Costs of locally produced food: Best Practices for Sustainable Food Procurement

University of British Columbia

AGSC 450

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Abstract

This research project was developed as part of a collaborative effort between the students and the Teaching Team of AGSC 450 class, Social Ecological Economic Development Studies (UBC SEEDS) program of the UBC Sustainability Office, UBC Food and Beverage Services, UBC Alma Mater Society Food Services and UBC Waste Management to explore opportunities for creating a more sustainable UBC food system.

We have organized our findings into three sections. In the first part, we will present our evaluation of last year's project and make recommendations developing the model we have chosen to adopt in our project. Next, we will discuss the true costs of food by demonstrating how to conduct a commodity chain analysis (CCA). Finally, we will present our recommendations for both UBC food providers and next year's AGSC 450 class.

Introduction

The UBC food system is in a sustainability crisis for many reasons. For instance, as a consequence of insufficient recycling and composting programs, too much waste is being trucked away for disposal in landfills, and due to increased population and housing on campus there are mounting concerns about both food security and UBC's growing ecological footprint. A lack of consumer and producer awareness about these issues is only further exacerbating the problems. Currently, efforts to decrease ecological and social concerns are being under-prioritized by economic constraints and social desires. The balance of the social, economic and ecological spheres of sustainability is essential to satisfy all stakeholders in the system and this must be done by finding common ground and value system. As a microcosm of the global system, we need to address these concerns in order to do our part as members of the global community and ensure a viable system for the future generation of learners.

Problem Statement

It has been readily acknowledged that our current global food system is significantly contributing to environmental degradation and conditions of socially unjust power (Kloppenburg & Lezberg, 1996). The food we consume comes from all around the world, yet we do not know its exact origin. There is a growing distance between our source of food and us which "represents our separation from the knowledge of how and by whom our food is produced, processed and transported" (ibid). If the food we consume is produced, processed and transported in ways that are unsustainable, how can we understand our role when we are so distance from it? How can we change our ways when we do now understand how the food system works?

UBC's Food System is a small part of this global structure, and its smaller scale (smaller than the globe) can assist us in evaluating the ramifications of this system, as well as permitting us to explore possible alternatives. In order to formulate an image of the costs of our current system, our team will demonstrate how to conduct a commodity chain analysis. We hope that this exercise will permit us to reveal the "hidden" costs that our society pays as a consequence of our current food system. Using this information, we hope to raise both consumer and producer indirect cost awareness, as well providing them with the skills and knowledge to create more sustainable choices.

Value Assumptions

While our group's values ranged from strong anthropocentric to eco-centric, this disparity in perspectives did not conflict with the accomplishment of our assigned task, which was primarily a theoretical and evidence-based endeavor. In many ways, this range served to expand our analysis and broaden our scope of understanding. We all agreed that no standardized dollar value that can be put on the environmental and social impacts of food production, but that these are key issues that need to be

addressed in a sustainable system. (If interested, please see Appendix A for our group's individual value statements.)

Our Vision

Our group's vision of a sustainable food system at UBC includes: fewer external inputs and more internal inputs; working to conserve and enhance natural resources such as soil; minimizing practices that degrade the environment; offering a variety of affordable nutritious foods; making use of locally grown and seasonally available foods; and educating stakeholders in an effort to create a community that is aware of the issues and how to attend to them.

Chosen Model

We have chosen Group 14's model as the most favorable because it most accurately represents our vision of a sustainable food system at UBC. Like Group 14, we hold the importance of indicator interactions very highly, as we believe it addresses the holistic characteristic of sustainability.

"It [sustainable food system] may be thought of as having three unique aspects: an ecological aspect, a social aspect, and an economic aspect. Each aspect may be looked at separately, but ultimately the three must be viewed together. They do not operate in isolation. They are interdependent and interconnected." (Forbes *et al,* 2003)

Our Chosen Indicators

Although the vision from group 14 closely echoes our own, we felt that the indicators of ecological and social sustainability needed to be modified in order to improve the effectiveness of the model and evaluation of the system's progress. We chose four indicators that we feel best assess the contribution of

our group's assigned scenario to the overall sustainability of the UBC Food System; two of which are taken directly from Group 14's model.

These indicators allow us to assess not only our specific task, but also emphasize the importance of viewing the food system as a whole. Our four chosen indicators are: the ecological footprint measurement and food miles as our environmental indicators, food affordability as our economic indicator, and finally food availability – also referred to as food security - will serve as our indicator of social sustainability.

Ecological Indicator

The ecological footprint is a measurement of the impact a certain activity has upon the earth. For example, the impacts of our current food system includes inefficient water use, over-fertilization and soil erosion due to tilling, and transportation and processing technologies that result in CO_2 emissions and water pollution. Our specific task involves identifying and assessing these "true costs" of food production, which are commonly referred to as "indirect costs". Most of these indirect costs can be perceived as functioning like a tax on the environment - a tax that we do not pay for directly when we purchase food. However, this 'tax' does take its toll on the earth, and will cost us humans large sums of money later when we are faced with the need to restore a degraded environment.

This indicator also functions well for the overall task of assessing the sustainability of the UBC food system as a whole. A system that has a large ecological footprint is a system that is not sustainable. The larger impact a system has on the earth, the less amount of time the earth will be able to sustain that activity. Since sustainability is about longevity, and a food system cannot exist without the land to grow food, we need to keep our impact on the earth to a minimum. Our vision includes a system that has a small as possible ecological footprint.

Our second ecological indicator, which was also chosen by Group 14, is food mileage. Food mileage relates to the distance that food travels from where it is cultivated to where it is consumed.

Depending on the composition of a certain diet, the food a person consumes may have an extensive food mileage. In fact, the average distance traveled by a food product in North America before it is consumed is 1300 miles (Kloppenburg & Lezberg 1996). Since our specific task is the true cost of food, food mileage would measure direct costs in the transportation costs, as well as indirect costs from the environmental damage due to CO_2 emissions. In this way, calculating the ecological costs of food transportation will help to assess the sustainability of the UBC food system as a whole. The goal would be to reduce the food mileage of food consumed at UBC and prioritize local production.

Economic Indicator

The economic indicator that our group feels is the best for our chosen task, as well as our overall vision, is food affordability. When assessing the true cost of food, we are accounting for the hidden costs in the food system. However, if people were to pay the full cost of food at the cash register the cost would be substantially higher and unaffordable for most. A sustainable food system is one where people can afford to consume the food that keeps the system running. Without people consuming food, the food system would collapse, and thus is not sustainable. We need to address the hidden costs of food, but also keep food affordable. This is a difficult balancing act, but one that is necessary when creating a sustainable food system.

Social Indicator

In accordance with food affordability, comes food availability. If people cannot afford food, it is not available to them. In a sustainable food system, everyone has the right to have access to nutritious and safe food. This is why our chosen social indicator is food availability, also understood here as food security. Food security is having the access to affordable, nutritious, unspoiled, and culturally appropriate food.

Another point to consider is that if we were to decide to rely on only local sources, we may not be able to supply enough food for the whole system. This also compromises food security. Our vision is to use local sources, but also to make food available to everyone in the system. The true cost of food may not

allow us to create food security, which is why we may not always be able to charge the true cost of food. While this scenario may not permit the true cost retail pricing of food to the consumer, it does allow us to assess these costs, and provide us with the means of raising public awareness.

Instruments for Measuring Indicators

In order to measure the indicators for our scenario, we will need to utilize various instruments. For the ecological indicator, the ecological footprint can be measured by researching the impact various activities have on the environment. This can be difficult, as it can be very subjective. Assessing food mileage is easier, as it is simply measuring the miles food travels to get to UBC. However, difficulties do arise when finding out where food comes from. UBC's food providers can identify their suppliers, but suppliers get their food from many different sources –depending on the season and changing prices on the world market. As well, items often change hands many times along the supply chain and the ability to identify actually sources becomes increasingly muddied. In order to facilitate this task, we have created a questionnaire for food service providers (see Appendix B). This questionnaire can be presented to UBC suppliers as a template of how to conduct their own CCA. The purpose is not to deter business, but to make wholesalers more aware of the ecological footprint their products create.

Measuring the economic (food affordability) and social (food security) indicators would involve a separate questionnaire. Evaluating what students can afford without using student input would not be efficient. This questionnaire could be formulated by the 2005 AGSC class.

Specific Task: The True Cost of Food

Our vision, and the indicators within our vision, allows us to measure the true cost of food, as well as the sustainability of the UBC food system as a whole. In recognition of group 14's model from last year and our own group values, we will bear our four indicators in mind as we discuss the CCA and conduct a

sample analysis, reveal the indirect costs associate with the food system and prepare recommendations for both UBC food providers and next year's AGSC 450 class.

Commodity Chain Analysis (CCA)

In our global food system, our food demands determine natural resource use and misuse. To move towards a more sustainable future, patterns of food production, processing, distribution and consumption must be recognized as natural resource issues. By revealing how local food consumption is linked to global structures, we hope to show how food choices in one place can affect the natural resource use and social conditions in another.

An effective method of revealing the distance food travels and its production, processing and transportation methods is the CCA. This method can be used to assess the true cost of food by presenting the differences and similarities in cost between various "production to consumption" pathways. A CCA "seeks to understand the links between producers and consumers by tracing the links that connect the people and places at different points along the chain" (Jackson *et al*, 2003). This method can reveal the complex interactions of production processes and the environment at various stages of the organization (Kloppenburg & Lezberg 1996). Through the CAA, we can reveal and eventually begin to calculate the environmental and social costs of agriculture production by connecting a specific food product to the impact it has on the environment, the power relations among humans and the connection between local and global food systems (ibid.). CCAs are also politically and commercially sensitive as producers may try to hide the length of the chain, to promote regional or national distinctiveness or to promote quality and reliability (Jackson *et al*, 2003).

Conducting a CCA

There are many steps involved in conducting a commodity chain analysis (Commodity Chain Analysis, 2004). These include:

1. Selecting a product

2. Listing all the ingredients used to make the product

3. Finding out who manufactures the product

4. Obtaining information about the company (business conditions and trends, management techniques, corporate strategies, and regulations)

5. Finding out how the manufacturer acquires their ingredients, from which country or countries

6. Finding out processing techniques in the country/countries (growing conditions, harvesting, transportation, and processing requirements)

7. Finding out the environmental, political, economic and labor conditions in the country/countries.

(See Appendix C for a more detailed version of the above)

Our group performed a CCA on a sample meal that would be offered by a UBC student residence; in this case we chose breakfast from Totem Park Residence. This meal includes two slices of bacon, two eggs, toast, hash browns, a banana, and a glass of milk. We believe that this standard breakfast will vary little in terms of ingredients and portion sizes among the campus retail outlets. Furthermore, this meal is comprised of relatively simple items, which facilitates the tracing of their origins – which is required in order to complete the CCA. Finally, our group believes that, from a nutritional standpoint, breakfast is the most important meal of the day as it provides students with the fuel they need in order to study and perform well in school and other activities. Our sample meal CCA is available in Appendix D.

Revealing the Indirect Costs

Indirect costs are those that are not paid for at the cash register but are contributing to our global economic bubble (Brown, 2003). These costs are difficult to quantify now but will become concrete at a later time. Our group decided to use a CCA as a means of identifying where some of these indirect costs incur. We feel that "through increased transparency of food commodity chains consumers will be able to

make more informed choices and contribute to current debates about the food system." (Jackson *et al*, 2003). We further distinguished these indirect costs with respect to the three-legged stool of sustainability and our chosen environmental, social and economic indicators.

Environmental costs

Lester Brown identifies the following "weaknesses" in our current economic market as responsible for the degradation of our planet: the market does not "incorporate the external costs of providing goods and services; it does not value nature's services properly; and it does not respect the sustainable yield thresholds of natural systems such as fisheries, forests, rangelands and aquifers" (Brown, 2003). It is because of these market failings that the environmental externalities of our current food system are not accounted for in retail food prices.

First of all, local and global food transportation is largely responsible for the carbon emissions damaging our environment and contributing to global warming (Norberg-Hodge & Gorelick, 2002). The economic costs of climate change and global warming are indeed already significant. In 1990, $608 billion was spent on natural disaster recovery, more than the previous four decades (World Watch, 2001).

Agricultural production directly impacts our environment. Some examples are: soil erosion due to tilling, nitrogen and phosphorus runoff (from both manure and fertilizers) contaminating waterways, and fossil fuel use and CO_2 emissions from chemical applications (See Appendix E for more information). This air, water and soil pollution can also be linked to detrimental human and animal health effects.

Social costs

The indirect social costs of our current food system range from health care costs (which can also be seen from an economic, tax-based perspective), to the costs of de-skilling communities, and to the ability of consumers to support production practices they approve of.

In Canada, where (for the moment) we enjoy a socially funded health care system, poor dietary choices become a nation-wide burden. While we recognize the value of having the freedom to make our

own consumption and lifestyle choices, we also realize that our health care system is paying the indirect costs of those who make poor choices. Harvey Skinner, head of the Public Health Sciences at the University of Toronto, wrote in the Globe and Mail that "smoking, obesity, poor diet, lack of exercise, excessive drinking and their social conditions account for 50 percent of premature deaths in Canada." The least expensive solution to our health care issues lies in educating people as to how to improve their lifestyle choices (The Fitness Bulletin, 2002).

Food-borne illness should also be accounted for in the true costs of food. Every year in Canada, it is estimated that 7 million people are affected by food-borne illness that costs the Canadian economy $5 billion in lost productivity (Sattar, 2003). This is a substantial burden to the financial system as well as a threat to consumer health and food security.

This leads us to another indirect social cost of our current food system: the increasing concentration of production in fewer - corporate - hands and the subsequent 'de-skilling' of the rural community. The imposition of production regulations and standards is essentially to safeguard consumer health. While these regulations are laudable, they often have the effect of raising production costs, thus undermining the economic viability of smaller scale farmers and processors.

As well, corporate concentration has resulted from the ability to offer lower retail prices, thanks to a reduction in costs from economies of scale. A larger processor can process more with less labor, while benefiting from larger storage, processing and packaging mechanisms. Quantifying the cost of the loss of local food processing capabilities is difficult. One can conduct a community-based multiplier effect assessment, which involves following dollar-interactions within a community. However, even this type of evaluation fails to take into account the future losses associated with the incapability of a community to process its own products, and it should be noted that once those systems are dismantled, they are difficult to re-institute.

A further social cost we would like to highlight is the ability of consumers to choose to support production practices they condone. Because of the producer-consumer distancing that is indicative of our global food system, consumer may unknowingly or willingly be supporting labor practices and environmental regulations that they would find unacceptable if they were occurring closer to home. We hope that CCAs will provide the information that conscientious consumers would like to have at their disposal.

Economics costs

As we consider increasing the retail costs of food to reflect all the true costs incurred in the food system, we must also consider food accessibility, and how it is already compromised. Statistics Canada's National Population Health Survey found that an estimated three million people in Canada, 10 per cent of the population, lived in households where a lack of money either prevented them from buying enough food or caused them to eat lower quality, less healthy foods (Dietitians of Canada, 2002). So we are already facing a national food security crisis, which would only be magnified by the inclusion of all true costs. However, with a system that doesn't reflect these indirect costs we are creating an unstable global bubble economy.

Conclusion

According to our research, a significant difference exists between the costs of food paid for directly and those paid for indirectly both with regards to the environment and society. The feasibility of a system that would account for these indirect costs is seemingly impossible for several reasons. These include: the extreme difficulty placing a dollar value on the concepts of the environment and health; the difficulty with placing scientific predictions on expected outcomes of change for such dynamic concepts; the politics and other barriers to implementing an adequate system and being able to accurately evaluate it; and creating a system that recognizes low income households and issues with food security.

Developing an assessment model

Part of our assigned task was to create an assessment model for the UBC food providers. While we were able to come up with a template, we found that actually instituting such a system would be improbable and developed a secondary proposal. We will present here our first assessment model and highlight its limitations. We will then discuss our secondary, more feasible proposal which we have included as part of our recommendations for next year's group.

First Assessment Model

We chose in accordance with our stated indicators (ecological footprint etc.) and found food miles - that is the distance a good has traveled - to be the clearest and most quantifiable unit of assessment. We therefore propose a simple point-based system that could be applied to a food item, with higher values reflecting sources from further afield. Furthermore, we suggest focusing solely on the item's major ingredients, ones that make up at least 80% or more of the item, so as not to have to struggle with assessing flavorings and spices. As well, we would recommend reducing the overall value by one point for every item that undergoes final processing/assembling on the UBC campus. For an example of a rating, please see Appendix F. Please note that our group unanimously agreed to accord a lower value to any good produced within Canada over any produced in parts of the United States that may require less transportation. This was an interesting decision in that it reflects our preference to support our domestic economy, over possible lower fossil fuel use (environmental cost).

Limitations

We readily acknowledge that several circumstances complicate the ability of both the AMS and UBC Food Services to assess and label the "true costs" of the food items they provide. First of all, both of these organizations receive their supplies from distributors, whose business is to provide a consistent year round supply of items. This means that as seasons change, the distributors must get their 'standard' produce items, such as tomatoes, lettuces, and apples, from further afield. So during the summer and fall

months, items available in the Lower Mainland would incur lower external costs due to reduced transportation. During the winter and spring, fresh produce must be shipped in from areas such as California or Mexico and have an increased value. Therefore, in order to ensure an accurate representation of the "true costs" of food items, the person in charge of purchases would need to continually be in contact with the distributors, and have access to information regarding their ever-changing, seasonally-determined sources. This would inevitably lead to higher labor costs, leading to eventually higher retail costs, and further undermining food accessibility and affordability.

Secondary Assessment Model – Monthly Feature Commodity Project

A less ambitious, but more realistic proposal would involve presenting a monthly information board on an individual commodity, a single food item or composite menu item. The information would outline a typical commodity chain for the highlighted item, including production techniques from cultivation to distribution, as well as an approximate food miles count. The presentation would also outline the similar information as it relates to an alternative item, along with the option to purchase the alternative item. For instance, one month could highlight bananas, providing information on both conventionally produced and organic, hopefully fairly traded bananas. Another month could focus on eggs, with free-run eggs being provided at a more expensive option (maybe even UBC eggs!)

If consumer response is positive, this program could help AMS and UBC Food Services promote locally available items – such as notoriously poor sellers like beets and cabbage – during the winter and spring months as a means of encouraging a more localized diet here on campus. This program would act as an educational resource to increase awareness of the indirect costs associated with the foods served and encourage consumers and producers to contribute more sustainable behaviors. See Appendix G for consumer survey.

Recommendations

To conclude our research project we are placing forward recommendations for the direction of next year's team project. We feel that the CCA is an effective way to educate stakeholders in the UBC system by revealing the indirect costs associated with foods in the UBC system. In doing so, we hope to proliferate change both in consumer and producer buying practices and contribute to the progression to a sustainable UBC food system. Our recommendations are as follows:

1) Conduct a more thorough CCA analysis for an entire day's menu at Totem Residence.

2) The results of the CCA should be discussed with the food service providers, with recommendations on how they can go about reducing the indirect costs associated with the food that they provide. These should include tangible practices that they can follow. For example finding alternative products or food providers with less associated transportation distances or that may be taking steps to lessen their environmental impact and ways to introduce healthier food preparation practices including those that monitor food safety.

3) Implement the monthly feature commodity, as a method to educate and raise awareness in consumers and producers. Monitor and evaluate the outcome.

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McCains Foods Limited: http://www.mccain.com/
Dairyland Fluid Division Ltd: http://www.dairyland-ca.com/
Saputo Inc: http://www.saputo.com/
Vanderpol's Eggs Ltd: http://www.vanderpolseggs.com/

Appendix A

Personal Value Statements

Tara Molloy's Personal Value Statement

"Despite wishing to sound more altruistic, in honesty I would define my paradigm as unabashedly anthropocentric. To my 'defense', I also believe that the root of all and any human actions (not just my own) is essentially anthropocentric, even egocentric. Some people will concede that all other entities – from plants and animals to waterways and ecosystems – have intrinsic values and rights of their own. But follow their line of reasoning and at some level it will come back to human health and welfare, and eventually even back to the happiness of the individual. Consider: while one may consider all communities valuable, and be dedicated to community-building the world over, a certain priority is given to one's own community – precisely because it is *one's own*. A person may choose to support one firm - that they consider more environmentally sensitive - over some other one, and this decision will make the person feel good about themselves. The most Buddhist or Christian actions, while being motivated by the most benevolent intentions, are never devoid of the self.

Social and ecological concerns rank high on the list of priorities I believe the world should use to assess commerce and all other human activities; however, I also acknowledge that, without economic sustainability, there is little incentive for individuals and firms to change their activities. This is why I have focused my studies on resource economics, and am prone to questioning economic viability first when proposing policy changes."

Elietha's Personal Value Statement

"My values are based on a combination of my life experiences and background in nutrition forming my own personal paradigm that I have a hard time defining with philosophical jargon. I believe that it is important that students in the UBC food system should be given the opportunity to choose foods that are culturally acceptable but I also strongly believe that we currently underestimate our personal roles as global citizens and the ramifications of our everyday actions on a planet that is facing many environmental challenges. In our affluent society we are used to such a variety of foods that we expect them and are not willing to compromise our tastes for an environmentally sustainable options. We figure if we are willing to pay the price we can have it and in effect overlook the hidden costs that are creating a time bomb.

I recognize our biggest challenge lies in being able to create a system that is able to balance these priorities which I think can be achieved through collaborative efforts and some compromise. We need to cultivate a society respectful of our environment and aware of the ramifications of our everyday actions in order to ensure viability for the system in the long term."

Amanda's Personal Value Statement

"Some of my decisions are community based and thus we should consider the impacts to the community and not just to the individual. Community involvement is critical because a people can either make changes towards sustainability or continue with unsustainable practices.

Humans are part of the ecosystem, and we need to learn how to integrate our economic and social lives into the environment so that the environment is maintained and enhanced rather than degraded. Food systems are determined by human choices, we thus must acknowledge the social aspect of human behaviour that constrain or make them. To a limit, I value humans more than other things in nature. However I know that without a healthy ecosystem, the well being and survival of humans are at risk. Also if we are to maintain the environment for future generations, we must consider the interests and well being of the natural world."

Marin's Personal Value Statement

"I think the environment is the most important factor when addressing food systems. Without the earth to grow the food, a food system would not exist. I think this makes me eco-centric. I understand that humans are involved in the food system, but I view the environment is intrinsic, rather than instrumental, so I do not think my viewpoint is an anthropocentric one. Without the earth we could not grow food, and we would cease to exist, so ultimately, the environment controls us."

Maria's Personal Value Statement

"I learned in my science background that everything in nature is in a constant state of flux, and that systems go in and out of phase at a steady rate, unless an element introduced in the system pushes it in one direction or another. This is how I view humanity, as well as the environment. History progresses with eras of solemnence, moments of great advancement and periods of destruction. Is the history of the earth based on plate tectonic theory or on humanity? Human's appearance in time as only a blip on the radar, yet there are claims of grave destruction as a result of our earthy inhabitance. We assume that we are the supreme beings and if we are to outlive other species then we must take responsibility and restore our ecosystem, before it becomes a better environment for another mutation.

I find this scientific approach depressing and I believe that humanity is greater than scientific theory. Since we are here and now in this moment in time then we must always strive to make things better for ourselves and the next generation. And so, I take a very strong anthropometric stand-point because the earth can destroy us at a faster rate than we can possibly destroy it. So, no matter what road an individual takes, whether it is to save the world, save some money or save a soul, we all have a role in this world. After all, it is in our nature."

Appendix B

Questionnaire for *(Supplier Name):*

UBC Food Providers (UBC Food and Beverage Services & UBC Alma Mater Society Food Services) is committed to local producers and will make an effort to support the sustainability initiative at UBC. The following questions are designed to create awareness of food origins and the indirect impact on food costs:

1. From which farms does *(Supplier Name)* purchase from?
2. What do you know of the practices of these farms?
3. How many of your products are *(Supplier Name's)* own signature brand?
4. Where are *(Supplier Name's)* processing plants located?
5. From which private food companies does *(Supplier Name's)* purchase from?
6. Which of these companies are within BC?
7. Within Canada?
8. Which products are from outside Canada and from which countries?
9. For what reason does *(Supplier Name)* purchase items from outside Canada?

   Check which one(s):

   - ○ Price
   - ○ Availability
   - ○ Variety
   - ○ Consumer Demand

Appendix C

Adapted from: New York University Libraries
http://library.nyu.edu/research/food/cca.html

Commodity Chain Analysis for Processed Food Products

See also: Research in Food Studies | NYU Virtual Business Library

I. Select a product

II. List the ingredients used in the product

III. Who manufactures the product?

IV. What can you learn about this company?

V. How do they get their ingredients? From what country or countries?

VI. What processing techniques are used?

VII. What are the environmental conditions in the country? What are the political, economic, and labor conditions in the country?

I. **Select a product**

Choose something you know and can obtain easily.

II. **List the ingredients used in the product.**

What commodities go into a certain ingredient?
Encyclopaedia Britannica online [http://search.eb.com/]
Enter a search on the name of the ingredient to get more information about that item.

III. **Who manufactures the product?**

Hall, Linda D. (ed.). Brands and Their Companies. Detroit: Gale Group, 2000. (2 vols)
Ref6 T223 .V4 A22
This directory provides an alphabetical index of brand names and contact information for the companies that make them.

Hoovers
http://www.hoovers.com
Use this online directory to look up a brand name and identify the parent company. Also gives top competitors.

Million Dollar Database
http://mddi.dnb.com
Use this database to find brief profiles of both domestic and international companies.

The ultimate corporate parent is given, as well the names of the CEO and company executives for each.

IV. What can you learn about this company?

ABI/Inform (online index)
http://www.umi.com/pqdauto/
Provides in-depth coverage of business conditions, trends, corporate strategies and tactics, management techniques, competitive and product information, and a wide variety of other topics.

Factiva (formerly Dow Jones Interactive; online index)
http://global.factiva.com
Provides access to articles from leading newspapers, news magazines and newswires. Search 6,000 newswires, magazines and journals, essential business, government and industry websites

Lexis-Nexis Academic Universe (online index)
http://web.lexis-nexis.com/universe/
Provides full-text access to newspapers from around the world and the U.S.; business, legal, and medical journals; corporate financial information; Federal laws, regulations, and court decisions; State laws and court decisions; quotations and biographies; and business directories.

Mergent Online
http://www.fisonline.com/
Use this database to look up annual reports of publicly traded companies. From the Business Summary page click on the Annual Reports tab at the top. Annual reports are available in PDF format and often contain a lot of pictures that load slowly. These reports usually include a summary of the performance of each product category and/or brand the company owns.

Periodical Abstracts (online index)
http://www.umi.com/pqdauto/
Provides abstracts of articles from a wide range of popular and academic magazines and journals. Good general coverage of social issues and public policy.

V. How do they get their ingredients? From what country or countries?

CRB Commodity Yearbook. By Commodity Research Bureau. New York: John Wiley & Sons, Inc. Annual.
Ref6 HF1041 .C56
This book provides essential information on commodities, including production levels in the U.S and the world, prices, and trade information. Individual entries for each commodity start with a short narative section that discusses recent market trends and identifies major producers. These are followed by tables of relevant statistics going back several years.

Agricultural Market Information Virtual Library
http://www.aec.msu.edu/agecon/fs2/market/contents.htm

U.S. Department of Agriculture
http://www.usda.gov/
--News and Information
http://www.usda.gov/news/news.htm

Agricultural Marketing Service
http://www.ams.usda.gov/

Agricultural Research Service
http://www.ars.usda.gov/

Economic Research Service
http://www.ers.usda.gov/

Foreign Agricultural Service
http://www.fas.usda.gov/

National Agricultural Statistics Service
http://www.usda.gov/nass/

VI. What processing techniques are used?

Encyclopedia of food sciences and nutrition. 2nd edition. (10 vols).
REF9 TX349 .E47 2003 Non-circulating
This encyclopedia describes growing conditions, harvesting, transportation, and processing requirements for each product. Includes list of recommended readings.

Encyclopedia of Chemical Technology / Kirk-Othmer Encyclopedia of Chemical Technology. (24 vols).
Ref9 TP9.K54 1999
This encyclopedia describes processing techniques for most commodities. Many entries include a detailed chart of the technique most often used for that item.

Agricola (online index)
http://agricola.nal.usda.gov
Worldwide coverage of literature relating to agriculture. Includes food and nutrition, food service management, natural resources and pollution, consumer protection and home economics. Indexes primarily journal articles, some government reports and documents, monographs and conference proceedings.

Encyclopedia of Chemical Technology/ Kirk-Othmer Encyclopedia of Chemical Technology.
Ref9 TP9.K54 1999
This encyclopedia describes processing techniques for most commodities. Many entries include a detailed chart of the technique most often used for that item.

VII. **What are the environmental conditions in the country? What are the political, economic, and labor conditions in the country?**

CIAO (Columbia International Affairs Online)
http://www.ciaonet.org

Country Studies (Library of Congress)
http://lcweb2.loc.gov/frd/cs/

Food and Agriculture Organization (FAO)
http://www.FAO.org

Global Newsbank
http://infoweb.newsbank.com

International Labour Organization
http://www.ilo.org

Organization for Economic Cooperation and Development (OECD)
http://www.SourceOECD.org

PAIS (Public Affairs Information Service)
http://spweb.silverplatter.com/waldo?

World Bank / International Bank for Reconstruction and Development (IBRD)
http://www.worldbank.org

World Health Organization (WHO)
http://www.WHO.org

Page last modified: February, 2004

Appendix D

How the CCA was Conducted

- Approached Dorothy Yip (UBC Food Services) and Nancy Toogood (AMS) for guidance.
- Main question answered was concerning wholesalers that supply products and general inquires regarding food costs and overhead costs.
- Findings that cost purchased included overhead and transportation costs of wholesalers.
- Sample meal is chosen by group: breakfast
- In order to conduct CCA for UBC residence, Josie Midah and Ed Ng from Totem Park Residence assisted in food price and product brand identification.

Item	Raw Food Cost rounded to nearest 5 cents (w/ meal plan) (1 cent = 1 point)	Retail price At residence
Bacon (2 slices)	2 @ 20=40	$0.85=1.70
Eggs	2 @ 20=40	$1.00=2.00
Hash browns (4oz)	35	$0.70
Toast (with butter or margarine)	20	$0.75
250 mL milk	45	$1.12
Banana	26	$0.52
Total price	$2.06	$6.79

- Each resident pays $7.50 per day to cover the cafeteria's overhead
- Residence food cost is about 50%
- Retail food cost budget is 39%

Group 8's CCA Template:

1. Select a product
2. List the ingredients used in the product
3. Which distributor supplies this product?
4. Who manufactures the product?
5. What can you learn about this company?
6. How do they get their ingredients? From what country or countries?
7. What processing techniques are used?
8. What are the environmental, social and economic impacts from the processing of this product? What are the direct and indirect costs?

In the following CCA steps 1 through 6 are outlined in detail since these can be determined with investigation and evidence. The processing techniques are important in the environmental, social and economic impact, yet to simplify the model, step 7 is briefly outlined since it directly affects step 8, which is addressed in the Direct and Indirect Costs section.

1**. Eggs, any style**
2. Main ingredient is egg
3. Gordon Food Services
4. Gordon Food Services brand as well as Vanderpol's
5. GFS: US company
    - Canadian division of GFS is Neptune Food Service
    - Distribution centre is based in Milton, Ontario
    - GFS has "Marketplace stores" concentrated in US around Great Lakes
    - Claims to be a "customer first" company

   Vanderpol's Egg's Ltd: BC company
    - Has instituted an in-house laboratory
    - Developed a HACCP program to ensure the safety and the quality of our products
    - Egg processing business since the 1950's years based in Abbotsford, BC

6. BC Egg Board has provincial quota exchange where a certain number of eggs must be distributed within the province. GFS eggs are mostly from Ontario.
7. Processing techniques: hens lay eggs, sanitation and candling, storage, packaging and transportation

1. **Banana** (fruit)
2. Main ingredient is Banana
3. Central Foods
4. Local and international produce and fruit growers
5. Central Foods:
    - Local produce distributor that purchases produce from Terminal Station
    - Mostly local growers and imported fruits and vegetables to supply consumer demand
6. Mainly Ecuador
7. Processing techniques: banana plantation, harvest, shipping and storage

1. **Bacon**
2. Main ingredient is cured pork
3. Centennial Foods
4. Centennial brand bacon
5. Centennial Foods
    - Founded in 1967
    - Privately owned food company; gross corporate sales of $250M CAD
    - Company specializes in value-added (pre-prepared) meat and seafood processing and "centre of the plate" (main ingredient) foodservices sales and distribution
    - Involved in research and development of custom designing a variety of raw and pre-cooked products
    - Has 3 CFIA/USDA approved processing facilities

- Distribution centres mostly in Western Canada: Victoria, Vancouver, Prince George, Kelowna, Edmonton, Calgary, Regina, Saskatoon, Winnipeg

6. Box states “Canadian product”
7. Processing techniques: slaughter animal; cut into pieces; addition of salt, nitrates and other ingredients; curing process and smoked; packaged for sale.

1. **Hash brown’s**
2. Main ingredient is potato
3. Neptune Foods
4. McCain brand
5. McCain’s:
    - has some farm operations to ensure a ready supply of quality potatoes, these provide only a small percentage of the company’s needs. Most potatoes are grown by independent growers who contract with McCain Foods for a supply of potatoes before planting the year’s crop. McCain agronomists work closely with farmers to help them constantly improve the quality and yield of their crops.
    - McCain Foods in North America decided not to accept any GMO potatoes effective with the 2000 crop, and has instituted testing procedures
6. Various Grower’s.
7. Processing techniques: potato plant growth and harvest, potato transported to McCain’s processing plant for packaging.

1. **Slice of Bread, Toasted**
2. Main ingredient is wheat
3. Monte Cristo Bakery
4. Monte Cristo Bakery products
5. Monte Cristo:
    - Local bakery with retail store on West Broadway
    - Has a wholesale outlet in Burnaby
6. Assumption that wheat is from Alberta and other prairie provinces
7. Wheat processing: grown and harvested in Alberta, storage, milled, packaged, transported

1. **Glass of Milk**
2. Main ingredient is milk
3. Dairyworld
4. Dairyland brand
5. Dairyworld:
    - Sub division of Saputo Inc.
    - Saputo is a publicly traded company that has sub-divisions on dairy products (Canada and Argentina), cheese (USA) and bakeries
    - Dairyland Fluid Division Ltd. Has a number of other milk based products including Armstrong and Orchard Hill
6. Mostly BC dairy farmers
7. Processing techniques: cows milked in Fraser Valley, transported for pasteurization, divided into containers, refrigeration and storage, transportation.

Appendix E

Environmental Costs of Breakfast

The hidden costs associated with the production of food are often found in the impact the process has upon the environment. A breakfast consisting of bacon, eggs, toast and hashbrowns has many avenues through which environmental degradation can take place.

Pork production, to produce the bacon, has certain impacts on the environment that we do not pay for at the register, but what we may pay for later. The production of pork involves raising a large number of pigs at a time. The manure created by the pigs, depending on where it is collected, stored and used, can cause ground water contamination. Other impacts on the environment from pig manure include the degradation of aquatic ecosystems, air pollution from odours and ammonia emissions, and diminished soil quality and biodiversity. Pig manure contains a lot of nitrogen and phosphorous, both of which, when loaded into the environment can cause damage. Though consumers do not pay for the costs to the environment currently, it is a hidden cost associated with the production of bacon.

Egg production has many of the same environmental effects as pork. Manure produced by layer hens can accumulate. Poultry manure can be used as fertilizer for plant agriculture; however, chickens are not able to digest certain phosphorous complexes, as they do not have the enzymes. In certain areas, it is law to feed the necessary enzymes that allow for phosphorous to be digested. With the enzyme, the chickens can utilize the phosphorous in their diets, and it is not excreted into their feces. Nonetheless, in areas where this is not the law, many producers can accumulate chicken manure with high amounts of phosphorous. High levels of phosphorous are dangerous to the environment as P can leach into ponds or streams and cause eutrophication. On the other hand, poultry manure, from chickens fed the required enzyme, is better for the environment than pork or cattle.

The milk used for our sample breakfast would come from a dairy farm. Dairy farms produce similar environmental impacts as pork. The manure produced by dairy cattle, depending on the treatment and usage, can cause ground water contamination, degradation of aquatic ecosystems, diminished soil quality and ammonia emissions. High producing dairy cows eat a lot of food. Often bypass proteins are fed to cows to increase the quality and quantity of the milk proteins. If the cow is not getting enough essential amino acids, much of this protein can pass through. The problem with dairy is not only the amount of protein (and hence ammonia) that passes through, but it is also that there is so much manure produced. If is difficult for producers to actually use the amount of manure that is produced. Nevertheless, much of the manure produced by dairy cows, chickens, and pigs is used as fertilizer for plant crops.

The production of crops such as potatoes, grain crops, vegetables and fruits can have many environmental impacts. Most farmers use fertilizer for the production of their crops. Depending on the type of fertilizer, the nitrogen, phosphorous and potassium in the fertilizer can leach into ground water, ponds and rivers. As well, the use of pesticides, herbicides and fungicides can have negative impacts on the environment. The repeated tilling of soil can cause erosion, as can the absence of cover crops. If farmers make use of large monocultures, they are reducing biodiversity. Many of these activities are hidden costs in the production of food.

Many farmers work to preserve the environment by controlling their manure management, limiting chemical use in crops, using cover crops, reducing tilling and creating farms with greater biodiversity. These producers are reducing the impacts of production on the environment, and reducing the hidden costs of production. Even though we do not pay for it currently, if producers work to reduce environmental impacts, the price we pay for the degradation later will be miniscule. Nevertheless, there will always be some farmers who are only concerned with their current profits, and not the sustainability of their farm. It is these farmers that increase the amount of indirect costs associated with the true cost of food.

Appendix F

Assessment Model 1

Location of Cultivation	***Suggested Rating***
UBC Farm	0
Lower Mainland	1
British Columbia	2
Canada	3
Western USA	4
Rest of USA	5
Central America	6
South America	7
Asia/Europe	8

To understand how this could work, consider a hamburger: Let us assume that the beef is raised in Alberta, the tomatoes and lettuce are from the Lower Mainland, and the cheese is from Armstrong (BC). The overall rating of this item would then be: 3 (beef) + 1 (tomato) + 1 (lettuce) + 2 (cheese) – 1 (assembling and cooking of patty on UBC campus) = overall value of 6

Appendix G

FEATURE FOOD PROJECT FEEDBACK FORM
FOR AMS & UBC FOOD SERVICES

(I)1. Name of Retail Outlet: _____

2. You are (circle however many are appropriate):

UBC student UBC faculty UBC staff Visitor Other (specify)_____

2. How often do you eat at a UBC retail outlet?

____/day ____/week ____/month

(II) 1. What did you eat today?_____

2. Did you see the Information Board? Yes No

3. What was the Alternative Option today?_____

3. Did you purchase the Alternative Option?
Why?_____ Why Not?_____

4. Would you like to see this alternative available all the time? Yes No

5. Would you purchase this option at its current price? Yes No

6. Any other Comments?_____

Thank You for Your Time!