

UBC Social Ecological Economic Development Studies (SEEDS) Student Report

**Greening the Development Monster UBC Food Systems Project Scenario 4 –  
Development at UBC**

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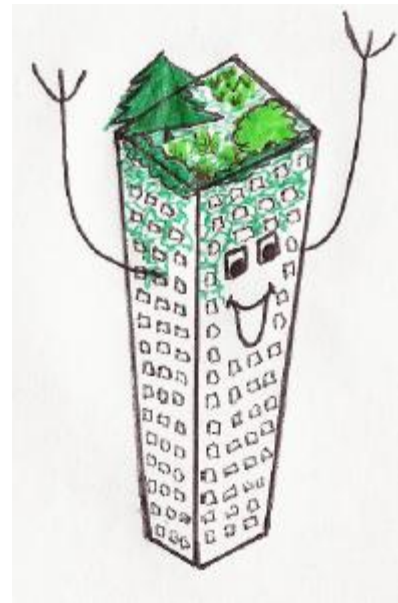
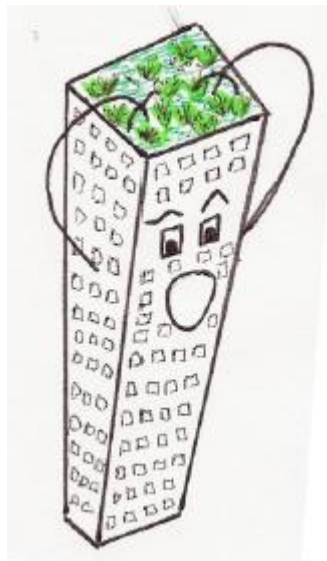
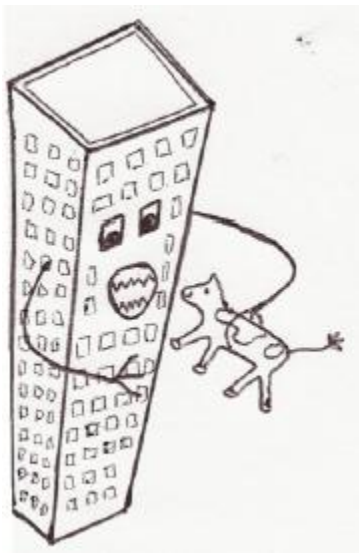
# Greening the Development Monster

UBC Food Systems Project  
Scenario 4 – Development at UBC

April 8, 2005

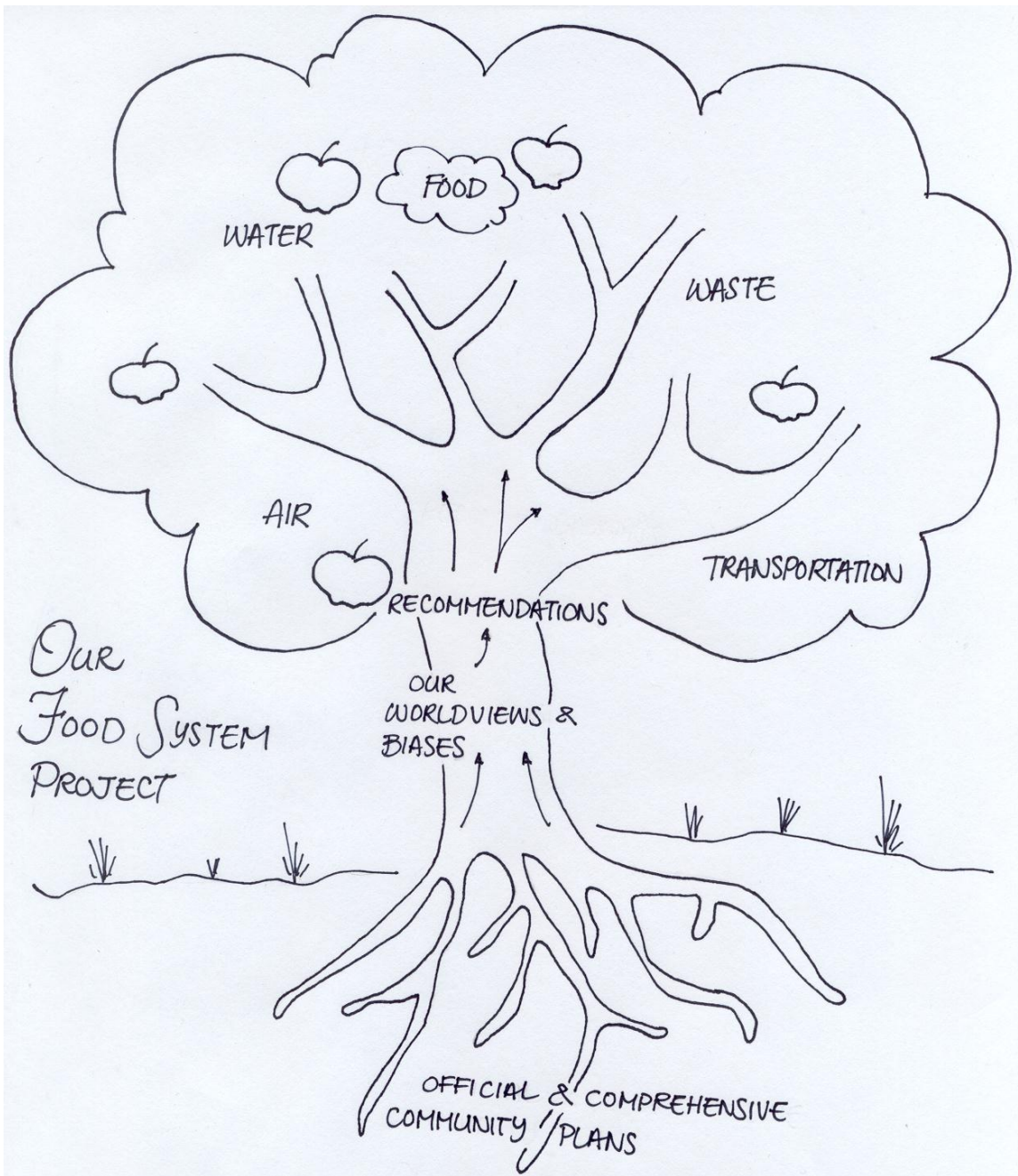
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Our Food System Project looks at UBC's Official and Comprehensive Community Plans. Filtered through our worldviews and biases, we have generated recommendations to include Food as a component of the plans, along with water, air, transportation, and waste management.

## **Abstract**

Our task in the UBC food systems project was to evaluate the effects of campus development on the ability to create and maintain a sustainable food system at UBC. Food security is a major issue around the world and universities such as UBC should be leading the way in developing innovative measures to create food sustainable communities. Because UBC is currently expanding we have the opportunity to model an urban agriculture strategy that can be extrapolated into the global community. The goal of this project is not to promote food self-sufficiency of UBC, rather it is to create awareness and education of the campus community on issues pertaining to food security. Through evaluations of the plans that guide development at UBC, Official Community Plan (OCP) and the Comprehensive Community Plan (CCP), we identified major barriers as well as opportunities that can hinder or enhance food sustainability on campus. We then made amendments to the OCP and the CCP. As a result, we developed a proposal for an urban agricultural strategy at UBC named The Edible Campus. This strategy involved six strategic actions which included a demonstration garden, designated garden areas, green space and open areas, food production on buildings, waste management systems and management considerations. To finalize our project, we made recommendations for next year's AGSC 450 class to investigate further the viability of an urban agriculture strategy at UBC. [REDACTED]

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## **Introduction**

In a world where people are becoming more disconnected from their food system, the issue of food security must take priority. The University of British Columbia (UBC) has the opportunity to lead the way in becoming a model sustainable community. The time has come for UBC to integrate the food system into the current development plans being implemented on campus. According to the Food Agriculture Organization (FAO) food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. The food system at UBC should work towards providing all its members with these basic requirements for survival.

We are part of an ongoing project envisioned by the teaching team of Agricultural Sciences 450 (AGSC 450), UBC Social Ecological Economic Development Studies (SEEDS), UBC Campus Sustainability Office, UBC Food Services, Alma Mater Society (AMS) Food and Beverage Department, UBC Farm, UBC Waste Management, as well as the accumulated knowledge of previous AGSC 450 projects, to assess the feasibility of transitioning to a sustainable food system at UBC.

Our project is divided into two main sections. In the first section, we will present our analysis of the Official Community Plan (OCP) and the Comprehensive Community Plan (CCP) which guide the development process at UBC. Based on this analysis we have proposed amendments to these plans to include food security as a priority. These amendments to the OCP and CCP are discussed in Appendix A and B respectively. The second section includes our recommendations for an Urban Agricultural Strategy to be implemented in the campus planning development process.

## **Problem Definition**

Our main task in the UBC Food System Project 2005 is to investigate whether the current form of urban development being implemented by the university is enhancing or hindering the transition to a sustainable food system. For UBC campus to develop a sustainable food system, food security needs to be an integral part of community planning by way of the OCP and CCP. By failing to address the food needs of campus residents, the community plans are hindering the ability of UBC to make this transition. UBC is in effect distorting the image of a complete community by neglecting the impacts of a non-local food system. There is enormous potential for UBC to bridge the gap between food production and consumption and create a truly integrated and sustainable community on campus. This system would establish strong social relationships between community members and the environment and create a model food system for the broader community. UBC has the potential to create awareness in 40,000 people every year, starting a ripple effect of knowledge and empowerment. Our group believes that the development on campus can co-exist with sustainable initiatives towards UBC's food security.

## **Identification of Value Assumptions**

We acknowledge that our group is biased towards a predominantly anthropocentric ( [REDACTED] ) paradigm due to the nature of our education system and social conditioning. Since food production, is by nature, driven by human needs we are looking at the problem statement through this lens. We also recognize that we are attempting to become more biocentric through thoughts and actions that promote the conservation of our natural resources ( [REDACTED]

[REDACTED] .



## **Vision Statement**

Our group's reflection on the seven guiding principles presented in the Vision Statement and developed by the project partners is of general agreement (Richer 16-17). However, we feel that more emphasis could be placed on educational tools to foster awareness and understanding of the food system throughout the campus community. We also think it is important to include the significance of developing research schemes at UBC in relation to the food system.

## **PART I: Campus Planning Documents and the UBC Food System**

### **Analysis of the Official Community Plan**

The OCP's guidelines, which are open to interpretation, present both barriers and opportunities for the creation of a sustainable food system. The OCP covers conventional community planning thoroughly; it addresses types of buildings, their location and size, along with services, such as sewer, water, electricity, fire and police protection and transportation. It outlines the future direction of the University Community through goals and visions: protecting the green zone, building complete communities, achieving a compact metropolitan area, and increasing transportation choice (OCP 2).

The main problem of the OCP is that it neglects to address food security, a key component of a sustainable community. It needs steps to define and include food as an essential service for the present and future generations at UBC (See Appendix A). Food services such as the AMS will thus have guidance in creating and following their sustainability mandates (Physical Principles for Planning, [REDACTED]).

Another major barrier of the OCP is its failure to adequately define ecological sustainability. It does not address the importance of ecological functions. The planning

process could be enhanced by clear definitions of “food security”, “greenways”, “complete communities”, and a sustainable food system (OCP) (See Appendix A).

The OCP does, however, provide opportunities, such as promoting an auto-restrained community and having greenways that encourage cycling and walking to potential local food sources. The OCP’s vision to provide more public open space, preserve green areas, and heritage landscapes can all aid in building stronger ecological and social sustainability (OCP 4, 11). Perhaps the strongest of these opportunities is the mention that long-term infrastructure and servicing on campus must have a minimal impact on the environment both on and off campus (OCP 21). LEED (Leadership in Energy and Environmental Design) certified buildings will lower the energy needs of the community and reduce its ecological footprint. Water collection and conservation strategies, may in turn be directed towards water recycling for food production, further closing the ecological cycle at UBC.

## **Analysis of the Comprehensive Community Plan**

### *Section 1: Introduction and Section 2: Existing Plans, Policies and Vision*

The CCP is responsible for establishing the principles for detailed neighbourhood planning in the eight local areas designated for development on the UBC campus by the OCP. The documents guiding the CCP process are the OCP, Memorandum of Understanding (MOU), TREK 2000, Principles for Physical Planning at UBC, Strategic Transportation Plan (STP), and the 1992 Main Campus Plan.

Although analysis of all the guiding documents is beyond the scope of this report, it is worthy to note that the eight Principles for Physical Planning, which are the standards against which to measure development on campus, do not make sufficient mention of either sustainability or food security on campus.

### *Section 3: Principles for the Comprehensive Community Plan*

The ‘Principles for Circulation’ are well developed and thorough. The plans to provide primarily underground parking will leave much aboveground area for greening. They “provide for the possibility of neighbourhood convenience commercial in each residential area, in order to reduce travel” (CCP 8), however this was not addressed or evident in the local area plans or the implementation strategies. It is also imperative that the type of commercial food outlet be well defined in the appropriate section to ensure locally owned, environmentally and socially responsible food outlets (See Appendix B).

The ‘Principles for Public Open Space’ incorporate planning for greenways and landscaping along all routes, public spaces and parks, and innovative storm water management and drainage systems, all of which indirectly contribute to a sustainable food system (CCP 12) The section is, however, lacking a direct definition of the ecological functions of green space (See Appendix B). These functions include protecting the physical and biological integrity of the ecosystem, maintaining the natural drainage and hydrology, providing food and habitat, conserving biodiversity, providing buffers to natural habitats and connecting fragmented ecosystems (Rhode Island Division of Planning 3-5).

The ‘Principles for Urban Form’ make ample discussion of community needs and services, ranging from crime management to sustainable technologies for minimizing energy use. However, there is no indication of food-related community needs such as easily accessible food outlets or the potential for urban agriculture to reduce our ecological footprint.

The last two principles (Principle of Timing of Development and Principle for Housing Tenure) were not directly applicable to the task on hand.

*Section 4.0 and 5.0: The Local Area and Strategies for the CCP*

Section 4.0 addresses the development plans of eight local areas consisting of North of Marine, Theological Neighbourhood, Gage South, University Boulevard, Thunderbird, East Campus, Mid-Campus and South Campus. Under each of the local areas, the CCP states different planning objectives, local area principles and density plans to meet the special needs of each individual location. Section 5.0 addresses the strategies employed in the design of UBC communities. These two sections have been integrated into one analysis and set of recommendations because the same principles are addressed in both the local neighbourhood plans and the strategies for community design.

The ‘Strategy for Tree Management’ (section 5.1) recognizes that the removal of trees is inevitable for the development of South Campus. However, the need for development must be balanced with the desire to ensure the “legacy of a healthy forest” (CCP 54) and create a “green urban landscape” (CCP 54). While the goal to retain the total number of trees is laudable, it is clear that development plans in South Campus take priority over ecological issues for example ground-based housing (CCP 54). If housing is more dense and multi-storied, fewer trees will have to be removed to accommodate development. The ecological value of the existing forest on those lands is significant, and housing plans need to accommodate the tremendous contribution of those trees to the local ecosystem.

The plan also mentioned the planting of trees within the newly-built communities in order to balance the number of trees removed with new trees. It is important to include the conditions for tree retention, such as ecological values such as age diversity (CCP, 54).

The ‘Strategy for Servicing’ (section 5.2) anticipates the future challenges of increased water demands and outflow, once development is in place. The proposed biofiltration channel will slow down the flow of water and remove toxic substances, and help to combat the erosion in this area. While several initiatives for reducing UBC’s dependence on the GVRD for water supply were mentioned, this plan addresses the *quantity* but not the *quality* of water outflow. The water flowing out of the University Endowment Lands is not only contaminated with the hydrocarbons associated with heavy car traffic, but also the many chemical pesticides used on property landscaping, that contaminate the water outflow. A plan for reducing chemical landscaping should be considered.

The ‘Strategy for Community Services’ (section 5.3) outlines important services for UBC neighbourhoods. The focus is put on recreational, academic and cultural facilities, but facilities for buying, preparing and enjoying food are not mentioned (CCP, 62). The majority of the neighbourhood plans do not include food outlets or grocery stores (CCP 17-47)

Accessibility of food in campus is crucial and it is suggested that basic shops and services should be within walking distance. This failure to address a community’s food needs contradicts one of the main visions outlined in the OCP and CCP that the campus development will reduce single occupancy vehicle (SOV) traffic to and from the UBC campus (CCP 4). Although more housing is being provided to reduce commuters, a lack of grocery outlets on campus will force people to drive off campus to acquire food.

Another area of concern is the emphasis placed on the relocation of existing agricultural and animal care facilities in South Campus (CCP 63). These operations should be recognized for their potential to be an integral part of the South Campus

community and their potential to provide social and ecological benefits to community members.

The ‘Strategies for Sustainability’ (section 5.4) bases its sustainability principles on intensive use of land, efficient development patterns, reduction of commuting and alternative travel modes on campus. This translates into more sustainable building standards and materials, recycling and treatment of gray and black water, and community planning for reduced SOV use (CCP 66). These building and planning strategies are innovative and have the potential to reduce energy use and waste dramatically. The strategies would be more inclusive of all aspects of sustainability if it were expanded to include the food system and affordability of housing. The density plan for each local area is comprehensive but affordability of housing is not considered. In a sustainable campus, the needs of low-income families and students should be taken into account.

### **Summary of Part I**

The OCP and the CCP are lacking elements that ensure food security on campus, and in doing so, has ( [REDACTED] ) not addressed the needs of a complete community. The urban food system is connected to many other parts of the local and global community in areas such as health, economy, ecology and the agricultural sector making it an important consideration for planners (Howe). One vehicle by which the food system can be incorporated in community planning is through urban agriculture.

[REDACTED]

## **PART II: An Urban Agriculture Strategy for UBC**

### **Our Vision for Planning at UBC**

Our group has chosen to explore the concept of edible landscaping as a vehicle by which development at UBC can be adjusted in order to meet the goal of sustainability. By creating an urban agriculture strategy at UBC which emphasizes edible landscaping, it will entice community members to become involved in their immediate environment and how it connects to the food system. Students and faculty, in particular, can take this stronger connection into their own education and research.

Our urban agriculture strategy at UBC will outline potential benefits and challenges, evaluate sustainability, and propose strategic actions.

#### *Description*

Edible landscaping is the use of vegetation whose products are edible in public spaces for all to enjoy. This can be fruiting varieties of apple, cherry, and plum trees and berry shrubs (SEFC Urban Agriculture Strategy 74). Edible landscaping adds another dimension to the aesthetic and ecological function of green space (SEFC Urban Agriculture Strategy 74). Being able to physically touch and consume nature as part of everyday routines promotes a stronger connection between people and the land in the urban environment.

Community gardens take food production out of the private realm and give all members of the community access to a small piece of land. Growing food not only allows people to work with the soil themselves, but also cultivates a culture around the celebration of food.

Although integration of the food system at into the community planning process presents a challenging task, we have identified five key steps that need to be taken in

order for it to be successful. The first step is to identify all stakeholders and institutions involved, determine how to reflect everyone's interests and needs in the plan, and come to a formal agreement between all contributing parties. The stakeholders who could be involved are elementary and secondary schools, community representatives, UBC, UBC Properties Trust, UBC Campus and Community Planning, UBC Utilities, UBC Architecture and Landscape Architecture, UBC Farm, food service providers, grocery stores, UBC Plant Operations and UBC students (Henney, *pers. comm.*). The second step will be to incorporate environmental concerns, food security and natural resource use into the planning framework, which may involve education and discussion with planners and stakeholder groups (Drescher). In terms of food security, it may be necessary to delineate what types of businesses are allowed into the area. The third step involves providing education and opportunities for urban agriculture. This can include identifying and protecting zones for agriculture, encouraging infrastructure development needed for small-scale agriculture, creating partnerships between individuals, community groups, companies and schools, and developing school and community gardens (Drescher). The fourth step in the process is encouraging multifunctional land use. Agriculture, forestry, education, waste disposal, water treatment, recreation and use of open space can all be achieved through numerous combinations (Deelstra *et al.*). Finally, the last step of the process involves conflict resolution. To accomplish the goal of enhancing urban sustainability, the community must minimize or eliminate conflict between citizens, agriculture and other resource-based activities (Drescher).



## **Cost - Benefit Analysis of Implementing an Urban Agriculture Strategy at UBC**

Implementing an urban agriculture strategy is a complex process. While the benefits are numerous, there are also several obstacles that need to be overcome. Here we will look at the main advantages and disadvantages in creating an urban agriculture strategy at UBC.

### *Ecological Benefits*

**Availability of local products:** Production of food on campus would be a move towards re-localizing the UBC food system.

**Resource use:** Edible landscaping would maximize the use of natural material resources on campus. It would initiate more efficient use of energy, better waste management and establish a more closed nutrient cycle in the area. Composting organic waste and using it as fertilizer in the gardens is the simplest possible way of achieving this (Smit *et al.*).

**Energy and fuel:** It would decrease both the need for community members to go off campus to purchase food, as well as the fuel used in transporting food onto campus. Local production would also decrease the wasteful protective packaging on food (Smit *et al.*).

**Biodiversity:** Urban gardens can serve as refuge for wildlife such as soil organisms, wild plants, insects, birds and amphibians and thereby increase the biodiversity within the city environment (Smit *et al.*).

**Air quality:** Green plants improve air quality through the absorption of green house gases (Stewart).

**Soil and water quality:** Provides permeable land to maintain natural hydrology patterns and retain topsoil.

#### *Economic Benefits*

**Employment and opportunity:** Increases opportunities for student employment on campus and allows for the establishment of small local food-based businesses.

Circulates currency within the local area (Smit *et al.*).

#### *Social Benefits*

**Community awareness and participation:** Enhances awareness of food issues among community members, and creates a stronger and healthier community by increasing opportunities for participation and interaction. A sense of community between people can facilitate further collective action on issues of local importance (Smit *et al.*).

**Nutrition:** Locally produced and harvested food would reduce nutrient loss and decreased freshness that results from the time lag of harvesting, packaging and transportation of produce (Smit *et al.*)

**Sense of stewardship:** Food production restores the city dwellers' connection to nature by instilling a sense of stewardship in farming (Garnett, 1996). This sense of ownership and care for the land gives the farmers a better appreciation of the land's natural processes.

**Aesthetics:** There is potential to improve the aesthetics on campus by greening the area and creating visually appealing gardens for food production.

**Food and Income Security:** Increases proximity to fresh produce, reduces the amount of food that needs to be purchased from outside, and provides opportunities for the sale of produce within the community (Smit *et al.*).

## *Costs and challenges*

**Financial Cost:** Creating usable land in an urban setting is an expensive task, as the land available is often not suitable for food production. Start-up costs include labour, the purchase of tools, equipment, seeds and the development of necessary infrastructure such as storage facilities. There are also the costs associated with the long-term maintenance of gardens, which would require financial stability of those responsible for the project. It is also important to recognize the opportunity costs of business profits that would have been gained from real estate development in the areas set aside for urban agriculture.

**Labour:** Agriculture is highly knowledge-intensive. Staff would have to be employed to provide continuity and stability. Student volunteers would pose a challenge given the seasonal nature of the school year.

**Climate and Location:** Implicit in the urban context of the agriculture strategy is the threat of vandalism to plants, gardens or infrastructure.

**Aesthetics:** By-products of urban agriculture such as weeds, dust and odours may not appeal to some community members at UBC.

**Safety:** Liability issues surrounding the improper handling and storage of food are a major barrier that needs to be overcome prior to implementing urban agriculture at UBC. There is also the risk of falling fruit and slippery, rotten fruit on walkways (SEFC Urban Agriculture Strategy).

**Contamination:** Crops and soils may be contaminated by agrochemicals and heavy metals from non-point sources. This would have to be examined for food safety reasons.

**Competition from larger farms:** The competition from large-scale rural farming may reduce the survival chance of a small-scaled urban agriculture project.

**Stability and security:** Urban agriculture practices need strong land protection acts, in order to ensure land ownership and long term agricultural schemes for the farmers. Otherwise urban agriculture becomes a short term and insecure activity (Smit *et al.*).



## **Strategic Actions**

These strategic actions, in conjunction with UBC Farm, propose to create an ‘edible campus’: demonstration garden, designated garden areas, greenways and open space, food production on buildings, waste management and agriculture and landscaping management considerations.

### *Demonstration garden*

- Establish an urban agriculture demonstration garden that will provide educational opportunities to community groups interested in food production.
- Provide demonstrations for various urban agricultural techniques, such as rooftop production, crop rotation systems, greenhouse production, worm composting, grey water treatment, aquaponics systems and hydroponic production.
- Demonstrate landscaping with native and other edible plants.
- Demonstrate and encourage artistic incorporation of food into the urban landscape to increase acceptance of urban agricultural endeavours.

### *Designated Garden Areas*

- Encourage community organizations, such as UBC food services, AMS food services and campus residences, to establish agricultural gardens.
- Work with school administrators to encourage the development of school gardens to be integrated into the education system.

### *Greenways and Open Space*

- Designate greenways and open space to perform natural ecological functions by planting native species.
- Promote ‘edible landscaping’ by selecting permanent food crops.
- Designate sections of the greenways for community garden use.

### *Food Production in and on Buildings*

- Develop food production systems inside buildings and on rooftops, balconies and window boxes of residences, commons blocks, parkades and apartment buildings by means of gardens, hydroponics or aquaculture.

### *Waste Management*

- Develop a larger-scale grey water recovery system and guidelines for recovered grey water use in landscaping on campus.
- Encourage complete nutrient cycling by providing compost services to all food outlets and buildings in UBC communities.

### *Agricultural and Landscaping Management Considerations*

- Establish a regulating body for the UBC food system. This body will be known as the UBC Food System Authority will have the power to enforce regulations pertaining to urban agriculture health, safety and aesthetic quality.
- Delegate maintenance of permanent crops and non-edible landscaping on greenways and open spaces to Plant Operations.
- Ensure that community groups with urban gardens maintain them to standards developed by the UBC Food System Authorities.
- Encourage commercial and campus food facilities to purchase food from community food production operations and develop marketing strategies for local producers.

## **Conclusion**

Bringing urban agriculture to UBC will be sure to attract much interest and will set an example of what a sustainable campus community can be. Food security is an issue that has been long neglected by planners even though it is integral, if not primary, to

sustainable development. By incorporating tenets for food production and food processing into the development plan at UBC, we are not only making for a more ecologically friendly system but one that has many academic and community benefits as well.

The Food Systems Indicator Model should be modified to include some key indicators so that it can be used to assess the progress of development at UBC. These indicators are: the distance that people must travel to acquire food; the total production of school and community gardens; the number of gardens; the number of students directly involved in food production; and quality of water outflow. There are many more facets other than edible landscaping to be explored, such as enforcing environmental building standards, improving accessibility of community members to food outlets, and regulating the types of food outlets on campus. However, it is beyond the scope of this paper to cover all the topics involved in the integration of the food system into the development process at UBC. Therefore we recommend that future AGSC 450 groups take on these other aspects of the planning process.

As students in the Faculty of Agricultural Sciences, we highly value the role of food system in our lives. Our goal is to bring this message of importance to the greater UBC community, and to bridge the gap between people and food through urban agriculture as a part of community planning. It is our hope that next year's AGSC 450 class has the opportunity to work more closely with UBC Properties Trust and Campus and Community Planning so that a realistic and mutually beneficial plan may be created.

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# Appendix A

## OCP Amendments

### Section 1.0-Introduction, pg1:

- Sustainability and a sustainable food system should be defined with consideration to the fact that it requires the equal fusion of three domains of knowledge and activity –economic, the socio-political and the ecological.

### Section 2.0-Regional Context Statement: Building Complete Communities, pg4:

- The definition of a complete community should include a sustainable food system.
- Food Security needs to be included and defined.

### Section 2.0- Regional Context Statement, pg4:

- Ecological and Community sustainability need to be recognized
- Create an umbrella governing body and would be obligated to follow the sustainable vision of UBC. Their goal would be to ensure that the food system is secure and sustainable

### Section 3.2- Vision: Goals of a Responsible Community, pg8:

- A Responsible Community needs to be outlined to include sustainability
- Food should be recognized as a service and as part of the ecological system of UBC.
- Should include designated garden areas on rooftops, greenways and schools for food production to aid in the creation of a sustainable food system.

### Section 4.1.1-4-Land use: Green Areas, pg11:

- Food sources should be part of research (UBC Farm).
- Greenways, open spaces, green edges and green areas all need to be defined for area and function.
- Should include designated garden areas for food production to support community supported agriculture (CSA).

### Section 4.1.17-20-Land use: Neighbourhoods-University Commercial, UBC Academic Core and Village Centre, pg 14-17:

- Stores must be sustainable as per definition, locally owned, community oriented and equitable.
- Should include designated garden areas for food production to support CSA

### Section 4.3.1-2-Long-term Land use: Social and Community Services, pg21-22:

- Long-term land use planning should include all provisions for a sustainable community and continue with developing and planning a secure, sustainable food system at UBC.

## **Appendix B**

### **CCP Amendments**

Section 3.2.2-Principles for Greenways and Pathways, pg 12:

- Greenways must protect and enhance ecological functions

Section 3.2.5 Sustainability Principles for Open Space, pg 13:

- Create amenities for food production in public open spaces
- Plant native edible species (and suitable non-native edible species if limitations present) wherever appropriate
- Creation of a governing body to manage open spaces
- Nutrient cycling must be considered in planning of open spaces

Section 3.3.2 Principles for Diversity of Use, pg 14:

- A certain amount of area should be allocated for growing and processing food and for performing ecological functions

Section 4.1-9-The Local Areas, pg 17-47:

- Planning should provide affordable housing types throughout the campus for people of all socio-economic, cultural and household groups
- Development restrictions for tree retention and vegetation to preserve natural habitats

Section 5.3 Strategy for Community Service, pg 62-65:

- UBC farm must be incorporated into the sustainable food system
- The governing body will outline the food outlets established in the community.

Section 5.4 Strategy for Sustainability, pg 66:

- The definition of a sustainable food system must be ecologically and socially responsible, healthy, culturally appropriate, affordable and easily accessible.
- UBC farm must be preserved as it is an integral part of the sustainable food system
- Must develop an urban agricultural strategy and include it in all future development plans on campus.
- Extends the definition of 'green space' to rooftops.