

UBC FOOD SYSTEM RESEARCH PROPOSAL

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AGSC 450

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“ I SEEK TO FIND OUT ABOUT MY WORLD SUCH THAT I CAN TAKE AN INFORMED ACTION IN IT. THE PROCESS OF LEARNING IS A SYNTHESIS OF FINDING OUT AND TAKING ACTION”

RICHARD BAWDEN

TABLE OF CONTENTS:

ABSTRACT 3

INTRODUCTION 3

VALUES ASSUMPTIONS 4

UBC FOOD SYSTEM: MAP OF BOUNDARIES 5

MODEL OF UBC FOOD SYSTEM 8

INDICATORS AND EVALUTION METHOD

SOCIAL PERSPECTIVE 9

ECOLOGICAL PERSPECTIVE 12

ECONOMICAL PERSPECTIVE 15

RECOMMENDATIONS 17

CONCLUSION 19

APPENDIX 1 20

APPENDIX 2 21

REFERENCES 22

ABSTRACT:

It is paramount for a food system to be sustainable: meet the demand of the present but not compromising the resources for future generations. Food security is a core part of a sustainable food system and should be used as an indicator to evaluate the current state of the UBC Food system. As a working team of AGSC 450, our role is to design a model to assess the sustainable state of the UBC food system, emphasizing on the lack of “food security” existing and how we achieve it through analysis of various components of the land, food, and community. We have chosen two indicators to be measured for each social, ecological, and economical perspective in the evaluation of the sustainability of the UBC food system. As such, these indicators will help to guide future AGSC students in assessing the state of sustainability of our food system and help make recommendations to strive for our proposed goal.

INTRODUCTION:

Our group defines food security as everyone, at all times, having easy access to safe, nutritious, and affordable food produced in a long-term socially, economically, and ecologically viable manner [REDACTED]. After reviewing numerous literatures about food system sustainability and the 2002 UBC Food System Project, we conclude that that a lack of food security is the major issue confronting the UBC food system. This problem indicates a need for action. We evaluate the UBC food system at two extremes: “unsustainable” to “sustainable”, with intermediate stages along a continuum. In order to progress towards a sustainable food system, we need to achieve food security. Food insecurity defines our current state of the UBC food system as being “unsustainable”, whereas attaining food security would define it as being “sustainable”. The intermediate stages to our continuum will be discussed further in context of various aspects of food security later on in this paper.

Our vision of a prospective sustainable food system corresponds with the goal of the Sustainable Development Policy of UBC: “develop an environmentally responsible campus community that is economically viable and reflects the values of campus community members.” Our analysis of a sustainable UBC food system concentrates on three aspects: social, economic, and ecological. A food system encompasses a cyclic ecological nature of production, consumption, and recycled concomitant with interaction with the entire UBC community in a social and economic context. Social issues raised from the UBC food system involve lack of nutritious choices, lack of institutional support, and lack of awareness and education. Ecological issues include local food production, organic farming and waste management. The economic aspect to be examined is a balance of food pricing and operational cost of the food outlets.

VALUE ASSUMPTIONS

In evaluating how we see fit the infrastructure and stability of the UBC food system, our group took the opportunity to conduct a discussion forum to determine our individual paradigms of a “sustainable” system. In debating whether our system should favour an ecocentric or anthropocentric view, our analysis concluded with the majority agreeing that ‘weak anthropocentrism’ is ideally how the UBC food system can become sustainable. “It is natural for humans to value other humans more highly than the rest of nature; however, that human survival and well-being depends on the health of our whole ecological support system.” (W.H. Murdy, 1993).” It is our consensus that basic human needs must first be fulfilled before we can look towards an ecocentric, community-based paradigm for our “ideal” system. Although human nutrition is our primary focus, we understand the importance of environmental factors, such

as food waste management, in attaining a sustainable infrastructure. It goes without question: attaining ecological sustainability will only further benefit and enhance social (humanity) stability.


In further driving towards “food sustainability”, we felt the importance of the boundaries of the UBC food system to become more community-orientated and less individualistic. The ideology of being united and bringing individuals closer together will further promote social stability and eliminate vulnerability to outside factors (social/economical/ecological) that could imbalance the entire food system. Our objective in establishing food sustainability within the infrastructure of the UBC food system focuses on the importance of measuring social, economical, and ecological indicators. It is our strong belief that “food sustainability” can only be achieved with an equal balance of all three categorical indicators. It is important to focus and work towards strengthening the weakest factor of the system first, keeping in mind not to negatively impacting other sectors currently standing in a stable condition. In moving towards a sustainable UBC food system, we feel it is important to focus on improving social and ecological stability, with emphasis on human nutrition and waste management, without disrupting any economical factors.

UBC FOOD SYSTEM: MAP

Our definition of the UBC Food System has been represented pictorially in Figure 1. The map can be viewed by dividing the system into four boundaries: global, national, regional and local boundary. Within each boundary, there are components that interact with each other, as well with components in the other boundaries, all to meet the system’s overall goals. Within the global boundary, the USA, Central America and Thailand are examples of components contributing to the UBC food system. For instance, tomatoes

used by UBC food outlets are grown and imported from California. The national boundary represents the nation of Canada, indicating that foods from other provinces are also distributed on campus (i.e. Canola Oil). The regional boundary, distinguished as the Greater Vancouver Regional District (GVRD) encloses components such as local grocery stores (Safeway), bakery shops, UBC farm and the University village. As for the local boundary, identified by the UBC gates, we have identified six main components: UBC Food Services, AMS, Natural Foods Coop, SEEDS, UBC Sustainability Office and UBC Waste Management Office.

Due to the complexity of the interactions between these components, we found it difficult to depict all of them on the map. However, an example of an interaction between components within the UBC boundary has been represented using black arrows. (Wastes from AMS, UBC Food Services, Natural Foods Coop and UBC Farm are taken to the UBC's Waste Management).



SEEDS (Social, Ecological, Economic Developmental Studies) and the UBC Sustainability Office co-ordinate the interactions between all these components in order to meet the goals of the UBC food system: instill sustainable development values in the UBC community and promote sustainable development practices among them.

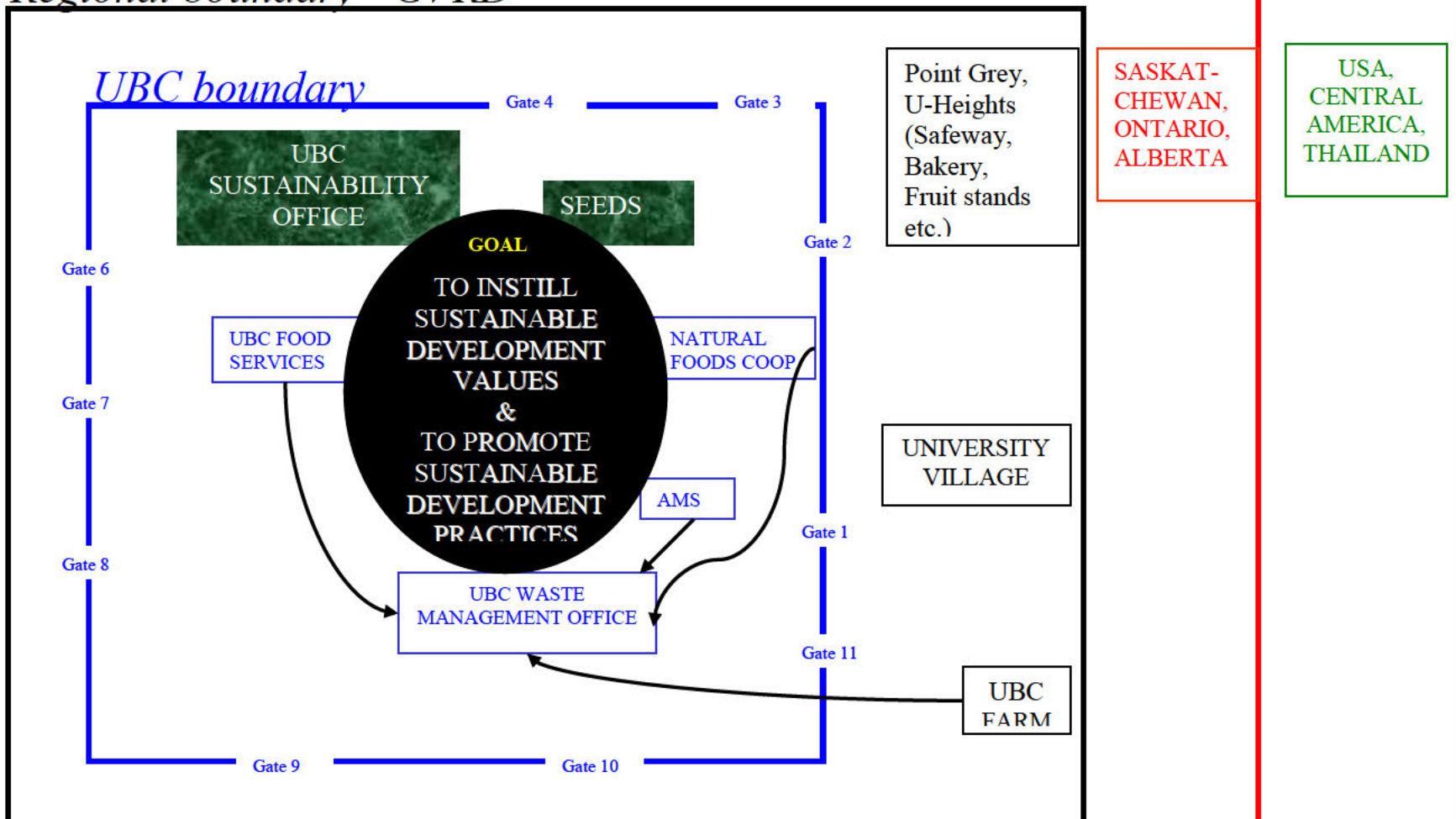
Fig. 1: MAP OF UBC'S FOOD SYSTEM

Global boundary

National boundary - Canada

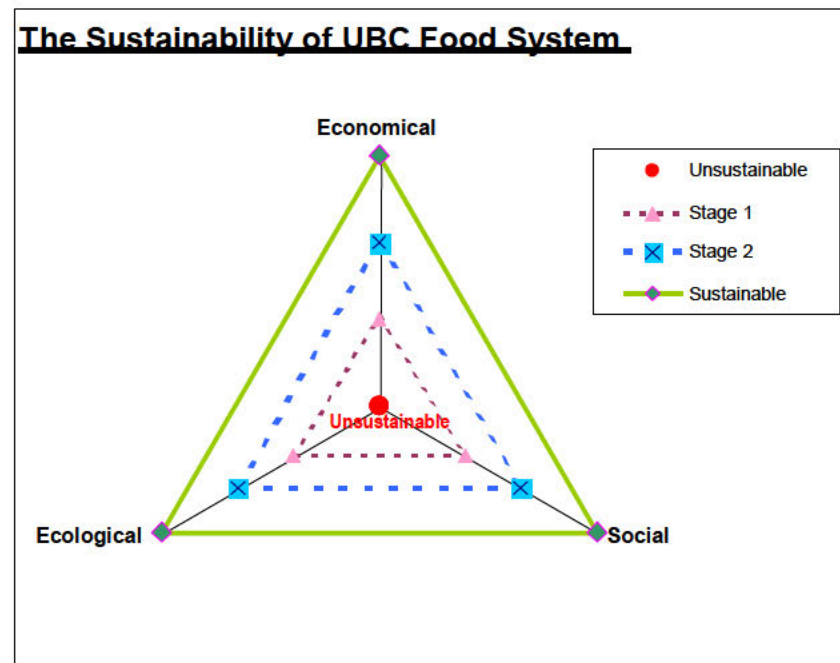
Regional boundary - GVRD

UBC boundary



UBC FOOD SYSTEM: DESIGNED MODEL

MODEL OF UBC FOOD SYSTEM:



The following is a theoretical triangular model composed by our group, visualizing a sustainable UBC Food System. The perimeter of the equilateral triangle (green) is a representation of the food system in a sustainable state ecologically, economically, and

SOCIAL PERSPECTIVES

Indicator 1 - Lack of awareness/participation in UBC Food System

Social sustainability is defined as a “food system in which accurate knowledge about the food system is easily accessible and widely distributed, and people have the resources and ability to communicate that knowledge” (Kloppenburger et al 2000). We believe the social sustainability of the UBC food system requires the active involvement of students from all faculties of UBC. If students are unaware of the issues surrounding sustainability, they will be unable to assist in the movement towards sustainability. From researching last year’s food systems projects, we noted that social awareness appeared frequently as an underlining problem of social sustainability (2002 UBC Food System Projects). The number of students aware and actively involved in the various components of the food system at UBC is one social indicator we have chosen to measure in assessing the starting point of awareness.

Methodology

The evaluation method of measuring our chosen indicator would be through the collection of data by surveying and illustrating trends noted from last year’s projects of the lack of awareness and participation in the UBC food system. The survey would be issued in a randomized fashion to students by the following AGSC 450 class. Information collected from this survey would set a basis for SEEDS [REDACTED] to assess and make changes towards increasing awareness over a period of time. Due to a lack of numerical data available now, SEEDS would work with

students to quantitatively set the continuum values based on the initial assessment values. Surveys would be issued biannually in September and January in order to assess changing views of students in the same academic year. On the continuum towards social sustainability, we expect to see a 50% increase in awareness heading towards a majority of students involved in the sustainability of the food system.

Indicator 2 - Lack of nutritional choices

The second social indicator to be measured would be the number of average meals available on campus that meet nutritional recommendations. These recommendations include nutritionally balanced meals with no more than 30% of calories from fat, 55% from carbohydrates (focusing on whole grains/enriched products/less simple sugars) and 15% from protein (meat or vegetable based sources). Three of the students in our group are majoring in dietetics and as such are food experts. We feel that there is a lack of healthy nutritious food choices on campus. The groups evaluating different food outlets last year also indicated this as a problem. Nutrition plays a role in our definition of food security, and thus we feel that students should have access to healthy foods within the

defined boundaries of the UBC food system. Knowing that some students may not always want nutritious foods, we do acknowledge that there are fast food outlets within our UBC boundaries offering food alternatives to satisfy their needs.

Methodology

Our indicator will be measured by conducting nutritional analysis on selected menu items as a starting point in implementing changes to current recipes and menu items. Third or fourth year dietetic students using the Food Smart 5 program in the MacMillan computer lab would be able to complete this analysis. Nutritional analysis would include caloric content, total fat, protein and carbohydrate content, including sugars and dietary fiber. Surveys would also be carried out on food outlets in order to determine the number of items available that are nutritionally balanced. Gathered information from both studies would be forwarded to all food producers, including AMS and UBC food services. Nutritional analysis and surveys would be completed annually and it is expected that with changes to recipes and incorporating more nutritious menu items, food service outlets would move away from empty calorie foods and progress towards sustainable nutritious choices with appropriate nutrient breakdowns. We expect to see an increase in the number of nutritionally balanced meals to increase by 25% in the intermediate stage, and 50% when socially sustainable.

ECOLOGICAL PERSPECTIVES

Indicator 3 – Use of non-local food sources

The sustainability of UBC food system relies on the amount of food produced locally versus importing food in from global, national and regional sources. Currently, UBC food services and AMS rely on large orders of food to produce an average of 7,000 full meals a day (www.foodserve.ubc.ca) [REDACTED] These orders do not include or incorporate any food sources from the UBC farm and/or is minimally purchased from local producers. Ecological sustainability, “a food system in which the health of the environment is sustained and enhanced for use by all beings and by future generations” (Kloppenburger et al 2000), can only be attained when the percent of all locally produced goods is solely distributed within the UBC food system. This is our chosen indicator to be measured.

Methodology

The evaluation method used to determine the percent of locally produced goods distributed within the UBC food system would be to interview UBC food outlets and the UBC farm, gathering statistical analysis to calculate the percentage of food purchased/distributed from the local region (UBC Farm) to the food outlets. AGSC 450 students would carry out these interviews and perform statistical analysis annually. The information would then be forwarded to the Sustainability Office, where they would assist in determining the numerical increase expected from the base year. On the continuum towards ecological sustainability it is expected that there will be a significant increase (50%) in the amount of food produced and used from the farm. Ideally, ecological sustainability

would be achieved when 100% of farm products are used by the food outlets, coupled with 25% of food distributed to UBC food outlets be produced locally, thus moving UBC away from national and global dependence.

Indicator 4 – Limited Access to Waste Management Facilities

To completely understand the health of a system, measurements must be taken of both inputs and outputs. While we think it is important to insure the reduction of inputs through the use of locally produced food, we also think it is important to consider our outputs by looking at creating a fully sustainable waste management facility that encourages maximum participation from all members of the UBC community. For the purpose of our model, waste is defined as the outputs from the production and consumption of consumer goods: recyclable products, such as cans, bottles and compostable organic matter. Waste plays an enormous role in any food system. According to UBC Waste Management, 70% of the waste produced at UBC is made up compostable materials, equaling approximately 1900 tones (<http://www.recycle.ubc.ca>) [REDACTED] [REDACTED] This entire amount is not all produced within the UBC food system, but a significant percentage is. Therefore, any model used to measure sustainability must use an indicator to measure how and to what degree the waste management system is used.

Methodology

We will use the number of various types of waste management facilities on campus as an indicator to measure the sustainability of our food system. It is our understanding that currently, there are diverse systems of waste management in place, such

as blue bin recycling for paper and cans, and composting for some of the food outlets. As a whole, we feel that the UBC Waste Management system lacks continuity, accessibility and overall efficiency. We currently have no adequate composting system, recycling is underused and there is an excessive amount of waste production. While we understand that UBC Waste Management is undergoing an extensive campaign for the renewal and expansion of its facilities, we would like to make suggestions and propose a time line that works in conjunction with the existing plans (<http://www.recycle.ubc.ca>). Following the guidelines outlined in the UBC Waste Management Annual Report, we agree with the target of increasing blue bins and implementing large scale, in-vessel composting services and support their recommendations for increased access for the UBC community. As such we would like to propose that by midpoint on our continuum, blue bins must be available on at least one floor at all faculty buildings/food outlets/residences within the boundaries of UBC Food System and composting facilities available to every food outlet on campus. At this stage, we have focused on food outlets and not general buildings because of their large production of organic waste. As an end goal we would like to have blue bins available in every room and composting facilities at all faculty buildings, food outlets and residences. Finally, we encourage UBC Waste Management's goal to increase education and awareness about reducing the amount of waste each individual produces and suggest that further information can be gathered through surveys and data collection with the help of AGSC students.

ECONOMIC PERSPECTIVES:

Indicator 5: Cost of food within UBC Boundary

In our third set of indicators we will look at the economic pillar of sustainability and how we believe it relates to the UBC Food System. Because the food system is consumer based, economics plays an important role in determining what and how changes should be implemented. One of the primary concerns we found when looking at the economic sustainability of the UBC Food System is that from our perspectives as consumers, we feel that most food items available within UBC boundary are quite expensive and not in balance with a student's budget. Therefore, we have chosen, as an economic indicator, the percentage of affordable meals available within our boundaries that are reasonably sized and nutritious. We believe this indicator will provide an accurate account of how accessible the food system is economically to the UBC community.

Methodology

There are three components to our chosen indicator: size, nutrition, and affordability. Before establishing our method of evaluation we must first clarify size and nutrition. For the first two, we look to the Canadian Food Guide to Healthy Eating (www.hc-sc.gc.ca/hpfb-dgpsa/onpp-bppn/food_guide_rainbow_e.html), which offers a variety of combinations covering all dietary needs. The third component, affordability, is our largest variable and will be determined by a series of questionnaires and surveys given to students and staff about their own willingness to pay for meals as compared with market price. AGSC students, under the guidance of the

Sustainability Office, will conduct these surveys on a regular basis but at varying times in the semester to follow economic changes. As well, we encourage that a survey be conducted at every stage along the continuum. At the midpoint on the continuum of sustainability, we propose that 50% of all meals offered on campus must be within the target range established by the surveys and community response. At the final stage we suggest that 75% of all meals must be within the target range in order to maintain economic sustainability.

Indicator 6: Operational costs of food outlets within UBC boundary

Finally, we will look at the economic management of the UBC Food System and propose a method of measurement with which economic sustainability can be achieved. From our initial research, we understand that many of the food outlets on campus, particularly those of UBC Food Services, do not operate at profit, thereby making their operation unsustainable (2002 UBC Food System Projects). According to Kloppenburg, “a [economically] sustainable food system is one in which local farmers and area businesses are profitable, capable of supporting a good standard of living for workers, their households, and the community in general” (2000). Working with that definition for economic sustainability, we believe by recognizing that the food outlets on UBC are part of a greater entity, we can in fact make them profitable and sustainable if all components are balanced.

Methodology:

We have proposed the use of a cost-benefit analysis, which will incorporate a more extensive understanding of costs, such as those that pertain to the environment and society. As well, we will look at the willingness of the UBC food system sectors to reinvest their profit for further development of sustainable practices. Our evaluation method will invite participation from the Food and Resource Economic students to complete an analysis of financial reports, as well, conduct in depth interviews with various food service managers. Using management's figures and interests, the students will attempt to construct a timeline for the UBC food system to renegotiate its costs and profits while incorporating all other components of the model for sustainability that we have proposed. Along the continuum of sustainability, we recommend the goal of lowering operational costs to equal those of market price, and eventually have operational costs lower than market price. We believe that by focusing on local resources, creating an efficient waste management system, and promoting healthy/cost-effective meals, we can in fact lower costs and make the whole food system economically sustainable.

RECOMMENDATION:

- ✓ Conduct surveys of university students on their willingness to pay for a regular-sized meal and how it differs from what they are paying now
- ✓ Perform a nutritional analysis of various/typical meals offered at UBC food service outlets and assess the nutritional content to determine how it differs from the recommendations of the Canadian Food Guide

- ✓ Collect data on food products that are produced locally & globally to determine UBC food system's dependency on imported foods
- ✓ Conduct a survey of how many food service outlets are recycling and composting their wastes: Count the number of composting bins available to these food service outlets
- ✓ Interview managers/owners of UBC Food Service outlets on their thoughts of sustainability to determine which areas need improvement
- ✓ Collect information and data on the costs/profits of UBC Food Services: Conduct a cost-benefit analyses to determine where costs can be lowered and how that can be passed on to the students
- ✓ Develop a program that links UBC Food Services, UBC Farm, SEEDS, UBC Sustainability Office, producers, and consumers together in exchanging information on UBC Food System
- ✓ Conduct surveys/interviews of university students, UBC Food Service workers, and faculties to determine where the sustainability of UBC Food System stands and use that information as a starting point to conduct further research in subsequent years

CONCLUSION:

Our idealistic goal of attaining a sustainable UBC food system concentrates on improving the “local”. We understand that the sustainability of a food system can only be achieved when an equal balance exists between social, ecological, and economical indicators. In development of our model, we chose indicators we felt, as a team, are the most important to be addressed in driving towards sustainability. In following the food security definition mentioned in our introduction, we chose to focus on accessibility and food production as a means of achieving sustainability. From the indicators chosen, we have promoted accessibility through increased nutrition levels, awareness of the food system and low cost to consumers. Likewise, food production has been promoted through efficient waste management, greater emphasis on locality of food source and decreased operational cost. We certainly understand that these are not the only indicators to be measured, but rather are key ones that will allow us to strive towards a sustainable food system. We also understand that addressing one indicator can either positively or negatively impact another indicator, furthering the system from achieving sustainability. We feel that our chosen indicators address causes as well as effects, and we believe they are relevant, understandable, and useable by the UBC community.

APPENDIX 1: THE CONTINUUM OF SUSTAINABLE INDICATORS FOR UBC FOOD SYSTEM

APPENDIX 2: INDICATORS AND EVALUATION METHOD FOR UBC FOOD SYSTEM MODEL

	Unsustainable	Intermediate Stage 1	Intermediate Stage 2	Sustainable
Social	1. Lack of awareness of and participation in UBC food system	50% increase in students' awareness and participation in UBC food system	100% increase in students' awareness and participation in UBC food system	Interactions of community with the food system
	2. Lack of nutritious choices	25% increase in number of nutritionally balanced meals	50% increase in number of nutritionally balanced meals	Variety of food choices and nutritionally balanced meal
Ecological	3. Use of non-local food sources	50 % produce from UBC farm are used within UBC food system	100 % produce from UBC farm are used within UBC food system; 25% of food at UBC food outlets are locally produced.	Use of local food sources and food from UBC farm
	4. Limited access to waste management facilities	Blue bins in all buildings and composting facilities at all food outlets	Blue bins in all rooms and composting facilities at all faculty buildings, food outlets and residences	Easy access to waste management facilities
Economic	5. High food price for consumers	25% of all meals must be within target range	75% of all meals must be within target range	Affordable meal
	6. Operational cost higher than market price	50% of the food items at selected food service has cost equal to market price	50% of the food items at selected food service has cost equal to market price plus another 50% lower than market price	Operational cost equal to or lower than market price

Perspective	Issue	Indicator	Evaluation Method	Evaluator
Social	1. Lack of awareness of and participation in UBC food system	Number of students aware of and participate in various components of UBC food system	Survey	AGSC 450 students and SEEDS
	2. Lack of nutritious choices	Number of nutritionally balanced meals	Nutritional analysis	3 rd /4 th year dietetic students
Ecological	3. Use of non-local food sources	% of goods produced locally or from the UBC farm	Interview and statistical analysis of UBC food outlets and UBC farm	AGSC 450 students and sustainability office
	4. Limited access to waste management facilities	Number of waste management facilities available	Survey	AGSC 450 students and UBC waste management
Economic	5. High food price for consumers	% of affordable meal that is reasonably sized and nutritious	Questionnaires and surveys	AGSC 450 students and sustainability office
	6. Operational cost higher than market price	Cost-benefit analysis of operational costs; willingness for reinvestments of profit for sustainable practice	Financial analysis and interview with food service managers	Food and Resource Economic students

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Canada's Food Guide to Healthy Eating

www.hc-sc.gc.ca/hpfb-dgpsa/onpp-bppn/food_guide_rainbow_e.html

European Union Food Security Policy: <http://europa.eu.int/comm/development/recueil/en/en08/en081.htm>

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Rome Declaration on World Food Security:

http://www.brown.edu/Departments/World_Hunger_Program/hungerweb/HN/Articles/WFS/ROMEFIN.htm

Vaughn, A., 1999. "The Food Indicators Toolkit: The Toolkit to develop local food indicators." London: SAFE Alliance.

UBC Campus Sustainability Office and SEEDS

<http://www.sustain.ubc.ca/>

UBC Food Services

www.foodserve.ubc.ca

UBC Waste Management Annual Report

<http://www.recycle.ubc.ca>

2002 UBC Food System Projects (Groups 10, 12, 16)

http://www.webct.ubc.ca/SCRIPT/agsc_450/scripts/serve_home