its continued multiplicity through his critique of three dominant perspectives that North American cities employ toward the concept. The first of these perspectives emerged from the Brundtland Commission's (1987) definition of sustainable development, which emphasized

inter- and intra-generational equity and directed attention toward resource variability over time and the impact of technological change on communities. The Brundtland definition further raised political and distributive questions: *what* is to be sustained, and thus valued?

A second common perspective has utilized a Triple Bottom Line (TBL) and has emphasized the balance of environmental, economic, social interests (Elkington 1994). Many local government officials have rhetorically engaged all three dimensions around ambitions for "green, growing, and just" cities (Campbell 1996, p. 296; Davidson et al. 2012; Opp and Saunders 2013). Yet both survey research (Saha and Paterson 2008) and comprehensive plan analysis (Berke and Conroy 2000) have suggested an uneven integration of the TBL principle in practice. Most notably, social equity has been identified as relatively neglected compared to the other two (Oden 2010; Opp 2017) In this respect, the TBL has reflected the formative "Planner's Triangle," which presented these values as competing, and described the tensions that are generated when decisions force trade-offs between them (Campbell 1996, p. 297). Finally, Lorr (2012) observed some cities as employing a free-market or corporate "greening" viewpoint, which explicitly presented economic considerations as "the main impetus for going green" and emphasized the role of private market innovation, technology, and the responsibility of individuals to ameliorate shared environmental problems (Lorr 2012, p. 20).

In contrast, through a study of what sustainability meant to economic development officials employed in San Francisco Bay Area municipalities, Zeemering (2009) characterized three alternative perspectives guiding how city governments approach sustainability. Given the research subjects shared professional orientations, economic development was a consistent central focus. However, their thoughts on the nature of its connection to sustainability varied. One cluster of officials viewed sustainability as being aspirationally linked to planning and urban

design; the second perceived sustainability as tied to business retention, reinvestment, and equity, whereas the third group emphasized public engagement as the key means of connecting development to sustainability.

The multiple conceptualizations of sustainability, along with cultural differences in the characterization of "needs," have shaped "parallel but distinct discourses around sustainability" (Redclift 2005, p. 212). Consequently, it is difficult to predict, *a priori*, how the broader set of local officials who are charged with coordinating their city's sustainability initiatives perceive the objective that defines their work.

Perspectives from Research on Practice

Unlike conceptual studies that have explicitly addressed and debated questions about how sustainability is, or normatively should be understood, empirical policy and planning research has tended to examine municipal plans, actions, and outputs, as well as the factors that have influenced them. Findings from this line of research have regularly pointed to the importance of administrative arrangements, the local political environment, and the availability of resources and capacity (Portney 2013; Kwon et. al 2014; Levesque et. al 2017; Krause et. al 2021; Deslatte et. al 2022). These contextual factors also likely shape how local officials perceive what sustainability means within their municipalities.

When city leaders choose to address sustainability as an objective, multiple options exist for the placement of administrative responsibility to carry it out. This decision can be complicated by the fact that sustainability transcends traditional departmental boundaries and has been an evolving and contested concept. While there has been considerable variation in the departmental location of where city governments across the US have headquartered their sustainability

functions, a plurality of cities have charged their planning departments with primary responsibility (Krause and Hawkins 2021). Even when not in a planning unit, a professional planner has often filled the sustainability coordinator role.

Scholars have noted how the changing role of the planner is shaped by planning contexts. In planning, context has typically referred to the power relations, agenda setting, and conflicts that play out within a community (Forester 2023). Under the umbrella of collaborative planning theory and communicative action, planners have taken on the role of mediators who facilitate deliberative communication and mutual learning through procedural acts of engagement (Laurian 2009;--- Innes 1998). In this context, one must be responsive to multiple audiences (Goldstein 2010), be able to adapt and improvise (Forester 2022; -Rydin 2007), and must demonstrate political astuteness by "...deploying political skills in situations involving diverse and sometimes competing interests and stakeholders, in order to achieve sufficient alignment of interests and/or consent in order to achieve outcomes" (Hartley et al. 2013, p. 24).

Cities' political environments have been tied to the presence of local interest groups whereby decisions, including those around the practice of sustainability, resulted from interactions between elected officials and private interests within urban governance processes. Thus, sustainability action has often hinged on the participation of different "constellations" of private actors (Zeemering 2012, p. 418) whose involvement has been critical for securing resources necessary for program implementation (Wang et. al. 2014, Fenton and Gustafsson 2017; Homsy and Warner 2015). Across cities, environmental, business, and other organized groups have expressed varying degrees of support for sustainability. These pressures have influenced the political behavior of elected officials and hold implications for the resultant distribution of policy benefits (Levesque, Bell, Calhoun 2017; Hawkins 2014).

Because their support is ultimately required for policies to pass, elected officials' political ideologies and policy preferences have been particularly salient to understanding the local discourse around sustainability (Oden 2010; Cho, Kim, and Park 2023). For example, in Bick and Keele's (2022) study of policy implementation by municipalities in the Great Lakes region, city staff reported using the term sustainability in ways they perceived would be most palatable for elected officials, whose motivations varied from being primarily focused on economic development to including social sustainability goals. Thus, how sustainability managers framed sustainability reflected a strategic attempt to better fit it with their cities' political climates (Oden 2010; Laurian and Crawford 2016; Krause and Hawkins 2021).

The availability of financial and human resources, and the capacities they enable, are additional factors that have been found to explain how sustainability is practiced at the local level (Homsy and Warner 2015; Romero-Lankao et al. 2016; Hawkins et al. 2023; McLean and Boren 2015). Decisions made around the type and extent of resources dedicated to sustainability have reflected, to a degree, the value a city places on them. These resources, furthermore, set the parameters around what can realistically be pursued and may influence the level of staff ambition.

Data Collection and Coding

This study has focused squarely on understanding how local sustainability officials have *perceived* sustainability, i.e., the objective that motivates their work. Understanding variations in the perception that key individuals hold around an issue can provide a unique insight for analyzing policy design and decision making (Zeemering 2009). Indeed, "expert judgment may

be the only, or the most, credible source of information available" in management situations characterized by complexity or ambiguity (Martin et al. 2012, p. 30). While more readily quantifiable measures related to sustainability have been used—such as indices of actions adopted or measures of pollution reduction—they have not been comprehensive. Moreover, their selection almost inherently reflected data availability and/or the researcher's own perception of what is important. Curl et. al (2011) highlighted how local transport planners' perception of accessibility, and their approaches to measuring accessibility, did not always capture local reality or match objective measures. Their study shed light on local issues not reflected by formal metrics, such as complex social interactions, as well as the gap between planners' perceptions, measurement of a concept, and real outcomes.

Our primary data were responses from local officials to a nation-wide survey administered by the authors in late 2020 through early 2021 to staff in U.S cities with populations over 20,000. The survey asked a series of questions about how city governments organized and implemented sustainability-related efforts. Of the 1,850 cities in the sampling frame, 591 (32%) surveys were completed. This was on par with typical response rates that surveys of local government officials have obtained over the past decade (Krause et al. 2023). The survey was administered at the end of the first year of the COVID-19 pandemic, which may have affected response rates and the content of responses.

Survey invitations were emailed directly to the member of each city's staff who we had pre-identified as most responsible for sustainability efforts. Our protocol for identifying recipients included first searching each city's directory for "sustainability" to locate an explicitly identified sustainability unit or manager. In the absence of matches, the search terms "green", "energy", "climate protection," and "environment" were used as these areas tend to be under the purview

of sustainability managers. As available, we reviewed the description of units' service responsibilities and position titles to identify the appropriate staff member. In many cases, the unit's policy and planning documents and/or meeting agendas were used to corroborate this information. In cases where not enough information was available online, calls were placed to identify the appropriate recipient and obtain contact information by following up on what information was found online (i.e., if a department that seemed likely to implement sustainability efforts could be identified, they were called; in other cases, we called a general City Hall line until proper identification was made.

We administered surveys electronically; emailed survey invitations included a link to the survey instrument in Qualtrics. Up to two reminder emails were sent to non-respondents over the course of one month. Finally, paper surveys, with a pre-stamped return envelope, were sent via first-class mail to all recipients who had not responded to the previous email invitations. Included in each of the invitations was a statement that directed the recipient to forward the survey to someone else in the municipality if that person was better qualified to answer the questions. The greatest proportion of respondents were in the city's planning department (18%). This was followed by respondents located in the city manager/chief administrative officer's office (17%), public works (14%), community development (14%), and energy/sustainability units (13%). On average, respondents had been in their current position for 6 years, and with their city for 12 years. This was the only demographic data collected by the survey. Study information about individual respondents was thus limited beyond the city and department they work in, the length of time they have been in their current position, and the total number of years they have spent working in their local government.

The primary data used in this study came from an open-ended survey question: “Based on your work, how would you define sustainability as practiced in your city or town?” Of those who otherwise completed the survey, 68% responded to this open-ended question. Additional data from this survey were used as indicators of local context, such as the presence of a sustainability staff or budget and the support of different groups.

Open-ended survey questions have allowed respondents to reveal the dimensions of complex issues that are most salient to them, while allowing researchers to collect many observations and apply qualitative methods to identify different and emerging themes that are difficult to capture with pre-determined survey response categories (Tvinnereim and Fløttum 2015). Because our study sample represented the individuals who were most responsible for their municipalities’ sustainability efforts, they could offer considerable insight into how sustainability has been practiced locally, including dynamics that may not be formalized in plans or revealed in lists of actions. Their statements were personal reactions based on their local practice as sustainability professionals. Our open-ended question provided a space for them to express relevant observations as they saw fit, not to refine or corroborate existing definitions. While we intentionally aimed to tap into the personal perception of the individual most responsible for municipal sustainability-related initiatives, we acknowledge that if a different person in the city government responded to our question, the provided answer may have been different.

Categorizing Local Sustainability Definitions

Content analysis has been a useful methodology for analyzing qualitative data. It has often been conducted by creating a coding frame of different groups of data that capture the relevant

meaning of text material. Following the qualitative data analysis strategy described by Maxwell (2005), we employed a categorizing strategy whereby our primary goal was to rearrange data into categories that facilitated comparisons between definitions of sustainability. The substantive categories that emerged from this process served as an organizational and retrieval system for our subsequent exploratory, descriptive analysis.

With this end in mind, we employed a systematic yet flexible inductive coding process to create several different types of categories (Maxwell 2005; Maxwell and Miller 2008). Our strategy combined the use of content analysis software with a manual coding process. Atlas.ti was first used to identify the type and variety of terms respondents included in their definitions. Each definition was described as containing one or more tags, which were used to segment the list of all survey responses into groups of definitions that used similar terms. After this initial step, two of the authors independently read the definitions contained within each of the categories produced by Atlis.ti and adjusted the groupings based on what they considered the definition's dominant theme. Because their interpretations of the statements changed as the review of the data progressed, they performed this individual process twice to enhance the validity of the resultant categories. The data reviewers then shared their results to identify and resolve any differences in interpretation. This process helped ensure quality comparison between coders, built dialogue, and resulted in the mutual resolution of coding disagreements, which builds consistency and follows the ideas behind intercoder reliability (O'Connor & Joffe 2020).

This process occurred over three weeks and yielded five main categories of definitions, what we termed their general orientation (see Figure 1). These categories reflected distinct types of reactions from respondents related to how they perceive sustainability as it is practiced in their communities. If a response reflected multiple orientations, it was coded to what was most salient.

For example: “If it can be squeezed in and the project manager is consistent in persuading the issue, it may be incorporated. Otherwise, a lot of department heads are void of information and can't be bothered, sadly.” This statement described the organization of sustainability efforts (project managers, department heads), but the underlying salient quality was disappointment. It was thus categorized into the “emotion” orientation. Table 1 provides descriptions of the general orientation categories and examples of the corresponding definitions. Statements ranged in length, but on average contained 32 words. All quotes are given in their entirety except where ellipses are seen, which indicates an excerpt.

Figure 1: General Orientation Categories

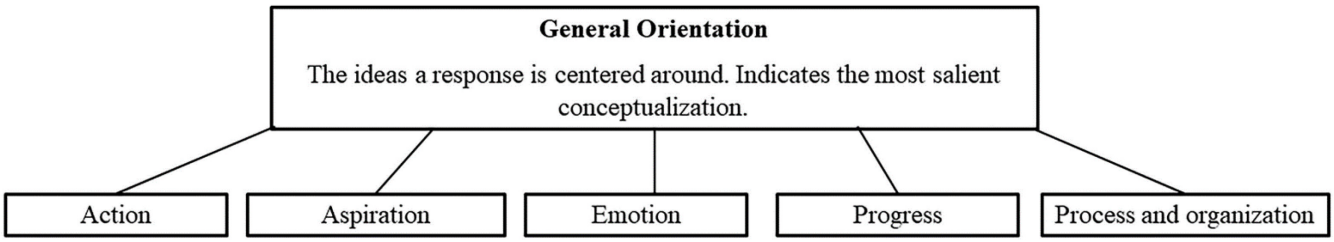


Table 1: Descriptions and Examples of General Orientation Categories

General Orientation Categories and Descriptions	Survey Response Example

Action: A statement that cataloged programs, policies/ordinances, and sector-specific goals that a city was acting on.	"The advancement of our GHG reduction goals with actions related to energy, waste and transportation." "We have a master plan chapter dedicated to sustainability, and our fleets are becoming more green. The City installed EV stations at all its facilities and is considering green roof technology installations for several of its buildings."
Aspiration: A statement of what sustainability is or might grow to be.	"Balancing the social, economic, and environmental elements to create a great community." "Meeting the diverse needs of existing and future residents through effective use of natural resources, enhance the environment, strengthen economic prosperity and promote social cohesion and inclusion."

Emotion: A statement that was charged with an emotional reaction about how sustainability was being practiced.	"It's completely political - our previous Mayor was a champion of sustainability, our current one has no interest." "I am proud of our efforts and our environmental planner. The position evolved over the last 25 years from a Recycling Coordinator, to a very accomplished environmental position that is meant to educate and participate in all aspects of what we do as a City and value add wherever practical to include sustainability elements.
Progress: A straight-forward description of accomplishments, or the lack thereof; an assessment of the maturity of city sustainability efforts.	"We have made lots of progress over the past few years but still have a long way to go!" "At its infancy." "Average with comparable municipalities."

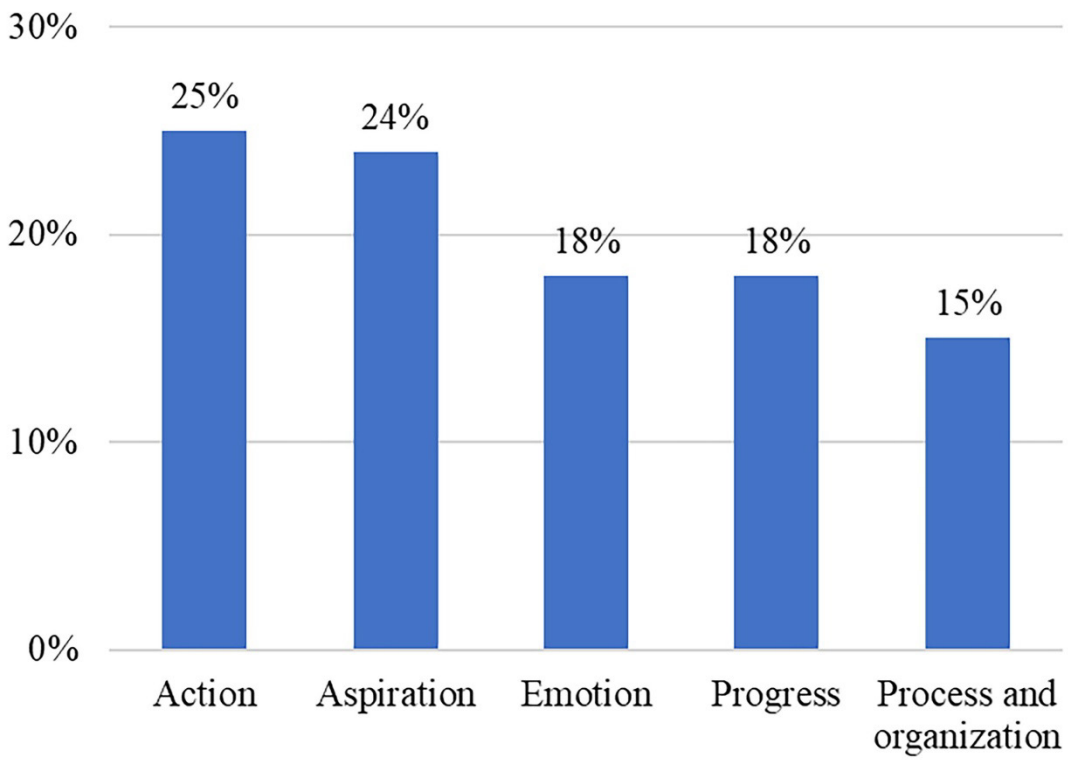
Process and organization: A statement that revolves around the process taken, approach to, or entities involved in sustainability initiatives.	"A collaborative effort undertaken by a range of partners and disciplines across city government." "We practice using a matrix management or teams approach which engages multiple departments, disciplines, and services provided."

Results

Categories of Definitions – Cities' General Orientation

The descriptions of sustainability that local officials provided in response to the survey question differed not only in content but also in type. That is, whereas some respondents defined sustainability as it is practiced in their city with a list of issue-based actions, others related emotionally, and still others characterized local progress relative to an external benchmark. Importantly, this observed variation in fundamental lenses taken by respondents (i.e., the people charged with coordinating efforts taken in cities across the U.S.) may reflect the way they approach their jobs and make decisions. Figure 2 shows the relative distribution of response types by their general orientation.

Figure 2. Proportion of Respondents in Each General Orientation Category



Note: n=403

Action statements

We labeled the first general orientation category as *action-focused*. Approximately a quarter of respondents defined sustainability as the programs, policies, and initiatives that are being implemented or developed locally (*"Disaster preparedness, modernizing infrastructure & utilities, and implementing sustainable building, zoning, and planning codes and strategies").* In some cases, this was a list of program areas. In others, respondents provided rich historical

details of adopted and dropped programs. Several cities explicitly noted that their identified actions stopped at the bar of state mandates or requirements for federal funding.

While focused on communicating their city's specific sustainability initiatives, respondents presumably did not provide an exhaustive list of local initiatives in their definition, nor were they asked to. As such, the initiatives that they mentioned were likely particularly important or top of mind for our survey respondents. Many of the responses in this category took a checklist-like approach, leading us to question the degree to which this orientation left space for thinking about what sustainability ought to look like in their community or who should be involved. In all cases, it is notable which action areas were, and were not, mentioned.

Along those lines, the types of specific sustainability-related actions that a local official explicitly referenced in their response to a broad, open-ended question about how sustainability is defined may be telling. Across all the responses received, approximately 10% defined their city's practice of sustainability, at least in part, by referencing energy-related initiatives. Approximately 7% of respondents each mentioned climate change initiatives, transportation initiatives, actions around land use, and improvements to city operations and infrastructure. Actions related to recycling, stormwater management, and clean air were mentioned relatively infrequently.

Aspiration statements

The second orientation category consisted of responses that took *an aspirational tone* toward sustainability and are characterized by being forward-looking and highlighting broad goals.

Respondents who defined sustainability in this manner gave attention to the impact that current actions may have on future generations and on the challenge of balancing the core principles of sustainability. Some respondents thoughtfully connected their idea of what sustainability is or might grow to be for their specific context, discussing their local valuation of a healthy economy and environment, and the importance of equity and improving quality of life. However, more so than the other general orientation categories, aspiration responses tended to be vague and not tied to the local context. A handful of local officials took a by-the-book approach, defining sustainability nearly word-for-word from the Brundtland Report. One candid definition encapsulated common wording in this category: “Meeting the needs of today's citizens without compromising the future citizen's opportunity to meet their own needs. This is very aspirational. As actually practiced, it's more about the triple bottom line and only engaging in sustainability if it can be profitable or at least financially neutral.”

Aspiration statements often explicitly referenced the balancing of environmental, economic, and social well-being. At the same time, many respondents noted that economic considerations tend to crowd out environmental or social elements of how it is practiced. This is illustrated with responses such as “while there is a strong desire and an understanding for the need for sustainability, economic factors tend to overshadow our efforts.” This dynamic is further reflected in the statement, “sustainability is something everyone would like to focus on more but not at the expense of other immediate issues,” suggesting a regular hierarchy dimension of sustainability across many cities.

Emotion statements

In the third orientation category, officials' responses were laden with sentiment such that their very definition of sustainability was an expression of emotion. The emotional nature of this orientation category demonstrated consideration for sustainability along with a personal attachment to the nature of its pursuit. These definitions reflected normative assessments about what was (or was not) being done in a city. Rather than assuming an "objective" tone in their definition of sustainability, these statements were highly personal. They were typically judgments about the quality of their cities' sustainability efforts or a reaction to their own experience in the job.

Many of these responses assumed a particularly candid tone, with statements having expressed either feelings of exasperation and frustration or (less frequently) joy and pride about their jurisdiction's practice. As part of their work, sustainability managers frequently interact with a range of stakeholders, and some of the statements in the category appeared to be a direct response to or internalization of community sentiments. As one particularly difficult example, a respondent stated: "I have been in this role, as the sole Sustainability person for almost 6 years and it has been a position full of bullying, threats, and lack of support. Soul destroying is how I would describe it. Even with new leadership and support, I know most staff will never support this work, and I am looking for new jobs. It's time for someone else to take on the fight."

Although not exclusively so, budget and staff capacity concerns were regularly mentioned in emotion statements. This included the expressed desire for more resources and disappointment in the ways resource deficiency often shaped the structure of implementation. These concerns appeared to weigh heavily in officials' minds: they were frequently among the first items referenced, suggesting local sustainability is routinely strained, even if it is a valued objective.

Progress statements

Fourth, progress definitions assessed the maturity of cities' efforts. Most progress statements provided by respondents expressed less than average performance to begin with: statements like "A struggle," "Minimal," "Beginning stages," and "Limited." Other statements expressed a modicum of optimism: "Heading in the right direction," "Slow, but steady," and "A lot of growth potential."

These statements often revealed not just where an official perceived their city's sustainability progress to be, but also what they benchmarked against for comparison. These statements tended to be particularly reflective on behalf of the practitioner, having demonstrated real consideration of their jurisdiction and its practice of sustainability. In some cases, this was done via comparison to nearby jurisdictions reflecting on whether they were "ahead" or "behind" in terms of the extent of their efforts. Some benchmarked themselves against the state ("...still 15 years behind the state") and others evaluated their city's progress toward comprehensive plan visions ("Our comprehensive plan has some policies related to sustainability, but we are still growing so the emphasis has not been on sustainability like some of the beach communities"). This set of responses echoed the findings of a recent study by Park and Krause (2021) who found that nearly 90% of their study sample of 443 U.S. cities with a population over 20,000 are engaged in some basic form of performance measurement around sustainability-related endeavors. However, the uptake of standardized external systems was observed to be comparatively modest.

Some of these responses also reflected on how changes in local elected officials, the national political climate, or resource availability have affected progress. While progress-oriented

definitions often referred to specific initiatives or programs that were (or were not) underway, the narrative centered on their accomplishments or lack thereof. Although not all responses that referenced politics and political will were captured in this progress category, it is where descriptions of politics and community and decision-maker priorities tended to accumulate, largely as context for progression. An illustrative example was, "This city is comparatively new, not quite 25 years old. Upon incorporation, it had many challenges, and as such climate change and sustainability were not high priorities. […] This is a conservative community; not exactly sure of the reaction."

Process and organization statements

The final general orientation category was composed of cities whose survey respondents defined sustainability around planning processes and the organization of efforts. These definitions emphasized who has been involved and how actors came together (e.g., "Collaborative effort in staffing and initiatives between city and university"). Rather than focusing on specific actions taken or, what sustainability should look like, these officials expressed their idea of sustainability around what it took to pursue their goals, including the usefulness of collaborative partnerships, the importance of citizen engagement, and limitations. They also highlighted streams of opportunity ("Experimental. We take advantage of programs that are offered to us and try to work them into our existing practices and plans. When mandated or regulated, we comply and direct funds as necessary. We have not been proactive.") and less organized approaches ("Ad-hoc, loosely and broadly defined and pursued").

The role of collaboration was mentioned as part of many of the process-oriented definitions provided. Collaboration was generally described in terms of its enabling benefits, such as sharing resources, plans, and funds. Examples included the city working with community groups, businesses, and regional organizations. For example, one official defined sustainability as "being advocated for at the local level, with strong support across government entities and commissions; at the regional level, through the signing of the Greenest Region Compact that provides resources from the Metropolitan Mayors Caucus and funds my position as sustainability coordinator; and at the community level, with interest groups adamantly probing our town government with ideas to expand sustainability programming." Another respondent noted their city was "very active in [facilitating] participation with residents, internal City Departments and local and regional businesses and non-profit organizations." This view of collaboration as integral to sustainability demonstrated an enlarging perspective that it takes a network of knowledge and resources for adequate action.

Local context and sustainability statements

The second aim of this paper was to assess whether aspects of the local context appeared to demonstrate meaningful associations with how local officials characterize sustainability. We focused on factors that have been previously noted in the literature as affecting sustainability-related actions: the presence of a stand-alone sustainability unit tasked with leading local efforts, support from elected officials and the general public, and financial and human resources in the form of a dedicated staff or budget. The data informing these variables came from the same survey as the open-ended question. Each of these contextual variables was dichotomous. The

support variables were originally asked using a 5-point scale ranging from no support (1) to high support (5). We re-coded responses of four and five as indicating high support.

Table 2 presents the proportion of respondents that provided a sustainability definition reflecting each of the five general orientations, given different administrative, political, and resource conditions. A chi-squared test was used to determine whether there was a significant relationship between the conditions and each of the general orientation categories. Sub-table (a) shows that a significantly larger percentage of respondents from cities that have a stand-alone sustainability unit cast their definition of sustainability in aspirational terms, compared to those that did not have this administrative structure. On the other hand, cities with no stand-alone sustainability lead unit tended to refer to sustainability actions, mostly by listing individual program areas. Meanwhile, aspiration statements frequently mentioned the ideals of the triple-bottom-line approach. This suggests that the presence of sustainability-specific lead units may have fostered a more holistic approach to sustainability implementation. Emotion definitions, many of which expressed discontent or frustration with the perceived lack of progress, were notably less common among respondents in cities with stand-alone units in place.

Sub-tables 3(b), (c), and (d) divide cities into groups based on whether or not their respondents perceived sustainability differently depending on having had strong support from the public, the mayor, and the city council, respectively. Regardless of the source, aspiration orientations were more frequently used in cities with higher degrees of support, compared to those with less. In comparison, when there was not high support, progress-oriented statements were employed significantly more often. Again, this was observed across all three groups of actors, but the largest difference was in cities where the respondent perceived that the public was not highly supportive of sustainability efforts. Sub-tables 3(e) and (f) show that respondents from cities with

dedicated professional and financial capacity described sustainability using aspirational terms more than respondents from cities where this was not the case. In cities without dedicated staffing, progress-oriented statements were more frequently used. Notably, these progress-oriented statements repeatedly described a lack of progress rather than the achievement of it. Concomitantly, a larger share of respondents from cities that did not have dedicated budgets provided emotion statements than did cities with this resource capacity. Together with the previous finding, this highlighted the critical need for providing implementing agencies with appropriate capacity – whether in the form of tangible administrative resources (e.g., a lead unit, budget) or political support from different stakeholder groups.

Across the six indicators of context, it was notable to observe that local sustainability managers' use of aspirational statements was significantly more frequent in supportive environments. The presence of resource cushions, in the form of staff and a relatively protected budget for sustainability work, potentially provided those responsible for implementation more room to think about what sustainability *could be* in their cities. Additionally, cities with a stand-alone energy or sustainability unit appeared more likely to have staff educated in the fundamentals of sustainability who may have been more comfortable referencing formal definitions to describe their own local practice. Finally, it is worth noting there was no consistently significant relationship between cities that provided action or process-oriented statements and the six planning context indicators presented in Table 2.

Table 2. Percent of General Orientation Statements Associated with City Contextual Factors

a. Stand-alone sustainability lead unit

	Yes (n=53)	No (n=350)	Sig. different
Action	15%	26%	p=0.04*
Aspiration	47%	21%	p=0.00**
Emotion	8%	20%	p=0.02*
Progress	15%	18%	p=0.56
Process	15%	15%	p=0.40

b. High public support

	Yes (n=230)	No (n=167)	Sig. different
Action	24%	25%	p=0.00**
Aspiration	30%	17%	p=0.04*
Emotion	17%	20%	p=0.04*
Progress	13%	23%	p=0.93
Process	16%	14%	p=0.23

c. High mayoral support

	Yes (n=234)	No (n=158)	Sig. different
Action	26%	23%	p=0.49
Aspiration	29%	19%	p=0.03*
Emotion	15%	22%	p=0.07^
Progress	14%	21%	p=0.08^
Process	16%	15%	p=0.61

d. High council support

	Yes (n=211)	No (n=183)	Sig. different
Action	27%	24%	p=0.49
Aspiration	30%	18%	p=0.00**
Emotion	16%	21%	p=0.11
Progress	13%	21%	p=0.03*
Process	15%	15%	p=0.87

e. Dedicated staffing for sustainability

	Yes (n=229)	No (n=174)	Sig. different
Action	25%	25%	p=0.96
Aspiration	31%	16%	p=0.00**
Emotion	17%	20%	p=0.52
Progress	14%	22%	p=0.03*
Process	13%	18%	p=0.15

f. Dedicated budget for sustainability

	Yes (n=112)	No (n=289)	Sig. different
Action	26%	24%	p=0.73
Aspiration	38%	19%	p=0.00**
Emotion	11%	21%	p=0.02*
Progress	13%	20%	p=0.16
Process	12%	16%	p=0.24

^ p<.1, * p<.05, **p<.01

Discussion of Results

To date, there has been little examination of how the individuals who are responsible for managing the implementation of local sustainability objectives perceive its practice. These actors play key roles in shaping policy priorities, as well as in navigating the political, fiscal, and

administrative environments that influence sustainability implementation. By examining how sustainability planners and managers describe its practice in their own words, this paper provides a unique point of departure for understanding its broader local dynamics.

The city sustainability leaders who answered our open-ended question did so in broadly different ways, resulting in five distinct "general orientation" categories in our coding process. Variation in the content of their answers and their overall approach shed light on the issues, processes, achievements, and/or frustrations they found most salient. This variation in responses by officials in similar roles, but different local contexts, illustrates the complexity of sustainability and the difficulty in achieving agreement on its valuation in practice (McLean & Boren 2015). Nonetheless, the resultant categories provide structure for organizing the personal reflections from sustainability officials.

Across the survey responses, the largest number of officials defined sustainability in terms of the set of discrete programs or policy initiatives that their city government has been pursuing. This suggests they readily connect sustainability to day-to-day actions. Of all the initiatives that were provided in the action-focused category of definitions, a plurality focused on energy, climate change, land use, transportation, and city infrastructure. Presumably, these are the issues around which sustainability professionals most regularly engage and/or are those that are front-of-mind due to the attention they demand. In comparison, actions related to recycling, stormwater management, and clean air were mentioned relatively infrequently. The same can be said for community well-being, including housing affordability and food. While important to comprehensive sustainability, these issues did not receive much attention, which may be because they are a part of standard practice, or they are the responsibility of city government units that do not typically lead overall sustainability efforts. For example, recycling and stormwater

management may be on operational autopilot in public works departments, whereas housing affordability may be overseen by a community development or social services department. Thus, the particular policies, programs, and initiatives highlighted in the action-focused definitions appear to reflect the practice of sustainability, often siloed across different functional units.

A sizable portion of city sustainability professionals defined the objective of their work in terms of the structures, relationships, and/or arrangements that facilitate their city government's initiatives. In this regard, collaborative efforts, both between members of city staff and with external organizations, were frequently mentioned as a means of advancing local sustainability goals. Respondents' association of sustainability with collaborative endeavors is consistent with the prevailing recognition that resource sharing, partnership development, and multi-level and regional governance are all important to its effective pursuit (Deslatte and Feiock, 2019).

An evaluation of achievements and perceived progress is another theme seen in the definitions provided by sustainability professionals. These statements are normative judgments of achievements or lack thereof. In many cases, responses unveiled internal and/or external benchmarks that officials use to assess their efforts. This reflects findings from a recent study which found that, although it is still under-developed as a management tool, a small majority of U.S. cities over 50,000 in population engaged in some sort of sustainability performance monitoring (Park and Krause 2021).

Still, another portion of survey respondents defined sustainability in aspirational terms; as an ideal or an outcome to be strived for. Our review of these definitions pointed to a tension in the weights that sustainability professionals when describing their cities' practices, gave to its different dimensions, notably their emphasis on the relative importance of economic gains and

short versus long-term decision making. This conflict is intrinsically traceable to the concept of sustainability itself, i.e., a "value-laden concept that has many different dimensions and perceptions" (Sala et al. 2015, p. 314; Campbell 1996).

A final set of sustainability professionals defined sustainability in a particularly emotional manner, explicitly describing it in terms of the sentiments it inspired in their own lives and experiences. These emotional responses included frustration over barriers and inconsistencies, appreciation for decision-maker support and community support, and pride in accomplishments. In this set of statements, contextual stressors, such as insufficient political will, staff capacity, and budget resources, were described as hindering progress and dampening morale to the point that city officials feel compelled to express them while defining the concept.

The second part of our analysis centers on local contextual factors and the general orientation expressed. Consistently, support in the form of budget, staff, or political will seems to open up the room to be aspirational toward sustainability, which corroborates previous research drawing a connection between resource availability and adopting and advancing sustainability objectives (Kwon et. al 2014; Levesque et. al 2017; Krause et. al 2021; Deslatte et. al 2022). This connection is not surprising given that many sustainability programs necessitate immediate investments in return for distant benefits crossing temporal and jurisdictional boundaries. Sustainability leaders likely face situations where they need to advocate for policy actions that diverge from conventional city operations or that resist organizational silos. Thus, approval and resources from key stakeholders can provide the foundation to sustain an aspirational approach. On the other hand, when the execution of a city's sustainability vision is stifled by insufficient resources and commitment, staff might find sustainability ideals too lofty, and opt for a

programmatic compromise wherein they concentrate efforts on a limited set of policies, especially those promising swift realization of economic gains.

Conclusion

This study explored the differences in how officials who are responsible for sustainability efforts in U.S. city governments define sustainability. We drew from unique survey data that asked respondents to define sustainability, as practiced, in their community. Because they are a linchpin in the success of their city's sustainability practice, their orientation toward the concept is valuable for advancing research on this topic. However, despite their positionality, their viewpoints have not been solicited in this way in previous scholarly research.

The mindset that practitioners bring to their jurisdictional practice remains consequential to local sustainability across the United States as they translate priorities into action (Zeemering 2009). Understanding categorical variation in cities' approach toward sustainability is the first step, provided here. Future studies focused on local sustainability, particularly of city officials involved in implementation, could further this line of inquiry by connecting their conceptualizations to subsequent actions. For example, application of behavioral game theory might elicit how problem-solving strategies (education, tax benefits, green procurement, etcetera) are chosen according to different conceptualizations of sustainability or different hypothetical scenarios. Additionally, drawing connections between socio-demographic characteristics that pattern with conceptualizations would build an understanding of why cities cluster together or diverge in their approaches.

References

Anderies, J. M., Folke, C., Walker, B., & Ostrom, E. (2013). Aligning key concepts for global change policy: Robustness, resilience, and sustainability. *Ecology and Society*, *18*(2). http://dx.doi.org/10.5751/ES-05178-180208

Berke, P. (2016). Twenty years after Campbell's vision: Have we achieved more sustainable cities? *Journal of the American Planning Association, 82*(4), 380–382. *DOI: 10.1080/01944363.2016.1214539*

Berke, P. R., & Conroy, M. M. (2000). Are we planning for sustainable development? An evaluation of 30 comprehensive plans. *Journal of the American Planning Association*, *66*(1), 21-33. DOI: 10.1080/01944360008976081

Bick, N., & Keele, D. (2022). Sustainability and climate change: Understanding the political use of environmental terms in municipal governments. *Current Research in Environmental Sustainability*, *4*, 1-11. DOI: 10.1016/j.crsust.2022.100145

Brink, M., Hengeveld, G. M., & Tobi, H. (2020). Interdisciplinary measurement: A systematic review of the case of sustainability. In *Ecological Indicators, 112,* 1-7. https://doi.org/10.1016/j.ecolind.2020.106145

Brundtland, G. (1987). Report of the World Commission on Environment and Development: Our Common Future. United Nations General Assembly Document A/42/427.

Campbell, S. (1996). Green cities, growing cities, just cities?: Urban planning and the contradictions of sustainable development. *Journal of the American Planning Association*, *62*(3), 296–312. https://doi.org/10.1080/01944369608975696

Campbell, S. D. (2016). The Planner's Triangle revisited: Sustainability and the evolution of a planning ideal that can't stand still. *Journal of the American Planning Association*, *82*(4), 388–397. https://doi.org/10.1080/01944363.2016.1214080

Cohen, M. (2017). A systematic review of urban sustainability assessment literature.

Sustainability (Switzerland), 9(11), 20-48. https://doi.org/10.3390/su9112048

Cho, W., Kim, D., & YS Park, A. (2023). Local government's resource commitment to environmental sustainability: Capacity, conservatism, and contractual dynamics. *Urban Affairs Review*, *59*(2), 447-475. DOI: 10.1177/10780874211064976

Curl, A., Nelson, J. D., & Anable, J. (2011). Does accessibility planning address what matters? A review of current practice and practitioner perspectives. *Research in Transportation Business & Management*, *2*, 3-11. https://doi-org.www2.lib.ku.edu/10.1016/j.rtbm.2011.07.001

Davidson, K. M., Kellett, J., Wilson, L., & Pullen, S. (2012). Assessing urban sustainability from a social democratic perspective: a thematic approach. *Local Environment*, *17*(1), 57–73. https://doi.org/10.1080/13549839.2011.631990

Deslatte, Aaron, and Richard C. Feiock. (2019). The collaboration riskscape: Fragmentation, problem types and preference divergence in urban sustainability." *Publius: The Journal of Federalism* 49(2): 352-377. DOI: 10.1093/publius/pjy020

Deslatte, A., Krause, R. M., & Hawkins, C. V. (2022). The road to routinization: A functional collective action approach for local sustainability planning and performance management. *State and Local Government Review*, *54*(4), 310-327. DOI: 10.1177/0160323X221111065

Elkington, J. (1994). Towards the sustainable corporation: Win-win-win business strategies for sustainable development. *California Management Review*, *36*(2), 90-100. DOI: 10.2307/41165746

Fenton, P., & Gustafsson, S. (2017). Moving from high-level words to local action—governance for urban sustainability in municipalities. *Current Opinion in Environmental Sustainability*, *26*, 129-133. DOI: 10.1016/j.cosust.2017.07.009

Forester, J. (2022). Options analysis as context-responsiveness in practice: Integrating diagnosis, expertise, and negotiation (refining communicative planning and critical pragmatism). *Planning Theory & Practice*, *23*(5), 663-680. DOI: 10.1080/14649357.2022.2133158

Forester, J. (2023). How planners might improvise in the face of power: Waking up theory for practice. *Planning Theory & Practice*, *24*(2), 147-150. DOI: 10.1080/14649357.2023.2210474

Goldstein, B. E. (2010). Epistemic mediation: Aligning expertise across boundaries within an endangered species habitat conservation plan. *Planning Theory & Practice*, 11(4), 523– 547. DOI: 10.1080/14649357.2010.525374

Hartley, J., Sørensen, E., & Torfing, J. (2013). Collaborative innovation: A viable alternative to market competition and organizational entrepreneurship. *Public Administration Review*, *73*(6), 821-830. DOI: 10.1111/puar.12136

Hartley, J., Alford, J., Hughes, O., & Yates, S. (2015). Public value and political astuteness in the work of public managers: The art of the possible. *Public Administration*, *93*(1), 195-211. DOI: 10.1111/padm.12125

Hawkins, C. V. 2014. Competing interests and the political market for smart growth policy. *Urban Studies*, *51*(12), 2503-2522. DOI: 10.1177/0042098013512875

Hawkins, C. V., Krause, R., & Deslatte, A. (2023). Staff support and administrative capacity in strategic planning for local sustainability. *Public Management Review*, *25*(5), 879-900. DOI: 10.1080/14719037.2021.1999667

Healey, P. (1999). Institutionalist analysis, communicative planning, and shaping places. *Journal of Planning Education and Research*, *19*(2), 111-121. DOI: 10.1177/0739456X9901900201

Homsy, G. C., & Warner, M. E. (2015). Cities and sustainability: Polycentric action and multilevel governance. *Urban Affairs Review*, *51*(1), 46–73. DOI: 10.1177/1078087414530545

Homsy, G. C., Warner, M. E., & Liao, L. (2016). Sustainability and local governments: Planning helps balance environmental, economic, and social equity priorities. *Local Government Review*, 5–14.

Huang, L., Wu, J., & Yan, L. (2015). Defining and measuring urban sustainability: A review of indicators. *Landscape Ecology*, *30*(7), 1175–1193. https://doi.org/10.1007/s10980-015-0208-2

Innes, J. E. (1998). Information in communicative planning. J*ournal of the American Planning Association*, *64*(1), 52-63. DOI: 10.1080/01944369808975956

Jepson, E. J. Jr. (2004). The adoption of sustainable development policies and techniques in U.S. cities: How wide, how deep, and what role for planners? *Journal of Planning Education and Research*, *23*(3), 229–241. DOI: 10.1177/0739456X03258638

Ji, H., & Darnall, N. (2018). All are not created equal: assessing local governments' strategic approaches towards sustainability. *Public Management Review*, *20*(1), 154-175. DOI: 10.1080/14719037.2017.1293147

Keith, M., Birch, E., Buchoud, N.J., Cardama, M., Cobbett, W., Cohen, M., Elmqvist, T., Espey, J., Hajer, M., Hartmann, G. & Matsumoto, T., (2022). A new urban narrative for sustainable development. *Nature Sustainability*, 1-3. DOI: 10.1038/s41893-022-00979-5

Krause, R., & C. V. Hawkins. (2021). *Implementing city sustainability: Overcoming administrative silos to achieve functional collective action*. Philadelphia, PA: Temple University Press.

Krause, R. M., Hawkins, C. V., & Park, A. Y. (2021). The perfect amount of help: An examination of the relationship between capacity and collaboration in urban energy and climate initiatives. *Urban Affairs Review*, *57*(2), 583-608. DOI:10.1177/1078087419884650

Krause, R. M., Fatemi, S. M., Nguyen Long, L. A., Arnold, G., & Hofmeyer, S. L. (2023). What is the future of survey-based data collection for local government research? Trends, strategies, and recommendations. *Urban Affairs Review*, 1-22. DOI: 10.1177/10780874231175837

Kwon, M., Jang, H. S., & Feiock, R. C. (2014). Climate protection and energy sustainability

policy in California cities: What have we learned? *Journal of Urban Affairs*, *36*(5), 905-924.

Laurian, L. (2009). Trust in planning: Theoretical and practical considerations for participatory and deliberative planning. *Planning Theory & Practice*, *10*(3), 369-391. DOI: 10.1080/14649350903229810

Laurian, L., & Crawford, J. (2016). Organizational factors of environmental sustainability implementation: An empirical analysis of US cities and counties. *Journal of Environmental Policy & Planning*, *18*(4), 482-506. DOI: 10.1080/1523908X.2016.1138403

Levesque, V. R., Bell, K. P., & Calhoun, A. J. (2017). Planning for sustainability in small municipalities: The influence of interest groups, growth patterns, and institutional characteristics. *Journal of Planning Education and Research*, *37*(3), 322-333. DOI: 10.1177/0739456X16655601

Lorr, M. J. (2012). Defining urban sustainability in the context of North American cities. *Nature and Culture*, *7*(1), 16–30. https://doi.org/10.3167/nc.2012.070102

Martin, T. G., Burgman, M. A., Fidler, F., Kuhnert, P. M., Low-Choy, S., McBride, M., &

Mengersen, K. (2012). Eliciting expert knowledge in conservation science. Conservation Biology, *26*(1), 29–38. DOI: 10.1111/j.1523-1739.2011.01806.x

Maxwell, J.A., & Miller, B. A. (2008). Categorizing and connecting strategies in qualitative data analysis. In P. Leavy & S. Hesse-Biber (eds.), *Handbook of emergent methods* (pp. 461–477). New York: Guilford Press.

Maxwell, J. A. (2005). *Qualitative research design: An interactive approach* (2nd ed.). Thousand Oaks, CA: Sage.

McLean, B. L., & Borén, T. (2015). Barriers to implementing sustainability locally: A case study of policy immobilities. *Local Environment*, *20*(12), 1489-1506. DOI: 10.1080/13549839.2014.909798

Moragues-Faus, A., & Morgan, K. (2015). Reframing the foodscape: The emergent world of urban food policy. *Environment and Planning A: Economy and Space*, *47*(7), 1558-1573. DOI: 10.1177/0308518X15595754

Morgan, K. (2010). The green state: sustainability and the power of purchase. In *Handbook of Local and Regional Development* (pp. 109-118). Routledge. DOI: 10.4324/9780203842393-17

O'Connor, C., & Joffe, H. (2020). Intercoder reliability in qualitative research: debates and practical guidelines. *International journal of qualitative methods*,19. DOI: 10.1177/1609406919899220

Oden, M. (2010). Equity: The forgotten E in sustainable development. In Moore, S., *Pragmatic sustainability: Theoretical and practical tools*. Routledge.

Opp, S. M., & Saunders, K. L. (2013). Pillar talk: Local sustainability initiatives and policies in the United States: Finding evidence of the "three E's": Economic development, environmental protection, and social equity. *Urban Affairs Review*, *49*(5), 678-717. DOI: 10.1177/1078087412469344

Opp, S. M. (2017). The forgotten pillar: A definition for the measurement of social sustainability

in American cities. *Local environment*, *22*(3), 286-305. DOI: 10.1080/13549839.2016.1195800

Park, A. Y., Krause, R. M., & Hawkins, C. V. (2021). Institutional mechanisms for local sustainability collaboration: Assessing the duality of formal and informal mechanisms in promoting collaborative processes. *Journal of Public Administration Research and Theory*, *31*(2), 434-450. DOI: 10.1093/jopart/muaa036

Park, A. Y., & Krause, R. M. (2021). Exploring the landscape of sustainability performance management systems in US local governments. *Journal of Environmental*

Management, *279*, 1-9. DOI: 10.1016/j.jenvman.2020.111764

Portney, K. E. (2013). *Taking sustainable cities seriously: economic development, the environment, and quality of life in American* cities. 2nd Edition. Cambridge, MA: MIT Press.

Purvis, B., Mao, Y., & Robinson, D. (2019). Three pillars of sustainability: in search of

conceptual origins. *Sustainability science*, *14*(3), 681-695. DOI: 10.1007/s11625-018-0627-5

Redclift, M. (2005). Sustainable development (1987-2005): An oxymoron comes of age.

Sustainable Development, *13*(4), 212–227. https://doi.org/10.1002/sd.281

Robinson, J. (2004). Squaring the circle? Some thoughts on the idea of sustainable development. *Ecological Economics*, *48*(4), 369–384.
https://doi.org/10.1016/j.ecolecon.2003.10.017

Romero-Lankao, P., Gnatz, D. M., Wilhelmi, O., & Hayden, M. (2016). Urban sustainability and resilience: From theory to practice. *Sustainability*, *8*(12), 1-19. DOI: 10.3390/su8121224

Rydin, Y. (2007). Re-examining the role of knowledge within planning theory. *Planning theory*, *6*(1), 52-68. DOI: 10.1177/1473095207075161

Sala, S., Ciuffo, B., & Nijkamp, P. (2015). A systemic framework for sustainability assessment. *Ecological Economics*, *119*, 314–325. https://doi.org/10.1016/j.ecolecon.2015.09.015

Saha, D., & Paterson, R. G. (2008). Local government efforts to promote the "Three Es" of sustainable development: Survey in medium to large cities in the United States. *Journal of Planning Education and Research*, *28*(1), 21–37. DOI: 10.1177/0739456X08321803

Santillo, D. (2007). Reclaiming the Definition of Sustainability. *Environmental Science and Pollution Research International*, *14*(1), 60-66. DOI:10.1065/espr2007.01.375

Scoones, I. (2016). The Politics of sustainability and development. *Annual Review of Environment and Resources*, *41*, 293–319. https://doi.org/10.1146/annurev-environ-110615-090039

Sharifi, A. (2021). Urban sustainability assessment: An overview and bibliometric analysis. *Ecological Indicators*, *121*, 1-18. https://doi.org/10.1016/j.ecolind.2020.107102

Svara, J. H., Watt, T. C., & Jang, H. S. (2013). How are U.S. cities doing sustainability? Who is

getting on the sustainability train, and why? *Cityscape, 15*(1), 9-44.

Tvinnereim, E., & Fløttum, K. (2015). Explaining topic prevalence in answers to open-ended survey questions about climate change. *Nature Climate Change*, *5*(8), 744-747. DOI: 10.1038/nclimate2663

Wang, X., Hawkins, C., & Berman, E. (2014). Financing sustainability and stakeholder engagement: Evidence from US cities. *Urban Affairs Review*, *50*(6), 806-834. DOI: 10.1177/1078087414522388

Zeemering, E. S. (2009). What does sustainability mean to city officials? *Urban Affairs Review*, *45*(2), 247-273. DOI: 10.1177/1078087409337297

Zeemering, E. (2012). Recognising interdependence and defining multi-level governance in city sustainability plans. *Local Environment*, *17*(4), 409-424. DOI: 10.1080/13549839.2012.678315