UBC Social Ecological Economic Development Studies (SEEDS) Student Report

The Sustainability of UBC Food System Collaborative Project II

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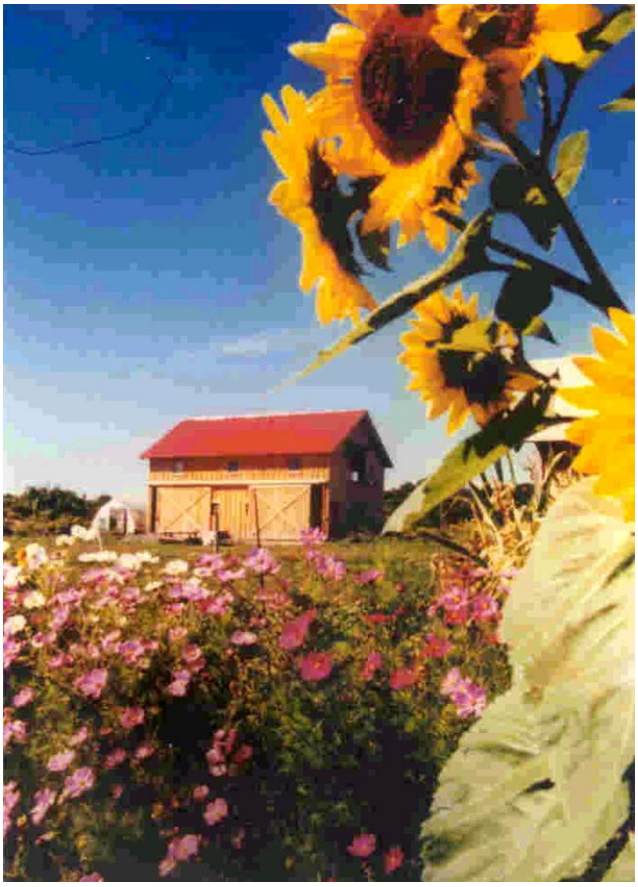

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Abstract -

As a working team, we determined that sustainability embodies three imperatives: environmental, economic and social. In order to effectively assess the sustainability of the UBC Food System, all three of these imperatives must be considered. In this report we attempted to

present the current status of UBC in terms of sustainability with specific reference given to the AMS Food Services, Agora, and the composting system. The majority of our information was developed from the papers that were written last year as a part of the five year UBC Food System Study. Based on our definition of a sustainable food system, indicators were developed to assess the sustainability of the food system.

Furthermore, we developed a research design and methodology that would aid in tackling this complicated concept of sustainability in a practical manner. A sample survey is attached that may be conducted in future years to determine present weaknesses in the food system according to consumers, and where developments can be made in order to achieve a sustainable food system at UBC.***Very good abstract***

Introduction -

The University of British Columbia (UBC) is a community that represents a global food system with its population of approximately 45 000, including students, staff and visitors[13]. (***With its own specificities as well?)***In light of our awareness of globalization, increased population, and its later connection with the food system, we take a deeper look at the issues surrounding

sustainability and explore some possible indicators within our own food system at UBC. Sustainability is based on the principle "that we must meet the needs of the present without compromising the ability of future generations to meet their own needs"[14]. However, the importance of sustainability is a community movement as well as just simply an environmental movement[15]. It is a holistic concept whereby we have to integrate the community's social, environmental and economic needs with the ecosystems of which we belong to so that we enhance and protect it rather than degrade or destroy it[15]. In order to adequately assess the levels of current sustainability practices at UBC we have identified a number of indicators that provide a measurement of the system's performance and thus demonstrates if we are heading closer or further from the goal of sustainability[B]. Although our 'map' (appendix B) outlines all components, interrelationships and boundaries of the UBC food system, we have selected specific sites in our research proposal and examined the relevant indicators accordingly.

Value-based research using indicators –

Principles that led us to choose these particular indicators for UBC campus are based on a framework of values held by members of the group. Significant influence came from our desire to see campus lifestyles and practices reflect a myriad of ideals that we have encountered, implemented and practiced in our personal lives. Since many models of sustainability arose from courses taught at UBC, we found it crucial to reflect on fundamental values articulated by the school.

It was our groups' opinion that UBC, with multiple diverse interests and agendas, has a challenging task of raising campus unity to make theories of sustainability practically attainable.

Recognition that education is closely linked to the surroundings that one learns in; rather than simply the theory learnt, has already compelled UBC Farm to incorporate this as one of their core values; problems with campus sustainability are that "what is taught and what is practiced" have not aligned[10]. ***Excellent point***

Initially we believed our groups' perceptions of sustainability were very similar. Upon further prying, we realized that major concepts such as absolutely closed systems and the integration of municipal systems (eg. waste management) were quite difficult to agree on. We could not resolve the definition of optimum sustainability in profit. Some of us passionately argued that a sustainable business had to supercede breaking-even in profit while others pointed to inclusion of all wages and costs being met as indicative of sustainability. These discussions resulted in us realizing the complex integration of individual beliefs and opinions in the process of measuring sustainability. ***Some narrative of the consensus as well as differences?***

Ecological Indicators -

Two ecological indicators that we have identified as good parameters to measure the state of UBC in moving towards sustainability are a) UBC composting systems, and b) the source of food consumed at UBC. Composting systems play an important role in achieving full sustainability at a university of this size. The amount of waste that would be otherwise sent to the landfill amounts to significant quantities and could prove harmful to the environment because "organic materials in landfills emit methane and contribute about 10% of greenhouse gas emissions"[12]. As Kloppenburg et al (2000) mentions "a sustainable food system is one in which the health of the environment is sustained and enhanced for use by all beings and by future generations"[8]. Additionally composting, the process of "natural decay of organic materials into a nutrient rich soil conditioner called

compost", has a positive effect on the environment, replenishing soil nutrients[12]. With this in mind, we now examine the composting system that exists currently at the UBC campus.

UBC offers four small-scale and two large-scale composting projects that include Acadia Community Gardens Composting and UBC Farm Pilot Project Windrow, respectively[12]. However, UBC Waste Management mentions that "70% of UBC's waste stream is made up of compostable materials," which questions the effectiveness the effectiveness of our composting system[12]. To improve our composting system, it is necessary to identify indicators to assess its state. One possible way of measuring is to quantify the amount of composting bins available at residential areas and food services locations. Another indicator would be to count how many students, faculty members, UBC residents and visiting customers of UBC food services are aware of such composting systems. As Kloppenburg et al states, "To act effectively and responsibly, people must be well-informed." Awareness about the composting system existing with in reach will lead to more people contributing to the success of the application of composting systems at UBC[8]. Consequently, our goal would be to increase the amount of compostable-waste diverted from the landfill to be used at the UBC Farm. Increasing awareness of the benefits of composting will help us turn bio-degradable waste into forms of soil amendments by informing the UBC community through brochures, posters and providing accessibility to compost bins.

Another ecological indicator is the source of food consumed at UBC. There are numerous ecological benefits to consuming food grown in close proximity, the most obvious being reduction in required packaging and transportation. Purchasing and consumption of locally grown food would greatly reduce excessive packaging, such as Styrofoam, while reducing energy consumption and thus reduce the emission of toxic substances associated with the processing, packaging and transportation of that food. In order to address this ecological aspect of sustainability, we first need

indicators to measure the sustainability of the system. Counting the number of medium and large trucks that come into UBC to supply food for UBC food services everyday; or quantifying the distance traveled by those trucks traveling to UBC trucks to UBC can serve as indicators. The overall goals for these particular indicators would be to assess methods to "reduce the number of steps between production and consumption", as well as to "create loyalty and markets for local brands and local producers". By purchasing more food from within close proximity we will reduce vehicular toxic emissions as well as transported food[9]. Please refer to the conceptual definitions of "Sustainable" and "Unsustainable" composting systems and sources of food consumed at UBC that are outlined below.

Ecological Indicators: Current UBC Composting : (4 small-scale composting projects and 2 large-scale composting projects)

Sustainable	5	Provide each residential unit that has a kitchen with a scrap bucket (1). Composting bin (either small or large scale depending on the size of the area) is available in every residential and food services areas at UBC and easily accessible. Educational programs as well as brochures and posters are readily available to ensure people are composting appropriate foods in the right way (i.e. packaging is removed) (D1). ****Less than 20% of UBC's waste stream is made up of compostable materials.**
Mildly sustainable	4	Appropriately sized composting bins (depending on the size of the area) are available in majority of residential and food services area at UBC (within walking distance). Posters are seen near the bins to inform people of appropriate food and ways to be composted. ****40-20%of UBC's waste stream is made up of compostable materials**
Neutral	3	Small-scale bins are seen somewhat throughout the campus. One or two large-scale bins exist at UBC. UBC farm makes use of compost produced at UBC. For those interested, educational programs are available. ****About half(50%) of UBC's waste stream is made up of compostable materials**
Mildly unsustainable	2	A few small composting bins are available on campus. A very small fraction of total waste is diverted from Landfill for use. ****About 75% of UBC's waste stream is made up of compostable materials**
Unsustainable	1	Offers no composting bins. All the food waste is sent to Landfill. ****More than 75% of UBC's waste stream is made up of compostable materials**

** Please note that these numbers are merely arbitrary set-numbers upon members of the group's agreement, for the lack of good references, meant to give some ideas.

Ecological Indicators: Sources of Food Eaten at UBC (local vs off-campus)

Sustainable	5	UBC farm market places are readily accessible on campus, offering seasonal vegetables and fruits. The hours and days of operation are good (weekdays and weekends). Source of food and ingredients used by UBC food services are mostly from local and regional suppliers; as well, UBC farm products are being used when and where possible. ****<10 trucks (large & medium); traveled <1000km radius**
Mildly sustainable	4	Some UBC farm markets places exist on campus. The hours of operation are somewhat reasonably set (open during lunch hours for students to purchase some fruits and vegetables). Source of food and ingredients used by UBC food services are mostly from national suppliers. ****10-20 trucks(large & medium);traveled ~4000km radius**
Neutral	3	UBC farm market place is available on UBC farm (not within walking distance from the campus). Source of food and ingredients used by UBC food services supplied equally from local, regional, national and global suppliers. ****20-35 trucks(large & medium);traveled more than 4000km**
Mildly unsustainable	2	No UBC farm market is available for purchase by UBC students and faculty members. Source of food and ingredients used by UBC food services is mostly from in global suppliers. ****Overseas**
Unsustainable	1	No UBC farm exists. Rely totally on global suppliers.

** Please note that these numbers are merely arbitrary set-numbers upon everyone's agreement in the group, for the lack of good references, meant to give some ideas.

Economic Sustainability -

In addition to the ecological, an economic approach must also be marshaled to achieve progress towards a more sustainable food system at UBC. A comprehensive economic analyses may include the costs associated with all of the thermodynamic and elemental interactions of the system – but for most analysis, economics can be considered as the flow of money. Economic sustainability can be defined as the "profitability and the ability of a system to maintain a decent standard of living for all participants. An economically sustainable food system must not contribute to a radical polarization of wealth since a dramatic concentration of wealth in two hands cannot

sustain a desirable standard of living for all"[4]. Therefore the two economic indicators that were chosen to assess the food system of UBC in an economic perspective were profitability, and equity. In order to assess the profitability indicator, the revenue and the accessibility (mainly in terms of location and available methods of payment) can be considered. Revenues provide a direct reflection of how well the other indicators, including social and ecological, are working in concert to achieve sustainability. For example when looking at Agora, located on the lower level of the MacMillan Building in UBC, it is noticed that the revenue is low, due in part to poor accessibility. Agora is one of the retail outlets of the UBC food services. From an economic perspective, Agora has poor accessibility due to its hidden location as well as its lack of payment options. Agora does not accept meal cards or debit cards. Therefore, if a consumer does not have any cash available on hand, then he/she would have to take their business elsewhere. Furthermore, the fact that Agora has short hours of operation contributes even more to its low profits. When assessing Agora according to the second economic indicator of equity and fairness, Agora seems to fail again in terms of sustainability. Agora employs only one full time worker and one part time student worker. This contributes to a polarization of wealth, thus contributing to poor economic sustainability[6].

The two economic sustainability indicators discussed above could also be applied to assess the sustainability of the AMS Food Services. AMS Food Services are run by the Alma Master Society and consist of many food outlets that are located in the Student Union Building (SUB) of UBC. When assessing the AMS Food Services in terms of the profitability indicator, the AMS Food Services seems to be sustainable since they have experienced net profits in the past four years. The fact that AMS Food Services is conveniently found in a central location of UBC, it makes it a convenient location for students, faculty members as well as visitors. AMS Food Services also has a variety of methods of payment that alleviates consumers from having to depend on cash alone.

AMS Food Services also appears to be sustainable in terms of the indicator of equity and fairness. Approximately 90% of the workforce of AMS Food Services is comprised of part time student staff[11]. Student wages are considered satisfactory as they are above minimum wage. This indicates equitable distribution of the income by AMS Food Services and does not contribute to polarization of wealth. Therefore, according to the economic sustainability indicators outlined above, the AMS Food Services appear to be relatively sustainable[3].

Economic Indicators: Levels of Sustainability –

Indicators chosen:

1. **Profitable**
2. **Equitable**

1. **Profitable/Viable** (I. revenue II. accessible {popular location + debit/Visa})

Sustainable	5	High revenue and highly accessible – including both a) popular location and b) choices of method of payment
Mildly sustainable	4	Moderate revenue and quite accessible – may include either accessibility indicator a) popular location or b) choices of method of payment
Neutral	3	Break even and somewhat accessible – may include either accessibility indicator; a) decent location or b) limited methods of payment.
Mildly unsustainable	2	Cost of input> output and somewhat inaccessible – may include either a) inconvenient location or b) very few methods of payment
Unsustainable	1	Cost of input>>output and considerably inaccessible – includes a) remote location and b) no choice for method of payment

2. **Equitable** (affordability, student workers employed)

Sustainable	5	Prices reflect students' willingness/ability to pay, above minimum wage and many student workers.
Mildly sustainable	4	Prices generally reflect students' willingness to pay, student workers employed.
Neutral	3	Prices barely reflect students' willingness to pay, very few students workers employed.
Mildly unsustainable	2	Prices slightly higher than students' willingness to pay, minimal student workers employed at minimum wage.
Unsustainable	1	Prices higher than student's willingness to pay, no student workers employed.

Social Indicators -

The goals of a sustainable food system should ultimately benefit humans, hence the requirement of the social aspect of sustainability[1]. A socially sustainable food system is one that preserves and enhances the health and well being of the individuals[8]. In this case, individuals are people within the UBC system. The UBC community should have access to quality and nutritious foods. Therefore, the first criterion for a sustainable system is accessibility. In UBC, not only does the SUB offer many food options, the Village and the University Marketplace situated outside the UBC system boundary also offers a variety of food outlets for the UBC community. As for Agricultural Science students, Agora is the obvious choice for food. However, with its limited hours of operation, Agora lacks an inviting atmosphere and a reliable place to enjoy a meal during lunch when the place is usually crowded[6]. While Agora is closed, students in the building may find it difficult to access food. In order to have a socially sustainable Agora, the operational hours need to be extended.

Since many people around the world come to this community, a socially sustainable food system is also the one that respects the cultural manifestations of self and community[8]. Consumers should be "aware of the ways in which consumption can be an affirmation of their own status as subjects, of their community relationships, and of their cultural contexts"[8]. It is important for a food system to provide vast variety of choices to satisfy a diverse group in a community. The AMS (Alma Mater Society) is an independent non-profit society that operates at UBC[3]. The food services provided by this society offer many varieties of food choices. For example, The Moon offers Chinese food to meet to increase Asian population at UBC and Pendulum offers vegetarian and organic dishes[3]. Therefore when measuring social sustainability, we should not only consider the aspect of accessibility, but also the variety of foods that each outlet offers.

As mentioned above, there is a lack of involvement in food outlets such as Agora. It is important to include student involvement as part of the criteria for a socially sustainable environment. A review of last year indicated that the use of UBC farm grown products for communal dinners in Agricultural Science events have enhanced the student involvement in this faculty, and consequently increased their devotion to their program[6]. UBC Farm uses one acre of its 55 hectares of land to establish The Market Garden Project. This project at UBC farm sells vegetables and animal products to Green College, St. John's College, consumers at MacMillan Building, residents of Hampton Place, and the SUB[7]. Because the primary purpose of this farm is to focus on education instead of production, the farm is insufficient to supply all the products to the UBC food system[7]. Although the UBC Farm cannot supply all the food requirements of the UBC community, if the farm can supply all it has to the UBC community, then social sustainability may be achieved. Expanding from this concept, a socially sustainable food system in UBC should produce from within its own system whenever possible for communal dinners throughout the

campus. This would ensure that the UBC food system would not have to completely rely on imported products outside of the Lower Mainland or even countries around the globe. Therefore, it would be one step closer to self-sufficiency. Students can also give back to the community by being involved at the farm and the dinner preparations. Community involvement is an indicator that can be used to assess the social sustainability of the food system.

Social Indicators: Measures of Accessibility

Sustainable	5	Both AMS and UBC food services are located throughout the campus and accessible to everyone who wants to purchase food. The hours of operations are aligned with the class time and also throughout the day. Food services offer at least 10* places that serve different varieties (i.e. ethnic, vegetarian, and organic) of healthy, good quality and wholesome food.
Mildly sustainable	4	Both AMS and UBC food services are located somewhat throughout the campus and accessible to almost everyone who wants to purchase food. The hours of operations are somewhat aligned with the class time and also throughout the day. Food services offer at least 8* places that serve different varieties (i.e. ethnic, vegetarian, and organic) of healthy, good quality and wholesome food.
Neutral	3	Both AMS and UBC food services are located in different places on campus and accessible to some that want to purchase food. The hours of operations are mostly during the daytime. Food services offer at least 5* places that serve different varieties (i.e. ethnic, vegetarian, and organic) of healthy, good quality and wholesome food.
Mildly unsustainable	2	Both AMS and UBC food services are located mostly at one location on campus and somewhat not accessible to those who want to purchase food. The hours of operations are somewhat limited. Food services offer at least 2* places that serve different varieties (i.e. ethnic, vegetarian, and organic) of food.
Unsustainable	1	Both AMS and UBC food services are located at just one location on campus and not accessible to almost everyone who wants to purchase food. The hours of operations are restricted. Food services offer zero* variety of food.

*****These numbers are being assumed, as further research is needed in the future to determine the actual numbers for these indicators.

Social Indicators: Student involvement with the UBC food system:

Sustainable	5	UBC farm provides all the ingredients whenever possible in communal dinners and food services on campus. Students are 75%* involved in this process.
Mildly Sustainable	4	UBC farm provides some ingredients whenever possible in communal dinners and food services on campus. Students are 65%* involved in this process.
Neutral	3	UBC farm provides a few ingredients whenever possible in communal dinners and food services on campus. Students are 50%* involve in this process
Mildly Unsustainable	2	UBC farm only provides one or two ingredients whenever possible in communal dinners and food services on campus. Students are 25%* involve in this process.
Unsustainable	1	UBC farm does not provides any ingredients whenever possible in communal dinners and food services on campus. Students have zero* involvement in this process.

*****These percentages are being assumed, as further research is needed in the future to determine the actual percentages for these indicators.

UBC Food Map-

The UBC Food Map illustrates the food dynamics within the campus of UBC, as well as the interactions on a regional, national and global scale (Appendix B). In order to improve the system's sustainability, it is important to outline the food processes of a location. From this diagram we can interpret the inputs and outputs of a facility such as UBC. A system is more sustainable when it has minimal inputs and minimal outputs. However, full sustainability is only possible if the system is completely closed (i.e. recycling nutrients). Although the possibility of a fully functional closed food system may seem incomprehensible at this time, we can begin by improving and enhancing

certain interactions between the components. Components can be defined as representative groups that are involved in the food dynamics of a system. In the diagram we can see the components illustrated by boxes, existing interactions between the components in blue arrows, interactions that need to be improved in red, and the boundaries/barriers limiting a closed food system.

The Components within UBC:

UBC South Campus Farm	Provides a unique educational opportunity for the students and community. Currently the facilities offer research space, cultivation, recycling of nutrients and education opportunities. However, the interactions within UBC could be improved to enhance sustainability on campus. This could be done by providing food to consumers, recycling wastes, and working with the Sustainability Office to redirect food outlets.
UBC Food Services	Manages and regulates food and beverage outlets and services campus wide.
AMS (Alma Matter Society)	Manages and regulates food and beverage outlets and services in the student union building.
Sustainability Office	Promotes, co-ordinates, and implements sustainable practices on campus. This component interacts with present research and in turn influences the UBC food services and AMS regulations and management. Ex: Social Economic Ecological Development Studies (SEEDS) - where students, staff and faculty members are involved in sustainability issues.
UBC Waste Management	Is in control of the pick up and disposal of UBC's waste from consumers and food outlets.
Food and Beverage Outlets	Prepares and distributes food to consumers and also contributes to the UBC waste.
Consumers	Purchase and consume food products and also contribute to the UBC waste.
Research and Education	Consists of modeling and testing to improve knowledge in students and community.
Food Products	Are the end results that reach the consumer.

The Components Outside of UBC:

Transportation services	Transports food products to and from UBC.
Local food suppliers	Provide food produced within the lower mainland and shipped to UBC.
Regional food suppliers	Provide food produced within BC and shipped to UBC.
National food suppliers	Provide food produced within Canada and shipped to UBC.
Global food suppliers	Provide food produced around the world and shipped to UBC.
Landfill Operation	Accumulates waste from the region to a specific site for decomposition. Most of the waste is taken from UBC and sent to landfills.

Boundaries are created through legal, environment, physical, economic, contractual and production barriers. These barriers can prevent or promote a system's inputs and outputs. That is, they can open or inhibit boundaries. Therefore barriers can inhibit the ability to enhance sustainability on the UBC Campus.

Research Proposal-

The economic sustainability of Agora

Agora cafeteria in the MacMillan building has low accessibility, as indicated by its limited hours of operation as well as its lack of debit, meal plan and credit card payment options. Agora was compared to other AMS food outlets in the SUB that were economically sustainable. Profitability and equity in the distribution of wealth indicate the economic sustainability of AMS food outlets in the SUB. The indicators of profitability and equity can be used to assess the economic sustainability of Agora and monitor its performance based on the recommendations derived from the survey.

Profitability of Agora should be assessed based on the last four year's financial reports (in comparison with profitability of the AMS outlets in the SUB). If Agora is making marginal profits or net losses, it is economically unsustainable. Agora should employ more than one full-time and one part-time student staff members. In comparison with the AMS outlets at the SUB, which comprises of 90% part-time student staff, Agora is not equitable in its employment opportunities and distribution of wealth. In order to improve the economic sustainability of Agora, a survey with specific questions should be conducted (appendix A). Responses to questions regarding accessibility, variety and quality of food should be used to gauge the preferences of the Agora clientele. Changes to improve accessibility (both in location and methods of payment), variety and quality of food and choice of food sources should be implemented. Over the next four years, the economic sustainability (profitability and equity) should be assessed based on the improvements made. Adjustments should be made based on past economic performance and thus, over the long run, Agora would become a more economically sustainable operation providing food security to its clientele.

Ecological sustainability of UBC's waste management

Current practices of waste management at UBC are ecologically unsustainable. UBC generates a significant amount of waste both biodegradable and non-biodegradable. The fraction of waste that is biodegradable can be composted and used to amend the soil organic matter. This would result in an efficient cycling of nutrients, becoming more ecologically sustainable. Composting requires all inhabitants of the UBC community to take on an active role in separating their biodegradable waste from the non-biodegradable waste by using the compost bins on campus. However, the low awareness of composting facilities and the benefits of composting together with

the low accessibility of compost bins has resulted in 70% of UBC's waste stream consisting of compostable material[12]. In order to become more ecologically sustainable, the UBC community must be made aware of the benefits of composting as well as the availability and accessibility of composting bins on campus. This would invariably result in an increased awareness of an individual's waste management where each individual will take on an active role rather than a passive role in separating their biodegradable waste from the non-biodegradable waste and contribute to the composting bins. An ecologically sustainable campus would have less than 20% of its waste stream consisting of compostable material. The compost would be used to amend the soil organic matter at the UBC Farm, which is working toward becoming a sustainable farming operation. This would divert nearly 50% of UBC's biodegradable waste from reaching the landfills and would in turn reduce the emission of harmful methane gas into the atmosphere due to reduced transportation of wastes from campus.

The accessibility and availability of a composting system can be assessed based on the number of composting bins on campus, their locations and the awareness of composting in the UBC community. The Campus Sustainability Office (CSO) employs summer students in its Trek Step 1 to take active roles in conducting outreach programs and tours as well as building awareness of sustainability in the UBC Community. Similarly the Sustainability Coordinator Program has UBC faculty and staff members volunteering to build awareness of sustainability in the workplace[11]. These programs could add composting to their agendas. These programs can be used to assist in counting the number of compost bins, mapping their locations on campus and building awareness in the form of posters and brochures for the UBC Community. Based on the initial assessment of the composting system and the responses to survey questions used to gauge the awareness and willingness of people to use compost bins, the findings of the CSO can be used to recommend

further changes to the composting system. Increasing the number of compost bins, providing easy access to the UBC community by strategically placing them in convenient locations for people to use will help improve the composting system. Brochures and posters placed around campus to educate people on the need to compost biodegradable waste will help build awareness. UBC Waste Management can assess changes in the percentage of compostable waste in the waste stream to gauge the effectiveness of the changes to the composting system. This can be used as an indicator to assess the status of the level of composting on campus and thus the ecological sustainability of the composting system.

Ecological and social sustainability of food sources

UBC Food Services currently relies on several sources for its supply of perishable and non-perishable foods. UBC Food Services buys food from suppliers based on their quick service, price, and ability to fill the quotas. Currently, there is little value placed on the origin of the foods. Therefore, most foods used to supply the food service outlets at UBC come from distant regions, provinces and countries such as Mexico and the U.S., versus local producers. This results in a low quality of food contributing to low social sustainability and low ecological sustainability from reliance on long distance transportation of food and by the increased level of packaging of fresh produce. In order to become ecologically and socially sustainable, UBC Food Services should first rely on sources of fresh produce within the boundary of the UBC system (UBC Farm), and secondly rely on local and regional sources of food before relying on global sources of food.

In order to assess the ecological and social sustainability of the food system, an indicator would be used to assess the number of food miles (miles traveled by food from place of origin to the UBC system). The origin of food as indicated in the inventory of the UBC Food Services should be

used to assess this indicator. Food derived from UBC Farm would be considered within the UBC system boundary and would have zero food miles. Whereas an unsustainable food system would have no UBC farm, a mildly sustainable system would rely on produce from other nations. A neutrally sustainable system would have 35-20 trucks (large & medium sized), having traveled more than 4000km, a mildly sustainable system would rely on 10-20 trucks (large & medium), having traveled ~4000km radius. A sustainable system would have 0 <10 trucks (large & medium) having traveled <1000km radius. The food miles would be used to provide the current ecological and social sustainability status of the food sources. This would help quantify the level of reliance on the global market for food by the UBC Community and the ecological and social sustainability of the food system in order to make changes to improve sustainability. A survey conducted to gauge the awareness and willingness of the UBC community to purchase locally produced food and their willingness to participate in community building events would help provide recommendations to the UBC Food Services and UBC Farm of the preferences of the UBC Community. The responses to the survey questions together with the current status of sustainability (based on the indicator) should be used to expand the UBC Farm to support the UBC food system and provide an increased market for local and regional food producers. This would increase the social and ecological sustainability of the UBC food system.

Conclusion-

As demonstrated in the paper, there is still much room for improvement in keeping UBC food systems' ecological, social, and economical integrity intact for the sake of generations to come: for the mere reason that our ideal sustainable system does not correspond with the current UBC system. Due to time constraints, we were only able to discuss some parts of the UBC food system, using the AMS food services, Agora and composting systems to create our idea of a model food system. Hence, it is our recommendation to subsequent fellow student researchers to consider using our model as a basis to tackle UBC food system components and ultimately the UBC food system as a whole. We hope to see improvement on the not-yet-fully-sustainable UBC and movement towards full sustainability, which is defined as level 5 in our continuum models.

Appendix A –Sustainability Survey

This survey is designed as a preliminary gauge of the willingness of members of the UBC community to participate in making the campus more sustainable.

The last section is especially relevant to the students in Agricultural Sciences.

Recycling system

Do you participate in separating garbage for recycling?

Have you ever used a compost bin (home, school)? Are you familiar with what waste can be composted?

If a composting bin was placed at beside a normal garbage bin would you separate your waste?

If a composting system was somewhat accessible (at every other garbage bin) would you utilize it?

Source of food

Are you concerned with the origin of your food?

Have you ever purchased from the UBC Farmers' Market (summer)?

If you were able to freely choose between locally grown produce and imported produce, which would you choose?

Would you consider price over location or vice versa?

Do high quantities of packaging (on food items) sway your product choice?

Accessible (location) Meals

If you purchase meals on campus, which location do you prefer? Why?

Do you prefer to eat at the location or take-out?

What qualities do you look for in eat-in locations?

Variety and Quality of Meals

Are you satisfied with the variety of meals available to you? If no, what is missing?

Are you satisfied with the quality of meals?

Do you frequent vending machines for snack food?

Do you find the quality and variety of food available at vending machines to be satisfactory?

Accessible (methods of payment) Meals

If a food venue offers multiple forms of payment are you more willing to support the business?

Are you ever deterred by a business that does not accept debit? Credit card?

Are you likely to return to a business that does not accept multiple forms of payment?

Do you find pricing of meals (at the location you frequent) to be fair?

Do you find pricing at other food services to be fair?

Community

Do you currently participate in community meals on campus? To what extent?

Would you like to participate in community meals? Eating or preparing?

Would you choose to work at the Farm if given the opportunity?

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