UBC Social Ecological Economic Development Studies (SEEDS) Student Report

Assessing the Sustainability of the University of British Columbia Food System

Mary Au-Yeung, Johan Coosemans, Mike Hanna, Marisa Kung, Ji Hee (Jessica) Nam, Maysoon Ramadan, Jyoti Tronson

University of British Columbia

AGSC 450

April 2, 2003

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AGSC 450 Group 4:
Mary Au-Yeung
Johan Coosemans
Mike Hanna

Marisa Kung
Ji Hee (Jessica) Nam
Maysoon Ramadan
Jyoti Tronson
Wednesday, April 2, 2003

Abstract

The UBC community is made up of over thirty thousand people with an elaborate food system made up of four sub-systems. Each sub-system of the UBC Food System is made up of many components. In order to assess the sustainability of the UBC Food System, the UBC Food System was mapped, underlying value assumptions were defined, indicators were proposed, and a model was designed. Assessing the sustainability of the UBC Food System is complex and involves not only the sub-systems of the UBC Food System, but the Sustainability Office of UBC and the whole UBC community as well. [redacted]

Introduction

The Food System of the University of British Columbia (UBC) faces many challenges towards achieving ecological, social, and economic sustainability. The UBC Food System includes UBC Food Services (UBCFS), AMS Food Service(AMSFS), UBC Farm, and the UBC International Village ***(*** [redacted] ***)***. Each has its own objectives and an independent agenda. However, the common theme within the UBC Food System is that they mainly follow a *strong* anthropocentric view where profitability is the main goal and sustainability is ignored. Although the majority of profits are returned to the community, it is not done in a sustainable way. Many problems, including food insecurity, food traveling long distances, large amounts of processed food and waste, exist within the UBC Food System.

The UBC Food System

UBC, situated in the Point Grey area of Vancouver, is one of the premier universities of Canada. UBC has approximately thirty thousand students, faculty and staff members. Therefore, the university must have a large food services program to supply the campus' nutritional requirements. As mentioned earlier, the **UBC Food System can be broken down** [redacted]

[redacted]. into four main categories: UBC Food Services, AMS Food Services, the UBC International Village, and the UBC Farm (see Appendix 1) [redacted] Each of the components plays a vital role in campus nutrition and through the following discussions, a brief overview of each component will be given [redacted] .

UBC Food Services

UBC Food Services is a monopoly controlling all food services on the campus community outside of the Student Union Building (SUB), including all the residential cafeterias. UBCFS states that it "will promote and support the University and greater community by providing good food, friendly service and value, while maintaining financial integrity through dedicated and skilled employees. Throughout the campus at UBC, our food service outlets are strategically located so you can access good food, quality service in a pleasant environment whenever you want,"(UBC Food Services, 1997). UBCFS is independently run and is profit-oriented with most of its outlets receiving supplies from one of a set of franchisers, including Starbucks, The Bread Garden, Tazo Tea, Coca-Cola, Dairyland, Campbell's soup and Pizza Pizza. **As such, there is a limited ability to increase the sustainability of the food supply,** [redacted]***)*** and limited ability for UBC Farm to supply base products to UBC Food Services; however, the opportunity may exist to provide some value added products ([redacted] Also, due to UBCFS's strong ties to franchises, there is little ability to increase sustainability through reductions in distance traveled by the food supply and source of the food supply because the food sources are often set by the franchise to provide cost savings.

UBCFS is promoting sustainability through waste reduction programs like providing discounts for people who provide their own containers like coffee mugs. There are also

recycling bins located in all the cafeterias and they promote waste reduction by only producing limited amounts of food at any one time. Unfortunately, they do not provide healthy food at reasonable prices when compared to the unhealthy alternative [redacted] Products like fruits cups and salads have historically been priced at levels that are above that of the unhealthy alternative.

AMS Food Services

AMS stands for Alma Mater Society, which each UBC student is a part of. It was established in 1915, as a nonprofit student society of UBC, whose mission is to improve the educational, personal and social lives of each and every member. AMSFS is run by the AMS and 100% of their profits go back to the AMS. AMSFS includes all of the restaurant and food service outlets in the SUB such as Pie R Squared, Snack Attack, Blue Chip Cookies, the Pendulum, and the Pit. The profit goes to AMS services such as Speakeasy, Safewalk, Joblink, Volunteer Services and the Advocacy Office.

The UBC International Village

The UBC International Village, also known as the Village, is located just outside of UBC's official boundaries, with many different food outlets designed to service the UBC community. The Village has no direct ties to either, UBCFS or the AMS Food Services and does not function as a collective entity. Rather, many independent owners and franchises (such as McDonald's) run the UBC International Village. Their food sources vary depending on the type of restaurants, with some business like McDonald's collecting their products from nation-wide distributors, while other gather products from the best sources available to them. The Village provides competition for other food suppliers on campus and may in fact cause food pricing on campus to be more competitive than would otherwise be the norm.

The UBC Farm

"The UBC Farm is a student-driven initiative to retain and re-create existing farm and forest lands at the University of British Columbia into an internationally significant centre for sustainable agriculture, forestry and food systems" (**Who Are We, What are We, 2003** [redacted] Its philosophy is "to provide academic and practical leadership in the areas of agro-ecological design, community planning and development in a manner that benefits past, present and future community members, be they citizens, planners, designers, developers, managers, leaders or farmers," (Philosophy, 2003).

The main goal of the UBC Farm is education, and "[providing] academic and practical leadership in the areas of agro-ecological design, community planning and development" (Philosophy, 2003 [redacted]). The 40-hectare plot, which will remain in farm production, offers many opportunities to provide work experience for agricultural science students, education to the UBC community and greater public, and food production within the UBC community. At the present time, the farm does not have the means to supply all but a small fraction of UBC needs. **One of the goals of sustainable food production is reduced transport cost. An issue to examine in the future is to find out how much food UBC needs to produce to counteract the long distances currently traveled by other food sources.** [redacted]

At this point in time, UBC Farm supplies fresh products to the UBC campus community and greater area of Vancouver through farmers' markets, which run through its growing season. UBC Farm provides fresh eggs, fruits and vegetables. While the existing farm initiative is still in its infancy, the market garden is heading into its third year, and has proven to be successful.

In the future, UBC Farm plans ***(UBC Farm plans or UBC Comprehensive Community Plan?*** [redacted] to develop a community which will integrate housing for five thousand people, stores and a five hundred student capacity school into

the farm community. This will provide a demonstration of how urban and rural land uses can be integrated within a community. The sustainable community will use the latest development techniques including water capture, surface water retention, nutrient capture, and nutrient cycling for use as an educational show case for the agricultural sciences faculty. [redacted]

Current Problems in the UBC Food System

Current problems within the UBC Food System surrounds issues of food insecurity, inadequate food choices offered, time and distance of food transportation to the campus, waste management, lack of education and involvement of UBC farm, and economic viability.

A Campus Sustainability Office (CSO) at UBC has been set up to increase awareness and to achieve campus sustainability. The CSO runs programs such as SEEDS (Social, Ecological, Economic Development Studies) that incorporates students, faculty, and staff in projects that address sustainability issues. However, the CSO has yet to address food sustainability. Food sustainability is an important aspect in addressing the overall sustainability of UBC. This can be seen by some of the issues identified by the UBC Food System Project of 2002:

- There is an overall lack of food security regarding affordability, availability, accessibility, and appropriateness of food choices offered by both UBCFS and AMSFS. There is a lack of emphasis on the students' needs; students feel that the food services lack wide enough variety of food items although the university consists of various ethnicity. Also, there is inadequate variety of nutritious food items offered by UBC residences (AGSC 450, Antonelli et al., 2002[redacted]

- Most of food supplies for UBCFS and AMSFS travel long distances and the UBC Food System depends heavily on large corporations such as Serca [redacted] as food suppliers.
- ***According to findings from the working teams conducting this study in agsc 450, 2002,*** UBC and AMS Food Services predominantly deal with processed food, which results in large amounts of packaging used and waste disposed as post-consumer wastes. UBC fails to meet the requirements for sustainable composting system. There is a lack of involvement of the UBC community and the UBC Farm in implementing an effective composting program (AGSC 450, Barclay et al., 2002).
- There is a need for the UBC Farm to be more ecologically, economically, and socially viable. The UBC Farm has a potential to significantly contribute to the sustainable supply of food for the UBC community. It is important that the farm emphasizes its educational role for UBC community and thus, become more actively involved in agricultural curricula. [redacted]
- The UBC International Village, which has no direct ties to AMSFS or UBCFS, provides competition for the other food suppliers and causes food prices on campus to be higher than the norm. [redacted]

The problems identified are only some of the issues that UBC Food System needs to improve on. Developing a model to determine how ecologically, economically, and socially sustainable the UBC Food System is would be feasible and appropriate. However, before a model can be developed, we must first address our underlying value assumptions.

[redacted]

[redacted]

Underlying Value Assumptions

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 Cost of Eating in BC, 2002). This definition clearly shows that there are links between accessibility and needs. Aspects of food security that are especially important are: 1) meeting dietary needs; 2) meeting food preferences; and 3) that food security can only exist when ALL people have access to food. Human beings must meet minimum dietary needs in order to survive and for this reason, our group takes a **weak anthropocentric view (a philosophy that human beings have basic needs.** [redacted] ***c***) in the case of food security. On the other hand, meeting food preferences as a part of achieving food security considers a strong anthropocentric philosophy (human beings have wants and preferences) because food preferences are what we desire from food. Lastly, defining food security to be obtained only when ALL people have access to food considers how human beings are connected to each other. This ties in with the fact that food security involves the community, not just one person. [redacted]**.**

Considering the definition above and what aspects? our group feels are more desirable and significant, we do not think that UBC is food secure. Every single person within the UBC

community does not have access to "sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (The Cost of Eating in BC, 2002) and this is clearly illustrated: [redacted]

- In a survey conducted by Chiu et al., 70% of both on-campus and off-campus individuals said that there is a lack of options to buy groceries at UBC, 66% were unsatisfied with nutritional content of foods available at UBC, and 62% believed that availability of local produce is lacking at UBC (2001[redacted]).
- In a survey conducted by England et al., 78% of respondents felt that campus food is "moderately expensive or expensive and that it lacks nutritional value" (2002).

These results follow the trend that was found by the Farrell Research Group Ltd. in 1996 as reasons why people bring their own lunch to campus.

Food security does not stand alone in assessing the state of the sustainability of the UBC Food System; food security is also a part of defining the sustainability of the UBC Food System [redacted] First of all, sustainability can be defined in simple terms or by more encompassing definitions, such as the one from the *West London Friends of the Earth* – "Living within the resources of the planet without damaging the environment now or within the future. It also means having an economic system that provides a genuine quality of life, rather than depending on increased consumption" (2000).

Sustainability, in terms of assessing the UBC Food System, is not only defined by the above terms, but by the following as well:

- Sustainability is "the ability of a system or process to be maintained or kept in existence" (Harmon, Harmon, & Maretzki, 1999) and a "community movement" (Hart, Sustainability, 1998 [redacted]

- Sustainable systems "will not fall apart or sink in the foreseeable future" (Harmon, Harmon & Maretzki, 1999), "should be able to operate indefinitely" (Harmon, Harmon & Maretzki, 1999 [redacted]), and "should allow us to meet our present food needs without compromising the ability of future generations to meet their needs" (Harmon, Harmon & Maretzki, 1999: [redacted]

The previous sections has many good ideas but it is very disjointed and it is not clear why the explanation of value assumptions required so much citation of the various sources refereed. It just does not read clearly. The linkages between food security and sustainability, although important, were not sufficiently explained or clarified

A Continuum Scale to Assess the State of the UBC Food System

With the above definitions and important aspects about food security and sustainability in mind, a continuum scale has been designed to assess the state of the UBC Food System (see Appendix 2). At one end of the scale is "sustainable". [redacted] At the other end of the scale is "unsustainable". A food system that is unsustainable is obviously the polar opposite of a sustainable food system, [redacted]. The midpoint identifies a food system where sustainable and unsustainable aspects are equally present, [redacted]

Proposed Indicators

An indicator is "something used to show visually the condition of a system" (**Hart, Indicator,1998** [redacted] Indicators are very useful in determining the current state of sustainability of the UBC Food System and can help us focus on the core issues. In UBC's case, special indicators need to be applied because the UBC area does not reflect a microcosm of society in the following ways: 1) The age demographic is skewed heavily towards 18 to 25; 2) It has mainly a temporary/transient population; 3) Presence of high cultural diversity; 4) Aside from the service industry brought to facilitate the university staff and students, the only major industry is education. Thus, UBC does not have all of the elements of a typical society, and so ecological, social, and economic indicators should be tailored towards this unique situation. [redacted] We propose that indicators in the areas of waste management [redacted] travel distance of food (more specifically?), diversity of food available on campus, public interest/involvement in the UBC farm, and success of the UBC market garden be used to assess the state of the UBC Food System**.**

Traditional indicators focused on cultural, economic and ecological sustainability as separate entities to be examined individually. However, current beliefs on the matter are that indicators in all three areas must represent the interconnections between them, as they are in the real world (Hart, Indicator, 1998). In order for an indicator to be effective, it must be relatively simple and straightforward so that everyone in the UBC community can easily understand the intent of the indicator, and ultimately take pride in its progress. They must also be both qualitative and quantitative in order to comprehensively assess the UBC system.

Waste Management

Indicator – Percent waste mass to mass of food products entering UBC

This indicator aims to significantly reduce the amount of garbage produced at UBC, by encouraging all members of the UBC community to consider waste reduction in their daily

activities. Composting, recycling, purchasing products with less packaging, and using waste for energy, are all ways of achieving a lower percentage, and we hope this indicator inspires other innovative methods of reducing garbage. These examples also touch on the economic benefits of reducing waste, by lowering the costs of purchasing inputs, such as fertiliser, elsewhere. Good

Average Distance Travelled of Food

Indicator – Aggregate distance travelled food divided by net quantity purchased.

By constantly monitoring average distance travelled by food purchase for campus consumption, there will be a push to continually decrease this value [redacted]. We feel that this indicator will encourage full utilisation of the UBC farm, and perhaps other methods of producing food locally, such as roof top gardening. It will also encourage the AMS and UBC food services to purchase B.C. produce whenever possible [redacted]

When food travels smaller distances, members of the UBC society benefit by eating food that is healthier due to less time for deterioration of nutrients [redacted]
The B.C. economy benefits by increasing demand of local producers, while the environment benefits most of all because of less fossil fuel needed to transport the goods [redacted].

Availability of Culturally Acceptable Food

Indicator – All significant populations of various ethnicities have access to culturally acceptable food. [redacted]

This indicator does not necessarily apply to restaurants only, but may also include availability of culturally acceptable food at markets located on the UBC campus, or both. If the answer is 'no' ([redacted] then this indicates an excellent market opportunity for an entrepreneur that ought to be both economically, and socially successful. If 'yes' ([redacted] then UBC should be considered sustainable in this area.

Visits to the UBC Farm

Indicator – Percent of U.B.C population that have visited the farm in the current year.

The purpose of this indicator is to increase the public awareness of the presence of the farm. Informing the public about the farm, and giving people the opportunity to see the origin of their food provides a meaningful urban/rural link to the community. Greater awareness of the farm also helps to protect it from future development, which is important because the farm is key [redacted] to increasing the sustainability of the UBC food system ([redacted]

Profitability of the UBC Market Garden

Indicator – Net profit of the market garden.

The UBC Farm market garden is an essential connection between the farm and the UBC community. It provides fresh, organic foods to the public, while again increasing awareness of the farm's presence. Its economic well-being is fundamental to its survival, and thus is also important to the ecological and social sustainability of the UBC food system as well.

Steps in Assessing the Sustainability of the UBC Food System

1) Detailed Mapping of the UBC Food System (This mapping exercise should be done earlier in the paper)

-There should be personal consultation with the Directors of the AMS and UBC Food Services (Nancy Toogood and Andrew Parr respectively), UBC Farm Program Coordinator (Derek Masselink) and private franchises (e.g. McDonalds) to determine what business services each requires [redacted] . It would be useful to know what companies supply each retailer, franchise, UBC or AMS Food Services, with non-food based products like cutlery (are they reusable or disposable and food based food?) and food based products like fruits and vegetables (are they local or imported?) and how each management practice influences economic sustainability of the UBC food system [redacted]

[redacted] The knowledge of specific food service business practices allows the Food System Model [redacted] to assess the economic, social and environmental sustainability. Furthermore, such information as human resource management reveals how much each food provider is spending on employment (general employment costs like labor and management outlays) and allows comparative cost analysis between food service providers on campus. [redacted]

-This should be completed in 2004

2) Identify Current Efforts of Food Sustainability

-Determine what each food sub-system's policies are about food sustainability (including waste management) by consulting with the directors once again [redacted]

-This should be completed in 2004

3) Identify the Typical Consumer

-Trends in consumer demographics can be attained through holding focus groups and conducting surveys. Information on consumer demographics allows food service providers to cater to consumer needs, increasing consumer satisfaction and economic efficiency of the food service retailer. Contingent valuation surveys would be especially useful in determining how much effort (labor for constructing back yard, street and rooftop garden) or money they ([redacted] would pay for the transition to a fully sustainable UBC food system. In other words, the average amount of opportunity cost residents will pay for the future benefit of cheaper, more nutritional and more diverse food supply as well as the environmental benefits associated with urban agriculture.

-This should be completed in 2004

4) Determine Indicators of Food Sustainability

-Review literature on indicators of sustainability, indicators proposed in the UBC Food System Project 2003, and findings from the three previous steps [redacted]

-should be completed in 2004

5) Measure Indicators

-Basic data collection must be performed; the following is the methodology for determining the proposed indicators level of sustainability

-Each of the five indicators will receive a score out of twenty, to make an aggregate rating out of one hundred percent. A perfect 20/20 score, as well as 0/20, will be defined below. A ratio scale between perfect and zero values needs to be set to determine intermediate values.

- These indicators should be tested on either a yearly basis or every other year, and then compared to past years to determine whether improvements have been made. Good

Waste Management – A perfect score of 20/20 would mean that 100% of food waste, including packaging is composted, recycled, or used for other purposes, while a score of 0/20 would mean that all food waste and packaging is thrown away. In order to determine this, all sub-systems of the UBC Food System should be instructed to track the weights of all waste disposed, while supplying the figures for mass of food entered into the food system. This will require collaboration with the waste disposal company that serves the UBC Food System. The mass of food waste is easily measured on a large scale because garbage disposal companies do this anyway when weighing the trucks before dumping. Most food is purchased by weight, and so should already be stored in inventory computer systems, also making it simple to obtain the needed information. A computer program that automatically tabulates the weights of the food and waste would greatly ease this task, but may still be done manually**.** [redacted]

Average Distance Travelled of Food – To measure this indicator, one needs to obtain the information on both food origin, and quantity purchased from databases from UBCFS, AMSFS, and the UBC Village. Each origin will be assigned an average value for distance (i.e. California = 1800 km), which will then be multiplied by the quantity of that particular good. To encourage locally grown food to be purchased for UBC, a value of zero will be assigned to all food originating from the lower mainland, and Fraser Valley. A score of 20/20 indicates that all food purchased was grown locally (total average distance of 0 kilometres), while a score of 0/20 indicates no food was grown locally. [redacted]

Availability of Culturally Acceptable Food – A demographic profile needs to be conducted to find the relative proportions of people from different cultural backgrounds. A predetermined percentage of any particular ethnicity will be chosen (i.e. 5%), which when exceeded, must have campus availability of culturally acceptable food. A score of 20/20 will be assigned when all cultures making up more than the predetermined percentage, have access to food from their ethnicity. [redacted]

Visits to the UBC Farm – A survey that is statistically relevant [redacted] to the UBC population should be conducted that questions whether people have visited the farm in the past year. A score of 20/20 indicates that 100% of the UBC community surveyed have visited the farm, while 0/20 indicates 0% had visited the farm.

Profitability of the UBC Market Garden – This should be the most easily attained information if those managing the farm will grant access to this information. An income statement will clearly state net profit of the market garden. A score of 20/20 indicates a highly profitable year , while a score of 0/20 indicates a large net loss. A scale must be made showing what is considered a large profit/loss, medium, and low profit/loss, to determine exact scores.

[redacted]

6) Statistical Methods for Quantifying Sustainability of the UBC Food System

-Tri-annual cumulative cost analysis for production, processing, wholesale and retail levels should be calculated [redacted] Statistical analysis 3 times a yearwill allow accurate statistical comparison on the state of the UBC Food System from term to term. Comparisons between terms of two different years will minimize comparable inaccuracies brought about by seasonal consumer demand fluctuations especially in summer when consumer demand pressures are relatively low. This approach to quantifying sustainability allows statistical consideration of the supply of seasonal food products such as fruits and vegetables. Comparing statistics from summer terms and winter terms would be like comparing "apples and oranges".

Conclusions

The mission statements of the organizations/companies running the food system at UBC address ideas that are appealing to the consumers in the UBC community. However**,** [redacted] the UBC food system is currently not 100% sustainable, which directly and indirectly negatively impacts the UBC community. These aspects affect food security issues, small food choices, inappropriate foods for vegetarians ([redacted] increased waste, and B.C. produce not purchased. The organizations within the UBC Food System have anthropocentric paradigms in which they operate in to run the food system at UBC. Essentially, this works against everyone in that profit is the main objective, which may be in conflict with the well-being of the UBC community. A biocentric paradigm would be able ([redacted] to address these issues better, since sustainability [redacted] would be the priority, rather than profit. A positive aspect about making

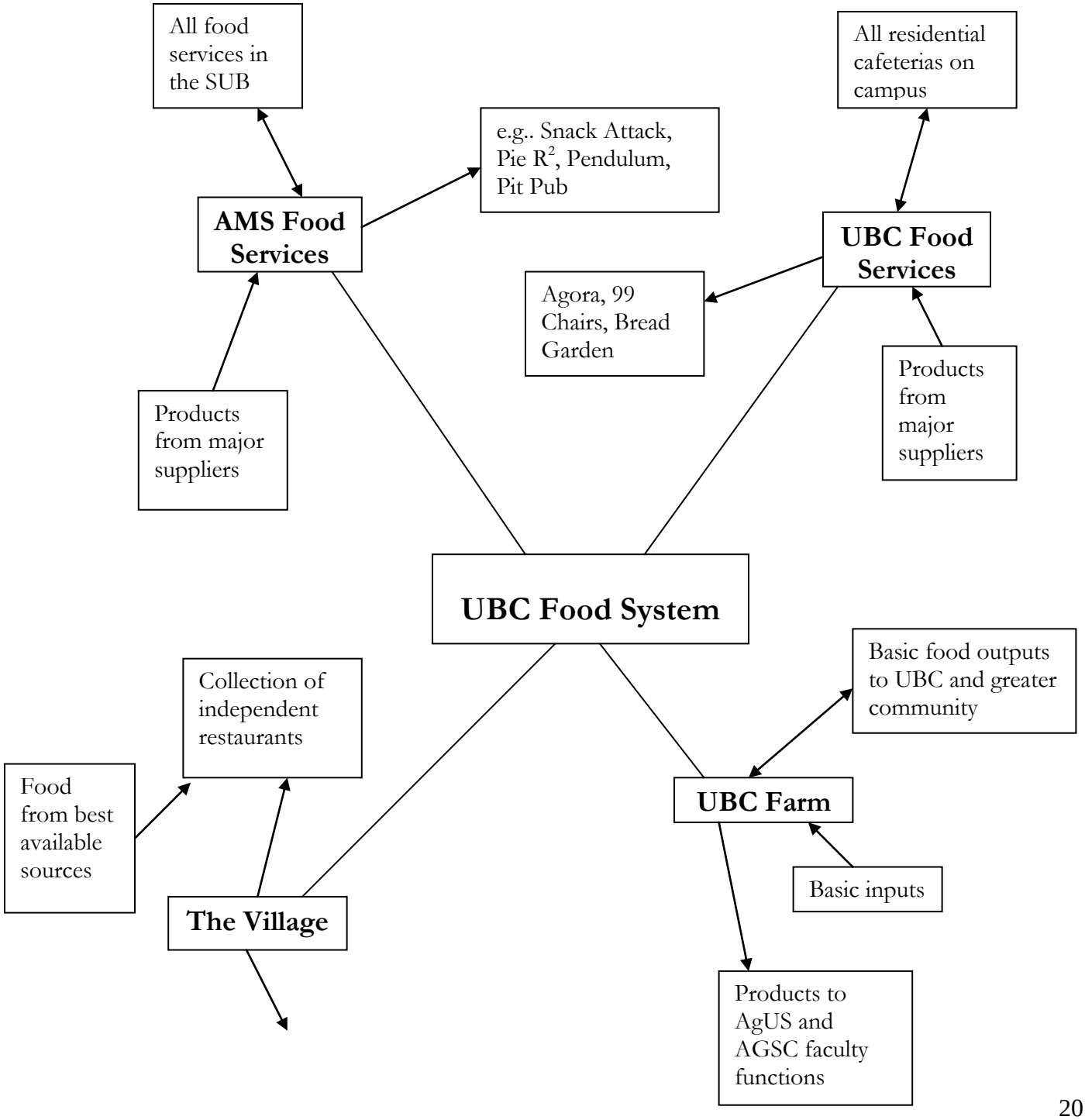
UBC sustainable is that it could be a testing ground for sustainability for B.C. and Canada at large.

To create awareness of UBC's goals towards sustainability, a graphic representation of sustainability for the UBC community, could be used ( ) . For instance, a thermometer style display at the UBC bus loop could foster pride in progress towards this issue. Other indicators could also be on display in prominent areas around UBC along with a brief explanation of what sustainability is.

With the current knowledge and technology ***),*** the UBC Food System cannot be made fully, 100% sustainable. As we have not assessed the sustainability of the system ourselves, we cannot identify the exact point where the UBC Food System is on our scale. The **definition of sustainability** can change every single day, Therefore, we recommend that the whole UBC Food System collaborate with the UBC Sustainability Office to work towards the goal of becoming the most sustainable that it can be. They need to identify what they consider to be sustainable in the UBC Food System and work from there. A start would be to look at the proposed indicators and recommendations from the UBC Food System Project of 2003. All individuals of the community, including students, should also be part of this process. There is much room for progress to be made towards this final goal, which is what these indicators are meant to spur. As the adage goes, "you cannot change, what you cannot measure".

What are the boundaries and goals? Examples of interactions with larger food system?

APPENDIX 1 : Mapping the UBC Food System



Franchises
e.g. McDonald's

APPENDIX 2 : A Continuum Scale to Assess the State Of the UBC Food System

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Unsustainable	Midpoint	Sustainable
-community within system is not food secure (most people do not have access to food at all times, cannot meet their dietary needs, and/or cannot meet their food preferences) -system is environmentally damaging (no efforts in waste management, including recycling and composting) -system does not involve the whole community -system cannot be maintained -system is concerned with current food needs only, the future is unknown -system receives a zero score for proposed indicators	-currently certain objectives of sustainability are being addressed; however, not all sustainability issues have been fully integrated into the food system -system receives a 50% overall score for proposed indicators	-community is completely food secure (everyone has access to food at all times, is able to meet their dietary needs and food preferences) -system is environmentally friendly (maximum utilization of recycling, composting, etc.) -system involves the whole community -system can be maintained to exist and be operated for an indefinite period of time -system allows for current food needs to be met and does not compromise food needs of future generations -system receives a perfect score for proposed indicators

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