

PLANNING AND FOOD SYSTEMS: INGREDIENTS FOR
SUSTAINABLE COMMUNITIES

by

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In recent years the planning profession has been increasingly involved in planning for sustainable communities. However, in their work to build healthy and equitable communities, planning scholars and practitioners have paid little attention to the impact of food systems. The limited attention given by planners to food systems issues is troubling, not only because planners have the skills and knowledge to effectively address those issues, but also because components of food systems greatly impact the natural environment, local economies, and degree of social equity; three major components of sustainable communities. Through a survey of senior long-range planners in Oregon and Washington, this thesis explores planners' willingness to address food systems issues and the extent that planners view food systems as important to achieving greater levels of community and regional sustainability.

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I

PLANNING AND THE SUSTAINABLE COMMUNITY MENU

Introduction

In the quest to steer cities and communities towards increased ecological sustainability, planners have historically paid close attention to issues relating to land use and urban design to encourage alternative transportation, improve air and water quality, minimize urban sprawl, and maximize open space. More recently planners have turned their attention to issues relating to health, energy and social services. However, in their work to build healthy and equitable communities, planning scholars and practitioners have paid little attention to the impact of food systems (Kaufman, 2004).

Food systems, or components of them, are directly related to many of the traditional and emerging areas of focus for planners. Designing high-density urban areas can reduce sprawl and conserve food producing agriculture land. Farmers on the urban edge that sell direct at street markets become an important part of lively downtowns. Transportation planners concerned about providing public transit to employment centers could broaden their view to include planning routes to food stores. Planners with housing responsibilities could consider proximity to food sources when determining locations for affordable housing units, and those concerned with health issues could examine the food choices available to families. These examples are just some of the long list of ways that food systems overlap traditional planning areas.

Background

At a local level there are many individuals and groups working towards such goals as building healthy cities and sustainable communities. While the concepts these terms

embody are difficult to succinctly define, they include the notion that to achieve a better quality of life, or as a species to continue living at all, we must find ways to live and develop our communities in a more sustainable way; that is to “meet the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987, p. 54). There is no universally agreed upon definition of sustainable development, though most agree that any development that is sustainable will reconcile the “three E’s” of environment, economy and equity (Berke and Conroy, 2000; Harris and Goodwin, 2001 in Jepson 2003; Chiappe and Flora, 1998, in Kloppenburg et al.1994).

The term food system refers to all the processes involved in the production, processing, distribution, access, consumption, and disposal of food (Dahlberg, 1994). Less visible elements of this system include agriculture practices, labor standards and policies, and external costs such as waste generated from packaging, or the pollution associated with shipping food vast distances. The food system can be viewed in broad geographic terms to include the international exchange of food goods, or it can be separated into such categories as local, regional, and national food systems.

The food system is inseparable from any hope of achieving a sustainable community. Food production requires the use of natural resources such as soil, water and land, which in turn affect the quality of the natural environment. Issues of hunger, food insecurity and access raise questions of economic, social and spatial equity, while elements such as marketing, retailing, and purchasing food are directly tied to local economies. No matter what context the food system is viewed in, each and every human participates in it, and the way we manage this system has direct implications for the health of our natural environment and therefore our communities.

The dominant food system in the US today is a market driven system, characterized in part by high input industrial agriculture, pollution from chemical fertilizers and

pesticides, highly processed foods, wide distances between producer and consumer, inequitable access to food for disadvantaged populations, diet related disease, and unnecessary waste. Feenstra (2002, p. 100) characterized the dominant food system as “highly energy and capital-intensive, globally integrated, and increasingly economically consolidated”. As a result, the dominant food system has degraded the environment, and caused economic failures for small family farmers and community based businesses tied to food production and processing; it has disconnected people from the source of their sustenance and worn away many of the social and cultural links that historically connected people to their food (Feenstra, 2002). Today’s conventional food system has created a situation where high quality nutritious food is prized and accessible by middle and upper income families, while disadvantaged populations are at higher risk of nutrient deficiency because they often can not readily access quality food (Feenstra, 2002). These characteristics are at odds with the goals of sustainability, and underscore the need to include food systems in any conversation about planning for more sustainable communities.

Planning for Food

To move from the conventional food system towards a more sustainable alternative will require a radical change in societal understanding and values regarding the food system. This includes developing a common language or framework to discuss the food system (Feenstra, 2002) where such terms such as “regenerative food system” (Dahlberg, 1993), and “foodshed” (Kloppenburger et al., 1996) become commonly understood. A move to a more sustainable alternative system will also require a broad view of the food system to include rural and urban issues, social justice, ecological health, human health (Kloppenburger et al., 1996) and a systems approach to solving problems where each issue is viewed in terms of relationships within a web of other causes and effects.

Feenstra (2002) described four types of “space” that community leaders ought to create in order to foster a more sustainable food system. The first, *social space*, includes

physical places such as farmers markets and community gardens where informal social interaction could occur. In a more formal setting a social space is a venue or set of opportunities where diverse people can meet to discuss ideas, share concerns, learn about one another, develop a common language and ultimately build stronger community relationships.

A second space described by Feenstra is *political space*. Political space concerns policies that are set by local governments that affect the food system. Such policies could protect urban fringe farmland for food production, design urban spaces to include space for community gardens and farm-stands, or consider the role of public transit in terms of access to food stores. To initiate such policies requires an ability to collect and interpret technical data as well as the ability to negotiate the local political environment.

Intellectual space refers to the idea that a food system is interdisciplinary and should be viewed in terms of a series of connections rather than isolated parts operating in a vacuum. This requires broad “visionary” thinking in terms of understanding the total system, and being inclusive of individuals closely involved with the many components of the system.

Finally, Feenstra (2002) calls for community leaders to create an *economic space* in the community. This includes finding ways to re-circulate money generated in the food system back to local residents. It also includes finding or supporting methods to connect elements of the food system in a local context. Examples of this include farmers markets, where farmers sell their locally produced food directly to consumers, or community supported agriculture where residents will “invest” in a local farmer and be repaid at regular intervals with locally produced, fresh, seasonal food.

There are of course many individuals who are capable and comfortable working in all of these “spaces”. However, in terms of local and state governments, planners have the

skills and perspective that make them especially well suited to institute processes that result in ever more just, participatory, and democratic outcomes that are based on continuous ecological and economic health.

Planners often view communities in terms of relationships between components of a city such as land use, housing, transportation, the natural and built environments, and economy (Pothukuchi and Kaufman, 2000). Planners are trained to collect and analyze technical data, are knowledgeable about the local political terrain, and they are often experts at gathering and using information obtained through community participatory processes where diverse views are sometimes at odds. As a profession, planning is forward looking in the sense that it aims to make human settlements ever more livable (Pothukuchi and Kaufman, 2000), and this goal is closely aligned with the notion of sustainability; that one generation will not compromise the next generation's ability to meet their needs (Jepson, 2003).

In summary, planners are in a better position than most to plan for ecologically, economically, and socially just and healthy communities; and one critical element of such a community is a more sustainable food system.

Research Background

Writers such as Pothukuchi and Kaufman (1999 and 2000) have pushed for an increased involvement among planners in food system issues because planning as a profession claims to view communities comprehensively in order to better understand how their various components interconnect. Part of this involvement includes community food assessments to inform planning activities related to community food security (Pothukuchi, 2004). Others view planners as important to food system planning because of their ability to engage the community in an on going dialogue that will produce innovative solutions to community food security and related issues of sustainability (Campbell, 2004). Vallianatos et, al. (2004, p. 22) assert that “the time is right” for

planners to become more involved in expanding food systems linkages between local farms and schools, while Hammer (2004, p. 21) articulates reasons for academic planning departments to “advance community food system theory” so that practitioners will have the knowledge and skills to effectively address food system issues.

Despite the growing body of literature explaining how and why planners should be more involved in food systems planning, very few planners, at least in traditional local and regional government planning departments, are. Pothukuchi and Kaufman (1999) identified four reasons why the food system had low visibility among urban policy officials and city residents. One reason was that many city dwellers did not notice any problems with the food system; a second reason was that food issues were seen as rural and not urban problems. Third, technology allows food to be transported ever-farther distances, so urbanites did not see the impact of urban sprawl on farmland. Finally, federal initiatives that affect urban policy and development rarely address food issues.

Later, the same researchers published a report of a survey of 22 US city planning agencies that support the assertion that planners are only minimally involved in food systems planning, if at all. The 18-question telephone survey was conducted in cities, most of which had a food policy council or some other active and broadly focused food organization. The survey asked senior planners in each community to report their involvement in different aspects of food system planning and rank their involvement as significant, moderate or minimal. The survey results indicated that, in general, planners were only minimally involved in food systems planning, and when they were involved it was “reactive rather than proactive and piecemeal rather than comprehensive” (Pothukuchi and Kaufman, 2000, p. 115).

The respondents’ answers explaining their low level of involvement in food system issues were grouped into seven categories. The first category was that the planners did not feel that the food system directly impacted the built environment, the primary focus of their

departments. A second group of responses viewed food systems as rural and not urban issues. These respondents saw food systems largely in terms of agriculture and food production. Third, respondents saw the food system as being driven by the private market and therefore out of their purview of working for public goods. A fourth category of reasons why planners had little involvement in food systems was that there was no funding to tackle those issues. Many did not see any problems with the food system, or at least not problems large enough to be considered a priority issue, and many planners did not know what other agencies or organizations to collaborate with to address food system issues. Finally, respondents said they simply did not know enough about the food system to make a greater contribution than they previously had.

Pothukuchi and Kaufman's research provides insights into the reasons why planners are not planning for food systems, but their research does not directly address the values that planners' hold, especially in relation to sustainability, of which food systems are an integral component.

In 2003 Edward Jepson published a report on his research to "measure the extent to which planners' views and opinions correspond to the principles of sustainable development" (p. 391). While Jepson's work does not directly address food systems issues it does consider issues such as agricultural production, access, and market forces in the context of what he terms ecologically based sustainable development. Jepson's ecosystem framework accounts for economic, environmental and social/equity, essential components of a sustainable food system.

Jepson (2003) attempted to connect ecosystem theories to community development dynamics, asserting that to understand and apply sustainability in the context of community development it must be interpreted in relation to its ecological foundation to ensure "consistency of form" (p. 391). Jepson described what a theoretical sustainable development framework would look like, based on an ecosystems theory. He devised a

table that outlined eight areas of planning focus: citizen participation, economic and agricultural development, inter-jurisdictional relations, land use, open space, the planner's role, social aspects of planning, and transportation. For each area Jepson offered a corresponding ecosystem theory and the impacts that theory would have if applied to community development strategies.

From this ecologically based sustainable development framework Jepson created a survey that was completed by 528 AICP planners employed in US cities, towns or villages. From this survey, Jepson hoped to identify which components of an ecological sustainable development framework were "most reasonable" from the planner's point of view.

Overall, the results of the survey indicated that there is a fairly high level of consistency among planners in their views towards sustainable development, and their views were generally less, rather than more, in line with the ecosystem theory framework for sustainable development. Most planners were in accordance with the ecosystem theory of sustainable development in terms of advocating for "unorganized interests, perspectives, and values" (Jepson, 2003, p. 404). Planners' responses were least consistent with the ecosystems framework on questions relating to economic and agricultural development. They were especially uncomfortable with the concept of self-sufficiency, the notion that non-human interests should be considered a high priority, and the idea that they should intervene in market forces (Jepson, 2003, p. 404, 405).

Jepson (2003) found that planners were unwilling to intervene in market forces and that they had conflicts framing economic and agriculture issues in an ecosystem theory framework. Jepson's finding support Pothukuchi and Kaufman's finding that planners see food issues as outside their scope because they are viewed as rural concerns and market driven. Both sets of research provide valuable insight into questions on the potential of planners to plan for food systems and move communities towards more sustainable development. However, a more focused approach is necessary to understand planners'

views on sustainability in specific relation to the food system.

Research Questions

Components of the food system are closely intertwined with many aspects of human settlements and communities. The degree to which food systems are sustainable reflects the degree to which communities as a whole are sustainable. Planning professionals often have the technical skills and comprehensive perspective to influence the nature of community development and land use decisions so that they are more sustainable, but they rarely use this influence to address food systems issues. The research completed by Pothukuchi and Kaufman, and Jepson offer insights into why planners have not been involved in food systems planning, despite its implications for sustainable development. This paper will build from their work to explore planners' values towards sustainability in relation to food systems. Specifically this paper will answer two questions:

“To what extent do long-range planners see food systems as important to achieving greater levels of sustainability?”

“Which components of the food system are planners most capable or comfortable addressing in order to achieve greater local and regional sustainability?”

Methods

A survey of long-range planners in Oregon and Washington was conducted to answer the two central research questions. The survey was designed to reflect planners' understanding of the impacts of the food system on planning for sustainable communities and to illustrate which impacts planners feel are most appropriate for local plans and policy to address. The survey was informed by literature related to topics of sustainable development, planning theory, and alternative food systems with an eye toward the intersections of the three realms.

Importance and Limitations

This paper will increase the knowledge base of the planning field in two ways. The primary importance of this paper is that it will provide insight into which components or impacts of food systems planners are most willing to address in local plans and policies to achieve greater sustainability. It will also identify the level of involvement in ten food systems planning related activities. For those interested in putting food systems on the planning agenda, or advocating for food systems related issues, this information will be useful in prioritizing goals and directing resources to areas that are likely to receive the most immediate support from planning agencies. The research findings will be useful in determining those areas that planners may be swayed to incorporate as they construct long-range plans, and also in identifying food system issues that planners are least likely to consider.

Second, this paper will advance the case that food systems directly and powerfully impact the health and well being of all individuals and communities in terms of environmental quality, economic strength and social justice. As such, planners should incorporate food systems issues into their regular activities and these issues should be addressed in long-range and comprehensive plans.

The survey results supporting this research have two major limitations. The survey was only sent to long-range planners in mid to large cities in Oregon and Washington. The results cannot be generalized beyond this planning position, city size, and geographic region. The survey questions were designed to illustrate the values and perceptions of planners towards issues of sustainability as they relate to food systems; it is therefore limited in the sense that it does not indicate how practicalities such as funding, time and political support influence planners' willingness to plan for food systems and sustainable communities.

Balance of Paper

The next chapter will provide a detailed literature review on existing research related to planners' involvement with food systems and planning for sustainability. It will begin with a short discussion of what is meant by the phrase sustainable development and its strengths and weaknesses as a conceptual planning tool. The literature review will then illustrate some ways that food systems directly impact the economic, environmental and social quality of communities, and it will identify skills and tools planners could use to influence the nature of the food systems impacts. Finally the literature review will examine current levels of involvement in planning for food systems and sustainable communities.

The Methodology chapter will begin with a discussion of the work of other researchers dealing specifically with planners' involvement in food systems and planners' perceptions of their ability to plan for sustainability. Based on previous studies, the research design of this study will be described. The fourth chapter will present this study's findings. Chapter five will analyze the findings and recommend actions for policy and practice as well as for further research on the relationship between food systems, planning and sustainable communities.

II

SETTING THE TABLE: FOOD SYSTEMS AND SUSTAINABILITY

Introduction

Historically, the planning profession has been concerned with bettering human society, primarily through the improvement of human settlements (Jepson, 2003). Planners have gone about the task of building towns and cities, and strengthening communities in a variety of ways. Traditionally planners developed policies and regulations to guide land use, urban design, and transportation systems. Planners have also devised strategies to protect air and water quality, and provide open space areas for residents to enjoy. More recently, planners have incorporated human health, social equity, democratic participation, and energy conservation into their agendas (Kaufman, 2004). However, in their work to build healthy and equitable communities planning scholars and practitioners have paid little attention to the impact of food systems (Pothukuchi and Kaufman, 2000).

There are several reasons for planners to incorporate food systems into their regular planning practices. One reason is that food systems are interconnected with many of the traditional and emerging areas of focus for planners. A second reason is that planners possess the technical skills, political know-how, and multidisciplinary perspective necessary to address complex food system issues. Finally, planning for sustainable development and sustainable communities has become an important goal for many planning agencies and practitioners (Berke and Conroy, 2000), and it is essential to plan for food systems to achieve this goal. Food is a human need and food systems impact the quality of the natural environment, the strength of the local economy, and the levels of equity that exist in a community and region. Balancing these three components is

essential in moving toward more sustainable development.

To explore the relationship between food systems and sustainable communities this chapter first reviews the concept of sustainable development in a planning context. It then presents information from planning, food systems, and sustainable agriculture literature to illustrate relationships between food systems and sustainable communities. This chapter includes an overview of research on the potential role of planners in incorporating food systems to create more sustainable communities, and concludes with a discussion of planners' actual involvement in these areas according to two recent studies.

Sustainable Development

To understand how food systems impact a community's ability to develop in a more sustainable manner it is important to first clarify what is meant by the term sustainable development. This is no easy task, few people use the term in the same way, and it is often unclear what is sustained, for whom, how and why it is being sustained. When the term 'development' is connected to 'sustainable' the phrase can lead to confusion.

In short, to 'sustain' means to hold up, support or maintain indefinitely and 'development' can be defined as the "act of progressing...synonymous with expansion or growth" (Frazier, 1997, p.184). Taking the phrase sustainable development according to its term's respective definitions, the question arises, "In a world of finite resources, can growth be maintained indefinitely?" The answer, to at least some, is clearly no. Shiva (1992, in Frazier, 1997, p.186) states "the growth of affluence results in the growth of poverty". Frazier (1997, p.186) adds, "development in one locus will precipitate a reduction of development in another, for the provisioning of goods and services to one population ultimately limits their availability to others".

Campbell (1996, p. 296) points out that the term 'sustainable', though "laudable" for offering a "holistic vision", is vulnerable to criticisms that it is little more than "vague

idealism”. Frazier asserts that the term’s ambiguity allows it to be used differently by different people and draws an analogy of this weakness to a sack dress, “a convenient, simple covering for a multitude of issues, of diverse shapes and sizes” (1997, p. 189). In evaluating comprehensive land use plans, Berke and Conroy (2000) found that, despite the explicit inclusion of the term ‘sustainable’ in plans, overall the plans had little effect in achieving sustainability principles.

Planning and Sustainability

Some criticism of the phrase sustainable development can be sidestepped by substituting the word ‘community’ for ‘development’. Further, if the notion of sustainability and sustainable communities are redefined and incorporated into a broader understanding of political conflicts, it can become a significant organizing principle for planning and community development (Campbell, 1996; Jepson 2003). The conflicts that can be framed in terms of sustainability arise out of questions on how to protect the natural environment, encourage economic growth, and advocate for social justice. Berke and Conroy (2000) substitute ‘equity’ for social justice and refer to these points of conflict as the 3 E’s of sustainability, and Campbell (1996) envisions each ‘E’ as a point on a triangle with sustainability in the center. Thus, to move toward sustainable communities requires a balance or reconciliation of the 3 E’s and their potential conflicts (Campbell 1996; Berke and Conroy, 2000).

The 3 E’s are inherent in the frequently used definition that states, sustainable development “meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987, p.54). Jepson writes that this definition of sustainable development is “suffused with the notion of long-term thinking, which is intrinsic to the theory and philosophy of planning” (Land, 1983; Tonn, 1986; Cited in Jepson 2003, p.389) and Pothukuchi and Kaufman (2000, p.113) describe the planning profession as being “comprehensive in scope (and) future-oriented”. Campbell (1996, p. 296) states that conflicts between environmental protection, economic growth

and social justice “go to the historic core of planning” while Berke and Conroy (2000) note that the public is increasingly calling on comprehensive plans to address these conflicts and advance sustainable practices in their communities.

According to the literature reviewed, planning as a profession is engaged, at least implicitly, in planning for sustainable communities. When considering some common issues planners address; providing adequate amounts of low-income housing, protecting open space, and devising site plans to attract business and industry, it is clear that planners are involved in planning for the 3 E’s of sustainability: environment, economy and equity. Food systems are linked to each component of sustainability and so planners are in a position to incorporate food systems into their work.

Food Systems and Sustainability

The term food system refers to all the processes involved in the production, processing, distribution, access, consumption, and disposal of food (Dahlberg, 1994). Less visible elements of this system include agriculture practices, labor standards and policies, and external costs such as waste generated from packaging, or the pollution associated with shipping food vast distances. The food system can be viewed in broad geographic terms in order to include the international exchange of food goods, or it can be separated into such categories as local, regional, and national food systems.

The food system is inseparable from any hope of achieving a sustainable community. Food production requires the use of natural resources such as soil, water and land, which in turn affect the quality of the natural environment and human health. Issues of hunger, food insecurity and access raise questions of economic, social and spatial equity, while elements such as marketing, retailing, and purchasing food are directly tied to local economies. No matter what context the food system is viewed, each and every human participates in it, and the way we manage this system has direct implications for the health of our natural environment and therefore our communities. The sustainability

triangle of economy, environment, and social justice or equity proposed by Campbell provides a relatively neat way to illustrate some of the connections between the food system and ideals of sustainable communities.

Economy

Food systems are closely linked to the economic health of communities. Grocery stores, restaurants, convenience stores, diners, cafes, and taverns are all places where food is sold, and each location is an important to a community's economic and social fabric.

Grocery Store Markets

Grocery stores are particularly important in that 99% of households shop at grocery stores on a weekly basis and 15% of total retail sales are “groceries and other foods for human consumption off the premises” (US Census 2002; in Sawicki et. al. 2004, p.6).

Grocery stores on average are increasing in size and grocery/merchandise and grocery/drug stores have doubled their share of “food at home” sales to 19.8% since 1990 (US Census Bureau, 2002; in Sawicki et. al. 2004) and Wal-Mart now accounts for \$1 of every \$5 dollars spent on groceries (Grimm, 2003; in Sawicki). These numbers indicate a trend towards fewer retailers and reduced competition. This is confirmed by the fact that the largest five grocery stores account for 42% of all retail sales and just four companies control 84% of the US cereal market (Hendrickson, et al, 1997; Krebs, 1994; in Pothukuchi, 2004). According to Pothukuchi (2004, p.9) this reduction in competition is indicative of the “movement toward market failure of the food economy”.

Limited competition carries important implications for consumers, especially those with lower-incomes, or limited mobility. This will be discussed in more detail later, but in short, residents will generally place more importance on housing cost than proximity to shopping centers. Since it is generally more profitable and easier to locate large retail food stores near higher income, suburban areas, lower income urban residents will have fewer food options than their wealthier counterparts.

The good news is that small food stores are, in actual numbers, growing more rapidly than the “big-box” stores. Small food stores can provide similar quality, selection, price, and time-savings as large stores. Small stores can also be located in the areas where they are most needed: lower-income neighborhoods and urban areas. Planners can use tools such as mixed-use zoning to encourage stores to open in residential neighborhoods, or they can apply maximum-square-footage ordinances that may encourage big stores to locate in or closer to urban areas where they can be more accessible to all (Sawicki, 2000).

Farming and food production is another important part of local and regional economies. In the late 1990’s 94% of US farms were small, family owned, and had sales less than \$250,000 per year. Despite their large numbers, these farms only received 41% of total farm income (Commission on Small Farms, 1998; in Vallianatos et al, 2004). In 1997 over 70% of farms had sales less than \$50,000 and half had sales less than \$10,000.

These dismal figures reveal that most small farms are not getting rich, and in fact may be struggling to survive. If strong local markets could be established, the fate of small farms could be changed. Pirog et al. (2001) found that a 10% increase in the production and sale of 28 fruits and vegetables grown in Iowa would result in \$54.3 million dollars of sales for local farmers in that State. This money could then be circulated in local and regional economies.

Strengthening local farm markets also has implications for land use, specifically protecting open space and reducing sprawl. Established markets that increase local farm sales and make family farming a viable business will leave more land in agricultural production and protect corresponding open space values. However, until more localized markets are established it should come as no surprise that small farms are willing to sell their land to developers for much more profitable returns. And, once the land is sold, the

food producing capacity is lost, and the chance for new development and urban sprawl increases.

The role of planners in devising land use strategies to combat sprawl is widely written about. A different angle proposed by Vallianatos et al. (2004) is to work with local communities to help build farm connections to local markets. The planner could stay within the well-understood role of providing technical data and facilitating community processes, only the tool to prevent sprawl and protect open space would change from land use regulation to economic incentives.

Environment

The food system directly impacts the natural environment in many ways. Some agricultural practices can increase biodiversity and integrate with natural ecosystem processes, while other agricultural practices can destroy habitat and pollute the air and water. The distance food travels and the materials used to package food products are important considerations for air quality and waste disposal issues. Air and water quality, and the functioning of natural systems also directly affect the health of human populations.

Food Production

The effects of energy intensive, industrial agriculture that dominate the conventional food system have been devastating to the natural environment. Forty percent of the world's food is produced using "highly wasteful irrigation systems that are depleting nonrenewable groundwater, sterilizing the soil and carrying carcinogens and other toxins into our drinking water" (Warshall, 2002, p. 229) For example, the state of California is pumping 1.6 billion cubic meters more water per year than can be replenished, and over half of the water use occurred in highly productive agricultural regions. Salinization of the soil from irrigation damaged nearly 35% of irrigated land in California and 70% of irrigated land in the lower Colorado River Basin (Warshall, 2002). In addition to water loss and salinization, water supplies and agriculture land are bombarded with chemicals.

Each year US farms apply approximately 800 million pounds of pesticides to their fields along with 19 million tons of nitrogen and 4 million tons of phosphorous fertilizers. These pesticides can eventually seep into water supplies and contaminate them and those that drink from those reservoirs. The 1998 Federal National Water Quality Assessment Program found that each of its river and stream samples, and half of its groundwater well samples were contaminated with pesticides. It also found that 20% of shallow wells located on farmland had nitrate concentrations that exceed EPA standards for drinking water (Warshall, 2002).

At first glance these issues may appear to be strictly rural issues to be addressed by agriculture policies. However, agriculture activities are not necessarily distant physically or theoretically from urban communities. Eighty six percent of fruits and vegetables, 63% of dairy products and 35% of grains are produced in “urban influence areas” (American Farmland Trust, 2004). Therefore both rural and urban communities will be directly affected by agricultural impacts on the environment. For example there could be conflicts over water rights or land use between urban communities and farmers, or battles fought over the links between agriculture practices, water pollution and human health.

Planners may not be able to regulate the way food is produced the way they can regulate how land is used within their jurisdictions. However, as planners are concerned with ensuring that their communities have adequate supplies of clean and abundant water, they will need to be aware of the impacts of the food system on their ability to meet this need. They should also be aware of the impact that their developments have on farmland, since large percentages of food are grown on or in close proximity to urban areas.

Food Distribution

Many US citizens are disconnected from the processes that bring food from farm to table; in part because highways, packaging and refrigerated trucks have made it possible to transport food vast distances. (Food in wholesale markets in Chicago and Maryland travel an average of 1,518 and 1,685 miles from their source (Hendrickson, 1996; in Pirog et al., 2003)). The externalized cost of transporting food thousands of miles comes in the form

of greenhouse gases from fossil fuel burning trucks, money to build and maintain highways, and an erosion of local economies.

Food transportation technology has helped mask the disappearance of farmland from the public eye. Between 1992 and 1997 an estimated 6 million acres of potentially productive agriculture land was lost to urban development. The loss of land is less noticeable to many because it has not come with a corresponding decline in food availability. Though food supplies have not decreased, other important agriculture land attributes such as wildlife habitat, open space, scenic views and water-catchment areas have.

To begin to counteract farmland loss, air pollution and the need for major highways and roads to accommodate freight trucks, planners can do at least three things. They can advocate for compact urban development that will allow areas of food production to exist in or near urban areas, they can support economic policies that enhance local markets, and they can incorporate space to accommodate farmers markets and farm stands into comprehensive plans in order to facilitate markets for local food producers.

Food Disposal

In 1960 the average US citizen created 2.7 pounds of municipal solid waste per day. By 2001 that number almost doubled to 4.4 pounds per person per day. Counting businesses and institutions this equals 229 million tons of municipal solid waste per year. Most of this waste is disposed of and taken to landfills. Food waste accounts for 11.4% of total municipal waste, just above plastics at 11.2% and just below yard trimmings at 12.2%. Paper products make up the largest proportion of municipal solid waste accounting for 35.7% (US EPA, 2004).

The Portland, Oregon regional government, Metro reported that 27% of food produced for human consumption annually in the US is thrown out as waste. In 1995 this accounted for 48 million tons of edible food lost. In terms of monetary costs, Metro reported that nationally it costs \$50 million to dispose edible food in landfills. In the three-county

region that Metro governs in Oregon, individuals threw away an estimated \$300 million worth of food and it cost \$11 million to collect and truck that food to landfills. At the same time, 600,000 individuals throughout the state were forced to seek food assistance from the Oregon Food Bank (Portland Metro, 2003)

Food disposal should concern planners in terms of economic costs, but also because as old landfills are capped, new ones will have to be located raising a series of questions about location and compatibility with adjacent land uses. In addition to economic and land use concerns, the Portland example indicates that a great deal of edible food is discarded that could be used to temporarily address issues of local hunger and food insecurity.

Summary

Of the total energy used in the US food system, 17.5% is used in food production, 28.1% in processing, 11% on transportation; restaurants consume 15%, and 25% of food system energy used is in home food preparation. As a whole, the US food system accounts for nearly 16% of the total energy consumption in the US (Hendrickson, 1996; in Pirog et al. 2003). Food systems use energy to produce, package, process, transport and dispose foods. The effects of these processes impact the quality of the environment and raise potential conflicts about land use, water quality, air pollution and human health.

Equity

When planning for equity, one of the most important goals in terms of food systems is ensuring community food security, defined as a situation where all community residents can obtain “ a safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that maximizes community self-reliance and social justice” (Hamm and Bellows, 2003 in Pothukuchi, 2004, p.8). There are a variety of factors that limit a community’s food security, but most can be summed up as a lack of access rooted in spatial, transportation and economic inequity.

Over the decades, grocery retailers have consolidated, store size and market area have increased, and the total number of stores has declined (Public Voice for Food and Health Policy, 1995 in Clifton 2004). The stores that remain, and many of the new ones built, are located to meet the needs of auto-oriented suburban populations while food stores in poor neighborhoods and inner-city areas have been closed (Chung and Meyers, 1999; Yim, 1993; in Clifton, 2004). Under this circumstance, if a resident cannot afford to own, or cannot operate a private vehicle, their mobility and access will be limited by walking distance, public transit routes, and time available to travel to other neighborhoods to shop. If food stores are distant, or if public transit stops are far off or infrequent, residents may be forced to rely more heavily on neighborhood fast food restaurants or smaller grocery and convenience stores that offer a limited selection of healthy foods. Further, individuals without access to private vehicles will be limited by how much they can carry, which can be further complicated if they are also shopping with young children or riding public transit during peak hours (Clifton 2004).

Limited access to healthy and affordable food affects families' pocketbooks and their health. Poor diets can result in obesity, which is attributed to approximately 300,000 deaths each year (Allison et al. 1999, in Pothukuchi, 2004). Diet is linked to one third of all cancer deaths, and seven diet-related health conditions alone cost US \$80 billion each year in medical costs and loss in worker productivity (Doll and Peto 1981; USDA Economic Research Service, no date; in Pothukuchi, 2004). While these costs are shared across society, their impacts are particularly acute for lower-income, spatially confined residents. Research has consistently shown a strong relationship between social and economic class and disease. Wallack (1990, p. 45) writes, "social class, not individual behavior or medical care, is the best predictor of illness...(and) one of the most powerful predictors of morbidity and mortality experience is income".

For planners concerned with providing equitable opportunity to its residents, food should be considered. Transportation routes, safe and walkable streets, the location of affordable

housing, distribution of food stores, and location of employment opportunities conspire to affect the ability of residents to access nutritious and culturally acceptable food.

However, in most cases those least able to access healthy foods are lower-income, have limited mobility and are spatially isolated. The result, further economic and health costs to the already disadvantaged.

Planners Role

Much of the existing literature on planning and food systems argues that planners should put food systems on their agendas because planning, at least as a profession, is concerned with building communities with vibrant economies, healthy environments and equal access to opportunity. Planning is also future-oriented, intended to improve the quality of life for coming generations. This forward-looking perspective and attempt to balance economic, environmental and social needs are the key elements of sustainable communities. Food systems interact and are important parts of each of these elements; therefore to plan for sustainable communities planners should incorporate food systems into their activities.

In moving their communities towards greater levels of sustainability Campbell posits that the role of planners is to manage and resolve conflict, and promote creative technical, architectural, and institutional solutions. Campbell also outlines procedural and substantive “paths” to sustainability (Campbell, 1996, p.305). The procedural and substantive paths parallel themes found in other research that discusses the role of planners in addressing food system issues to increase community sustainability.

Procedural Role

Three procedural roles for planners in increasing community sustainability are as negotiator, translator and facilitator. In the negotiator role, planners can mediate dialogue among stakeholders that may have conflicting views on community issues. The planner can bring stakeholders together to balance multiple competing interests and seek compromise on issues related specifically to food systems or broader community

concerns (Campbell, 1996; Pothukuchi, 2004).

Planners generally have an interdisciplinary perspective and are trained to see the links between community issues and their possible solutions. Planners, understanding a variety of perspectives can act as translators between competing interests, helping for example, environmentalists understand tax incentives for businesses, and helping economists understand environmental carrying capacity (Campbell, 1996). These translation skills can be applied to food system issues to clarify issues and find common ground from which to resolve or prevent conflicts.

In addition to bringing specific stakeholders to the table, the negotiation process itself may mobilize the larger community around important development issues. Planners can facilitate community processes such as meetings and public forums that widen participation from a few stakeholder groups to the general public. Such processes can inform complex issues by highlighting community nuances or by developing creative solutions to local problems (Campbell, 1996). These processes can be used to collect information about food systems issues. Such information can then be distributed to decision makers in the public, private and nonprofit sectors. The information from planner led community processes can influence the outcome of decisions and may result in food systems plans or actions with broad public support (Pothukuchi, 2004).

Substantive Role

Land use planning is one of the strongest and most accessible tools planners possess for substantive change. Planners strongly influence land use policies and regulations, and are in a position to incorporate food systems into broader goals of developing healthy communities. Specifically, planners could revise local land use plans and regulations to encourage community gardens, or urban entrepreneurial gardens. Planners could also write food source gardens, or the general goal of food security, into comprehensive plans. For example comprehensive plans could require a certain amount of space per population

or per development for community food gardens (Campbell, 2004).

Along with incorporating food systems into local plans, planners can develop programs and regulations to slow the conversion of food producing land on the urban fringe to development. These largely regional planning strategies include the development of transfer or purchase of development rights programs to relieve pressure on local farmers to sell land. Other strategies include establishing urban growth boundaries or agriculture districts, and working with private organizations such as land trusts to protect farmland and open space (Vallianatos et. al, 2004).

There are also a number of strategies more specific to urban areas that planners can take to address food systems issues. Planners can apply mixed-zoning principles to allow increased integration of commercial and residential uses helping provide more equitable food access, and reducing dependence on private vehicles. Planners can help link farmers to urban consumers by allocating space for outdoor markets and farm stands. They can create or organize community shuttles, vanpools or neighborhood circulars or alter transit routes to improve access to grocery stores in food scarce neighborhoods (Clifton, 2004).

Planners could also apply their technical skills and multidisciplinary perspective and perform community food assessments. Pothukuchi (2004, p. 6) describes community food assessments as “activities to systematically collect and disseminate information on selected community characteristics so that community leaders and agencies may devise appropriate strategies to improve their localities”. Community food assessments can identify gaps in food systems that lead to food insecurity and they can highlight community resources and visions for improving local food systems. A planner’s role in community assessments parallels those described earlier. Planners can foster public participation processes focusing on the local food system, and they can apply technical analysis and tools to clarify issues. One relatively new tool many planners have is the

ability to use Geographic Information Systems (GIS). GIS can be used to illustrate the spatial distribution of goods, services and opportunities within the food system. Planners can use GIS to map transportation routes and location of grocery stores, helpful in assessing neighborhood access to food sources. Mapping can show areas of greatest need, highlight areas suitable for community gardens, and illustrate spatial relationships of race, income, disease and much more (Pothukuchi, 2004).

Summary

The terms sustainability and sustainable development have been criticized for being vague and ambiguous, and used to cover a multitude of issues, in a multitude of ways to support a multitude of sometimes-conflicting interests. Still, it is commonly agreed that a sustainable community fairly reconciles or balances the conflicts between environmental, economic and social equity interests, and the planning profession is engaged in developing more sustainable communities. Planners commonly address economic, environmental and social equity issues, the 3 E's of sustainability, and they do so to improve the quality of life in a community for present and future generations. Food systems directly and sometimes forcefully impact the 3 E's of sustainability and the effects can be felt at individual to global levels.

Planners have the technical skills, a future oriented and multidisciplinary perspective, and are often in a position to influence political decisions. Relying on these traits, planners can address food systems issues procedurally and substantively. In a procedural role, planners could facilitate public processes, negotiate and mediate between stakeholder groups, and generally foster community dialogue on food systems issues. In a substantive role, planners could modify land use plans to provide space for gardens, encourage neighborhood grocery stores and improve public transit links to food sources. Planners can also rely on technical skills such as GIS to perform community food assessments to highlight community needs and resources.

Conclusion

Theoretically, planners have the skills and perspective and are in a position to incorporate food systems into their planning practice to create more sustainable communities. There have been very few studies, however, that examine the actual involvement of planners in food systems planning, or that explore the perceptions of planners toward the concept of sustainability. The research of Pothukuchi and Kaufman (2000), and Jepson (2003) provide two notable exceptions.

Pothukuchi and Kaufman (2000) surveyed 22 US planning agencies to explore the extent of their involvement in food system planning. They found that overall, planning agencies involvement in food systems issues was minimal, piecemeal, and reactive rather than extensive, comprehensive and proactive.

The survey respondents' provided several common explanations for their low level of involvement in food system issues. One explanation was that planners did not feel that the food system directly impacted the built environment, the focus of their department's work. Planners viewed food systems issues as primarily rural and agricultural, and driven by the private market and therefore beyond their scope of work. Planners cited lack of funding and lack of information on how, and with whom, to collaborate to address food systems issues. Finally, many planners simply did not see any priority problems in the food system.

Jepson (2003) measured the extent to which an ecological definition of sustainable development was reflected in the views and opinions of US planners. His research was not directly concerned with food systems, however it did consider environmental integrity, equal access to opportunity, agricultural capacity, regional governance, and land use, to name a few of the areas in his study intertwined with food systems issues.

Jepson found that planners' views of sustainability were least in accordance with an ecological framework of sustainability in areas related to economic and agricultural

development, particularly the notion of self-sufficiency. Jepson also found that planners were uncomfortable intervening against land-development market forces, they were uncomfortable giving non-human welfare priority consideration, and were uneasy placing natural resource capacity at the center of their plans. In light of agricultural impacts on the natural environment, and the effect market forces have on equitable access to opportunity, these findings are significant to food systems planning.

Comparing Jepson's research to Pothukuchi and Kaufman's, two similarities emerge that help clarify the current position of planners towards planning for food systems. One is that planners (presumably urban) do not view rural and agricultural issues as falling

within their scope of work, or they are uncomfortable including those issues in the plans and policies they formulate. Second, planners are unwilling to intervene in private market processes specifically related to food systems or land-development market forces.

Contrasting research on planners perspectives toward an ecological definition of sustainability, and actual involvement in planning for food systems, with research on planners' potential role in food systems, indicates a disconnect between what planners could do, and what they are willing to do to plan for sustainable communities. However, there has been no research that directly links planners' perspectives on sustainability to their willingness to plan for food systems. Drawing from the work of Pothukuchi and Kaufman (2000), and Jepson (2003) the remainder of this paper explores this link by answering two questions. First, "To what extent do long-range planners see food systems as important to achieving greater levels of sustainability?" Second, "Which components of the food system are planners most capable or comfortable addressing in order to achieve greater local and regional sustainability?"

Research on planners' perspectives toward sustainability and their willingness to plan for food systems to achieve greater sustainability is important for three reasons. First, it will illustrate planning actions that could lead to more sustainable communities. Second, it will reveal which principles of sustainability planners are most comfortable with and which actions planners are most willing to undertake to strengthen food systems. This information can help advocates of food systems planning understand which issues planners will be most receptive to, and which will require more planner education. Finally, drawing the connections between planning practice, food systems and sustainability principles, will forward the case that planners interested in creating sustainable communities should consider the food system because of its direct and substantial impact on the natural environment, economy, and issues of social equity.

III

SAMPLING PLANNERS' VIEWS

Research Objectives

There were two primary objectives of this research project. One was to collect information to discover the extent that long-range planners were willing to address community food issues. The second objective was to gather information regarding planning agencies' activities directly concerned with components of food systems. This information was evaluated to understand the extent that long-range planners view food systems as important to achieving greater levels of community and regional sustainability and to understand planners' willingness to plan for food systems.

Survey Population

The survey was distributed to senior long-range planners in cities with populations greater than 50,000 in Washington and Oregon states. Long-range planners were selected because of their significant involvement in developing comprehensive and zoning plans, and their experience integrating a variety of elements, such as housing, transportation, open space, etc. to achieve broader community goals. Planners were selected only from cities with populations of 50,000 or greater because these cities were large enough to employ planners dedicated solely to long-range, and possibly regional, planning. Planners from Oregon and Washington were selected because sustainability issues are prominent in each of these states, and also because of their close geographic proximity to the University of Oregon where this research was based.

Information published on the Internet by the Washington State Data Book and Portland State University Population Research Center was used to identify cities with populations

of 50,000 or greater. In total there were twenty-three cities that matched the criteria for location and population size. A second Internet search was performed to locate the cities' websites and to retrieve contact information for each cities' planning department. When it was not obvious who the senior long-range planner was, or if there were several senior long-range planners, planning offices were contacted to determine the most appropriate person to respond to the survey. Planning offices were also contacted by telephone to obtain email addresses for the selected planner if those addresses were not posted on the city website.

Survey Design

To achieve the research objectives a three-part survey was created. Part one of the survey consisted of thirteen statements. Using a Likert-scale, respondents indicated their level of agreement with each statement according to their ideals, rather than based on current practice, regulations, or their agency's activities. Possible answers were *Strongly Agree*, *Agree*, *Neutral*, *Disagree*, and *Strongly Disagree*. Each statement tied a planning tool or activity to at least one of the Three E's of sustainability and a component of the food system. Take for example the statement, "Public transit routes should be designed to connect lower-income neighborhoods to grocery stores". Long-range planners plan for public transportation, at least in a general way, through comprehensive plans. Connecting lower-income neighborhoods to grocery stores addresses issues of equitable access for economically disadvantaged families and individuals, and social equity is a commonly agreed upon sustainability principle.

Based on planning literature, the survey assumed that in theory, most planners agree with the basic principles of sustainability. The statements were thus designed to reveal the extent to which planners were willing to incorporate those principles in practice to address food systems issues, rather than to determine if they agreed or disagreed with the sustainability principles themselves.

Part two of the survey consisted of ten questions concerning planning activities directly related to food systems. Most of the questions were directly derived from Pothukuchi and Kaufman's (2000) publication that listed the ten food systems issues planners were most involved with. For each question respondents indicated if they or their agency had been involved in the activity. If the respondents or their agency had been involved in the activity, they indicated if they were *Significantly*, *Moderately* or *Minimally* involved.

The third part of the survey asked for respondents' background information including job title, city and state of employment, and willingness to further discuss this research.

Survey Distribution

Each planner was sent an email message briefly introducing the researcher, the research project, and requesting the planner's participation in a forthcoming survey. Two days after the introductory email was sent, the survey, including a more detailed introduction, was sent to each of the planners. The survey was sent as a Microsoft Word Form attachment, and also included in the body of the email. Planners had the option of completing and returning the survey via email, either as an attachment or in their email program. Planners who did not respond after two working days of receiving the survey were contacted with a follow-up phone call. Finally, a follow-up email was sent to planner's who had not returned the survey after four working days. This method of continual communication with respondents resulted in the return of eighteen of twenty-three surveys. However, two were not returned in time for inclusion in the final analysis.

Data Analysis

The survey questions in Part I of the survey were designed so that responses would reflect planners' comfort or ability to address food systems issues within a sustainability framework based on environment, economy and agriculture, and social equity. A fourth category, public health, was added to separate the results of a five-part question that asked respondents to indicate their level of agreement that, diet and nutrition, water and air quality, housing stock quality, physical exercise and food quality, should be addressed

in comprehensive plans.

Several of the Part I statements could be placed and analyzed in a different category. For example, responses to the statement, “comprehensive plans should encourage small grocery stores in residential neighborhoods” may also reflect planners’ views towards environmental sustainability. The development of residential grocery stores could reduce vehicle trips, gasoline consumption and air pollution. However, the primary intent of the statement was to understand planners’ willingness to encourage development that was also strongly influenced by economic forces. Therefore, this statement was placed in the economy and agriculture category. The Part I survey results are presented by category, followed by a comprehensive summary of findings.

Based heavily on Pothukuchi and Kaufman’s (2000) earlier survey, the second half of the survey presented planners with ten food systems related planning activities and asked planners to indicate if, and to what degree, their agencies were involved in the activity. The responses to questions in Part II of the survey were grouped into three tiers based on the number of planning agencies that had been involved in each activity. Tier One activities were those where at least eleven of the sixteen agencies indicated previous involvement. Tier Two activities were those that at least six agencies had been involved, and Tier Three were activities were those that five or fewer agencies indicated involvement. Part II survey data were compared to Part I data to highlight possible differences between planners’ theoretical views and the actual practice of their organizations.

IV

A TASTE OF PLANNERS' PERSPECTIVES

This chapter first presents the survey results and analysis of Part I of the survey, which are divided into four categories: environment, access & equity, economy and agriculture, and public health. Next, results and an analysis of Part II of the survey are presented, followed by a comprehensive summary of the survey results and their meaning for the inclusion of food systems issues in the planning profession.

Environment

The impacts of producing, packaging, distributing, purchasing and disposing food directly impact the quality of the natural environment. For example, depending on the method, agricultural production can increase biodiversity, create wildlife habitat and at a minimum, maintain the quality of the soil and water used to grow crops. Agricultural practices can also be destructive to the natural environment; they can deplete or pollute water supplies, erode and deplete soil nutrients, alter ecosystems and create human health problems.

Protecting the integrity of the natural environment is essential to community and regional sustainability. Planners can address environmental issues through regional and comprehensive plans that regulate uses that affect water, air and soil quality, as well as through measures that protect fragile or important areas such as wetlands and forests. Planners were asked to respond to three statements, shown in Table 1 on the following page. The statements were designed to reflect respondents' view towards the role of planning tools and local communities in protecting environmental quality.

One question asked if comprehensive plans should incorporate strategies to prevent local and regional soil, water and air pollution. Fifteen planners agreed (8) or strongly agreed (7) with this statement while one planner was neutral.

Table 1 Environmental Sustainability Statements

Statements	States	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Regional development plans should address the effects of agricultural production on the environment and human health.	Oregon	3	3	0	1	0
	Washington	2	5	2	0	0
	Total	5	8	2	1	0
Comprehensive plans should incorporate strategies to prevent local and regional soil, water, and air pollution.	Oregon	4	3	0	0	0
	Washington	3	5	1	0	0
	Total	7	8	1	0	0
Communities should create policies that will locally address national or global environmental problems.	Oregon	3	3	0	1	0
	Washington	1	4	3	1	0
	Total	4	7	3	2	0

Planners were also asked if they agreed that regional development plans should address the effects of agricultural production on the environment and human health. Thirteen planners agreed (8) or strongly agreed (5) with this statement, two were neutral and one planner disagreed.

A third question asked planners their level of agreement with the statement that communities should create policies to locally address national or global environmental problems. Eleven planners agreed with this statement, while three planners were neutral and two disagreed.

The survey also included a question that asked planners if they agreed that comprehensive plans should address the following five public health issues as

components of comprehensive plans: diet and nutrition, water and air quality, housing stock quality, physical exercise, and food quality. The most obvious of these elements related to environmental sustainability and public health that is affected by food systems is air and water quality. All sixteen respondents agreed (9) or strongly agreed (7) that this component should be considered in comprehensive plans (Table 4 on page 43 shows these results in more detail).

Environmental Sustainability Analysis

Overall, planners agreed that communities and planning tools such as comprehensive and regional development plans should incorporate strategies to protect environmental quality and human health. The responses also indicate that planners are most comfortable addressing environmental issues at a local level, but as the geographic scope broadens to include regional and national or global environment concerns, planners' willingness or perceived ability to tackle environmental issues diminishes.

The discomfort or inability to address regional, national and global environmental issues holds at least one major implication when considering the effects of food systems on the natural environment and human health. That is, food systems span wide geographic areas, and so do their effects. To effectively mitigate the negative environmental impacts of the food system requires strategies that span political boundaries. If solutions are not created at a regional or wider level, each jurisdiction may only consider their own interests, creating a situation, where the environment and human health of one area may be compromised for the benefit of communities in another area.

Access & Equity

Enhancing food security is a central component of creating equitable communities. There are a variety of factors that can lead to community and household food insecurity, many are related to the inability of families to own or operate a private vehicle, lack of public transportation, and the location of grocery stores in suburban and wealthy neighborhoods. Lower-income families and individuals are those most often unable to easily access stores that carry a wide variety of affordable and nutritious foods. As a result, the health of these families could be compromised if they are forced to rely more heavily on fast food restaurants and convenience stores that are often more expensive compared to larger retailers and carry few if any fresh foods.

There are a number of ways to address the problems associated with inequitable access to affordable and nutritious foods. Table 2, on the following page, lists some of these methods and the number of planners agreeing with each. One method to enhance access to food sources is to design public transit routes to connect lower income neighborhoods to grocery stores and supermarkets. As shown in Table 2, all but one planner, who was neutral towards the idea, agreed (10) or strongly agreed (4) with this concept.

A second method mentioned in Table 2 to provide more equitable access to food sources is to reduce the distance between lower-income neighborhoods and food stores. This can be achieved by siting lower-income housing near larger grocery stores and shopping centers and also by encouraging the development of small neighborhood grocery stores. When asked their views on these ideas fourteen planners agreed (10) or strongly agreed (4) that proximity to grocery stores should be considered when siting affordable housing units. Thirteen planners agreed (7) or strongly agreed (6) that comprehensive plans should encourage small grocery stores in residential neighborhoods while four planners were neutral and three disagreed with this idea.

Table 2 Access and Equity Statements

Statements	States	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
One of the most important responsibilities of planners is the identification and consideration of interests, perspectives, and values that are not organized or represented in the political process.	Oregon	3	2	1	0	1
	Washington	4	0	3	2	0
	Total	7	2	4	2	1
Allocating space for community gardens should be part of local comprehensive plans.	Oregon	0	3	3	1	0
	Washington	0	3	5	1	0
	Total	0	6	8	2	0
Public transit routes should be designed to connect lower-income neighborhoods to grocery stores.	Oregon	2	4	1	0	0
	Washington	3	6	0	0	0
	Total	5	10	1	0	0
Proximity to grocery stores should be considered when siting affordable housing units.	Oregon	4	2	0	1	0
	Washington	0	8	1	0	0
	Total	4	10	1	1	0
Comprehensive plans should encourage small grocery stores in residential neighborhoods.	Oregon	2	4	1	0	0
	Washington	4	3	1	1	0
	Total	6	7	2	1	0

A third method to enhance food security is through the establishment of community gardens where families can grow produce to supplement their diets. Planners can promote community gardens by planning for gardens in comprehensive plans. When asked if they agreed with the idea that allocating space for community gardens should be part of local comprehensive plans six planners agreed (6) or strongly agreed (0), while eight were neutral and two disagreed.

Planners may be more compelled to work for more equitable access to affordable and nutritious food if they believe that one of the most important responsibilities of planners is the identification and consideration of interests, perspectives, and values that are not organized or represented in the political process. Nine planners agreed (2) or strongly agreed (7) that the inclusion of underrepresented populations was a top priority for planners.

Four planners were neutral, two disagreed and one strongly disagreed with this idea.

Equity & Access Analysis

Of the five statements planners responded to related to equity and access within food systems, the greatest levels of agreement were regarding methods to increase lower-income families' access to grocery stores. Respondents were least comfortable addressing food insecurity by allocating space for community gardens through comprehensive plans.

Overall the survey results indicate that planners are more willing to address food systems and equity issues when those issues can be mitigated through traditional planning arenas such as housing, transportation, and zoning in the case of promoting neighborhood grocery stores. These planning areas are predominately rooted in the built environment. The exception to this is that only six planners agreed that allocating space for community gardens should be part of comprehensive plans; the majority of planners were neutral towards this idea.

These findings point to a few additional conclusions. First, food security advocates will find planners more receptive to ideas that address food systems issues through traditional planning avenues. Second, advocates of community gardens should not give up hope that gardens will be included in comprehensive plans. Though only six planners agreed with the concept of including community gardens in comprehensive plans, eight were neutral and just two disagreed.

Planners may be uncomfortable including community gardens in comprehensive plans because it is outside the realm of traditional planning concerns and they are not fully aware of the positive impacts the gardens could have for lower-income families. This hypothesis is supported by the survey results that, compared to the respondents' willingness to address equity issues through land use and urban design, fewer planners were comfortable identifying interests and groups whose needs are underrepresented in

political processes.

The lower level of comfort with the responsibility to uncover unorganized interests and unmet needs indicates that planners may be more comfortable solving equity problems than identifying them. This could indicate that with more education and advocacy on emerging issues and ideas like community gardens, planners will be more willing to incorporate them into the planning agenda. A good example is that in recent years researchers have paid more attention to the role of urban design in encouraging physical exercise. In this survey, seven planners agreed, and six were neutral to the idea that exercise was a public health issue that should be considered in comprehensive plans.

Economy & Agriculture

The strength of the local and regional economy is a third important component to community sustainability. Food systems can impact the nature of local economies in a variety of ways. Grocery stores, restaurants, street vendors, farms and farmers markets are just a few examples of food systems elements that add to local economies. Each of these elements is also related to the environmental and social equity components of sustainability.

Planners can incorporate food systems issues in local and regional comprehensive plans as part of strategies to strengthen local economies. For example planners can develop strategies to preserve agricultural land, comprehensive plans could explicitly allocate space for farmers markets and farm stands, and community land use and economic plans can promote local markets for locally produced food products. The survey asked planners to reflect on four statements related to the planners' role in planning for food systems to strengthen local and regional economies, three of the statements concerned agriculture and food production. The four economic and agriculture related statements are shown in Table 3 on the following page.

Table 3 Economy & Agriculture Statements

Statements	States	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Comprehensive plans should encourage more localized production of goods and services.	Oregon	2	2	1	2	0
	Washington	1	4	3	1	0
	Total	3	6	4	3	0
The preservation of traditional, small-scale farming should be a priority component of any regional development strategy.	Oregon	2	2	1	2	0
	Washington	2	2	4	1	0
	Total	4	4	5	3	0
Local production of food for local consumption should be a top priority of regional land use and economic development plans.	Oregon	2	2	1	2	0
	Washington	2	2	1	4	0
	Total	4	4	2	6	0
Comprehensive plans should encourage policies that link local farmers to local consumers.	Oregon	2	3	1	1	0
	Washington	2	3	1	3	0
	Total	4	6	2	4	0

Nine planners agreed (6) or strongly agreed (3) that comprehensive plans should encourage more localized production of goods and services. Four planners were neutral and three disagreed with this statement.

Seven planners also agreed (4) or strongly agreed (3) that the preservation of traditional, small-scale farming should be a priority component of any regional development strategy, while four were neutral and three disagreed.

Eight planners agreed (4) or strongly agreed (4) that local production of food for local consumption should be a top priority of regional land use and economic development plans. Two planners were neutral, while six disagreed with this statement.

Finally, ten planners agreed (6) or strongly agreed (4) that comprehensive plans should encourage policies that link local farmers to local consumers, while two respondents were neutral and four disagreed with this statement.

Economy & Agriculture Analysis

Compared to statements reflecting environmental and social equity issues, fewer planners agreed that planning actions should influence economic and agriculture aspects of food systems and at most only four planners ever strongly agreed with any of the statements. Planners were most comfortable using comprehensive plans to link local farmers to local consumers. Planners were next most willing to use comprehensive plans to encourage localized production of goods and services. The two statements planners were least comfortable with were related to the preservation of small-scale farming and local production of food for local consumption.

The relative unwillingness of planners to incorporate economic and agriculture issues into comprehensive plans and development strategies is similar to Pothukuchi and Kaufman's (2000) finding that planners viewed many food systems issues as beyond their scope of work because the issues were rural and market driven.

Public Health

The final Part I survey question asked planners to indicate their level of agreement with the ideas that diet and nutrition, water and air quality, housing stock quality, physical exercise, and food quality were public health components that should be addressed in comprehensive plans. Two components, housing stock quality and physical exercise, are not directly related to food systems. These components were included because they provide a reference point to traditional planning concerns, in the case of housing quality, and emerging concerns, in the case of exercise, with which to compare food systems issues. Planners' responses to each statement are shown in Table 4 on the following page.

Table 4 shows that all planners agreed or strongly agreed that housing stock quality, and water and air quality were public health components that comprehensive plans should address. Seven planners agreed (6) or strongly agreed (1) that physical exercise should be addressed in comprehensive plans, while six were neutral and three disagreed with this statement. Three planners agreed (2) or strongly agreed (1) that comprehensive plans should address food quality, five were neutral and eight disagreed (5) or strongly disagreed (3). Finally, none of the respondents agreed that diet and nutrition should be addressed in comprehensive plans. Six planners were neutral and ten disagreed (6) or strongly disagreed (4) with this statement.

Table 4 Public Health Statements

Statements	States	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Comprehensive plans should address the following public health components:						
Diet and nutrition	Oregon	0	0	2	3	2
	Washington	0	0	4	3	2
	Total	0	0	6	6	4
Water and air quality	Oregon	5	2	0	0	0
	Washington	2	7	0	0	0
	Total	7	9	0	0	0
Housing stock quality	Oregon	3	4	0	0	0
	Washington	4	5	0	0	0
	Total	7	9	0	0	0
Physical exercise	Oregon	1	1	3	2	0
	Washington	0	5	3	1	0
	Total	1	6	6	3	0
Food quality	Oregon	1	0	2	2	2
	Washington	0	2	3	3	1
	Total	1	2	5	5	3

Public Health Analysis

Three of the five possible public health components listed, food, housing, and water and air, are human necessities. Impressively, all sixteen planners agreed that water and air quality, and housing stock quality should be addressed in comprehensive plans. Most striking is that not a single planner believed that comprehensive plans should consider diet and nutrition concerns, and ten disagreed or strongly disagreed with this idea.

Further, only three respondents agreed (1) or strongly agreed (2) that food quality issues should be considered in comprehensive plans while eight disagreed to some degree. This finding is more remarkable considering that seven respondents agreed that physical exercise, also a non-traditional planning concern, was a health component worthy of consideration in comprehensive plans.

Most planners believed public transit should connect lower-income neighborhoods to supermarkets, proximity to grocery stores should be considered when siting low-income housing, and comprehensive plans should encourage the development of residential grocery stores. Each of these issues can greatly affect the availability of affordable, nutritious food, and dietary quality. Yet, the very low number of planners interested in incorporating diet and food quality into comprehensive plans indicates that while planners may see the connection between equity and food issues, they do not view it as their responsibility to plan for the nutritionally adequate diets and food quality.

Survey Part II

Tier I

Table 5 shows that the top three food systems planning activities were related to designing and siting supermarkets and food outlets. Fourteen planning agencies were involved in siting supermarkets, grocery stores, fast food outlets, or food wholesaling developments. However, in this most common food systems planning activity, only four planners reported their agency's involvement was significant.

Table 5 Tier One Food Systems Activities

Questions		Involved		Level of Involvement		
		Yes	No	Significant	Moderate	Minimal
Has your agency been involved in siting supermarkets, grocery stores, fast food outlets, or food wholesaling?	Oregon	6	1	1	3	2
	Washington	8	1	3	2	3
	Total	14	2	4	5	5
Has your agency assisted in establishing farmers markets, food festivals, etc.?	Oregon	6	1	1	3	2
	Washington	5	4	2	3	0
	Total	11	5	3	6	2
Has your agency been involved in the design of food outlets?	Oregon	5	2	1	2	2
	Washington	6	3	0	3	3
	Total	11	5	1	5	5

Eleven planners indicated that their agency had assisted in establishing farmers markets, food festivals and other similar activities, and eleven agencies had been involved in the design of food outlets. In the case of the former activity, only four agencies were significantly involved, and only one agency was significantly involved in the later activity.

Tier II

The next most frequent food related planning activity was preserving agricultural land. Eight agencies were involved in this activity and four were significantly involved. Six

agencies were involved in encouraging food related economic development, and six agencies had addressed food issues in comprehensive plans. In each of the latter two activities, no agency was significantly involved.

Table 6 Tier Two Food Systems Activities

Questions		Involved		Level of Involvement		
		Yes	No	Significant	Moderate	Minimal
Has your agency been involved in preserving agricultural land?	Oregon	4	3	3	1	0
	Washington	4	5	1	1	2
	Total	8	8	4	2	2
Has your agency encouraged food-related economic development?	Oregon	3	4	0	2	1
	Washington	3	6	0	2	1
	Total	6	10	0	4	2
Has your agency addressed food issues in comprehensive plans?	Oregon	3	4	0	0	3
	Washington	3	6	0	1	2
	Total	6	10	0	1	5

Tier III

The activities in Tier III are those with the least involvement among planning agencies. Table 7 on the following page reveals that five agencies addressed food issues in neighborhood plans and five planned for community gardens. With the exception of one agency planning for community gardens, no agency was significantly involved in any of these activities. Four agencies studied the impact of the food sector on the local economy with one significantly, one moderately and one minimally. Finally, four agencies were moderately or minimally involved in hunger prevention programs, but none reported significant involvement.

Table 7 Tier Three Food Systems Activities

Questions		Involved		Level of Involvement		
		Yes	No	Significant	Moderate	Minimal
Has your agency been involved in planning for community gardens?	Oregon	2	5	0	2	0
	Washington	3	6	1	0	2
	Total	5	11	1	2	2
Has your agency addressed food issues in neighborhood plans?	Oregon	3	4	0	2	1
	Washington	2	7	0	0	2
	Total	5	11	0	2	3
Has your agency studied the impact of the food sector on the local economy?	Oregon	1	6	0	0	1
	Washington	3	6	1	1	1
	Total	4	12	1	1	2
Has your agency been involved in hunger prevention programs?	Oregon	1	6	0	1	0
	Washington	3	6	0	2	1
	Total	4	12	0	3	1

Survey Part II Analysis

Part II survey results reveal that more planners were involved in food systems activities related to the design and development of the built environment than any other type of activity. Yet, despite the higher numbers, very few agencies were significantly involved in these activities. This finding echoes Part I results that found planners are most comfortable addressing food systems issues related to traditional planning areas such as land development.

Responses to Part II of the survey also support the previous analysis that planners are uncomfortable incorporating economic aspects of the food system in their planning activities. Only six agencies encouraged food related development and just four agencies studied the impact of the food sector on the local economy. With regards to these activities, zero and one agency, respectively, had significant involvement. The exception to the finding that planners are uncomfortable meddling in economic matters is the relatively high number of agencies (11) that helped establish farmer markets and food festivals. This number closely corresponds to the number of planners (10) who agreed

that comprehensive plans should encourage policies that link local farmers to local consumers. Yet, once again, the number of agencies (3) significantly involved in this activity is very low. These results indicate that outside of siting and designing food outlets and supermarkets, linking local farmers to local consumers through farmers markets is the form of food related economic development planners are most comfortable with.

Despite the relatively high overall levels of support for farmers markets and linking local farmers to local consumers, only four planners strongly agreed that preservation of small scale farming should be a top priority of regional development strategies, and only four strongly agreed that local food production for local consumption should be a top land use and economic development priority. Further, only four agencies were significantly involved in preserving agricultural land and three of those agencies were located in Oregon, where state land use law mandates forest and farmland protection. These results are interesting, because without strategies to preserve small-scale farming, and with out encouragement of local food production, farmers markets consisting of small and family owned farms will have difficulty surviving, and links between producers and consumers will be weakened.

Finally, compared to the number of planners who agreed with statements regarding the use of comprehensive plans to mitigate food systems impacts, the number of agencies that used comprehensive plans for this purpose was smaller. Five agencies used comprehensive plans and six used neighborhood plans to address community food issues, though none significantly. This difference was especially pronounced when compared to the relatively high number of planners that supported the use of comprehensive plans as a tool to prevent soil, water, and air pollution. This implies that aspects of food systems, especially environmental ones, are in planners minds, but advocacy and education is needed to encourage planning departments to more actively attend to these issues.

Summary

Part I of the survey found on average, 6.5 planners agreed and 4.3 planners strongly agreed with each statement. Just over three (3.2) planners were neutral, 2.3 disagreed and 0.5 strongly disagreed with the Part I survey statements. The greatest number of planners agreed with statements that gave planners responsibility for environmental protection and with statements that addressed issues related to the built environment. Planners were less inclined to view the preservation of small-scale farming and promotion of local food production for local consumption as priority activities for their departments. Finally, only three planners agreed that food quality should be considered as a public health component included in comprehensive plans, while no planner agreed that diet and nutrition should be included.

Analysis of Part II of the survey found that, on average, less than one planning agency was significantly involved in common food systems planning activities. Planning agencies were most involved, and most significantly involved, in activities related to the siting and design of supermarkets and food outlets, and in establishing farmers markets. Six agencies encouraged food-related development and addressed food issues in comprehensive plans. However, no agency reported significant involvement in these activities. Four agencies studied the impact of the food sector on the local economy, but only one significantly, and four were involved in hunger prevention programs, but none significantly.

The survey results lead to the conclusion that planners are willing to address food systems issues, and planning agencies are involved in food systems activities, especially when those issues and activities occur within the realm of conventional planning, and when they address food systems impacts on the natural environment and human health. However, there is a gap between planners' willingness, and their agencies' practice of planning for food systems. This disconnect means that much work is needed to translate theory into practice. Chapter Five offers policy and research recommendations to more

fully integrate food systems into the planning agenda

V

THE CHEF'S RECOMMENDATIONS

The research presented in this document was undertaken to better understand the willingness and ability of planners and the planning profession to incorporate food systems issues into planning practice to increase community and regional sustainability. Literature from a variety of sources including planning and agriculture journals clearly made the case that the three principle components of sustainability, environment, economy and equity are intimately connected to, and affected by, the nature of local, regional and even global food systems. Academic literature also strongly supports the notion that planners are in an ideal position to address food systems issues. Planners have the skills and perspective to capably address multidisciplinary issues and are often in a position to influence political decisions.

Existing literature provided reasons why planners should be involved in promoting sustainability through incorporation of food systems issues, and it offered reasons why and how planners could be more involved in food systems activities. The research presented herein was undertaken to better understand planners' perceptions towards the impacts of food systems on sustainability, and the degree to which planners were willing to mitigate those impacts. Specifically, this study set out to answer two questions: "To what extent do long-range planners see food systems as important to achieving greater levels of sustainability?" and, "Which components of food systems are planners most capable or comfortable addressing in order to achieve greater local and regional sustainability?"

Based on results of a survey completed by sixteen long-range planners in Oregon and Washington state, the short answer to these questions is that while planners most likely view food systems as having important impacts on various aspects of community sustainability, fewer planners agree that it is the responsibility of planning departments to address food systems issues. Protecting the integrity of the natural environment was the sustainability principle most planners felt comfortable with, followed next by practices that encouraged more equitable access to quality food sources. Planners were least comfortable considering issues related community and regional economic sustainability, especially in relation to agriculture and the preservation of small-scale farming.

The following discussion presents additional major research findings and their implications for the potential of planners to integrate food systems issues in planning practice to create more sustainable communities.

Major conclusions from survey

One of the most obvious conclusions that can be drawn from the survey results is that, of the Three E's of sustainability, planners placed protection of the natural environment at the top of their priority list. Planners were most comfortable with strategies to mitigate the effects of agricultural production on the environment and in ensuring air and water quality as a component of public health. Next to environmental sustainability, more planners were comfortable undertaking activities, or including issues, that addressed concerns over equitable access to food, followed by strategies to manage economic impacts of food systems.

This finding implies that planners will be more likely to incorporate food systems issues into their practice if they view an aspect of the food system as negatively impacting the quality of the natural environment or if they believe a polluted environment is negatively affecting the health of the community. This is a positive result for supporters of environmental sustainability, but is a much less positive result for food security

advocates, those promoting equitable access for urban low income families, and those interested in working with planning agencies to preserve small-scale, traditional farming and food production operations.

Next to mitigating environmental impacts of food systems, more planners agreed with statements that described methods to create equitable access to quality food sources for lower-income families and neighborhoods. Each of the proposed activities was based in traditional planning disciplines such as land use and development, zoning, and transportation. However, comparatively fewer planners were willing to identify the needs of populations most likely to face inequitable access to opportunity than they were to simply address the equity issues.

For individuals advocating on behalf of lower income families and neighborhoods, this result holds two implications. First, if individuals are interested in working with local planning departments to address problems associated with social and economic inequity, they will achieve the quickest results if they identify the precise needs of the community, for example lack of transportation, rather than ask the planning department to identify the needs of underrepresented populations. Second, advocates should be aware that planners will be most likely to create solutions to equity concerns within in the framework of conventional planning areas such as housing and transportation. Understanding this will help community advocates better target their time and resources.

A third important finding is that comparatively fewer planners agreed with statements relating to the role of comprehensive plans and regional development strategies in influencing agricultural and economic aspects of food systems. No agency reported significant involvement in encouraging food-related economic development and only one agency reported significant involvement studying the impact of the food sector on the local economy.

This finding reveals that many planners view issues pertaining to economic sustainability, particularly agricultural economics as beyond their professional scope. However, more planners agreed or were neutral toward ideas that planning practices should incorporate issues linked to economic sustainability than the number of agencies significantly involved in planning for economic aspects of food systems. This result implies that with education and heightened public awareness of food related economic concerns, planning departments may be persuaded to look more closely at food systems as keys to enhancing economic sustainability.

Fourth, planners overall did not view food quality, and diet and nutrition as public health components worthy of inclusion in comprehensive plans. This is striking, because planners were in total agreement that other necessities of human life, including shelter, and clean water and air, should be included in comprehensive plans. There could be a variety of reasons why planners did not see food and diet as an important element for comprehensive plans, but at a minimum this result reveals that of the basic human necessities, food is the lowest priority for planners in their professional capacities.

The implication of this result is that for planners to give food quality and diet equal attention with issues like housing and the environment, awareness through research and advocacy must be undertaken to clearly and directly link food issues to concerns of more universal import such as public health. For example, in recent years planning and public health scholars have published a wealth of material tying chronic illnesses such as heart disease, obesity, diabetes, depression and asthma to the design of urban environments (Jackson & Kochtitzky, 2001). Other scholars have focused attention on human health effects related to urban sprawl. Potentially negative effects include decreased physical activity, water and air pollution, mental health, and vehicle accidents (Frumkin, 2001; Schwartz et. al, forthcoming:). The increased research and awareness of the ties between urban design and public health explain why seven planners agreed, six were neutral, and only three disagreed that exercise should be an aspect of public health included in

comprehensive plans. It seems plausible, that with increased attention on the relationship between urban design, food systems and public health, food quality, diet, and nutrition will also be included in planning strategies.

The conclusions drawn from the survey results offer a somewhat mixed prognosis for the near term potential of food systems to be considered in planning activities. On one hand, planners were in overwhelming agreement about the importance of including certain food systems issues in their planning agendas and activities, particularly those related to the natural environment. On the other hand a relatively low average of just over four planners strongly agreed with each statement, and an average of less than one planning agency indicated significant involvement in any given food systems activity. This indicates that as a whole, planners were only mildly interested in taking steps or incorporating issues to mediate food systems impacts. With this in mind, the following policy and research recommendations are offered to as methods to move food systems toward the center of the planning table in the near term, and to make them an integral part of planning practice in the more distant future.

Policy Recommendations

Incorporate Food Issues in Comprehensive Plans

One overarching and general recommendation is to make food an element that is included in land use and planning decisions. This would be most easily accomplished by incorporating food as an element in comprehensive plans. Today for example, comprehensive plans require the provision of safe and adequate amounts of drinking water, housing units, parks and infrastructure. Food should be included on this list, and as a general policy, be considered in discussions ranging from the impacts of a single development, to long-range planning for city expansion. More specifically, comprehensive plans should allocate space for community gardens, require residential developments to provide on-site land for gardening, and comprehensive plans should designate space for farmers markets to operate.

Apply Mixed-Use Zoning and Incentives

One way to improve access to sources of affordable, nutritious foods, and possibly encourage local consumption of local food products is through mixed-use zoning and business incentives. Mixed-use zoning allows a variety of uses to exist in the same area, and sometimes in the same building. For example, a small grocery store or produce market could open in a vacant two story building in a residential neighborhood. The business would operate on the ground floor, and apartments could open in the second story. Tax or other incentives could be given to food stores that open in lower-income neighborhoods. A primary result of these actions would be increased access to more healthy food. Secondary results include reduced need to own a vehicle, reduced traffic congestion and air pollution, and possibly increased levels of physical activity as resident's bike or walk, rather than drive to the grocery store. The neighborhood grocery store would likely be locally owned, and would therefore have an easier time purchasing food from local producers, thereby re-circulating money in the local or regional economy.

Connect Neighborhoods to Supermarkets

Three methods to connect neighborhoods to supermarkets and grocery stores are one, plan residential developments near supermarkets, two, site commercial areas fit for supermarkets near residential areas, and three consider food access when designing transportation routes and systems.

Siting residential neighborhoods near supermarkets and vice versus require very careful thought. Large supermarkets usually want to locate in wealthier suburban areas with easy and abundant private vehicle access. Increased residential development on the outskirts of town near supermarkets may put some residents in closer proximity to food sources, but could also lead to sprawl. This obstacle can be partially overcome through the encouragement of smaller neighborhood groceries stores. It can also be overcome by setting maximum square footage standards. These standards prevent the development of massive box stores that can only be located in suburban areas, and may encourage those

stores to open in more densely populated areas.

The third way to improve access to supermarkets and grocery stores is through public transit systems. Public transportation routes should be designed to directly and frequently connect residential areas to grocery stores. Other possibilities for improving access to food sources are through taxi-voucher programs for low-income families, the development of car share programs, and through urban design that results in safe, walkable and bikeable streets.

Expand Regional and Multi-Disciplinary Planning

Food systems span political boundaries and so the most effective way to plan for them is through regional planning structures. Planners are reluctant to tackle some food systems issues because they view them as rural, agricultural, market driven, or something they cannot address through traditional planning avenues. Regional planning structures such as Food Policy Councils have the capacity to look beyond political boundaries to attend to broader food systems issues that effect progress towards greater local and regional sustainability. A planning body consisting of policy makers and experts from a variety of fields including land-use, economic development, community development, agriculture, could share ideas and develop comprehensive solutions to the interconnected issues related to food systems.

Research Recommendations

Compared to many other topics pertinent to the planning profession, very little research has explored the relationships between planning, food systems and sustainability. The first research recommendation then is simply to do more. Over the course of researching and writing this manuscript, a number of specific questions and topics for further research have arisen, and are briefly discussed below.

Examine Links to Public Health

Planners and policy makers may be more likely to consider the impacts of food systems if those impacts are framed as part of a broader, more universal public interest. In recent years the numbers of people suffering from obesity and diabetes has risen to epidemic

proportions. This health issue has gained widespread attention in academia and the media. Since obesity and diabetes are food related illnesses, now is the time to explore relationships between these diseases and the urban landscape. For example planning researchers could ask, “Is there a link between poor food access and obesity, or other food related disease? “Is the incidence of food related disease higher in more spatially isolated and lower-income neighborhoods?” Each of these questions holds implications about land use and transportation design, areas planners are comfortable working in.

Study Agriculture Effects on Urban Health

There is certainly a great deal of literature on the environmental impacts of agriculture, but more research is needed to explore links between agriculture production and urban human and environmental health. Exploring questions such as, “What is the food producing capacity of a region?” “What is the potential for regional self sufficiency?” “Are natural resources being consumed at unsustainable rates?” would result in a better understanding of food systems impacts on environmental and therefore human health. Establishing the links between agricultural production and environmental health is a good starting point for new research because of the high interest planners have in promoting environmental sustainability.

Explore Development Effects on Agricultural Production

Similar to the questions posed regarding the impacts of agriculture on environmental and human health, it would be valuable to know more about the effects of urban development on agricultural production. Further research is needed to identify which farmland preservation strategies are most effective, and research exploring the effects on urban expansion and food producing capacity would be valuable. Other studies could investigate the potential for urban agriculture, including community gardens, rooftop gardens, and micro-scale poultry production.

Research Food Systems Impacts on Economies

Planners might be more inclined to incorporate food related economic issues in their

work if links between the economy and land uses were made. One research topic in this area could include studies of the economic impacts of farmers markets on nearby businesses. A second study might explore economic impacts of protecting land for small-farmers and the effects those farm products on the local economy, if consumed by local consumers.

Conclusion

Planning as a profession has historically endeavored to meet community needs through the design of physical space and consideration of human interests so that present and future generations would have healthy, livable environments and access to a variety of social, economic, and political opportunities. In short, planning aspires to develop sustainable communities.

This research found that food systems directly and significantly impact the level of community sustainability. It also found that, though planners are well suited to mitigate food systems impacts, they are often uncomfortable taking this responsibility. However, with additional research that links food systems issues to conventional planning practices, and advocacy to encourage planners to expand their agendas, it seems likely that planners will take more responsibility for food systems issues and will thus be better able to move their communities towards greater levels of sustainability.

APPENDIX I

Survey Part I Results

Environmental Sustainability Related Statements

Statements	States	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Regional development plans should address the effects of agricultural production on the environment and human health.	Oregon	3	3	0	1	0
	Washington	2	5	2	0	0
	Total	5	8	2	1	0
Comprehensive plans should incorporate strategies to prevent local and regional soil, water, and air pollution.	Oregon	4	3	0	0	0
	Washington	3	5	1	0	0
	Total	7	8	1	0	0
Communities should create policies that will locally address national or global environmental problems.	Oregon	3	3	0	1	0
	Washington	1	4	3	1	0
	Total	4	7	3	2	0

Equity & Access Related Statements

Statements	States	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
One of the most important responsibilities of planners is the identification and consideration of interests, perspectives, and values that are not organized or represented in the political process.	Oregon	3	2	1	0	1
	Washington	4	0	3	2	0
	Total	7	2	4	2	1
Allocating space for community gardens should be part of local comprehensive plans.	Oregon	0	3	3	1	0
	Washington	0	3	5	1	0
	Total	0	6	8	2	0
Public transit routes should be designed to connect lower-income neighborhoods to grocery stores.	Oregon	2	4	1	0	0
	Washington	3	6	0	0	0
	Total	5	10	1	0	0
Proximity to grocery stores should be considered when siting affordable housing units.	Oregon	4	2	0	1	0
	Washington	0	8	1	0	0
	Total	4	10	1	1	0
Comprehensive plans should encourage small grocery stores in residential neighborhoods.	Oregon	2	4	1	0	0
	Washington	4	3	1	1	0
	Total	6	7	2	1	0

Economy and Agriculture Related Statements

Statements	States	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Comprehensive plans should encourage more localized production of goods and services.	Oregon	2	2	1	2	0
	Washington	1	4	3	1	0
	Total	3	6	4	3	0
The preservation of traditional, small-scale farming should be a priority component of any regional development strategy.	Oregon	2	2	1	2	0
	Washington	2	2	4	1	0
	Total	4	4	5	3	0
Local production of food for local consumption should be a top priority of regional land use and economic development plans.	Oregon	2	2	1	2	0
	Washington	2	2	1	4	0
	Total	4	4	2	6	0
Comprehensive plans should encourage policies that link local farmers to local consumers.	Oregon	2	3	1	1	0
	Washington	2	3	1	3	0
	Total	4	6	2	4	0

Public Health Related Statements

Statements	States	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Comprehensive plans should address the following public health components:						
Diet and nutrition	Oregon	0	0	2	3	2
	Washington	0	0	4	3	2
	Total	0	0	6	6	4
Water and air quality	Oregon	5	2	0	0	0
	Washington	2	7	0	0	0
	Total	7	9	0	0	0
Housing stock quality	Oregon	3	4	0	0	0
	Washington	4	5	0	0	0
	Total	7	9	0	0	0
Physical exercise	Oregon	1	1	3	2	0
	Washington	0	5	3	1	0
	Total	1	6	6	3	0
Food quality	Oregon	1	0	2	2	2
	Washington	0	2	3	3	1
	Total	1	2	5	5	3

APPENDIX II

Survey Part II Results

Questions Regarding Food Systems Related Planning Activities

Questions		Involved		Level of Involvement		
		Yes	No	Significant	Moderate	Minimal
1. Has your agency been involved in siting supermarkets, grocery stores, fast food outlets, or food wholesaling?	Oregon	6	1	1	3	2
	Washington	8	1	3	2	3
	Total	14	2	4	5	5
2. Has your agency been involved in the design of food outlets?	Oregon	5	2	1	2	2
	Washington	6	3	0	3	3
	Total	11	5	1	5	5
3. Has your agency been involved in planning for community gardens?	Oregon	2	5	0	2	0
	Washington	3	6	1	0	2
	Total	5	11	1	2	2
4. Has your agency studied the impact of the food sector on the local economy?	Oregon	1	6	0	0	1
	Washington	3	6	1	1	1
	Total	4	12	1	1	2
5. Has your agency assisted in establishing farmers markets, food festivals, etc.?	Oregon	6	1	1	3	2
	Washington	5	4	2	3	0
	Total	11	5	3	6	2
6. Has your agency addressed food issues in neighborhood plans?	Oregon	3	4	0	2	1
	Washington	2	7	0	0	2
	Total	5	11	0	2	3
7. Has your agency encouraged food-related economic development?	Oregon	3	4	0	2	1
	Washington	3	6	0	2	1
	Total	6	10	0	4	2
8. Has your agency addressed food issues in comprehensive plans?	Oregon	3	4	0	0	3
	Washington	3	6	0	1	2
	Total	6	10	0	1	5
9. Has your agency been involved in hunger prevention programs?	Oregon	1	6	0	1	0
	Washington	3	6	0	2	1
	Total	4	12	0	3	1
10. Has your agency been involved in preserving agricultural land?	Oregon	4	3	3	1	0
	Washington	4	5	1	1	2
	Total	8	8	4	2	2

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