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Towards an Edible Atlanta: Cultivating a Sustainable Urban Agriculture Plan

An Applied Research Paper

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Introduction

As we move forward into a climatologically hostile future, it is becoming increasingly critical to invest in localized, sustainable, and resilient food systems. Historically, American colonialism dictated the design and formation of cities in close proximity to agriculture (Vitiello and Brinkley, 2013). However, with the rise of American suburbanization and an industrialized food system, post modern urban planners have not usually focused land use planning efforts on bolstering agriculture within cities (Vitiello and Brinkley, 2013). There has been a fairly renewed interest from the American Planning Association in which they adopted their *Policy Guide on Community and Regional Food Planning* in 2007 which recognizes that food systems should be created with equity, economic vitality, and ecological sustainability at the forefront. Within sustainability, there are three pillars: social, environmental, and economic, which should be used to facilitate and maintain a healthy and equitable food system. Concurrently, urban growth continues to occur at rapid rates, oftentimes developing land that could have been used for food cultivation. As such, urban agriculture (UA) has recently gained traction especially following the COVID-19 pandemic, with many major metropolitan areas publishing urban agriculture plans separate from the comprehensive food system plans.

Interestingly, Atlanta has not published a formal UA plan such as the case for other metropolitan areas in the United States. However, Atlanta has AgLanta which is the urban agriculture 'hub' of urban agriculture from the City of Atlanta's Office of Sustainability and Resilience and Department of City Planning. The AgLanta website lists city-wide UA legislation and permits, urban farm applications and forms, as well as sources for banking, grants, and

funding. Despite the variety in UA resources offered by the City of Atlanta, the lack of a formal and institutionalized UA planning document should be noted.

Through this study I seek to determine which urban agriculture programs in the US have been most successful in incorporating the three dimensions of sustainability into UA plans. As such, this paper will include an overview on the current state of the literature exploring the various types and models of edible infrastructure and the most successful elements, the three dimensions of sustainability and its importance in food system planning, and the urban agriculture plan elements that are most fitting within the Atlanta context. This will then be followed by an exploration of the methods and results, concluding with policy recommendations for Atlanta decision makers and change agents in the UA landscape of southern US cities.

Literature Review

Successful Edible Infrastructure and Urban Agriculture Elements

In recent years, municipal and state governments have deployed UA in a variety of ways for a multitude of purposes. The United States Environmental Protection Agency views green infrastructure more in the context of addressing runoff and hydrologic interactions within an urban setting, giving the examples of strategically planted trees and open spaces (United States Environmental Protection Agency, n.d.). However, the definition of 'edible' green infrastructure furthers the utility of these spaces; "[Environmental green infrastructure] together with the beautification of a city, contribute to not only urban food production but nutritional, socioeconomic, and environmental co-benefits" (Russo et al., 2017, p. 62).

Previous work has been done to apply and expand Russo, et al.'s framework. Säumel et al., however, deploys the Edible City Solutions conceptual framework in which urban landscapes are fashioned into productive spaces that provide environmental, socio-cultural, and economic benefits (2019). For example, these spaces can take the shape of edible ornamental urban greening, edible wild plants, urban gardening and farming, indoor farming, edible green walls, roof gardens, urban woods, school gardens, and fruit trees or shrubs in streets and parks (Säumel et al., 2019).

As such, the multiplicity of these spaces cannot be overstated, especially as industrialized development expands rapidly and oftentimes with what seems to be little regard for sustainability and environmental harmony. “An underpinning principle of green infrastructure is multifunctionality. The capacity for a single green space to perform several services confronts the current urban paradox, where growing demands for [gray] infrastructure, and diminishing acreage for greening, juxtapose with an increasing demand for ecosystem services” (Landscape Institute, 2009; Pinho et al., 2016 as cited in Evans et al., 2022). While easier to evaluate within a strictly theoretical framework, previous studies have attempted to quantify the properties of what makes certain edible infrastructure and UA structures, programs, and spaces successful.

Evans et al. (2022) found that “the delivery of ecosystem services is partly modulated by the spaces in which they are assessed” (p. 10). The Evans et al. (2022) deployed a framework involving four service categories: provisioning, regulating, supporting, and cultural. In this sense, provisioning refers to the activity of food production, regulating refers to ecological homeostatic activities such as water flow and temperature stabilization, supporting refers to the creation of

habitat for species and nutrient cycling, and cultural refers to the fostering of societal interaction and recreation. Adopting either green infrastructure or urban agriculture within Community Gardens, Green Spaces, Allotments, and Parks is most conducive for diverse ecosystem service provision, each delivering > 16 different ecosystem services from all four service categories [provisioning, regulating, supporting, and cultural]" (Evans et al., 2022, p. 10). In the Evans et al. (2022) research, it became evident that several cultivation spaces for edible uses had been previously understudied in the academic context. Where spaces like community gardens, agricultural farms, and rooftop spaces had been most frequently studied, greenhouses, parks, and schools had been less so.

However, in a review of nature-based solutions for edible cities, researchers noted that there is a lack of tools "capable of supporting users in the planning, design, monitoring and assessment" of these methodologies (Mino et al., 2021, p. 15). As such, this article suggests that the most successful approach to an edible urban transformation is one that is holistic and incorporates an assessment of socioeconomic and environmental impacts (Mino et al., 2021). Further research has been done that connects Nature-Based Solutions for edible cities to an urban sustainability transition (Sartison and Artmann, 2020). A recent article with a focus on three German cities leading the edible city movement determined that Nature-Based Solutions can "[promote] social cohesion and human-nature and food connection" (Sartison and Artmann, 2020, p. 1). Sartison and Artmann (2020) also offer recommendations and the components of success from the case study cities' implementation strategy:

...the study suggests that there is a need for a mix of supportive city staff and politicians, organizing sufficient resources and bottom-up initiatives.... The

courage and space for experimenting with different forms of [urban food production] in the edible city are seen as important for long-term embedding. Furthermore, the creation of networks with different [urban food production] initiatives helps to promote education and learning, which in turn strengthens replication and frontrunner cities can act as a stimulus for followers to spread the idea of edible cities nationally and internationally” (p. 8).

As demonstrated by other cities, a holistic approach towards sustainable and nature-based solutions for urban food production is made possible through a combination of strong municipal leadership and grassroots approaches (Sartison and Artmann, 2020).

When applied more specifically to the context of food system planning, a recent article used the case study of Lisbon, Portugal to conduct a foodshed assessment. “Using ecological suitability analysis and landscape planning methods to map the Edible Green Infrastructure (EGI) allows to obtain Food provisioning ecosystem services budgets or potential self-sufficiency and footprint information that highlight the contribution of periurban and rural agriculture to Green Infrastructure (GI) objectives” (Cardoso & Domingos, 2023, p. 13). As such, Cardoso and Domingos (2023) conclude that it is imperative for food system planning be a critical component of spatial planning so as to centralize policies for the development of a local urban food system.

Food Systems Planning and the Three Dimensions of Sustainability

Historically, food systems and matters of food access were absent from planning discourse as it was often seen as separate issues involving rural and agricultural geographies (Vitiello and Brinkley, 2013). Only in more recent publications within the last several decades, have concepts of food systems and food systems planning reached modern discourse. A 1998

paper stated, “Despite its low visibility, the urban food system nonetheless contributes significantly to community health and welfare; to metropolitan economies; connects to other urban systems such as housing, transportation, land use, and economic development; and impacts the urban environment” (Pothukuchi and Kaufman, 1998, p. 213). The article goes on to call for holistic food system planning efforts of which could and should be institutionalized at the municipal level and that planners have the specific technical expertise to address (Pothukuchi and Kaufman, 1998).

In a survey of 22 metropolitan planning agencies, one research team found that community food system issues were not, at least at the time of its publication in 2000, a priority for planners (Pothukuchi and Kaufman, 2000). As such, this sentiment coexisted with the idea of “healthy cities” and sustainability movements, yet these ideas remained largely divorced from sustainable food systems planning (Pothukuchi and Kaufman, 2000). With regard to the role of a planner in sustainable food system planning, one article conducted semi-structured interviews with 12 planners in North America who self-described in some way as a food system planner (Soma and Wakefield, 2011). It was found that there was a widespread acknowledgment that food system planning was neither well understood nor well institutionalized despite its overlap and linkages between social, economic, and environmental pillars within urban communities (Soma and Wakefield, 2011).

However, the later 2010s brought a continued era of intensifying climate crises that forced a more critical look at food system challenges and developing a pragmatism that focused more deeply on transitions to sustainability (Hinrichs, 2014). Conceptualizing the aspects of a sustainable food system has also been complex for scholars. Eakin et al. (2016) define food

system sustainability through six overlapping knowledge domains “Individual food security,” “Community food sovereignty,” “Human economic welfare,” “Agro-ecosystem integrity,” “Land change,” and “Global food democracy.” Through these domains, five system attributes emerge which should serve as critical components and guide sustainable food system choices: “diversity,” “modularity,” “transparency,” “innovation,” and “congruence,” (Eakin et al., 2016). Diversity with regard to biodiversity and diversity in values and actors (Eakin et al., 2016). Modularity in the sense of food sovereignty and agency (Eakin et al., 2016). Transparency meaning resource ownership and allocation, food content, and food source (Eakin et al., 2016). Innovation regarding food technology development, cultivation and distribution networks, and grower knowledge (Eakin et al., 2016). Congruence in the sense of respecting planetary boundaries and ecological processes (Eakin et al., 2016).

As our collective definitions of food systems and the roles of planners within them have evolved, so has our understanding of its sustainability. Using a qualitative text analysis of peer reviewed articles on food systems change towards sustainability, Weber et al. identified five approaches to food systems change: alternative food movements, sustainable diets, sustainable agriculture, healthy and diverse societies, and food as commons with four mediums of change across all cluster: political action, close collaboration between stakeholders, education, and deep value shift (Weber et al., 2020). The authors discuss that either the Food as Commons or Alternative Food Movements clusters should be deployed in food systems as these perspectives most comprehensively address all three spheres of transformation (personal, practical, and political) by suggesting “actions intervening in values and knowledge, policies, and practices,

and include elements that facilitate interconnection between these spheres” (Weber et al., 2020).

An additional article also took note of the interconnections that exist between food system and sustainability and the gaps that the discourse often negates (Bilali et al., 2018). Bilali et al. (2018) argues that “this disconnect [in the literature] hinders a coherent discussion of sustainability transitions, which will be necessary to solve problems (environmental, social, economic, and health) generated by conventional food systems” (p. 1). These transitions to sustainable food systems can be facilitated through increasing efficiency such as through more sustainably intense cultivation and distribution practices, curbing demand such as through sustainable eating behaviors, and food system transformation or alternative food movements such as localized food systems like through UA (Bilali et al., 2018).

As demonstrated in the literature, food systems should be holistic in what they intend to address as they should have sustainability at its foundations, particularly within the context of UA:

“Historically, as well as currently, economic and food security are two of the most common reasons for participation in urban agriculture. Urban agriculture not only provides a source of healthful sustenance that might otherwise be lacking, it can also contribute to a household’s income, offset food expenditures, and create jobs. Social facets are another reason for populations to engage in urban agriculture. A garden or rooftop farm is a place where people come together for mutual benefit, often enhancing the common social and cultural identity for city residents. Larger urban farms also participate in community enrichment through

job training and other educational programmes, many of which benefit underserved populations.” (Ackerman et al., 2014, p. 190).

However in a more contemporary context, Ranjbari et al. (2021) discusses that the ‘social’ pillar is being prioritized in public policy spaces at the expense of the environmental and economic pillars as a result of the COVID-19 pandemic (Ranjbari et al., 2021), which stands to reason that the emphasis of the social pillar in this space is likely to manifest similarly in UA plans and broader food system plans in which economic and environmental pillars are less highlighted.

To understand sustainability in a more theoretical nature, Caraher (2009) argues that the three pillars of sustainability can be advanced to understand the power dynamics of what it means to be a ‘consumer’ in order to develop understanding of its influences on the food system. Thus, it is critical to advance a sustainable food system transformation especially as we move more intentionally towards new urban agriculture initiatives, rather than a transition which has less emphasis on “human agency, contestation, and deliberation (Stirling, 2011 as cited in Weber et al., 2020, pg. 12).

With sustainability as the foundation, UA, or more broadly green infrastructure, can take on a variety of modalities within an urban space.

Urban Agriculture in the Atlanta Context

As previous research indicates, substantial urban agriculture and edible green infrastructure initiatives should ideally incorporate all three pillars of sustainability. Through these pillars that should underpin edible green infrastructure, there is potential to deploy what Bohn and Viljoen call “continuous productive urban landscape” (CPUL) which is a design concept that centralizes the networks of productive landscapes in urban spaces (2005). The

interconnections of these productive greenspaces are then intended to support the built environment (Bohn and Viljoen, 2005), which could look like open urban spaces for cultivation that operate alongside structured outdoor spaces for residents to enjoy with elements such as benches, tables, or swings. This has been executed at a relatively small scale at the Browns Mill Urban Food Forest which is located in a South Atlanta neighborhood and owned by the city and managed in part by Atlanta's urban agriculture department, AgLanta. This seven acre cultivation space also doubles as a park with benches and walking trails.

Other research also advocates for a similar sustainable urban structure particularly in the age of a post COVID-19 pandemic landscape regarding shifts in farming activities and supply chains. Similar to the design principles synthesized by Bohn and Viljoen (2005), Sardeshpande, et al. (2021) advocate for an edible urban commons that could “help [localize] and diversify food systems along the lines of smallholder agroforestry, offering alternative sources of nutrients in times of unforeseen stress or shock” (Sardeshpande, et al., 2021). Sardeshpande, et al. (2021) also discuss the criticality of edible urban commons being integrated and localized at a neighborhood level. As such, the Atlanta Neighborhood Planning Unit system could offer a method of deploying and scaling UA initiatives created by the city and ensuring that these spaces are reflective of the needs and desires of the neighborhoods of which they are apart.

As such, this paper intends to understand how green infrastructure, more specifically UA, can be leveraged to localize food production and foster urban resilience in the city of Atlanta. Previous research has indicated a more recent focus in the discourse on “under-represented [ecosystem] services and growing spaces...and the added value that would

be achieved by incorporating ecosystem service assessments of green infrastructure and urban agriculture into...decision-making in urban space” (Evans, et al., 2022, p. 10).

With this in mind, this research seeks to examine how urban agriculture can be leveraged to engage all three pillars of sustainability through a review of recently published municipal level plans. Thus, the goal of this research is to identify successful aspects with regards to the three pillars of sustainability within urban agriculture plans. This data would then be used to propose local level policies and recommendations for advancing a sustainable food system within the Atlanta context.

Methods

This research intends to explore the following questions: Are there policy tools within municipal UA plans to address climate change and the three elements of sustainability? And what of these policy tools is most important for the Atlanta context? In this analysis, I selected all urban agriculture plans that had been published at a municipality level to better understand how sustainability pillars intend to be applied. This research is intended to explore how well the three pillars of sustainability are being implemented within municipal level plans to understand established best practices in order to provide insight for the further development of Atlanta’s UA landscape.

To do this, I completed a document review with qualitative scoring based on best practices. Document reviews are useful for qualitative research in that the analysis is based upon stable and accessible data; however, the scoring method applied here does allow for bias since only one researcher is reviewing the documents and there is no validation process involving multiple document reviewers (Morgan, 2022). A previous study has conducted a

similar document review using the three pillars of sustainability to evaluate municipal level food system plans rather than UA plans that this study hopes to examine (Karetny et al., 2022). The only requirement of this selection was that they needed to be separate from the comprehensive plan and explicitly describe their respective UA initiatives. The only cities that had plans that met this criteria can be found in Table 1 with a list of the plans and the years of which they were published. A map of the cities of these selected plans can be seen in figure 1.

City	Title of UA Plan	Year Published
Baltimore, Maryland	Homegrown Baltimore: Grow Local Baltimore City's Urban Agriculture Plan	2013
Brockton, Massachusetts	Brockton Urban Agriculture Plan	2017
Bridgeport, Connecticut	Cultivating Community: An Urban Agriculture Master Plan for Bridgeport	2019
Alpharetta, Georgia	Alpharetta City Agriculture Plan	2022
East Point City, Georgia	East Point City Agriculture Plan	2020
Philadelphia, Pennsylvania	Philadelphia's Urban Agriculture Plan: Growing from the Root	2023
New York City, New York	Mayor's Office of Urban Agriculture: Cultivating Urban Agriculture in New York City	2023

Table 1. List of selected UA plans for municipalities in the United States with the years published.

The median year of the plans selected for this study was 2020 with the most plans being written in 2023.

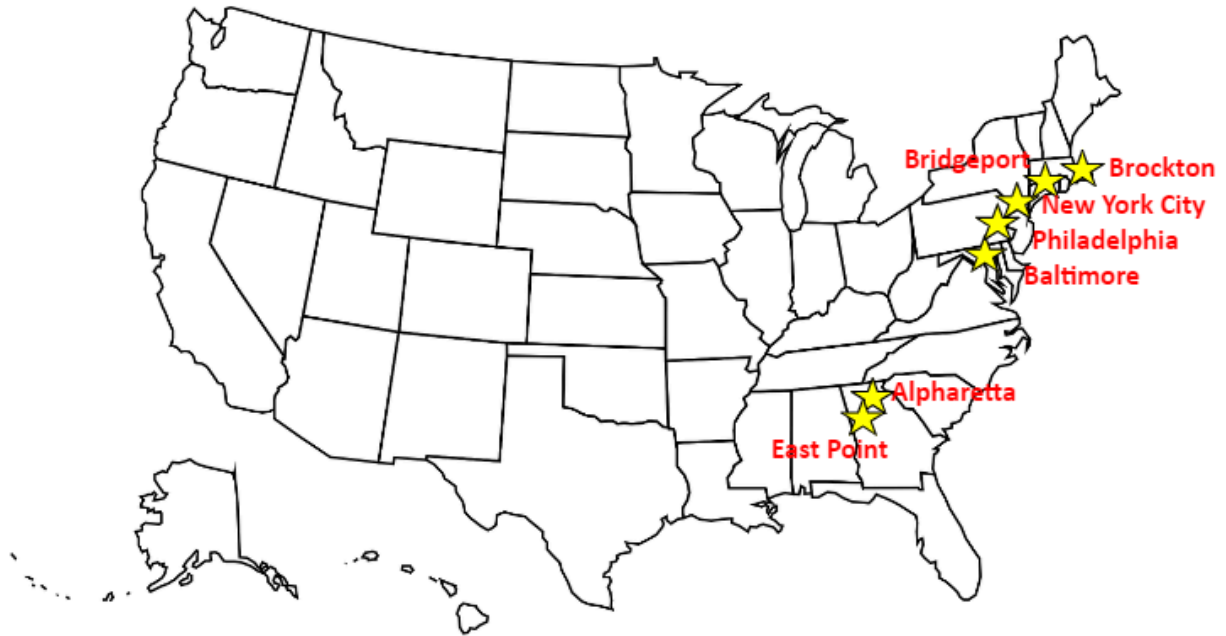


Figure 1. Map of selected plan locations.

A scoring criteria for each plan was adapted from a similar plan evaluation framework created by Karetny et al. (2022) which evaluated the sustainability elements of greater food system plans of municipalities (Table 2). This research intends to apply this same framework instead to UA plans while also highlighting the recent focus on the ways in which UA and green infrastructure and their co-benefits are being leveraged to combat climate change (Duebbling and De Zeeuw, 2011; Lucertini, Di Giustino, 2021). The scoring criteria were applied to each of the plans listed in the table above. Similar to the framework applied by Karetny (2022), the scoring process was binary; if the plan contained an element or explicitly stated it as a goal or objective, it was given a score of 1. If an element was not addressed within a plan, it was given a score of 0.

Dimension	Objective	Rationale
	Does the UA plan intend to....	
Social	Improve access and affordability of food options	Karetny et al. (2022)
	Increase consumer knowledge of food cultivation, preparation, and distribution within the UA system	
	Celebrate the culture, identity, and heritage of the local and regional food system and support opportunities to better reflect its diversity	
	Create pathways for engagement across stakeholders to foster collaborative decision making	
	Support the wellbeing of UA workers	
	Encourage consumers to grow, process and sell their own food by helping them access natural capital and built capital and enabling sale of their products	
	Increase coordination and efforts within social policy areas	
Environmental	Conserve and protect water resources	Karetny et al. (2022)
	Support energy use reduction or alternative energy use	
	Preserve undeveloped land, limit development of natural landscapes	
	Reduce the environmental impacts of food production and/or waste such as through composting	
	Increase coordination and efforts within environmental policy areas	
Economic	Support a knowledgeable UA system workforce	Karetny et al. (2022)
	Support existing and grow new food businesses, provide technical and financial assistance to urban food entrepreneurs	
	Promote the availability, quality, and value of urban food to grow market demand	
	Support economic viability of UA through investment in physical UA infrastructure such as through land trusts	
	Develop and increase access to funding mechanisms and infrastructure for UA	

	Support entrepreneurs in accessing resources needed for entrepreneurship in UA	
	Increase coordination and efforts within environmental policy areas	
Climate	Explicitly connect sustainability efforts to climate change?	Duebbling and De Zeeuw, (2011); Lucertini, Di Giustino (2021)

Table 2. Qualitative scoring criteria adapted from Karetny et al. (2022), Duebbling and De Zeeuw, (2011) and Lucertini, Di Giustino (2021)

As such, this work intends to be applied to the Atlanta context by providing sustainability and climate adaptation insights on UA practices that previous municipalities have explored in their UA plans in order to guide future implementations in the city.

Results and Discussion

The results of the analysis can be seen in the chart below with each of the evaluated sustainability dimensions and the number of UA plans that discuss it (Figure 2). A more in-depth examination of each plan is detailed in the scorecards outlining the dimensions and the respective scores.

Sustainability Dimensions and Number of Plans

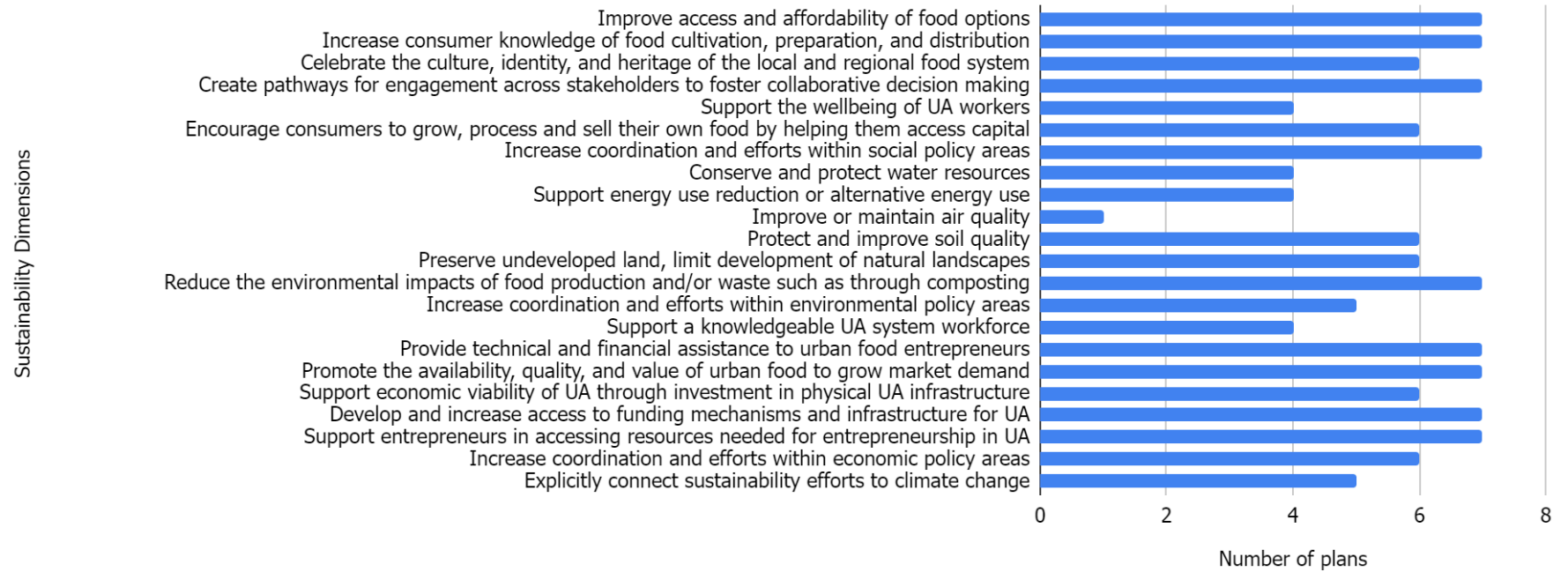


Figure 2. Shows the sustainability dimension and the number of times it is discussed within each selected plan

Baltimore, Maryland - 2013		
Dimension	Objective	Score
	Does the UA plan intend to....	
Social	Improve access and affordability of food options	1
	Increase consumer knowledge of food cultivation, preparation, and distribution within the UA system	1
	Celebrate the culture, identity, and heritage of the local and regional food system and support opportunities to better reflect its diversity	1
	Create pathways for engagement across stakeholders to foster collaborative decision making	1
	Support the wellbeing of UA workers	1
	Encourage consumers to grow, process and sell their own food by helping them access natural capital and built capital and enabling sale of their products	0
	Increase coordination and efforts within social policy areas	1
Environmental	Conserve and protect water resources	1
	Support energy use reduction or alternative energy use	1
	Improve or maintain air quality	0
	Protect and improve soil quality	1
	Preserve undeveloped land, limit development of natural landscapes	1
	Reduce the environmental impacts of food production and/or waste such as through composting	1
	Increase coordination and efforts within environmental policy areas	1
Economic	Support a knowledgeable UA system workforce	1
	Support existing and grow new food businesses, provide technical and financial assistance to urban food entrepreneurs	1
	Promote the availability, quality, and value of urban food to grow market demand	1
	Support economic viability of UA through investment in physical UA infrastructure such as through land trusts	1
	Develop and increase access to funding mechanisms and infrastructure for UA	1
	Support entrepreneurs in accessing resources needed for entrepreneurship in UA	1
	Increase coordination and efforts within economic policy areas	1
Climate	Explicitly connect sustainability efforts to climate change?	1
Total score		20

Table 3. Scorecard of Homegrown Baltimore: Grow Local Baltimore City's Urban Agriculture Plan (2013).

Despite being the oldest plan in the analysis, Homegrown Baltimore: Grow Local Baltimore City's Urban Agriculture Plan had one of the highest scores (Table 3). The plan was published in 2013 and created by the Baltimore City Planning Commission, Office of Sustainability.

Baltimore ranked lowest in the social dimension with the only objective scoring a '0' was that there was no mention of encouraging consumers to grow, process and sell their own food by helping them access natural capital and built capital and enabling sale of their products. Likely given the more urban setting of the city than others in the analysis, individual food production, outside of community gardens, may not be as feasible and was accordingly omitted. Particular strengths of the social dimension include a discussion on Baltimore's Community Greening Resource Network (CGRN), which "links gardeners to one another and also forms partnerships with non-profits, academic institutions, government agencies and businesses, leveraging the resources available through these diverse organizations to better support gardening efforts" (City of Baltimore, 2013, p. 30). Regarding the coordination and efforts within social policy areas and UA worker wellbeing, the plan includes a section on occupational safety and health of urban farm employees.

As for the environmental dimension, Baltimore discusses preserving and expanding existing water infrastructure in UA activities through an added water access program and the development of rainwater capture systems. The plan also includes sections from the zoning code that pertain to UA, of which make land use allowances for greenhouses if they are designed for capturing wind energy. Soil quality is also focused upon in which the plan seeks to develop soil standards regarding contamination levels and establish best management practices

for farms and gardens to improve the safety and efficacy of food production. The only time the plan discusses air pollution is in the introduction “Plants can reduce air pollution by absorbing pollutants through their foliage” which earns a score of ‘0’ since there were no programmatic goals or objectives associated with this comment (City of Baltimore, 2013, p. 10). Regarding land conservation, there is a section of the plan that discusses a future process for moving land from a ‘vacant lands’ list to a Community Managed Open Space status to better preserve undeveloped lands. As for other environmental policy coordination, the Baltimore plan also outlines program development processes for composting, pollination, and beekeeping.

Within the economic dimension, the plan earned a full score. There is mention and discussion of a Buy Local, Eat Local plan and a program called Homegrown Baltimore: Land Leasing Initiative which intends to “to identify qualified farmers to establish new, entrepreneurial urban agriculture ventures on city-owned land [with] a limited amount of capital bond funding is available to assist farms with infrastructure-related start-up costs” (City of Baltimore, 2013, p. 24). There is also a discussion of local lending agencies that are launching grant and loan programs as well as partner organizations that can assist in increasing capital access for urban cultivators in Baltimore.

In spite of this plan being 11 years old at the time of this writing, it explicitly connects UA as being critical in addressing climate change through carbon sequestration from farms and gardens, localized food production for the purpose of decreasing greenhouse gas emissions, and sustainable cultivation practices that reduce travel times and decrease the need for farm machinery and fertilizers.

Brockton, Massachusetts - 2017		
Dimension	Objective	Score
	Does the UA plan intend to....	
Social	Improve access and affordability of food options	1
	Increase consumer knowledge of food cultivation, preparation, and distribution within the UA system	1
	Celebrate the culture, identity, and heritage of the local and regional food system and support opportunities to better reflect its diversity	1
	Create pathways for engagement across stakeholders to foster collaborative decision making	1
	Support the wellbeing of UA workers	1
	Encourage consumers to grow, process and sell their own food by helping them access natural capital and built capital and enabling sale of their products	1
	Increase coordination and efforts within social policy areas	1
Environmental	Conserve and protect water resources	1
	Support energy use reduction or alternative energy use	0
	Improve or maintain air quality	0
	Protect and improve soil quality	1
	Preserve undeveloped land, limit development of natural landscapes	1
	Reduce the environmental impacts of food production and/or waste such as through composting	1
	Increase coordination and efforts within environmental policy areas	1
Economic	Support a knowledgeable UA system workforce	1
	Support existing and grow new food businesses, provide technical and financial assistance to urban food entrepreneurs	1
	Promote the availability, quality, and value of urban food to grow market demand	1
	Support economic viability of UA through investment in physical UA infrastructure such as through land trusts	1
	Develop and increase access to funding mechanisms and infrastructure for UA	1
	Support entrepreneurs in accessing resources needed for entrepreneurship in UA	1
	Increase coordination and efforts within economic policy areas	1
Climate	Explicitly connect sustainability efforts to climate change?	1
Total score		20

Table 4. Scorecard of the Brockton, Massachusetts UA plan (2017).

Published in 2017 by the City of Brockton's Department of Planning and Economic Development, the Brockton Urban Agriculture Plan earned a full score in all but the environmental dimension (Table 4).

Regarding the social dimension, there is a strong emphasis on providing education to the consumer through knowledge development of food cultivation, preparation, and distribution within the UA system as the plan outlines efforts to integrate UA into the Brockton school system. The plan also describes activities related to developing a local land trust for the purpose of facilitating connections with Haitian and Cape Verdean communities in Brockton who "continue to be underrepresented in politics and there are few spaces to bring these diverse communities together" (Kilduff and Tensen, 2017, p. 68) as a means of celebrating the culture, identity, and heritage of the local and regional food system. There is also a section devoted to outlining a pathway to an urban agriculture commission which would foster a network of local farmers, city officials, residents, and other local food production advocates, all of which should reflect the city's diversity. Interestingly, the plan also proposes improving local transportation networks to better support the movement and overall wellbeing of UA workers.

The environmental dimension earned the lowest score across all dimensions evaluated in this plan. While there is an entire chapter devoted to waterway considerations relevant to UA initiatives, there is no mention of energy reduction or alternative energy use nor air quality considerations. There is, however, an in-depth consideration of contaminated soils which includes a map and a discussion on the pollutant types and locations, citing Brockton's industrial history. In addition, an entire section of the plan is devoted to protecting and conserving land and describes the tools within their toolbox such as agricultural preservation restrictions,

Chapter 61A and Chapter 61B which reduces property tax burdens for farmers and landowners of undeveloped lands, and municipal conservation funds, all of which overlap with the economic dimension.

As for the economic dimension, there are numerous discussions on the importance of providing financial and technical assistance for those engaged in cultivation and food entrepreneurship, citing information from Brockton's community development corporation. In an effort to better educate a UA workforce, Brockton has a workforce investment board and plans to better connect students and workers to UA initiatives within educational institutions. To increase coordination and efforts within social, environmental, and economic policy areas, the plan proposes the creation of a food policy council and outlines possible initiatives that it could pursue such as mapping local resources for food cultivation, organizing local food markets, providing nutrition education, and advocating for transportation options to better connect food insecure households to food stores. The plan suggests including participants across production, consumption, processing, distribution, and waste recycling which crosscuts all dimensions evaluated.

In the Brockton plan introduction, there is a clear and explicit connection between the sustainability of UA efforts and climate change;

Food and agriculture are deeply political. The ability to grow food is affected by social and environmental justice, climate change, property rights, and global economic and political conditions. To grow one's own food in a city is a revolutionary act shaped by issues of race, class, gentrification, and urban

renewal, complex issues that require multifaceted approaches (Kilduff and Tensen, 2017, p. IV).

The introduction poignantly highlights the bio-political flashpoints that embody the field of UA, all of which will be further amplified by the changing climate. Brockton’s plan offers a clear connection to the sustainability pillars that should underpin UA, acknowledging its needed dynamism with regards to climate change.

Bridgeport, Connecticut - 2019		
Dimension	Objective	Score
	Does the UA plan intend to....	
Social	Improve access and affordability of food options	1
	Increase consumer knowledge of food cultivation, preparation, and distribution within the UA system	1
	Celebrate the culture, identity, and heritage of the local and regional food system and support opportunities to better reflect its diversity	1
	Create pathways for engagement across stakeholders to foster collaborative decision making	1
	Support the wellbeing of UA workers	0
	Encourage consumers to grow, process and sell their own food by helping them access natural capital and built capital and enabling sale of their products	1
	Increase coordination and efforts within social policy areas	1
Environmental	Conserve and protect water resources	0
	Support energy use reduction or alternative energy use	0
	Improve or maintain air quality	0
	Protect and improve soil quality	1
	Preserve undeveloped land, limit development of natural landscapes	1
	Reduce the environmental impacts of food production and/or waste such as through composting	1
	Increase coordination and efforts within environmental policy areas	0
Economic	Support a knowledgeable UA system workforce	0
	Support existing and grow new food businesses, provide technical and financial assistance to urban food entrepreneurs	1
	Promote the availability, quality, and value of urban food to grow market demand	1

	Support economic viability of UA through investment in physical UA infrastructure such as through land trusts	1
	Develop and increase access to funding mechanisms and infrastructure for UA	1
	Support entrepreneurs in accessing resources needed for entrepreneurship in UA	1
	Increase coordination and efforts within economic policy areas	0
Climate	Explicitly connect sustainability efforts to climate change?	1
Total score		15

Table 5. Scorecard of the Bridgeport, Connecticut Cultivating Community: An Urban Agriculture Master Plan (2019).

The Bridgeport Food Policy Council published its Cultivating Community: An Urban Agriculture Master Plan for Bridgeport in 2019 (Table 5). The plan scored highest in the social dimension (6/7) and lowest in the environmental dimension (3/7).

Regarding the social dimension, Bridgeport offers a recommendation on expanding and strengthening the local agriculture network through developing a funding strategy and outreaching to new producers. The plan also expressed a desire for the food system initiatives to be community led in order to reflect the diversity. Regarding coordination within social policy areas, the plan recommends the food policy council coordinating with the Bridgeport Board of Education to add food production programs into the curriculum.

Within the environmental dimension, the plan had no mention of water resource protections, energy use reduction or alternative energy use, air quality measures, or evidence of coordination within environmental policy areas. However, the plan does discuss food production site screening procedures such as soil testing. Undeveloped land preservation is discussed in the proposition of additional non-profit land trusts and conservation easements. In addition, there is also a composting program which addresses the objective regarding food production waste.

The economic dimension earned a relatively high score with a discussion of food business and entrepreneur training and development offered by a faith-based organization, a workforce development center, and food entrepreneurship organization. There was also an acknowledgement of the increasing demand of local produce and proposed shared kitchens to serve as small business incubators to assist food entrepreneurs. Near the end of the plan, there is a section on financing UA efforts from the USDA, the Fruit Tree Planting Foundation, and Sustainable Agriculture Research and Education Program. There is also a list of technical resources for cultivators to use which include handbooks from the EPA and the Leopold Center for Sustainable Agriculture as well as information on soils, farm financing, and land trusts.

The beginning of the Bridgeport plan has a vision statement with a part of it stating “[t]he Bridgeport community envisions the city having...a resilient food system that is capable of providing long term food security, adapts well to climate change, and reduces dependence on outside food sources...” (Green Village Initiative et al., 2019, p. 17), thus earning a full score for connecting climate to sustainably in UA.

East Point, Georgia - 2020		
Dimension	Objective	Score
	Does the UA plan intend to....	
Social	Improve access and affordability of food options	1
	Increase consumer knowledge of food cultivation, preparation, and distribution within the UA system	1
	Celebrate the culture, identity, and heritage of the local and regional food system and support opportunities to better reflect its diversity	0
	Create pathways for engagement across stakeholders to foster collaborative decision making	1
	Support the wellbeing of UA workers	0
	Encourage consumers to grow, process and sell their own food by helping them access natural capital and built capital and enabling sale of their products	1

	Increase coordination and efforts within social policy areas	1
Environmental	Conserve and protect water resources	0
	Support energy use reduction or alternative energy use	1
	Improve or maintain air quality	0
	Protect and improve soil quality	0
	Preserve undeveloped land, limit development of natural landscapes	0
	Reduce the environmental impacts of food production and/or waste such as through composting	1
	Increase coordination and efforts within environmental policy areas	0
	Economic	Support a knowledgeable UA system workforce
Support existing and grow new food businesses, provide technical and financial assistance to urban food entrepreneurs		1
Promote the availability, quality, and value of urban food to grow market demand		1
Support economic viability of UA through investment in physical UA infrastructure such as through land trusts		0
Develop and increase access to funding mechanisms and infrastructure for UA		1
Support entrepreneurs in accessing resources needed for entrepreneurship in UA		1
Increase coordination and efforts within economic policy areas		1
Climate	Explicitly connect sustainability efforts to climate change?	0
Total score		12

Table 6. Scorecard of East Point, Georgia’s City Agriculture Plan (2020).

Produced for the City of East Point, the Food Well Alliance Team (a Georgia non-profit devoted to local food production), and the Atlanta Regional Commission in 2020, East Point’s City Agriculture Plan scored the lowest of any plan evaluated in this analysis at 13/22 (Table 6).

Regarding the social dimension, the plan discusses East Point’s mobile market and how it is being used to improve access to healthy food options. To further build access, the plan includes a goal of empowering individuals to grow their own food through providing materials and technical assistance. In addition, the plan discusses the recommendations of the Urban

Agriculture Collective (UAC) which refers to the UA food system steering committee members and leaders in local food advocacy. While not described in great detail, the plan offers a recommendation that involves engaging the UAC in an audit and potential update on the zoning code to improve its integration with UA. In addition, it is also suggested that the UAC could partner with the East Point Housing Authority to expand space for food production while also increasing community garden space for senior housing.

The environmental dimension was the lowest scoring section with no mention of water resource management, air or soil quality maintenance, nor undeveloped land conservation. There was a recommendation that would provide access to loans for energy efficient refrigeration equipment to store produce as well as the creation of a composting program.

Regarding the economic dimension, one recommendation suggests the creation of a community grocery store which will sell produce grown by local growers. In an effort to increase access to funding mechanisms and infrastructure for UA and food entrepreneurship, there is a recommendation to develop a list of agriculture resources and guides for urban producers in addition to the provision of small business incentives and assistance programs. Finally, there is no mention of climate change at any point in the plan.

Alpharetta, Georgia - 2022		
Dimension	Objective	Score
	Does the UA plan intend to....	
Social	Improve access and affordability of food options	1
	Increase consumer knowledge of food cultivation, preparation, and distribution within the UA system	1
	Celebrate the culture, identity, and heritage of the local and regional food system and support opportunities to better reflect its diversity	1
	Create pathways for engagement across stakeholders to foster collaborative decision making	1
	Support the wellbeing of UA workers	1
	Encourage consumers to grow, process and sell their own food by helping them access natural capital and built capital and enabling sale of their products	1
	Increase coordination and efforts within social policy areas	1
Environmental	Conserve and protect water resources	0
	Support energy use reduction or alternative energy use	0
	Improve or maintain air quality	0
	Protect and improve soil quality	1
	Preserve undeveloped land, limit development of natural landscapes	1
	Reduce the environmental impacts of food production and/or waste such as through composting	1
	Increase coordination and efforts within environmental policy areas	1
Economic	Support a knowledgeable UA system workforce	0
	Support existing and grow new food businesses, provide technical and financial assistance to urban food entrepreneurs	1
	Promote the availability, quality, and value of urban food to grow market demand	1
	Support economic viability of UA through investment in physical UA infrastructure such as through land trusts	1
	Develop and increase access to funding mechanisms and infrastructure for UA	1
	Support entrepreneurs in accessing resources needed for entrepreneurship in UA	1
	Increase coordination and efforts within economic policy areas	1
Climate	Explicitly connect sustainability efforts to climate change?	0
Total score		16

Table 7. Scorecard of the Alpharetta, Georgia City Agriculture Plan (2022).

The Alpharetta City Agriculture Plan was produced in 2022 by the Foodwell Alliance, a Georgia non-profit devoted to developing a network of local producers across Metro Atlanta, and the Atlanta Regional Commission (Table 7). The Alpharetta plan scored a 16/22 with the highest scoring dimension being social and the lowest scoring being environmental.

Regarding the social dimension, the plan cites Alpharetta as having a “vibrant social culture of food-based events” (Atlanta Regional Commission & Food Well Alliance, 2022, p. 28) involving food trucks and food tours with the plan proposing that these spaces could be built upon as a means of community engagement and interactive programming. There is also a mention of the development of a Local Food Working Group which would create pathways for engagement across stakeholders to foster collaborative decision making. In addition, there is a proposition to support the doubling of SNAP/EBT dollars at the Alpharetta Farmers Market which would increase coordination within social policy areas. Similar to other plans, there is no mention of initiatives to improve UA worker wellbeing.

Objectives within the environmental dimension: water resource protections, energy use reduction or alternative energy use, and air quality measures, are not mentioned in the plan. Regarding land preservation, the plan discusses The Conservation Fund which purchases farm land and through a lease to own program, the land remains undeveloped or as farmland. The plan also discusses the implementation of a community composting model and the development of a pollinator habitat.

For the economic method, the plan recommends an amendment to the zoning code that would allow for the sale of produce on properties that are zoned for agricultural uses to

promote the availability, quality, and value of urban food to grow market demand. The plan also mentions conservation easements to further support the economic viability of UA through investment in UA infrastructure. In addition, there is a recommendation for the creation of an initiative called the home grower's cooperative which "could be a resource for offering assistance in preparing beds, trading plant starts, exchanging harvests, and advertising garden-related events and programs throughout the city" (Atlanta Regional Commission & Food Well Alliance, 2022, p. 20). In addition, the plan discusses how AgLanta, a local food production program by the City of Atlanta, will be utilized in UA initiatives which aims to crosscut the coordination and efforts within the environmental and economic policy areas. Lastly, there is no mention of climate change anywhere in this plan.

New York City, New York - 2023		
Dimension	Objective	Score
	Does the UA plan intend to....	
Social	Improve access and affordability of food options	1
	Increase consumer knowledge of food cultivation, preparation, and distribution within the UA system	1
	Celebrate the culture, identity, and heritage of the local and regional food system and support opportunities to better reflect its diversity	1
	Create pathways for engagement across stakeholders to foster collaborative decision making	1
	Support the wellbeing of UA workers	1
	Encourage consumers to grow, process and sell their own food by helping them access natural capital and built capital and enabling sale of their products	1
	Increase coordination and efforts within social policy areas	1
Environmental	Conserve and protect water resources	1
	Support energy use reduction or alternative energy use	1
	Improve or maintain air quality	0
	Protect and improve soil quality	1
	Preserve undeveloped land, limit development of natural landscapes	1
	Reduce the environmental impacts of food production and/or waste such as through composting	1
	Increase coordination and efforts within environmental policy areas	1
Economic	Support a knowledgeable UA system workforce	1
	Support existing and grow new food businesses, provide technical and financial assistance to urban food entrepreneurs	1
	Promote the availability, quality, and value of urban food to grow market demand	1
	Support economic viability of UA through investment in physical UA infrastructure such as through land trusts	1
	Develop and increase access to funding mechanisms and infrastructure for UA	1
	Support entrepreneurs in accessing resources needed for entrepreneurship in UA	1
	Increase coordination and efforts within economic policy areas	1
Climate	Explicitly connect sustainability efforts to climate change?	1
Total score		21

Table 8. Scorecard of the Mayor’s Office of Urban Agriculture: Cultivating Urban Agriculture in New York City (2023).

Produced by the Mayor's Office of Climate and Environmental Justice and the Mayor's Office of Urban Agriculture in 2023, the Cultivating Urban Agriculture in New York City plan scores a 21/22 (Table 8).

The social dimension earned a complete score of 7/7. One of the purposes of the plan is to increase access and production of culturally relevant food by socially disadvantaged farmers in New York for historically disinvested communities. Furthermore, there is an explicit discussion of "empowering students to become climate and urban agriculture stewards" through educational experiences (Mayor's Office of Urban Agriculture, 2023, p. 9). One initiative describes a pilot program that will involve a site for a community garden and sell produce from a rural socially disadvantaged farm. Regarding increasing coordination and efforts within social policy areas, the plan has a discussion of supporting an initiative that targets UA programming towards young people living in public housing.

Regarding the environmental dimension, there is information on water conservation efforts as well as a variety of plans for alternative energy implementation such as the installation of solar energy, electric building infrastructure, and green roofs on property owned by the city. There is also an ongoing soil bank outreach survey by the Office of Environmental Remediation to monitor soil quality. Furthermore, the plan discusses plans to increase awareness of the New York City clean soil bank which allocates native soil from construction sites to community and school gardens. Throughout, there is a discussion of the climate and environmental justice issues that UA initiatives in the city intend to address such as through stormwater capture and improved irrigation as well as composting. However, there is no mention of protecting or improving air quality.

The economic dimension also has a complete score. Regarding the UA system workforce (and worker wellbeing from the social dimension), the plan perhaps most clearly across all plans in this analysis, seek to “support urban agriculture and horticulture training that would foster wellness, fresh food access, and workforce development for NYC veterans” (Mayor’s Office of Urban Agriculture, 2023, p. 6). There is also a clearly stated priority of increasing entrepreneurial and business opportunities particularly for Black, Brown, and Asian cultivators. One initiative called the Urban Agriculture Innovative Production Grant Program describes an ongoing expansion that would target UA programming and workforce training towards young people living in public housing. Additionally, the city is working to build economic viability in UA infrastructure by including community land trust gardens in legislation at the state level.

Throughout the plan, a concern for climate change and its criticality regarding UA activities and initiatives is clearly linked to the three pillars of sustainability.

Philadelphia, Pennsylvania - 2023		
Dimension	Objective	Score
	Does the UA plan intend to....	
Social	Improve access and affordability of food options	1
	Increase consumer knowledge of food cultivation, preparation, and distribution within the UA system	1
	Celebrate the culture, identity, and heritage of the local and regional food system and support opportunities to better reflect its diversity	1
	Create pathways for engagement across stakeholders to foster collaborative decision making	1
	Support the wellbeing of UA workers	1
	Encourage consumers to grow, process and sell their own food by helping them access natural capital and built capital and enabling sale of their products	1
	Increase coordination and efforts within social policy areas	1
Environmental	Conserve and protect water resources	1
	Support energy use reduction or alternative energy use	1
	Improve or maintain air quality	1
	Protect and improve soil quality	1
	Preserve undeveloped land, limit development of natural landscapes	1
	Reduce the environmental impacts of food production and/or waste such as through composting	1
	Increase coordination and efforts within environmental policy areas	1
Economic	Support a knowledgeable UA system workforce	1
	Support existing and grow new food businesses, provide technical and financial assistance to urban food entrepreneurs	1
	Promote the availability, quality, and value of urban food to grow market demand	1
	Support economic viability of UA through investment in physical UA infrastructure such as through land trusts	1
	Develop and increase access to funding mechanisms and infrastructure for UA	1
	Support entrepreneurs in accessing resources needed for entrepreneurship in UA	1
	Increase coordination and efforts within economic policy areas	1
Climate	Explicitly connect sustainability efforts to climate change?	1
Total score		22

Table 9. Scorecard of Philadelphia, Pennsylvania’s Urban Agriculture Plan: Growing from the Root (2023).

Produced by the Philadelphia Park and Recreation Department in 2023, the Urban Agriculture Plan: Growing from the Root plan scored a complete 22/22 (Table 9).

Regarding the social dimension, the plan begins with a land acknowledgement and a call to “Frame today’s realities through the lens of structural racism, and pull from past examples while exploring new policies, programs, and possibilities” and it states that this plan is for “everyone who wants a healthier, more just local food system that centers BIPOC presence/resistance/histories/and ancestral knowledge and practices” (Philadelphia Parks and Recreation, 2023, p. 43). The plan calls for enacting universal design in gardens to ensure inclusivity and equitable access so that UA opportunities better reflect its diversity. To support the wellbeing of UA workers, there is an initiative to expand the current roles of a local horticulture center to act as a garden hub to supply resources for farmers and gardeners. Regarding social policy area efforts, the plan “[seeks] improvements to how Philadelphia Housing Development Corporation (PHDC) and the Philadelphia Land Bank educate and inform the public about equitably selling, transferring, and leasing public land for community gardens and farms, agriculture projects, community-managed open spaces or other productive land uses” (Philadelphia Parks and Recreation, 2023, p. 56).

The environmental dimension as represented in this plan scored highest compared to all other plans in this analysis. The plan mentions a partnership with a vacant land program to create community gardens integrated with green stormwater infrastructure such as rain gardens. A section of the plan is also focused on developing programs to increase the affordability of solar power installation at community farms and gardens. Regarding the air

quality objective in this dimension, the plan mentions using agroecologically centered pest management and sustainable technologies as a way of protecting air quality and its impact on human health. For the soil health objective, the plan mentions that there is an additional plan being written on maintaining and improving soil conditions, Soil Generation, led by a Black and Brown grassroots agroecology coalition composed of Philadelphia growers and food system advocates. In addition, there is a discussion on the development of a municipal level UA program to improve top soil conditions, increase carbon sequestration, and decrease water pollution from soil runoff. The plan also mentions establishing multi-agency partnerships to evaluate a possible conservation district which would improve technical and financial resources within these environmental policy areas.

Regarding the economic dimension, the plan begins with a section on methods of racialized land-based oppression, of which centers the document's recommendations on the economic pillar of sustainability. There is a discussion on allocating funds or training and education for growers "to ensure growers have all the tools they need to manage relationships and growing spaces" (Philadelphia Parks and Recreation, 2023, p. 62). Additional objectives within this dimension are addressed by the plan's initiatives on community kitchens that foster food entrepreneurship, inclusive and financially sustainable land bank policies, and establishing a network to connect farmers to wholesale opportunities. Regarding the coordination within economic policy areas, the plan mentions "[partnering] with workforce and economic development programs and nonprofit partners to foster new economic and mutual aid opportunities in agricultural transportation" (Philadelphia Parks and Recreation, 2023, p. 112).

Finally, the plan clearly connects sustainability in UA to climate change efforts. One of the stated goals at the beginning states the criticality of “[taking] climate action to support a local food system that increases access to nourishing chemical-free food, restores soil quality, mitigates the urban heat effect, manages stormwater, and reduces food waste and transportation costs” (Philadelphia Parks and Recreation, 2023, p. 10).

A total matrix showing each sustainability dimension and the comparison among plans can be seen below in table 10.

Dimension	Objective	Brockton	Bridgeport	Alpharetta	Philadelphia	East Point	Baltimore	NYC
Social	Improve access and affordability of food options	•	•	•	•	•	•	•
	Increase consumer knowledge of food cultivation, preparation, and distribution within the UA system	•	•	•	•	•	•	•
	Celebrate the culture, identity, and heritage of the local and regional food system and support opportunities to better reflect its diversity	•	•	•	•		•	•
	Create pathways for engagement across stakeholders to foster collaborative decision making	•	•	•	•	•	•	•
	Support the wellbeing of UA workers	•		•	•		•	•
	Encourage consumers to grow, process and sell their own food by helping them access natural capital and built capital and enabling sale of their products	•	•	•	•	•		•
	Increase coordination and efforts within social policy areas	•	•	•	•	•	•	•
Environmental	Conserve and protect water resources	•			•		•	•
	Support energy use reduction or alternative energy use				•	•	•	•
	Improve or maintain air quality				•			
	Protect and improve soil quality	•	•	•	•		•	•
	Preserve undeveloped land, limit development of natural landscapes	•	•	•	•		•	•
	Reduce the environmental impacts of food production and/or waste such as through composting	•	•	•	•	•	•	•
	Increase coordination and efforts within environmental policy areas	•		•	•		•	•
Social	Support a knowledgeable UA system workforce	•			•		•	•

	Support existing and grow new food businesses, provide technical and financial assistance to urban food entrepreneurs	•	•	•	•	•	•	•
	Promote the availability, quality, and value of urban food to grow market demand	•	•	•	•	•	•	•
	Support economic viability of UA through investment in physical UA infrastructure such as through land trusts	•	•	•	•		•	•
	Develop and increase access to funding mechanisms and infrastructure for UA	•	•	•	•	•	•	•
	Support entrepreneurs in accessing resources needed for entrepreneurship in UA	•	•	•	•	•	•	•
	Increase coordination and efforts within economic policy areas	•		•	•	•	•	•
Climate	Explicitly connect sustainability efforts to climate change?	•	•		•		•	•
Total Score		20	15	16	22	12	20	21

Table 10. Shows the matrix for sustainability within each UA plan

The only plan with a 22/22 score was Philadelphia, closely followed by the NYC plan. The lowest score was held by East Point which is most lacking in the environmental pillar having only scored less than half of the total possible points.

As can be seen above, the least commonly discussed sustainability objective was on air quality which only one plan mentioned, Philadelphia. Another two of the least commonly discussed sustainability dimensions were part of the environmental pillar on water management, which Bridgeport, Alpharetta, and East Point did not have, as well as alternative energy sources, which Brockton, Bridgeport, and Alpharetta did not have. Another least commonly discussed dimension was within the economic pillar regarding the development of a knowledgeable UA system workforce.

The most commonly discussed sustainability dimensions were regarding improving food access and consumer knowledge, collaborative decision making, reducing environmental

impacts of food waste, entrepreneurial support, growing market demand of urban food, as well as increasing funding and infrastructure for UA.

As for the climate component, two plans did not mention climate change nor connected it to sustainability efforts, both of which happened to be more recently published by smaller municipalities in the South which could have implications for the contents of an Atlanta UA plan. Interestingly, Baltimore had the oldest plan having been published in 2013 yet it explicitly described the importance of a sustainable UA system on mitigating and adapting to climate change.

Finally, there are considerable biases to consider in this analysis. I completed this analysis independently without subsequent rounds of plan reviewers, which could have led to more precise and accurate results as completed in the research of Karetny et al. (2022).

Policy Recommendations

The following is a list of policy recommendations and rationale that a UA plan for Atlanta should implement in a municipal urban agriculture plan that captures all three pillars of sustainability. These recommendations were chosen based upon what is likely to be excluded from a sustainable UA plan.

1. The UA plan should be produced by the city of Atlanta's Office of Sustainability and Resilience and Department of City Planning

- Rationale: The highest scoring plans in the analysis (Philadelphia, New York City, and Brockton) were produced by municipal level bodies, particularly the city planning department and/or the city parks and recreation department or

economic development department. A UA plan produced by a municipal department, rather than a nonprofit or food policy council (such as in the case of Bridgeport, Alpharetta, and East Point), seems to have higher degrees of connection to partnering agencies and resources that create coordination among social, environmental, and economic policy areas.

2. The UA plan should have some component that addresses air quality

- Air quality was one of the least commonly addressed objectives across all dimensions in all plans. In creating a sustainable UA plan, Atlanta cannot afford to be remiss regarding air quality. According to the American Lung Association (2023), Atlanta has the fourth poorest air quality in the southeastern United States thus calling for an integrative approach in addressing UA sustainability and its health impacts. An Atlanta UA plan could recommend crops that may be less sensitive to certain air pollutants (Aubry & Manouchehri, 2019) or propose fertilizer or pesticide varieties that minimize its impact on air quality and human health.

3. The UA plan should have some component that addresses soil quality

- Given Atlanta's industrial history, along with other cities whose plans have been analyzed here, it is critical to make soil quality considerations in a sustainable UA plan. According to the US Census Bureau, Atlanta is one of the fastest growing metropolitans in the United States (Wilder & Mackun, 2022). Given the rapid development and possible soil contamination, an Atlanta UA plan could consider recommending the establishment of a soil bank such as addressed in the New

York City Plan. As new construction takes place, lower layers of protected and uncontaminated soil can be tested and reserved for use in urban cultivation space, thus reducing environmental and economic costs for purchasing and transporting outside soil.

4. Establish an Urban Agriculture Commission for Metro Atlanta led AgLanta and formed by the Atlanta City Council

- Rationale: While the Atlanta metropolitan area has the Foodwell Alliance, a nonprofit devoted to connecting farmers and gardeners to support and resources, it seems as though an Urban Agriculture Commission (UAC) could be useful for Atlanta and the surrounding metro. A UAC, as proposed and described in the Brockton plan (2017), describes this body's activities as advocating for the interests of food production and cultivators, protecting natural resources, and promoting economic opportunities. This committee would be formed by the Atlanta City Council with the duties it performs being specific to the needs and context of Atlanta and the needs and desires of local growers and UA activists.

5. Establish a food policy council

- Rationale: Despite Foodwell Alliance and AgLanta, Atlanta does not have the social dimension centered arm of a food policy council such as in the case of all plans evaluated with the exception of East Point and Alpharetta. An Atlanta food policy council could perhaps better integrate health and wellbeing components of the social and economic dimension into a sustainable UA plan through connecting the Fulton County Health Department, food businesses, growers, and

the Fulton County Cooperative Extension to facilitate healthy food promotion programs in schools, youth engagement activities, and opportunities for expanding the local food production economy. Furthermore, it could coordinate with the Georgia Food Policy Council to further regionalize Atlanta's local UA landscape.

6. Support the wellbeing and workforce development of employees working in the UA sector in the city of Atlanta

- Rationale: Two of some of the least mentioned objectives in this analysis involved the wellbeing and educational development of UA employees. In an Atlanta UA plan, this could look like expanding transit options for employees involved in production, processing, cultivation, and distribution like in the Brockton plan or a central UA resource hub for growers such as in the Philadelphia plan. Furthermore, the City of Atlanta's housing department could partner with UA initiatives to bring UA education, programming, and workforce training to young residents who live in public housing such as in the New York plan.

7. Implement agricultural preservation restrictions (APR)

- Rationale: AgLanta Grows-A-Lot Urban Farms has implemented a pilot program in which it leases land to urban growers for food production on land identified as energy right-of-way spaces. This land contains energy and utility equipment from Georgia Power and cannot be developed upon. Atlanta could take these protections a step further to secure vacant land from future development by

implementing agricultural preservation restrictions such as in the case of the Brockton plan; “An APR provides several tangential benefits including financial relief by releasing equity “locked up” in land values, enabling emerging or beginning farmers to purchase productive land, providing retiring farmers with an option to transition land between owners without surrendering land to development, and providing productive land for nonprofits such as land trusts or educational centers” (Brockton, 2017, p. 100). Using an APR, Atlanta land owners who engage in food production could voluntarily implement a permanent deed restriction that would prevent future developments that may restrict agricultural production which could deliver crosscutting and holistic benefits to a sustainable UA landscapes.

8. Centralize climate action within the UA plan

- Clear connections to how and why UA is critical for cities is important in climate adaptation. Two plans in the analysis, East Point and Alpharetta, are also Georgia cities, neither of which mention climate change. At the time of this writing, Atlanta is already somewhat of an (albeit unintentional) leader connecting UA to climate adaptation; the majority of city owned growing space is located in South Atlanta and many community gardens are located in West Atlanta. Atlanta has the potential to become a leader among other southern cities for their acknowledgement and focus upon sustainable UA initiatives in mitigating and adapting to climate change.

Conclusion

In conclusion, this paper presents a qualitative analysis of seven UA plans at the municipal level using an adapted framework derived from Karetney et al. (2022) to examine how the three pillars of sustainability: social, environment, and economic, in addition to climate change, are discussed within the plan. The recommendations proposed here have been informed by recently published literature and the results of the plan analysis. As such, the recommendations are aimed at Atlanta decision makers and change agents in the UA landscape of southern US cities.

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