

Land Use and Planning for Secure Regional Food Systems

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Abstract

Despite rising awareness of the centrality of food systems in sustainable development, no discussion of sustainable food systems is complete without understanding the impact of land use and planning on the economic, environmental, and social equity goals at the heart of sustainability efforts. In this report, we examine the relationship between land use, planning, and sustainable food systems at the regional scale in the Portland Metropolitan Area (Oregon, USA). Exploring the Three E's of sustainable development across three distinct geographic ranges, rural, peri-urban, and urban, we highlight components of sustainable regional food systems, evaluate which land uses and planning methods contribute to a secure regional food system, and illustrate both the benefits and challenges of developing sustainable regional food systems as illustrated by Portland's activities in this area.

Land Use Planning in Secure Regional Food Systems

Secure Regional Food Systems

A food system is the complex web of interconnected entities that take food from its source to our plates. It includes those who plant, harvest, catch, or raise the plants and animals we eat. It includes the various distributors, processors, and vendors who handle our food. The concept of a regional food system introduces the idea of locality—that a significant portion of the food eaten by the residents of a region should come from within or nearby that region. More than just eaters of local produce, a regional food system is the network of people and organizations that brings local food to local people. A growing movement recognizes that the current system of food production and consumption is

unsustainable and therefore not secure. A secure regional food system is a system that allows the region to meet the nutritional and dietary needs of its population without compromising the region's future ability to continue to do so. It incorporates three aspects of sustainability: ecologic or environmental sustainability, economic viability, and social equity. Secure regional food systems operate at three interrelated spatial scales: rural, peri-urban or rural-urban interface, and urban.

The Challenges of Planning for "Sustainable" Land Uses

No standards exist regarding the definition, range, or scope of sustainable land use planning, making it difficult to carry out and evaluate. However, it is generally accepted that this planning is most effective at the local or regional scale. Thus, land use plans influence both the meaning of sustainability and the development and execution of sustainable plans and strategies for cities and their inhabitants. Widely regarded a model of sustainability planning, Portland presents an exemplary case for examination of contemporary approaches to sustainability planning. Sustainability is a term frequently employed yet rarely clarified or circumscribed. Meaning literally the power to keep something or state in existence, sustainability first appeared in an ecological context in the 1970s alongside the emerging environmental movement (Litke, 2006). In subsequent decades, it evolved to widely connote the recognition that we must "strive to achieve a decent standard of living for all people and live within the limits of natural systems" (Berke & Conroy, 2000). Based on this definition, sustainable development may be considered the professional development of strategies for achieving this goal (Jepson, 2001; Campbell, 1996).

If sustainability is truly a "chaotic, bewildering social experiment" then land use planners face a recondite task in translating this concept into effective practice (Litke). The lack of clarity regarding definitions of sustainability significantly limits development of clear mandates in land use planning on several fronts including scale, range, and scope. Current research asserts that despite the importance of developing sustainability strategies at the state and federal levels, planning for sustainability is most effectively undertaken at the local or regional scale (Berke & Conroy, 2000; Beatley, 1995; Campbell, 1996). These authors carefully point out the importance of relating local planning activities to global concerns without explicitly characterizing the nature of this relationship or offering concrete solutions for planners trying to navigate across these realms. Given the lack of empirical evidence supporting their conclusions about the appropriate scale of sustainability planning, their consensus about the superiority of the local scale may be based in an understanding of the relationship historically between

the land use and development-control functions of local plans in support of implementation of larger strategic plans (Bracken, 1981; Beatley, 1994). This research, then, evaluates the claim that the local realm is truly where "a different (or improved?) professional planning paradigm can most effectively take shape" (Beatley, 1995, p.208).

More contentious than scale are debates over the range of planning for sustainability. While most planners and planning scholars would agree that "planning is present action toward the making of a better future," and as such, inherently backward looking and future-oriented simultaneously, the matter of in what ways and how far forward to plan for sustainability varies greatly (Spatt, 1971). In the literature on planning for sustainability, "long-term" stretches from the present generation to the next, from "seven generations" down the road to as far as five-hundred years from now (Wheeler, 2000; Berke & Conroy, 2000; Beatley, 1994). Traversing otherwise divergent planning traditions, the modern ideology of progress is woven firmly within the fabric of planning, with the conservation of resources its universal goal. With resource scarcity a constant, variations in perceptions of the range of land use planning emerge according to differences in cultural understandings of time. In the past fifty years the linearity of Modern time embedded in the ideology of planning's systematic "progress thinking" has given rise to a range of spatial-temporal conceptions evident in the literature (Thomas, 1994). The effectiveness of land use planning in promoting sustainability is therefore inevitably determined in some part by local understanding of time, heritage, conservation, progress, and the future. Finally, and the least agreed upon, is the scope of sustainable land use planning, at both the procedural and substantive levels. Influential is the "Three Es" model of sustainable development which outlines the substantive areas of sustainability across which planners attempt to strike a balance: environmental protection, economic development, and social equity (Jepson, 2001; Beatley, 1995; Berke & Conroy, 2000). Beyond these substantive concepts, however, lies the problem of identifying which procedures best address these problem areas. It is this model, the Three E's, that frames our discussion here.

Land Use Planning in Sustainable Regional Food Systems

Sustainable regional food systems are essential because a region that fails in any of the three aspects of sustainability--environmental, economic, or social--cannot endure over the long term. Sustainable land use planning, then, is an essential component of any sustainability strategy for the following reasons:

- In the absence of planning, land use still happens; planning helps achieve more sustainable land uses and growth management.
- Planning provides benefits to communities: housing, schools, open-space; enhancement of community character; environmental protection; economic growth.
- Planning minimizes impact of human settlement on natural environment and systems.
- Communities prepare for the future by adapting and anticipating future needs through their planning efforts.
- Well-thought-out resource planning prevents haphazard conservation.
(excerpted from Diamond and Noonan, 1996)

Research Strategy

Based on these relationships between secure regional food systems and land use planning, the following questions merit further investigation:

1. What are sustainable land use and planning methods within a secure regional food system context?
2. Is Portland using land and planning in these ways?

This is an emergent research model, in which researchers gathered as much unfiltered information as possible, collated it, eliminated redundancy, and identified emerging themes in order to narrow the field of inquiry and identify individual focus areas/tasks for examination. From this process, the contextual nature of sustainable development practices emerged; thus the report's organization illustrates development of the three foci of the sustainability project (economics, environment, and society) across a range of geographic scales, including:

- Economic Development in Rural Agriculture
- Environmental Sustainability at the Peri-urban Fringe
- Social Justice and Equity through Urban Agriculture

Agriculture and Land Use in the Portland Metro Region

Oregon's first wagon train immigrants in the 1840s were "farmers searching out grassy prairies in the rich valleys" of the Willamette and Columbia Rivers who planted wheat in Tualatin Valley and fruit trees in the Columbia Gorge (O'Donnell, 1976, p.6). There was an ideal situation: plentiful, rich agricultural lands with valley roads to the active ports nearby—perfect save that the farmers lacked markets for their goods. Once Gold Rush wealth increased demand for lumber, wheat, fruit, and other

farm products, the farmers of the area enjoyed success with growth evident throughout the 1850s, when farms expanded to produce oats, potatoes, butter and cheese. In his colorful history of Northwest Oregon, O'Donnell (1976) attributes the region's "effortless" agricultural growth to "clement seasons, a lushness, the sometimes tropical summer, [and] the muffling fogs" combined with libertarian attitudes and "preference for isolation" and "independence" (p. 12, 14). In the 1860s, the region's commodity wheat market expanded exponentially with rivers driving expansion, as O'Donnell describes it: "the two rivers [Columbia and Willamette] were like great sluices pouring down on the city such quantities of wheat that it was soon to become a world renowned wheat shipping port" (p. 18). A global city early on, Portland's farmers exported their "products of forest and field" to the Orient and Latin America (Abbott, 1983, p.235). Bolstered by Willamette Valley fruit produce, the agricultural sector firmly entrenched itself, with wheat as the region's most important export. The agglomeration economies emerging in association with this agricultural production fueled Portland's economic and physical growth for decades.

As early as the 1870s, the thriving Portland urban area was already encroaching on farmland east of the Willamette River as the "farmsteads of the Sixties were being transformed by drives, lawns and ornamental shrubs into proper town establishments" (O'Donnell, 1976, p. 17). By the turn of the 20th century, Portland was known for its award-winning rose gardens and appreciation of the outdoors (ibid, p. 26). The preservation of green space as a site of leisure has been an enduring preference of area residents.

Although much has changed in subsequent years, Portland's current combination of progressive liberal politics, environmental conservatism, and environmentally-based economy has existed since its territorial origins. Current debates surrounding social equity in land access emerged in Portland during the Depression era (and were likely present before), when a majority of the city's population, who were private homeowners, fought to move rental units from the city center to the margins. Because of the vast growth and diversification of crops in Upper Columbia in the early 1900s, area farm property values quintupled. The exploitation of immigrant labor has always been central to the region's agricultural success from the Chinese (1850s), to the Japanese (1890s), to the Blacks (1920s), and now Mexican agricultural workers.

Perhaps because of its economic roots in the land, Portland's planners realized early on the importance of limiting urban encroachment on agricultural lands outside the urban core.

Although the area is now recognized as "the heartland of Ecotopia," the region's agricultural and land use history was not always blissful (Abbott, 1983). Despite early efforts, a lack of visionary political leadership in the mid-20th century stalled plans for so-called "smart growth." Since the 1960s, anti-sprawl efforts have spurred an intensifying antagonism between urban and rural land uses. In 1973, the LCDC (Land Conservation and Development Commission) emerged to keep local land use plans in compliance with state goals of limiting sprawl and reinforcing pro-environmental ideology. At the behest of the LCDC, the Columbia Region Association of Governments—the precursor to Metro—legislated the Urban Growth Boundary to protect the region's rich farmland from urbanization. (Within this UGB, the burden of proof rests on opponents to development; outside the UGB burden of proof rests on developers to show that the land is not worthwhile as farmland.) Since the 1980s, the region's increasing suburbanization raised many issues of governance, transportation, and housing. As a result, the region's current land use policy deals with mitigating the costs (environmental, economic, and social) of increasing population growth. Currently, most efforts to offset sprawling suburban land development are executed by metropolitan planning agencies at the neighborhood level (for a detailed discussion of Portland's land use and planning history, see Abbott, 1983).

As we entered into the 21st century, leaders in regional sustainability began to emphasize the need to address our food system in our long-term strategic planning. In 2002, over one hundred people including local farmers, restaurant owners, educators, health care providers and local governments met in Portland for a Food Policy Forum and identified major issues impacting the health of our local food system including hunger, food access, land use policies, economic issues, environmental impacts and more. It was then, that Portland-Multnomah Food Policy Council formed as a subcommittee within the Portland-Multnomah Sustainable Development Commission. The Food Policy Council is a citizen-based advisory council charged with addressing issues and initiatives that impact our regional food system. In addition to advocacy and advising local governments on policy implementation, the Food Policy Council is invested in public education, research, and community organizing. The current work of the Food Policy Council's Land Use Sub-committee is discussed more in depth later in this report.

Economic Development and Rural Agriculture

Introducing the Issue

At the state or regional level, a sustainable food system must address two key issues: the existing supply of productive agricultural land must be protected and the sustainable food yielded by

that land needs to be increased. As a matter of arithmetic, if the population which depends upon the food supply increases, the food supply must also increase if the system is to be viable into the future. Land use planning can play a key role in protecting farmland and thereby safeguarding the food supply. Local, regional, state, and national policies work together to shape the landscape.

Current Practices

Oregon has a rich farming and agricultural history. Native peoples have thousands of years of experience living off of the rich bounty provided by the local flora and fauna. For more than 150 years, Anglo farmers have been converting the rich soils of the Willamette and Columbia River Valleys into bountiful crop yields. Since the early 1970s, Oregon has been a national leader in planning for and protecting its prized agricultural lands from urban encroachment and degradation. One of the primary goals of the State's landmark planning legislation was to preserve and maintain the agricultural land supply. To that end, in 1993, the Oregon State Legislature adopted the Oregon Agricultural Land Use Policy:

The preservation of a maximum amount of the limited supply of agricultural land is necessary to the conservation of the state's economic resources and the preservation of such land in large blocks is necessary in maintaining the agricultural economy of the state and for the assurance of adequate, healthful and nutritious food for the people of this state and nation. (ORS 215.243)

The principal method of preserving the existing agricultural base is to shelter high-value agricultural land with a zoning designation that only allows farming and severely limits the non-farm uses that would otherwise compete for space with cropland. In return for productively farming the land, farmers receive reduced property tax valuations and deferred taxes.

Concerned that that tax relief for farm use was being abused for "the professional man's fine residence in the filbert orchard, the city worker's five suburban acres and a cow, [or] the retired person's 20 acres of marginal land on which a travel trailer constitutes the personal residence," the Legislature changed the farm income requirements to ensure that only productive farms were subsidized. In 1993, the state's land use rule-making body, the Land Conservation and Development Committee, raised the minimum farm income threshold for farms on "high-value farmland" to \$80,000 gross income. (LCDC, 1-2)

As a result of the statewide efforts to protect agriculture, Oregon has seen its farm base stay relatively stable. As the following chart shows, since 1973, the number of farms in Oregon has risen almost 13% to 38,300. The amount of land being farmed has declined slightly, down almost 14% since 1973, but down less than 3% since 1993. By comparison, California has lost almost 4% of its farms since 1973 and has lost nearly 26% of the farm acreage it had 35 years ago and over 12% of the acreage farmed in 1993.

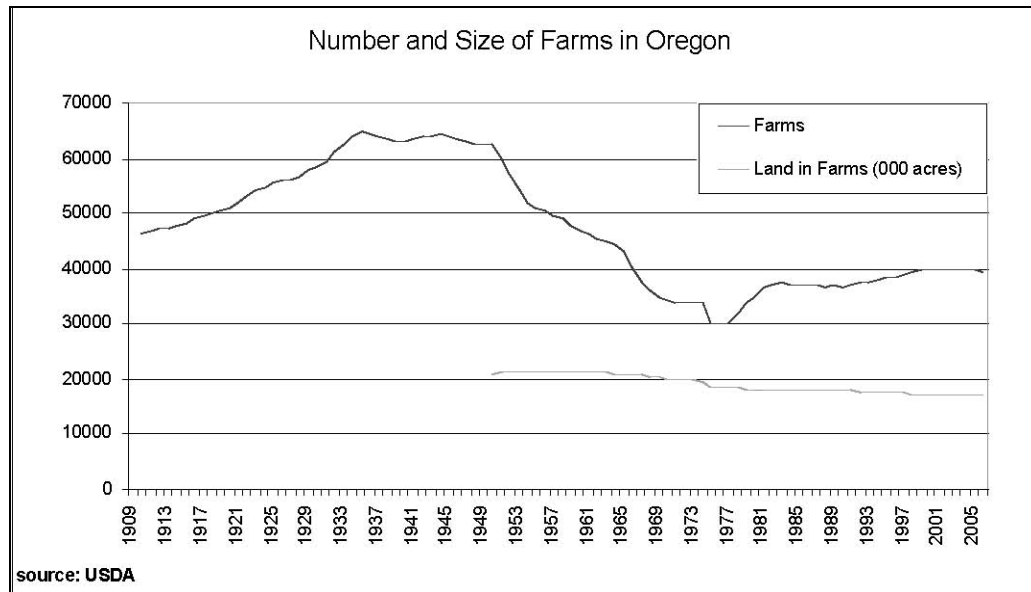


Figure 1

Land use planning can do two things to preserve and maintain agricultural land. As mentioned, it can minimize the conflict between agriculture and incompatible land uses and it can curtail the encroachment from expanding urbanized areas. It can also direct the development of the infrastructure in a manner that supports farm clusters and the resulting the agglomeration economies and economies of scale. Indeed, agriculture functions best when farms are within a supportive land use framework that allows them to cluster together and shields them from other land uses (Reid, 30). By strategically siting transportation facilities such as roads and railways, the community can lower the costs to transport farm goods to market. Advance planning also results in a more efficient roll-out of the urban services like sewer systems, schools, and utility lines needed by the farmers.

Next Steps

Land preservation

Over the last 35 years, Oregon has done a remarkable job of preserving its agricultural land. However, in the face of continued population growth, the per capita farmland acreage is falling. This places ever-increasing pressure on the existing agricultural land to urbanize. Balancing the urban needs and the rural needs will be increasingly difficult and will require courageous political leadership and heroic efforts at consensus-building. Negotiating a policy that considers both private property rights and public benefit and is politically palatable will certainly not be easy. Part of the effort will be to increase the financial yield that farmers receive from their land. If they are to continue to resist the urge to plant rows of condos and tract homes, farmers will need to have alternate means of cashing out their investment in land.

Incentives for food production

The State of Oregon has a strong land use provision in the Exclusive Farm Use (EFU) designation. This land use not only receives the protection for farm use in planning decisions, but also provides landowners tax abatement in an effort to further promote agriculture use. At a minimum of \$650 in gross income you qualify as farm use. After 6.5 acres the assessment is \$100 per acre up to \$3000 of gross income. (ORS 308A.056)

These levels are easily reached and these standards don't differentiate between the different agricultural services and products. We need to put more land into food production if we want to support the amount of people that are predicted to live in Oregon in the near future. We are not advocating for the farming of more marginal lands or creating a greater intensity of farming on already reeling with over inputs of fertilizer. Rather, a shift needs to occur in the priorities of what is grown on already perfectly good farmland.

The two biggest non-food land users in the Willamette Valley are tree farming and grass seed. Approximately 50% of the valley is put into grass seed at any one time. Excluding the areas where these two crops are providing revenue on lands that benefit from a perennial crop (such as those with slope issues or poor soil quality) there is land that could be put into food production. The reason for the acreage devoted to these crops stems from their high value per amount of inputs required. Short of controlling what people plant or deciding what has value in the marketplace we need to create incentives for food production on these lands.

We propose a revision to the current tax structure that rewards the growing of grains and other produce on lands suitable for these crops. The current market for grains has led a movement into the transition of seed grass lands into wheat, this tax might serve to bring more landowners into the fold, as well as balance out some of the volatility that comes from selling on the commodities market.

Food Policy Councils

Food policy councils are popping up in several states, and Oregon is no different. Portland, Eugene, Tillamook and Clatsop counties, and other communities have created groups of people interested in the processing, growing, and distribution of food in an effort to understand and guide food policy. The growth of these councils has come from grassroots support and governmental agencies in the State of Oregon. While there is initial hesitation on the part of agricultural interests, more of this sector is being incorporated into the discussions. (ODA 2007)

Governor Kulongowski has proposed statewide Food Policy Council. So far, this council has focused on transport and food security. Food is cheap due to labor costs being less in other countries and transport costs not being fully realized. Food policy councils seek to reduce the energy used to import foods and create an alternative food transport plan for emergency situations. Beyond emergency situations, councils look for ways to address access to food issues. Understanding the transport issue not only helps farmers get more food to markets and reduce spoilage, it also provides fresh and nutritional produce for those less likely to get it.

Our recommendation would be for the newly formed State of Oregon Food Policy Council to address and weigh in on the issues surrounding land use planning as it pertains to food policy. As seen when the Oregon Farm Bureau (OFB) formally announced its support of Measure 49, this will be contentious. The support for a local food system will have to be grown first, with strong policy that seeks to benefit all players. It will be important to point to the provision of Oregonians during natural disasters or during times of limited resources such as those in low-income settings.

Considerations

There are many services and opportunities provided by the State of Oregon for creating a sustainable land use policy that serves the needs of producers and consumers. From its model farmland preservation policies and laws, services and forums that advise farmers on the methods of local sales of

their products, and the beginnings of a state level food policy council. The following considerations are not policy suggestions as much as advice for use when implementing strategies for future land use.

The Big Look: The review of the State of Oregon's land use and planning guidelines.

“The Oregon Task Force on Land Use Planning” (also known as the Big Look Task Force), created by Senate Bill 82 (2005), is charged with conducting a comprehensive review of the Oregon Statewide Planning Program and make recommendations for any needed changes to land use policy to the 2009 Legislature. Some of the issues that are driving this policy review are the how Measures 37 and 49 are being incorporated into the planning structure and why these Measures were so divisive. The review and recommendation of the work groups will provide direction for the role of the state in deciding land use at a local level. As the goals and rules stand, the state has strong oversight on the conversion of farmland into non-farm uses. The Big Look committees are charged with finding out how the state's interests can be promoted while allowing for more flexible decision making at the local planning level.

Measure 37: A way for landowners to retrieve property rights they felt they had lost through the land planning process instigated by legislators in 1973. While the discussion is couched in the “free market” and the strong property rights needed for our economic system, the subtext of this discussion is financial. (Shriver, 2005) To portray the rural landowner as greedy does great disservice, and often the impetus for farmers is to gain highest value off of a small, low productivity parcel in order to maintain the rest of their operation. Measure 49 seeks to address this, but there are still many issues to iron out. The resolution of the question of land rights brought up in the debate surrounding these two measures will not come easy, and this group does not pretend to have a solution.

Field or Forest? The current method of development planning favors the retention of forestland over farmland. In no way would we advocate for the selection of forests for development over farmland. These forested areas provide numerous benefits and their retention is important. With that, farms are usually located on valley floors and closer to waterways, historically areas of high diversity in flora and fauna. Care must be taken to find a correct balance of farmland with ecosystem services. Changing our focus to lands further up the watershed or with greater slope, transition into other non-farming uses should be evaluated. Conservation tillage can prevent soil and nutrient loss, and these practices see a

strong representation in Oregon, it will be important to continue with the education and promotion that has occurred.

Environmental Sustainability at the Fringe: Peri-Urban Agriculture

Agriculture and the Urban Growth Boundary

With one third of the nation's best farmland located within metropolitan and adjacent counties, it's not surprising preserving agricultural land is problematic (Daniels, 1991). Despite numerous accolades for Oregon's progressive planning policies, like urban growth boundaries (UGB) and exclusive farm use zoning, controversy remains concerning the paramount land use in the urban periphery. Nowhere in the state is the issue more prevalent than the Metro region of Clackamas, Multnomah, and Washington counties.

Between 1982 and 1992, almost two thirds of Oregon's 89,000 acres of converted farmland, occurred in the Willamette Valley (Marin, 2007). This trend may persist considering that one million people are expected to descend upon the Portland metropolitan area over the next thirty years. The requisite infrastructure, jobs, homes, and transportation that accompany such growth will continue to push the UGB further. Currently, Metro adjusts the UGB every five years to maintain a twenty-year supply of land for development. Some critics assert that the focus on incremental boundary shifts has limited long term planning and adversely affected agriculture in the area (Mortensen, 2008).

The agricultural roots of the metro area are extensive and provide an important contribution to the regional economy. The three counties comprised 17% (\$714 million) of state agricultural production in 2005. When comparing farm production in the state's 36 counties, Clackamas County was second, Washington County third, and Multnomah County (smallest in the state) was fourteenth (Mortensen, 2008). The significant economic component of regional agriculture coupled with a growing populace interested in locally produced food, necessitates careful planning to maintain a viable regional food system.

The following section examines connections between the UGB, agriculture, and development. Reviewing current implications of this dynamic relationship yields some complex challenges for policy makers. However, unlike many other cities in the country, the Portland Metro area has a solid foundation for building an increasingly sustainable food system.

Current Practices

Relative to many urbanizing regions of the country, policy approaches in the Willamette Valley have been successful in retaining peri-urban farmland. This can be attributed to employing a multifaceted approach of various policy measures. The UGB has been instrumental in limiting sprawl, while exclusive farm use zones have designated specific areas for farm use only. Other approaches, like ex-urban districts, were designed to accommodate the demand for rural lifestyles by allotting less productive agricultural areas to appease certain citizens. Essentially, environmental, economic, and social consequences of development are considered as the area grows (Nelson, 1992). However, with any policy measure, there are myriad implications for the stakeholders involved. Regardless of the purported success of this regional strategy, it is important to examine its effects on the community.

Metro regional policy has not followed the traditional path of many agricultural areas in the country. As evidenced by Julie Guthman's detailed narrative, *Agrarian Dreams*, many California farms were forced into producing the highest yielding and economically profitable crops due to increasing land values. The commoditization of land by speculators intent on future commercial development drove many California farms into industrial production. This shift resulted in compromising social and ecological aspects of agriculture throughout the state (Guthman, 2004).

The Metro area has no immunity from speculation, but its land use policy has shaped a slightly different outcome. Current practices strictly limit development outside of the urban growth boundary, while taxes, fees, and zoning regulate development within the boundary. Earlier studies assessed land values for agriculturally zoned areas within the UGB much higher than areas outside of it. However, the type of agriculture, farm size, and location greatly affect values. In general, areas zoned for agriculture typically had lower values compared with potentially developable land (Marin, 2007). One may infer that these policies have successfully thwarted the traditional commodified land market. Though, with an ever-shifting UGB, land values can fluctuate leaving uncertainty for many landowners. The unique interplay of the UGB and land values provides a variable environment where impermanence persists. Other studies have shown many rural areas close to but outside of the UGB had diminished land values from urban externalities. Alternatively, areas close to but within the UGB had lower property values the farther they were from open space amenities (Marin, 2007). The complexity of this market presents an immense challenge for policy makers. With varying farm use, farm location, and farm size, policies aimed at preserving regional food production must be specific and detailed.

One area of land use policy that critics have cited as lacking sufficient detail concerns the presence of “hobby farms.” These farms are smaller than fifty acres and produce less than \$10,000 annually. When land use policies in the Metro area were first implemented, many residents established farms to receive the associated tax breaks. These farms typically provide nominal agriculture production and serve as open space rather than part of the regional food system. In order to maintain farm related businesses, it is critical to have a certain amount of viable agricultural production. This perceived competition with productive farms, questions the ability of current policies for maintaining farming and not just farmland (Daniels, 1991). However, when addressing this issue, a blanket policy limiting farm size or certain types of agriculture may prove detrimental. It is critical to consider the significant contributions of direct marketing farms, vineyards, and nurseries to the region.

Arguably, the greatest contribution of current land use policy is the maintenance and provision of ecosystem services through farmland preservation. Public Goods such as flood absorption, air cleansing, and water filtration are critical functions provided for "free" that are often taken for granted (Nelson, 1992). Food, fiber, and fuel may be the typical products we associate with agriculture, but ecosystem services prove equally as valuable and are often compromised by development. Agriculture is unique in that certain ecosystem services can be provided intentionally through crop selection and other farming practices. While valuing ecosystem services such as nitrogen fixation and carbon sequestration is challenging, scientists and other members of the academic community believe it offers a common language that will resonate with the general public (Swinton et al., 2007). The enormous cost of infrastructure projects designed to provide similar services clearly illustrates the value of maintaining natural processes. Portland's \$1.4 billion "Big Pipe" project is an obvious example of costs associated with disrupted ecosystem services like the hydrologic cycle.

Next steps

In an effort to accommodate expected future growth and protect valuable agricultural and natural lands, a new system of managing growth is currently being developed. Metro and Clackamas, Multnomah and Washington Counties are working together to identify specific lands as urban and rural reserves, using a framework approved by the Oregon Legislature in 2007. Urban reserves will be areas designated for future development, while rural reserves will be protected from future Portland-Metropolitan expansion. The urban and rural reserves planning mechanism is a strategic approach to

growth management that will provide greater predictability for landowners, farmers, and communities. This new system offers the region greater flexibility in determining which areas are more suitable for urban development in the next 40 to 50 years (Metro, 2008).

A Regional Reserves Steering Committee has been established and has recently begun meeting to identify potential urban and rural reserve study areas. Based on research and public participation, the committee will advise the Metro Council and the commissions of Clackamas, Multnomah and Washington counties on the designation of future reserves. Agreements between Metro and the counties are expected to be reached by 2009. It will be interesting to see if the committee is able to adhere to their rigorous timeline.

At the Steering Committee's first meeting in January of 2008, Mike Houck, Director of the Urban Greenspaces Institute in Portland State University's Department of Geography, explained that his constituents had already held a caucus to discuss the issue of an incomplete natural resource inventory. He pointed out that the current natural resource maps of the region do not take into account the multiple layers of natural resource information and that the Regional Reserves Committee will need to consider more detailed and specific information as it becomes available (Regional Reserves Steering Committee, 2008).

Another valid concern came from Mary Kyle McCurdy, of 1000 Friends of Oregon and Coalition for a Livable Future, who emphasized the importance of solidifying the public involvement process. Commenting that the Steering Committee is made up of a group of "insiders", she highlighted the value of including those not represented at the table. McCurdy reminded the committee that this public participation process will need to be determined along with plans of its integration into final decision criteria (Regional Reserves Steering Committee, 2008).

Leading up to the reserve designation process, a study of the various factors that influence and define our region was conducted. This effort sought to identify how agriculture, natural areas and urban communities all contribute to the value of the region (Metro, 2008). The study joined several relevant reports, including an assessment of agricultural lands surrounding the Metro region developed by Oregon Department of Agriculture (ODA).

The ODA report suggests several complexities to consider in managing urban growth. For instance, the report noted that the scale, shape and size of protrusions of non-farm lands into agricultural lands can impact efficient and effective agricultural operations. It also pointed out that certain non-farm uses are more compatible with agricultural operations than others. The report

highlighted the benefits of clustering farms which can increase the sharing of labor, housing, equipment, advocacy and other assets and services. Also, several trends were identified within the Portland-Metro region that must be considered. These include an increased consumer demand for organic, local and sustainable products, a growing agri-tourism industry, and an increased demand for biofuels (ODA, 2007)

The report includes maps of the Metro region that identify three main agricultural land categories: Foundational, Important, and Conflicted Agricultural Land. These findings, along with those of other regional studies, will be used to inform the designation of new urban and rural reserves.

The Portland-Multnomah Food Policy Council has brought attention to the importance of farms in the region that currently participate in direct-marketing. Farmers markets, community supported agriculture (CSAs), u-pick and farm stands all provide opportunities for farmers to capture retail dollars, build relationships, and sell locally. Because farm direct marketing plays a dynamic role in Oregon agriculture, the Food Policy Council has emphasized that although the ODA assessment of agricultural lands is a very important tool, it is not the only agricultural information available. The Food Policy Council informally presented Multnomah County Commissioner (and Regional Reserves Steering Committee Member) Jeff Cogen with a map that indicated the location of currently identified direct marketing farms and Farmers Markets.

Similar to Mike Houck's concerns about natural resource stocks, The Food Policy Council is interested in assuring that existing farms currently playing a role in our local food supply chains will not be overlooked. The hope is that this map can be overlaid with the DOA information, which will likely be integrated with other assessments on natural habitat, community assets, and other valuable regional resources. As one can imagine, assets abound and the Regional Reserves realistically will be unable to protect them all. It is clear, however, that the committee will need to consider data and maps presented by an array of interest groups in addition to the broader government reports already generated.

Considerations

As our region increasingly becomes aware of the importance of preserving and strengthening our local food networks, we are beginning to understand that food system considerations should be a part of our long-range plans. "Making the Greatest Place: 2040 Growth Concept" is the new name of Metro's comprehensive plan. This strategic "blueprint for the future", is intended to guide the growth

and development for the next 50 years, including the implementation of regional reserves. The plan is based on values of livable communities that have clean air, water, and access to natural amenities. Although preserving farms and forestland is a key element to the plan, the promotion of a sustainable food system is not mentioned as a core value. One way in which Metro and other governments could move forward in planning more sustainable systems is to move beyond protection of existing elements into the promotion and creation of new structural elements.

The Madison Wisconsin Comprehensive Plan begins to model this kind of proactive approach by integrating aspects of food system development into the city's overall development plans. The City has stated that it will not only maintain existing agricultural operations, but also encourage new farming operations with an emphasis on direct marketing such as Community Supported Agriculture Farms (City of Madison, 2006). The plan's approach to community gardens is similar in that it will not only protect existing community gardens in the City but also create a permanent community garden site for every 2,000 households in the City. In addition to addressing agricultural land issues, the Comprehensive Plan contains a variety of food system planning measures including food retail, farmers' markets, and food policy councils.

One way in which a region can maintain its agricultural lands and promote local farming is by providing links that connect farmers. The aging of farmers and the basic economics of farming in the United States discourages younger generations from taking up farming, which has sped up the conversion of agricultural land and consolidation of our food systems. The average age of farmers in many states is over 50 years (Born, 2005). The high cost of land, combined with limited profitability, is a serious barrier for beginning farmers. King County, Washington, has been successful in preserving agricultural lands through a program called FarmLink that matches new generation farmers with older generation farmers wishing to sell or lease their property for agriculture. This kind of program coupled with incentives could help stimulate the need for a new generation of farmers.

Policies for incentivizing local agricultural production must undoubtedly address land values. In addition to considering programs that offer farmers additional property tax relief, there is also discussion around utilizing a transferable development credit (TDC) system. A "transfer" of development credits refers to an increase in development on one parcel or "receiver site" over the level initially allocated under zoning by reducing the development on another parcel or "donor site" by a like amount. TDCs are already used to guide site-appropriate urban growth within the city core, but could also be used to transfer rights from peri-urban agricultural sites to inner-city sites. The Land Use

Committee of the Portland-Multnomah Food Policy Council is considering how TDCs could play a role in preserving and promoting our food system. It was explained that peri-urban land owners could contact a central development credit institution (perhaps under Metro governance) to sell their development credits while receiving sites would buy those development credits to increase development allowances within the city. This would give financial incentives for land-owners to maintain their land's agricultural potential. Similarly, establishing a "Right to First Refusal" system for measure 37 and 49 claims could allow land owners to transfer their property development credits to urban development projects. Another scenario would allow the government to simply purchase the development rights from claims deemed critical for preservation (Duke, 2007).

Urban development and farm preservation have proven to be compatible in several regions around the world, including the Saclay Plateau near Paris France. This particular region serves as a successful example of the integration of farmland into a new system of land use planning called the Countryside Action Plan (CAP). This new system is based on the recognition of agriculture's contribution to the local economy, spatial landscape, cultural identity, and ecosystem services. In a study of agri-urban development, the Saclay Plateau CAP highlighted the importance of preserving a modern image of farming, protecting and enhancing the region's heritage, and creating a network of pathways and greenspaces. The study also found that "power-sharing among various actors is often crucial to improving control over the peri-urban phenomenon" (Mougeot, 2005).

The development of an inclusive process that facilitates cooperation between all stakeholders is one of the most important considerations, as the Portland Metropolitan region moves forward. A framework for consensus decision-making incorporating public involvement will need to be a priority of county and metro leadership. It is also important to maintain a flexible and adaptive management approach to avoid "path dependence". When policy is vested in one particular option, it loses the resilience necessary to accommodate unexpected change.

In the vein of improved communication, it's vital to mention the role of the federal government in the regional food system. With farm lending programs generated at a federal level and farmland controls and regulations coming from state and local authorities, there is an unfortunate lack of coordination between various levels of government (Daniels, 1986). Continued subsidies and fluctuating commodity prices greatly influence food systems leaving local governments with an exceedingly difficult environment for food policy development. Thinking solely on the local level may not be the best option. Larger government bodies can often overturn regional

legislation so it's imperative to evaluate federal policies. Ultimately, a national policy standard may have the greatest influence on a sustainable food system. As Brandon Born simply states, "Outcomes from a food system depend more on the actors involved rather than the scale of the system" (Born, 2006).

Planners and public health professionals have an opportunity to collaborate and engage the community in a dialogue about the meaning and goals of a secure food system. These two fields, only a century ago in fact, were largely considered one and the same. There are many other related disciplines, including ecology, economics, and sociology, that are also collaborating and helping to bring into focus the common vision of a sound, secure, and equitable community food system (Campbell, 2004). The work on strengthening food systems can be seen as a catalyst for sustainable development in perhaps all fields because it connects our social and physical environments, our personal and political spheres, and the welfare of our households with our region's overall viability. Planning for sustainable development inherently requires systems-thinking, and our food system is one that we all connect with on a daily basis. It, therefore, has the potential to play an essential connector role in our region's transition into more sustainable processes and practices.

Social Justice and Equity through Urban Agriculture

Urban Agriculture and Land Use in the Sustainable Regional Food System

Land use is a local issue with global impacts. As urban areas continue to expand, humans are increasingly appropriating land far from the urban core as a source of resources to meet their immediate needs of food, clothing, and shelter. This acquisition often comes at the expense of eroding natural ecosystems (Foley et al, 2005). Increasing dependence on "long distance food" facilitated by technological innovation, reduced transportation costs, and government policy has increased the average distance food travels as much as fifty percent in the last half century (Halwell, 2002). While this shift presents consumers with increasing variety of foods to choose from, the complex global food chain that makes these choices possible has many unforeseen costs including erosion of local economies, landscapes, and communities. As our globe is increasingly urbanized, with over half the world's population residing in cities, local agriculture is increasingly urban agriculture. Although cities themselves may not be self-sustaining food systems, available urban infrastructure and rising transportation costs suggest cities will increasingly try to secure as much food as possible from within

their limits (UN Food and Agriculture Organization, 2000). Here we offer a brief definition and history of urban agriculture as background for our examination of the challenges and benefits of using urban lands for agricultural purposes. Then we offer as illustration an assessment of the various urban agricultural land uses currently underway in the Portland Metro Area (Oregon, USA) followed by an overview of innovative approaches to urban agriculture currently in development.

Current Practices

Although definitions vary widely, urban agriculture can be understood simply as the cultivation of food in cities. This includes the processing, distribution, and consumption of both plant and animal based foods as well as the less widely recognized inputs, structures, services, and benefits related to these activities including (Bailkey & Nasr, 2000; Butler & Maronek, 2002; Halwell, 2002; Smit & Nasr, 1992). An increased focus on urban agriculture has emerged of late in response to the perceived economic, social, and environmental limits of the long-distance food model but it is by no means a new phenomenon (Register, 2006). In fact, cities often spring up on a region's most arable land because the same land that is good for growing is good for building. In Mexico City, the Aztecs grew more than 45,000 tons of maize on chinampas (floating gardens) of mud pulled from Lake Texcoco and piled on the banks of the rivers (Sweet, 2008) and the residents of ancient Iran, Syria, and Iraq procured vegetables from home gardens (Halwell, 2002).

Worldwide, municipal policymakers are increasingly aware that urban agriculture can contribute to regional food security, especially in developing nations. It also has potential to provide employment, improve the environment, and make productive use of vacant spaces within the city (Mougeot, 2006). The UN Development Program estimates 800 million people engage in urban agriculture, the majority in Asian countries. Of these, 200 million raise their food for markets while the rest raise it for personal use, some examples:

- In Africa, urban farms produced 90% of the leafy greens consumed in Dar-Es-Salaam, Tanzania (1999); In Brazzaville, Republic of Congo, 1.4 million people procure 65% of their vegetable needs from urban agriculture; In Uganda 1.2 million people in Kampala raise 70% of their poultry in the city.
- In Asia, 80% of fresh vegetables (118,628 tons), 50% meat, and 40% eggs originate from 7,100 hectares of urban gardens in Hanoi; 90% of milk and eggs originate in Shanghai; and the majority of green vegetables consumed in Bangkok are produced in within city limits. (Smit for UNDP in Halwell, 2002; Tixier and du Bon, 2006).
- Japan, The Netherlands, and Chile all have more urban than rural farmers (Smit & Nasr, 1992).

Until as recently as the 1950s, almost all food consumed in urban areas of the U.S. was grown nearby given the impracticality and expense of shipping foods long distances. However demographic shifts along with technological innovations in refrigeration, transportation, and processing resulted in development of industrial food systems premised upon on products that could be stored or preserved for long periods of time and transported over long distances relatively cheaply. In addition to ecological degradation, excessive fuel consumption, and monoculture practices that resulted from these systems, the industrial "long-distance" food model resulted in what Halwell terms the "Wal-Mart Effect" in which international food conglomerates, aided by favorable national and international trade policies, wrested market shares from local growers and purveyors through intense financial investment. The result, he claims, was a "hemorrhaging" of money, jobs, and food out of local economies which now receive approximately \$.07 on the local food dollar spent versus over \$.40 in 1910 (p.23). The result is a global food system that is recognized as efficient in economic terms, but that appears less efficient when inefficient when we consider conditions like "food swapping," when countries import food that they could produce locally in order to maintain standardized, predictable commodities or "broken waste loops" in which one end of the food system faces tremendous raw material disposal pressures (which can be alleviated by composting and other strategies) while the other is challenged by dealing with leftover food packaging, a significant portion of urban waste (Goldstein in Halwell, 2002, 21).

Despite these trends, urban agriculture is making a comeback. In developing nations, this is in response to economic crises and high migration rates (Bryld, 2003). In Western nations, the re-emergence of urban agriculture is in large part a response to loss of diversity in the post-war years resulting from technological innovation and policy which promoted industrial commodity agriculture at the expense of the small farmer (Guthman, 2006; Halwell, 2002). For economic, social, and ecological reasons, it is now widely recognized that maintaining diversity despite pressure from powerful food industry interests is the basis of sustainable regional food system (Beatley, 1994; Dale et. al., 2000; Foley et. al., 2005; Halwell, 2002; Smit & Nasr, 1992).

Although urban agriculture may expose residents to contaminants due to pollution, whether through automobile or industrial wastes, the benefits for local communities of reclaiming their food economies and autonomy generally offset these costs, often by forcing urban farmers to take advantage of alternative agricultural models in urban areas, as we discuss further, below.

The Entrepreneurial Approach to Urban Agriculture

While it is increasingly recognized that urban agriculture plays an important role in sustainable regional food systems, less understood is how practices and policies contribute to viable urban agricultural systems. Central in this discussion is the local farmer, who by virtue of her position in a global food economy must understand more than how to grow food effectively and efficiently; she must begin to appreciate the tactics that multi-national food conglomerates implement in every stage of their vertically integrated industrial food chain from processing and packaging to marketing (Stanford, 2006; Paxson, 2006). Most food policy currently focuses on food production issues, but for local approaches to urban agriculture to succeed, farmers will increasingly need to increase their technical and economic knowledge in order to locally address each link in the food chain (Maxwell & Slater, 2004). Some examples of the strategic linkages between producers and consumers in sustainable urban food chains are highlighted below (for more detailed discussion, see Halwell, 2002, pp. 41-9)

Small-Scale Local Food Processing: The emerging micro-finance sector has recognized the importance of food processing facilities to local economies and continues to fund food processing enterprises in developing nations (Zeller & Sharma, 2000). An excellent example of advances in local small-scale processing is the ITDG's (Intermediate Technology Development Group) distribution of a small electric grinding mill for the production of peanut butter. In Zimbabwe, where peanut butter is traditionally ground with stones by hand by women, ITDG both rents and finances the mills for local entrepreneurs. (<http://www.itdg.org>).

Planners can effectively prioritize this aspect of urban agriculture, as is evident in the City of Vancouver B.C.'s Southeast False Creek Urban Agriculture Strategy, which includes a provision for incentives that encourage small food processing companies to locate in SEFC where appropriate (<http://www.cityfarmer.org/SEFalseCreekFinal.html>).

Expanding Markets: Schools, Institutions, and Restaurants: Expanding the definition of urban agriculture to include local institutional and industrial food purchasers is a sustainable development practice currently being explored by Emma Sirois, Program Director, Health Care without Harm (Portland, Oregon, USA). Her organization works with hospitals to adopt sustainable food procurement policies that support local urban agriculture, in particular by building relationships between local fresh-food producers and hospitals. With her background as a urban planner, Emma understands the links

between food policy, land use planning, and agricultural programs and works on policy that considers the complexity of urban food systems (personal communication, <http://www.noharm.org/details.cfm?ID=1052&type=document>).

Distribution and Direct Marketing--Farm Shops Farmer's Markets, CSA, Subscription Agriculture:

In areas where agriculture already occurs in urban areas like the US and UK, farm shops sales are growing more than 20% per year. In Japan, farmers sell approximately 60% of their produce directly to one of the nations 1000 food co-ops or buying clubs with sales of roughly \$15 billion (USD). (See the discussion above, Peri-Urban Agriculture: Direct Marketing Farms).

This entrepreneurial approach to urban agriculture remains uncharted territory to most farmers, both in developing nations and in the West. It's important to note that policy for training farmers in sustainable business practices will be as necessary as training them in sustainable growing practices if we're going to bridge the vast distance between the "long-distance" food industry and local farmers. Necessary conditions for the success of a local food system are:

- Cooperation between farmers: often the challenges of the local food model outweigh the benefits. By developing strong partnerships, local producers can engage in what Julie Guthman has termed "co-opetition," or the sharing of resources from equipment to ideas while operating as competing individuals (2004, p. 166).
- Alliances between farms and food businesses: the highly consolidated industrial food markets make it difficult for small-scale producers to enter markets. Alternative marketing strategies will entail developing partnerships between traditional retailers and local producers through alternative channels and word-of-mouth (Halwell, 2002).
- Capitalize on local competitive advantage: there are many attributes available in local urban products that industrial food products lack, including freshness, seasonality, variety, and healthiness. Farmers must promote theirs as "value-added" products with a story to tell, highlighting the contrasts between their products and those of their industrial competitors (Guthman, 2006).

"Smart growth": often used in planning, "smart growth" generally connotes processes by which urban sprawl is contained in favor of more sustainable development patterns. In the realm of urban

agriculture, this concept could be co-opted by those successful local food businesses for whom growth is essential and inevitable. This would entail development of locally-friendly corporate models predicated on investment in the local economy through provision of jobs, income, and food for their community (see Country Natural Beef: <http://www.oregoncountrybeef.com/>).

The Benefits of Urban Agriculture

Using urban land for agriculture has many benefits that vary with time and place which go beyond providing urbanites with food to include socioeconomic, environmental, and health impacts (Smit & Nasr, 1992; Halwell, 2002 p. 33). One of the greatest benefits is the sense of food security that urbanities receive from local food production. As mentioned above, food security is important for urban population survival in case of catastrophic damage to the rural food supply. However, in addition to this fundamental need for nourishment, there is a psychological benefit to knowing that one's needs are being met in a locally accessible manner (Maslow, 1943). For many urban residents living near or below the poverty level, a combination of factors makes basic life needs difficult to obtain, resulting in a struggle for survival with little hope for improvement or growth. This can lead to a sense of "learned helplessness" that is detrimental to sustainable quality of life (Seligman et al. 1980). This is contrary to the World Health Organization's definition of health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" that is a "resource for everyday life, not the objective of living", and "a positive concept emphasizing social and personal resources, as well as physical capacities" (WHO, 1948 & 1986).

In addition to the environmental and nutritional benefits of locally grown food, urban agriculture improves perceived quality of life. Other advantages of urban agriculture also abound. Reduction of food miles to urban centers reduces the cost of shipping and significantly decreases the cost of produce. Locally grown produce does not need to be refrigerated for shipping because it can be harvested and consumed in the same day. This has beneficial effects on the economy and the environment. Personal gardens can reduce the family food budget, freeing constrained financial resources for other uses. Surpluses can be given away or traded with friends and neighbors to strengthening social networks, or they can be sold to supplement household income.

Conversion of urban land to agricultural use is also beneficial to public health. In addition to the reduction of environmental damage from fossil fuel food-miles mentioned above, inclusion of agricultural land into the urban landscape through intelligent planning can greatly benefit communities. Participation in gardening projects improves physical health through exercise, as well as through social interactions and access to fresh, nutritious produce (Armstrong, 2000). The psychological benefits of urban green space are not as well known as the negative effects of other built environment aspects (Weich et al., 2002, Evans, 2003), but research is beginning to appear in the literature (Maas et al., 2006). Inclusion of natural elements such as urban green space has also been shown to reduce levels of violent and non-violent crime, partially through the establishment of social capital (Kuo and Sullivan, 2001). As noted by Richard Jackson, Director of the CDC Center for Environmental Health (2001): ""Land use decisions are just as much public health decisions as they are decisions about food preparation.""

Lastly, urban agriculture programs foster a sense of environmental stewardship among city dwellers that is often lacking (Dorsey, 2003). Urban living facilitates disconnection from the natural world which is essential for all life, including the continued promotion of agricultural systems. Bringing these processes into the city exposes residents to the environmental realities of our era, enhancing recognition of the need for sustainable practices to be initiated.

The Challenges of Urban Agriculture

Until Pothukuchi and Kaufman (1999) proposed that food systems should be on the municipal agendas, there was little mention of "food" among urban systems. Much has changed in the last decade as municipalities increasingly recognize the centrality of sustainable food policy in local and regional governance (Drescher, 2002). Despite increasing awareness of food systems among urban policy officials, little progress has been made in bringing food policy issues to the top of urban agendas. As mentioned previously, food policy councils are slowly emerging in response; however, the dynamic role of urban agriculture--identifiers, typologies, characteristics, analyses, and evaluations-- in sustainable regional food systems have yet to be determined (Mougeot in Agropolis, p.246). This lack of understanding of urban agriculture leaves us on shaky ground for sustainable decision-making, with no clear mandate for the scales or dimensions of urban agriculture policy and administration (Foley et. al, 2005).

While innovation in urban agriculture on a case-by-case basis may precede policy, the need for comprehensive urban agricultural policy is essential if we are going to ensure ecological sustainability while promoting social justice and equity. The challenges of doing so are amplified in developing nations where structural adjustments in the last two decades have resulted in economic crises and increasing migration rates. Smit & Nasr (1992) point out that although most urban agriculture in developing nations should be considered a sustainable land use, there are potential negative impacts to urban inhabitants including exposure to increased contaminant levels, increased pathogen exposure from improper monitoring or water and soil quality. Furthermore, urban inhabitants will need to come up with strategies for overcoming limitations of the built environment on their cultivation techniques, including lack of adequate light, irrigation, and air flow. It may also be difficult to overcome ingrained cultural ideals around food production and consumption. Most importantly, without adequate planning and facilitation, urban agriculture could result in increasing disparity--especially with regard to inequitable access to arable urban land for growing.

This last point is the most significant in this discussion, according to Alex Drescher of the IDRC (Canada), who argues that the number one issue facing urban planners with regard to urban agriculture is how we can increase access to land for the poor and how we will integrate these poor into our urban land markets (2002, p. 555). While most of the challenges of urban agriculture may be remediated by programs and legislation that reduce waste, maintain water and soil quality, and educate farmers in sustainable cultivation practices, access to land is something that proves difficult to legislate (Bryld, 2003). Insecure land tenure plagues many inhabitants of developing nations. In many countries, urban agriculture is illegal.

Even in western countries, urban agriculture focuses primarily on informal allotment schemes--informal in land tenure, labor, and sales of products. Furthermore, there inherent inequalities of this sector are highly gendered. Planners facing the challenging of securing not just food but land for urban poor must recognize that women are key stakeholders in all aspects of food systems from production to marketing, and they should be addressed accordingly. Proper analysis of local land markets by planners is essential for effective integration of urban agriculture legislation into planning policy (for a more comprehensive discussion see Drescher, 2002).

Comprehensive municipal agricultural planning can help eliminate "food deserts" (urban areas where healthy food is not accessible); however, even in more sustainable regions it is widely recognized that land use decision-making is never a straightforward process. For instance, while many

Oregonians support protecting farmland and the environment, there has been much debate over recent legislation reinforcing private property ownership rights (Measures 37 and 49). It will be important in coming years for planners to evaluate how urban residents value urban agricultural lands and whether they are willing to support increasing the amount of land designated for agricultural use within city limits. In addition, they will need to consider market demand when designating zoning regulations in these cases (Reid, 2006).

Urban Agriculture in Portland, Oregon

Portland currently presents an exemplar case for examining progressive land uses in food systems planning. These are promoted through various non-profits and government agencies, including the Office of Sustainable Development, and supported by high levels of public interest and participation in planning. In addition to the Food Policy Council discussed above, some components of Portland's approach to urban agriculture are highlighted below:

Portland's Community Gardens: As of 2005, Portland had approx. 30 community gardens hosting approx. 1000 plots generating approx. \$500,000 in produce annually. Supported through the Bureau of Parks and Recreation since 1975, Portland's community gardens continually boast demand for space that far outstrips supply. A study undertaken in 2005 (Diggable City, Portland State University), identified 239 urban sites for additional garden space, however funding for program expansion remains limited, with recent budget constraints lowering community garden priority and raising plot rates despite protests from the Food Policy Council that the gardens are necessary in food insecure areas of the city (East of I-205). Although land tenure is secure for gardens on city land, private land tenure is less stable with a popular community garden on private university land (Reed College) recently closed due to institutional expansion (Hess, 2005; <http://www.portlandonline.com/parks/index.cfm?c=djieg>).

Zenger Urban Agriculture Park: Formerly a dairy farm known as Zenger Farms, this property was purchased by Portland's Bureau of Development Services in 1994, primarily in conservation of the Johnson Creek Watershed. In 1995, the property was returned to agricultural use through lease to Urban Bounty Farm. In 1999, Friends of Zenger Farm was established, formalizing the property's role as an urban education and environmental resource center. Today the Friends of Zenger Farm operates

as non-profit farm and wetland preservation group dedicated to promoting sustainable food systems, environmental stewardship and local economic development through a working urban farm in the public domain (<http://www.zengerfarm.org/>).

Preserve: A small non-profit dedicated to teaching the art and science of food preservation with a focus on sustainability and self reliance within an urban environment, Preserve offers resources on food preservation and safety, healthy cooking, practical homemaking skills, and sensible consumerism and encourages participants to investigate alternative economies as they relate to the household, community and world. Their goal is to offer skills and service to encourage a move towards simpler, holistic life styles and good stewardship (<http://www.portlandpreserve.com/>)

Your Backyard Farmer: Promoting itself as an "innovative approach to community supported agriculture," Your Backyard Farmer is a for-profit start-up in which urbanite's backyards are the farms. The farmers do site assessment, cultivation, and harvesting of produce according to resident needs and available arable land (minimum requirements for backyard farms start at 10' X 10' with access to water and six hours of sunlight daily). In addition to the fee they charge, Your Backyard Farmer has begun selling overflow from the backyard farms (produce exceeding resident needs) to local restaurants at market rates. Demand for their services--from residents to restaurants--continues to grow (<http://www.yourbackyardfarmer.com>).

Growing Gardens: A small non-profit organization that empowers low-income families with the knowledge, skills, and resources to be able to grow their own food on-site at their house in urban Portland, Growing Gardens has volunteers work with households to assess soil quality, drainage, and light availability in order to grow nutritious, culturally relevant produce. Families work with the same neighborhood resident/volunteer mentor for three years to build social relationships as well as working knowledge of how to sustainably care for their urban garden. (<http://www.growinggardens.org>).

Village Gardens: A component of the Janus Youth Programs' Urban Agriculture Services, this project comprises over 56,000 square feet of agricultural production land in the city of Portland. The St. John's Woods Garden Project provides 7,000 sq. ft. of garden space, as well as all necessary seeds, tools, and

instructions, to families living 200% below federal poverty guidelines. The associated Big Apple Garden Club is a social resource for neighborhood residents to come and socialize while learning valuable horticultural skills from local experts, an uncommon opportunity in North Portland. The similar Seeds of Harmony Garden provides 24,000 sq ft. of communal garden and meeting space at the New Columbia housing development, Portland's only Hope VI development project. Youth aged 14-21 from both programs are invited to participate in Janus' Food Works program on an acre of METRO-owned land on Sauvie Island. These youth are taught entrepreneurial skills of running a small farm business from the initial planning and planting through harvesting, marketing and point-of-sale. They receive school credit and are supported to transition into employment in the local agricultural sector. Residents of these communities have noted substantial improvements in youth behavior and reductions in vandalism since the program began. (<http://www.janusyouth.org/what-we-do/urban-agriculture-services.php>)

The Future of Urban Agriculture

In addition to the urban farms, community gardens, and backyard gardens discussed above, progress is underway to expand the definition of urban agriculture to include land use and planning dimensions not previously considered. Organizations like Tucson's Development Center for Appropriate Technology (DCAT) are currently researching "appropriate" technologies which strive to increase the economic, social, and environmental sustainability through application of ideas, energy and resources. These include consideration of areas not previously suited for agricultural uses, incorporating idle public or other lands, using lands on an interim basis, and growing on surfaces previously considered unsuitable for growing (Smit & Nasr, 1992). Some examples of innovations currently being explored in the realm of urban agriculture are outlined below:

Grassroots Participation in Planning: REAP (Renter Education and Advancement Program): In 2007, neighbors in Portland's Mt. Scott-Arleta Neighborhood applied for funding through the City of Portland's Office of Neighborhood Involvement Small Neighborhood Grants Program. Their intention was to promote renter participation in neighborhood activities through demonstration of sustainable, community-driven, urban agriculture. By reaching out to renters as politically and economically disenfranchised group, they hoped to empower neighborhood residents to meet basic human needs of food procurement while supporting them in incorporating creative approaches to sustainability

generally reserved for more traditionally privileged groups. The project launched an apartment or small space container gardening program to educate renters about cultivating a variety of sustainable resources in a limited space, including food, medicinal herbs, materials repurposing, water collection, bartering, and composting. Operating from unoccupied land in the public right-of-way (controlled by PDOT), the program includes a series of monthly workshops centered around the soon-to-be-defunct yellow recycling bins that will abound once the City of Portland institutes its new rolling cart recycling program in early 2008.

Roof Gardens: Available agricultural land in the urban environment is scarce. Investigations have begun to assess the possibility of producing food on surfaces not traditionally utilized for agriculture. One example is the conversion of flat or slightly-inclined rooftops into horticultural space. Portland is becoming well-known in the national (and international) community for its preponderance of "Green-roofs," though currently this is primarily limited to grasses and mosses for the purposes of temperature regulation and energy efficiency. Portland zoning has also included a "Floor-Area Ratio" incentive to allow developers more floors to their buildings if they include green-roof designs. There is no reason why these spaces could not be used for small-scale food production as well. Many other cultures throughout the world already use rooftops and balconies to grow food (Vishwanath, 2006). Considering the majority of urban land area that is utilized for buildings whose roofs are non-productive, it seems reasonable to investigate conversion into some type of productive space for horticultural purposes. The only major concern with this concept are the structural limits on weight restrictions for the roof loads; older buildings can be assessed and cultivated accordingly, while new buildings can be built with rooftop gardens in mind.

Gardens on the Water: With agricultural land becoming scarce, some people are looking to grow food on the water. NYSunWorks is a company that has developed a floating greenhouse in order to grow produce anywhere that is water-accessible. This "ScienceBarge" is solar powered and uses filtered river water to grow any produce available in a conventional greenhouse. (<http://nysunworks.org>)

Aquaponics: The symbiotic cultivation of vegetable and fish stocks for food use, using the methods of hydroponics and aquaculture. Nutrient-rich waste water from commercial indoor fish-farms, typically

tilapia, is used to fertilize and hydrate growing crops. These crops filter the water before it is returned to the fish tanks, producing a closed hydrological cycle. Aquaponic projects can provide a nutritionally complete diet to a population in one self-contained unit, and removal of the need for chemical fertilizers, pesticides or waste-water run-off eliminates potential for environmental damage. In addition, aquaponic projects can be situated on brownfields or indoors, greatly reducing food-miles and essentially permitting food production anywhere in the urban setting. (Savidov, Rakooy and Hutchins, 2007).

Green Building--Vertical Farming: An ambitious and potentially world-changing concept comes from the mind of Dickson Despommier, Ph.D. of Columbia University. Originally conceived of as a public health project to reduce risks of infection by parasitic worms during agricultural activities in rural developing countries, the Vertical Farm (<http://www.verticalfarm.com>) has developed into a feasible method to locally feed the increasing number of urban residents throughout the world. By combining a variety of fields such as soil microbiology, engineering, public health, policy making, urban planning, architecture, agronomy, plant genetics, agriculture and economics, the Vertical Farm maximizes urban land by building up instead of out. It has been proposed that a 30-story, one square block facility could support the produce needs of over 50,000 people per year. Production would not be limited to the growing season but could continue year round. In addition, climate-contained production would ensure constant successful harvests independent of external natural or environmental disturbances such as droughts, floods or infestations. All produce would be grown organically as pesticides would be unnecessary, as nutritional fertilizer could be obtained from aquaculture fish farms underground. Non-productive biomass could be burned for heating the LEED platinum-certified building with solar panels and rooftop urban windmills to supply power. A ground-level produce distribution center would eliminate food miles for the urban customer. Lastly, technological efforts at developing a sustainable, self-contained farming operation will have long lasting future benefits for space exploration and other extraterrestrial endeavors. Though this idea is still in the theoretical stage, it could conceivably alter the entire structure of sustainable urban food systems. (Vogel, 2008).

Leaving Room to Grow

Urban Land Use Planning

Although various streams of planning theory and practice have diverged in recent years from their roots in the social mobilization of the reform movement, planning generally continues to strive to accomplish the greatest good for the greatest number possible. Thus the traditional goals of planning are bolstered by increasing acceptance of the sustainability paradigm. Despite the challenges planners face in incorporating sustainability into their plans and practices, many of these efforts may significantly affect the success of urban agricultural programs and initiatives. Although they are increasingly implementing low-impact development, smart growth, and sustainable urbanization, planners must continue to promote urban agriculture by maintaining adequate open space and encouraging biodiversity through land use decision-making. Brown & Carter (2003) encourage planners to recognize that "a city that promotes urban agriculture can have green space that pays taxes rather than costing taxpayers money" (17).

Accordingly, planners need to learn from "the experiences of communities, from Amsterdam to Curitiba to Portland, that have sought to implement an alternative vision. The ingredients of such comparatively successful places remain poorly understood" (Beatley & Manning, 1997, p. 392). Despite widespread acceptance of sustainability as a central goal of current planning efforts, little consensus emerges about how to execute and evaluate sustainable approaches to urban agriculture. Planners will need to learn more about the complexity of regional food systems and the role of urban agriculture within them, acknowledging the interdependence of divergent interests in property, resources, and development (Campbell, 1996). Finally, to understand and maintain the space necessary for urban agriculture, planners will need to educate themselves on core concepts of sustainability and how they engage communities in a dialogue about sustainability (Berke & Conroy, 2000).

Urban Agricultural Policy: Barriers and Incentives

There has been much discussion in this report about considerations for sustainable food policy in Portland, OR and the Metro region. However, urban agriculture policy is highly contextual and must differ according to the wealth, level of development, and location of regions and nations. Unlike Portland, developing nations are still focusing much of their urban food policy on crop development and production while other, less sustainability-focused urbanized regions continue to focus their policy

on the quality of foods produced. However, there are some constants in urban food policy development that need to be considered (Maxwell & Slater, 2004):

- Sustainable urban foods systems are not likely, thus, food trade is inevitable.
- Urban food systems in developing nations are evolving more rapidly.
- Because of the complexity of food systems, the capacity for setting food policy is weakest in the poorest regions.
- Urban agricultural policy should promote ecological sustainability through policy that focuses on reducing waste and contamination, developing best practices, monitoring composting, recycling nutrients, and educating producers in sustainable land uses (Bryld, 2003).
- Urban agriculture should be officially legalized, with policies enacted that secure access to land for the poorest urban inhabitants (Drescher, 2001).
- Urban agriculture must be institutionalized and managed at the municipal level.
- Context-specific, multi-stakeholder process is essential for sustainable urban agriculture policy development (i.e. Food Policy Councils).

Urban Agriculture: Furthering the Cause of Social Justice and Equity?

"Each of us must accept our ethical and moral responsibility to help ensure the sustainability of human life on earth. We can do this, in part, by supporting farmers who are committed to protecting the natural environment, helping to make ecologically sound food and fiber systems economically viable. But, we must also accept our responsibility to help build food and farming systems that are socially just. Social justice includes employment equity for farmers, farm workers, and others employed in the system. But, social justice also demands that all people have adequate food, clothing, and shelter. Sustainability is a question of environmental integrity and economic viability, but sustainability is also a question of social justice.

~ John Ikerd, Professor Emeritus of Agricultural Economics, University of Missouri, Columbia, MO.

Many people approach and evaluate sustainability through environmental and economic lenses. Less widely appreciated is the role of social justice and equity issues in sustainability and sustainable development practices. Based on Dr. Ikerd's description of social justice with regard to food systems above, how does the picture of urban agriculture we've presented here further the ideal of social justice and equity? Let's examine the selection of issues high on the social justice movement agenda and evaluate the potential remediating impact of urban agriculture as we've described it:

Consumer Rights: the more self-sufficient an urban area, the greater the opportunity for consumers to exercise real choice in their food buying habits and the more access they will have to fresh, affordable,

nutritious foods. Furthermore, the lack of urban agriculture predisposes urban inhabitants to excessive risk in times of food scarcity or crisis (Halwell, 2002).

Labor Rights (Farmers and Farm Workers): In their study of entrepreneurial community gardens, Feenstra et. al. (1999) discovered that community members of all ages gained access to jobs and a wide variety of marketable skills through their participation.

Income Disparity: In large urban areas, low-income households spend a disproportionate amount of their income on food (Smit & Nasr, 1992; Drescher, 2002).

Accessibility: People living near or below the poverty line are often limited to quality, nutritional produce because of physical and economic barriers. Increasing urban agricultural opportunities would significantly increase access and availability to food resources.

Gender Inequality: Feminist scholars like Dolores Hayden have long recognized that contemporary urban plans often discriminate women in a variety of ways (see "What Would the Non-Sexist City Look Like" for an interesting discussion). In many respects, urban agriculture is communal agriculture, a model that scholars generally recognize as more amenable to women (Pothukuchi & Kaufman, 1999). Additionally, women bear a disproportionate amount of the burden of urban poverty that equitable access to urban land for agricultural purposes could significantly alleviate (Drescher, 2002). If planners adequately recognized women as stakeholders in the planning process, it's doubtful urban agriculture would be absent from many planning agendas. Furthermore, as the primary caregivers for a majority of the world's children, women represent a group that would substantially benefit from progress in the realm of urban agriculture planning and policy.

Empowerment: The ability to grow one's own food provides urban dwellers with the ability to make an impact on their own life. This sense of empowerment has been shown to be extremely beneficial in improving long-term health states for both individuals and communities (Israel et. al, 1994). Urban community gardens in particular are beneficial for establishing social networks and building aspects of social capital that contribute to health (Glover, Parry and Shinew, 2005).

Conclusions

Sustainability is a term that is exceedingly difficult to define, especially when considering the complexities of planning land uses. The perennial problem emerges that addressing one issue in a "sustainable" fashion may negate sustainability in another aspect. However, there are certainly practices that are recognized as more sustainable than others. Sustainable practices consume fewer resources, more efficiently, while avoiding externalities that adversely affect the social and economic systems humans depend upon. Planners in a secure regional food system ultimately create and implement land use practices which preserve the ability of the land to produce crops. Conversion of land to urban uses is essentially irreversible and sustainable land use practices must preserve the ability for future generations to farm the land. Furthermore, a community's health is significantly affected by its access to healthy food. Both public health and planning professionals are beginning to understand that our country's obesity epidemic, a form of malnutrition, is largely due to the design of communities we live within (California Department of Health Services, 2006). Building a more sustainable food system means that we must integrate the consideration of food access into every comprehensive plan in the region. Planners are involved in many of the interconnected areas of food systems, from the production, to distribution, to access and waste management of our food. Their involvement with the various aspects of food systems including environmental and natural resources, transportation, open space, water resources and quality, neighborhood revitalization, and public health, positions them to bring about meaningful sustainable change. Therefore, sustainable planning considers the implications of decision-making on food systems and strengthens partnerships between organizations and community leaders who are working for a more sustainable food system. Planning for a more sustainable food system is a cross-disciplinary endeavor requiring collaboration between many stakeholders.

Toward Sustainable Land Use Planning

Recognizing the centrality of local planning involvement in achieving sustainability, a more consistent, thorough application of the established sustainability tools is called for. Urban planners must lead the way. Jepson (2004) notes: "Planning--perhaps more than any other profession--is closely associated with sustainable development in terms of principles and the requirements of professional intervention" and is closely associated with processes crucial in resolving conflicts encountered in implementing sustainability. "For these reasons, the extent and nature of local planning office

involvement in the enactment of sustainable development policies are of essential concern" (230). Planners to move beyond the traditional planning realms of land use and development control toward a holistic, community-focused practice. Based on the strategies put forward in this report, it's clear that planners must examine their approaches to sustainability at the institutional level, examining the cultural along with political barriers to implementing sustainable plans and practices. Here are some ways planners and planning agencies can further these goals:

- Develop sustainable food system assessment strategies.
- Foster through meaningful relationships the growth of grassroots community food groups.
- Recognize that sustainability is a cooperative endeavor requiring development of a multi-level "policy matrix" that promotes rather than undermines local sustainability efforts (Beatley & Manning, 1997).
- Consider expanding the "Three Es" model to better address the complex conflicts facing industrial society. Campbell (1996) suggests that adding the letter "P" for politics and governance, is essential to complete the model of sustainable planning practice.
- Understand the core principles of sustainability and learn about the tools available to execute food system friendly plans.
- Acknowledge the power of planning to promote meaningful dialogue about the role of food systems in regional sustainability (Berke & Conroy, 2000)

Recommendations

Portland is a pioneer in sustainability planning, and their food policy is no exception, as evident in the formation of the Food Policy Council, the Office of Sustainable Development, and the citywide inventory of urban agriculture (Diggable Cities Report, Portland State University). As with any daunting task, there's always more that can be done. Here are our final recommendations for advancing regional food system security through land use planning:

- Strengthen the tax incentives to support farmers (especially food crop farmers).
- Continue to use land use planning, infrastructures, and transportation planning to limit and guide development of non-farm uses in rural areas.
- Provide incentives and easy pathways for new farmers to enter the field.
- Establish a transferable development credit institution that can facilitate the transferring of development credits from agriculturally viable lands to more appropriate development parcels.
- Establish a Right to First Refusal system for measure 37 and 49 claims.
- Advocate for a national policy standard that better coordinates farm programs at the federal level with farmland controls and regulations at the state and local levels.

- Extend new building zoning incentives for floor-area ratio increases (currently in place for Green-roofs) to include food production.
- Create tax incentives for companies looking to establish aquaponic food production in the Portland Metro area.
- Increase funding for Portland Department of Parks and Recreation Community Garden Program, including acquisition of land for expansion in low-income neighborhoods.
- Articulate in comprehensive plans the need to not only preserve agricultural land, but also promote sustainable food systems.

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