

**The greater good:
Integration in a surplus
food management system**

by

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Abstract

This study explores surplus food management in the City of Vancouver, including the organizations involved, how it behaves as a system, and opportunities for optimizing the system. The analysis incorporates environmental policy integration, systems thinking for sustainable development, food systems planning, and approaches to food security. Data collection included eight semi-structured interviews with individuals familiar with surplus food management, a review of literature and information from various organizations' websites, and my personal experience volunteering with a food redistributor. Results showed that the surplus food management system has developed organically, seemingly serving the needs of organizations involved. However, financial constraints, agenda conflicts, and ineffective relationship management are hurdles to reducing food waste and ensuring that people in need receive nutritious foods. To begin to improve surplus food management, an intermediary is proposed, which would ensure that there is sufficient capacity to use surplus food appropriately and mediate relationships among participating organizations.

Keywords: surplus food management; systems thinking; intermediary; food systems planning; Vancouver

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List of Acronyms and Abbreviations

AH	anti-hunger
AP	anti-poverty
Vancouver	City of Vancouver
EPI	environmental policy integration
GVFBS	Greater Vancouver Food Bank Society
SFS	sustainable food systems
VCH	Vancouver Coastal Health

Chapter 1.

Research Overview and Justification

1.1. Research question

How does surplus food management in Vancouver behave as a system, and what are the opportunities for optimizing the function of surplus food management?

For the purposes of my research, surplus food management will be defined as a process through which “voluntary, extra-governmental community organizations...collect surplus/wasted and donated foodstuffs and redistribute them to the ‘needy’, working largely with volunteer labour and donated facilities” (Riches & Tarasuk, 2014, p. 45).

1.2. Background

1.2.1. *Food security and insecurity*

Food security is a concept that originated in the 1970s, since which time an estimated 200 definitions and 450 indicators have been established (Mechlem, 2004). Food security can be measured at the national level based on the supply of “basic foodstuffs,” as well as at the household and individual levels (Mechlem, 2004, p. 633). National and household food security does not guarantee the ability of individuals to access food (Mechlem, 2004). For the purposes of this research, I will use a definition that is among the most widely used, and that was adopted by the 1996 World Food Summit: 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” (*Canada’s Action Plan for Food Security*, 1998, p. 9).

Following the November 1996 World Food Summit, Canada crafted a food security strategy (*Canada's Action Plan for Food Security*, 1998). Food security is similarly among the goals of Vancouver's Food Strategy (*Vancouver Food Strategy*, 2013), and surplus food management is argued by some to be among the tactics that can promote food security.

The opposite of food security, food insecurity, manifests itself in a range of circumstances, ranging

from concerns about running out of food before there is more money to buy more, to the inability to afford a balanced diet, to going hungry, missing meals, and in extreme cases, not eating for a whole day because of a lack of food and money for food.

(Tarasuk, Mitchell, & Dachner, 2012, p. 5)

Riches and Silvasti discuss that food insecurity does not necessarily imply hunger, and that, "as a social problem, hunger could be easily solved" since there is technically "no shortage of food in industrialized countries" (2014, p. 8). Despite the apparent simplicity of the problem, society cannot currently eliminate hunger. Further, food security is more multi-faceted than hunger, making it more difficult to achieve (Riches & Tarasuk, 2014).

Food insecurity has been identified as an issue affecting Canadians, and the rate of food insecurity has significantly increased in Canada since 2008 (Tarasuk et al., 2012). In 2012, four million Canadians experienced food insecurity, 1.15 million of whom were children (and this does not include the homeless or those living on reserves) (Tarasuk et al., 2012). The effects of food insecurity on children and adults alike should not be taken lightly; in addition to poorer physical and mental health for both groups, food insecurity has been linked to depression and asthma in children, and increased rates of chronic disease (e.g., depression, heart disease, diabetes) in adults (Tarasuk et al., 2012). As well, one study suggested that homeless youth who are nutritionally vulnerable or in poor health have difficulty obtaining food, shelter, and employment (Gaetz et al., 2006). Food banks, as well as a range of other food distribution organizations provide food to people in need. In British Columbia, food banks alone assisted an estimated 100,000 British Columbians per month in 2014 ("HungerCount 2014," 2014).

This challenge of meeting the food needs of all people exists despite there being no evidence of a food shortage based on production levels (Sen, 1999), and despite the fact that one third of food is wasted (Habib, 2014). This polarization, of excess and waste alongside hunger and poverty (Power, 1999), can be explained in part by political and social arrangements that affect people's ability to acquire food (Sen, 1999). Thus, this research explores the function and structure of surplus food management in order to better understand the political and social barriers, and thus garner knowledge to overcome them.

1.2.2. *Critiques of food security*

Food security has been critiqued by some academics. Food security supports charitable food aid as a solution to poverty, which Riches and Tarasuk (2014) argue is problematic. Additionally, newer ideas about food policy suggest the value of a "food first" approach, which promotes public health and welfare through a more socially-equitable and low-carbon system (Riches & Tarasuk, 2014). This food first approach aims to guarantee people economic, physical and social prerequisites that will allow them to obtain safe and nutritious food, promoting health and welfare (Riches & Tarasuk, 2014). Thus, this alternative to food security focuses on ensuring that people have the resources to obtain food themselves, instead of simply ensuring that they are fed, since the latter may lead to inappropriate types of food assistance and inappropriate environments through which food is obtained.

1.2.3. *Addressing food insecurity*

Food assistance programs like food banks have been in place in Canada since the 1980s (Riches, 1986; Tarasuk & Eakin, 2005), and were initially intended to be temporary, stop-gap practices. While food banks and surplus food management are able to address symptoms of food insecurity, the ongoing need for such programs and the persistence of hunger indicates ongoing social and/or political challenges at the root of this widespread problem.

Surplus food management is a sub-system within the greater socio-political context of food insecurity and unsustainability in Canada, and can be considered a

grassroots initiative to address hunger and food insecurity. Distributing surplus food to people in need began in response to job loss and when people were increasingly unable to meet their food needs, and was often initiated and managed by charitable organizations (Riches, 1986). Although the government has committed to nourishing its citizens (*Canada's Action Plan for Food Security*, 1998), the responsibility continues to be offloaded onto communities (Woolford & Curran, 2012), thus surplus food management continues to fill a gap in the social safety net. This begs the question, how can Canada expect to advance food security on a national level when there continue to be challenges in achieving food security at the local level? Understanding the food security efforts being implemented at the local scale, like in Vancouver, may be instructive in the pursuit of national food security. The ability of surplus food management to achieve food security in a given city indicates the potential of other cities, and Canada as a whole, to achieve food security.

Many organizations began to participate in surplus food management and food-related programming before the existence of higher municipal food security mandates. Thus, the ways in which the organizations address food security are not always methodical or coordinated. This mirrors what was found by Dachner et al., namely that charitable food programs in Toronto “developed organically, not as a planned and coordinated civic strategy to address the food needs of program users” (2009, p. 847). Now that municipal directives around food security exist, the system should be assessed to determine how it fits with the context of food security, and where policy is needed to improve outcomes.

1.2.4. *Critiques of the charitable food provisioning model*

There are critiques of the appropriateness of surplus food management as a measure to prevent hunger and poverty. Riches (1986) suggests that there are problems with the Canadian and global food systems, and that food banks are simultaneously becoming integral elements of the public welfare system and food industry. Further, Riches (2000) suggests that food recovery should not be an acceptable solution to poverty. Tarasuk and Eakin (2003) suggest that the operations of charitable food services create situations in which food assistance is based more so on supply than demand; that is, food assistance is dissociated from the needs of the recipients.

Additionally, Tarasuk and Eakin (2003, 2005) argue that food banks obscure the problem of hunger, thus lessening the drive for government or other groups to seek long-term solutions.

There is presently no immediate solution for food insecurity. People in need will continue to require food, and some amount of surplus food is inevitable. Until higher-level, system-wide changes can reduce the incidence of food insecurity, surplus food needs to be managed as responsibly as possible. Thus, this project is meant to evaluate the current practice of surplus food management, and consider how this stop-gap measure could work in the most responsible way possible.

1.2.5. *Source of surplus food*

Certain established practices in the food retail business may contribute to the amount of surplus food and surplus products that enter the surplus food management system. Several types of policies are used to forecast demand and sales, including returns and rebates (Taylor & Xiao, 2009). Return policies entail a manufacturer that buys back any unsold products from retailers, and rebate policies entail a manufacturer that provides retailers with a bonus for each unit sold (Padmanabhan & Png, 1997). These policies can be beneficial for both manufacturers and retailers, depending on the type of commodity and certainty of demand, among other factors (Padmanabhan & Png, 1997). Return policies, in particular, encourage retailers to be more aggressive in the quantity of products that they stock, increasing manufacturers' and retailers' potential profit (Padmanabhan & Png, 1997). Retailers' overstocking and receipt of compensation for unsold products may be, in part, responsible for the amount of surplus food and products.

1.2.6. *The role of surplus food management in Vancouver*

Surplus food management is an established practice in Vancouver. A network of local organizations works through formal, as well as informal means, to connect surplus food with hungry people. There is great need for food assistance: the level of food insecurity is illustrated by the fact that the Greater Vancouver Food Bank Society

provides food to 28,000 people every week (“About Us,” 2012), which is approximately 1% of the population of Metro Vancouver.

Making use of surplus food, through measures apart from landfilling, will benefit Vancouver, in that it contributes to other municipal goals and systems (including ones related to social services, transportation, economic development, and health, among others). Surplus food management can contribute, not only to food security (i.e. Goal #3 from Vancouver’s Food Strategy: “Improve access to healthy, affordable, culturally diverse food for all residents” (*Vancouver Food Strategy*, 2013)), but also to sustainability, with its social, environmental, and economic benefits (promoting the three pillars of sustainability).

Surplus food management contributes to social goals in that it promotes access to food among people in need. Surplus food management contributes to environmental goals in that it prioritizes the use or re-use of resources instead of landfilling. This reduces transport of waste out of the city and reduces the transport of additional foods into the city, thereby decreasing energy consumption, pollution, and the amount of waste produced. It also promotes the effective use of all of the resources that went into producing food. Finally, surplus food management contributes to economic sustainability in that it promotes a closed-loop food system, which translates into economic efficiency for organizations. Surplus food management also provides a cost-effective way for food vendors to deal with unsaleable products. Obtaining food for free or at a lower cost improves the economic viability of the food distribution organizations that distribute or receive it. Thus, surplus food management is an important tool for Vancouver to advance sustainability.

If the implementation of surplus food management is deliberate and concerted, it has great potential to advance sustainability as described above. Conversely, lack of attention to the practice can impede advancement of sustainability in all areas. It is widely believed that integration of policies is necessary to achieve sustainability objectives and will ultimately lead to positive outcomes for the organizations involved (Hertin & Berkhout, 2005). This need to integrate initiatives and policies is acknowledged in the Vancouver Food Strategy, which describes several ways in which food initiatives are linked to other city strategies and sustainability (*Vancouver Food Strategy*, 2013).

Thus, it is evident that Vancouver has much to gain from considering how surplus food is managed, as surplus food management can contribute to many other city objectives. This study examines the degree of integration among organizations, and the role of government, and is relevant to Vancouver and other planning bodies that have similar goals.

1.2.7. *Socio-technical transitions, intermediaries, and collective action in cities*

Cities are shifting the way in which they provide infrastructure-related services (Hodson & Marvin, 2010). There is increasing concern surrounding the long-term security of resources, so cities are increasingly seeking ways to create self-reliant infrastructure; this is done in order to minimize dependence on national and international resource networks, with the end goal of ensuring resource security and resilience in the face of shocks (Hodson & Marvin, 2010). Hodson and Marvin (2010) and their colleagues approach the question of guiding 'socio-technical transitions' from a standpoint of need for better infrastructure management in the face of increasing privatization of infrastructure provision; to other researchers, socio-technical transition management is a method to be applied to a host of social and institutional pressures for change (Loorbach, 2007; Meadowcroft, 2009).

In order to predict or manage the path of an urban transition, it is important to consider what all of the stakeholders and social interests envision for the process, and how their various types of understanding overlap, or are unique (Hodson & Marvin, 2010). Since there is often a range of organizations, with different perspectives and interests, involved in a given practice, it may not be possible to achieve a unified shared vision (Hodson & Marvin, 2010).

Collective impact is another frame that can be used to consider how cities or organizations respond to the challenges of increased competition and rates of change. Collective impact refers to when "a group of important actors from different sectors [commit] to a common agenda for solving a specific social problem" (Kania & Kramer, 2011, p. 36). It is suggested that "large-scale social change comes from better cross-sector coordination, rather than from the isolated intervention of individual organizations" (Kania & Kramer, 2011, p. 38). Kania and Kramer (2011) discuss that collective impact

requires a common agenda, shared measurement, continuous communication, and mutually-reinforcing activities among participants. Kania and Kramer also suggest that collective impact requires “the creation of a new set of nonprofit management organizations that have the skills and resources to assemble and coordinate the specific elements necessary” to solve the social problem of interest (2011, p. 39). These organizations are envisioned to be backbone support organizations with staff that are independent of the participating organizations (Hodson & Marvin, 2010); they could also be termed “intermediaries.”

Similarly, Hodson and Marvin state that intermediaries are involved in coordinating capacity, and aim to intervene in existing practices, “[constituting] a space outside of the obduracy of both existing urban governance regimes and existing socio-technical regimes” (2010, p. 482). It is recognized that, in order for an intermediary to achieve sustained success in promoting urban transitions, there must be sustained funding, secure employee positions, and the intermediary must be capable of understanding and integrating different viewpoints, creating communications forums among the different interests (Hodson & Marvin, 2010).

Collective impact is suggested to be especially useful for solving *adaptive problems*, namely problems created by a need to adapt to indeterminate changes reaching into the future (Kania & Kramer, 2011). Some examples of intermediaries that engaged in collective action are: a Cincinnati-based not-for-profit that aimed to improve children’s educational outcomes, operating as an offshoot of an education company; a river clean-up project, founded by an individual; and an anti-obesity campaign, initiated by an associate professor at a major university (Kania & Kramer, 2011). The results of these initiatives include: improved student success across three school boards in dozens of areas, in the first four years of the program; restoration of >1000 acres of watershed, reduction of 215 million pounds of pollution, and a six-fold decrease in levels of a certain carcinogen, 15 years after the start of the river clean-up; and a statistically significant reduction in body mass index among children, from the anti-obesity campaign from 2002 to 2005 (Kania & Kramer, 2011). In all of these examples, a central organizer or organization brought together a range of stakeholders, including public, private, and not-for-profit interests, to devise strategies for addressing a complex problem (Kania & Kramer, 2011), and the variations in their approaches are relate to the origins of the

initiatives, the types of stakeholders that are involved, and how the relationships are managed.

Intermediaries (also known as intermediary organizations, or policy intermediaries) can be a range of organization types (e.g., semi-government agencies working across scales of governance, non-governmental organizations), and can engage in a number of types of work (e.g., consultancy, project management, advocacy, awareness-raising) (Hodson & Marvin, 2010). Intermediaries could work over a time frame of 6 months to 10 years (Hodson & Marvin, 2010). In short, intermediaries have no one prescribed form or function, but they generally develop organizational capacity to reconfigure the arrangement of “institutions, practices, and regulations” in a city (Hodson & Marvin, 2010, p. 479).

1.3. Summary of approach to analysis

This research contributes to an understanding of challenges in the practice of surplus food management in Vancouver, the reason for certain challenges, and areas where attention might be needed, with consideration of the role that an intermediary could play. Surplus food management could be considered to be a response to a particular realm of urban transition, related to food security, hunger, and sustainability and a practice that would benefit from collective impact. Because surplus food management involves many stakeholders with unique perspectives, and addresses a social issue (by collecting surplus food and redistributing it to people who are food-insecure) it is a form of ‘infrastructure provision.’ Thus, it presents a role for the emergence of an intermediary transition management agent.

Surplus food management has a range of stakeholders that are networked together, and has system-wide effects due to its multiple goals, approaches, and actors. Thus, I used a systems approach to collect and evaluate information. Systems thinking suggests that it is important to consider all system actors and their interactions in order to develop a complete understanding, and identify meaningful patterns (Boulding, 1968; Checkland, 1981; Flood & Carson, 1993). Systems thinking is also important in providing a view to the unique perspectives of interacting groups (Checkland & Poulter, 2010), which can improve the understanding of barriers to achieving food security in

Vancouver. In order to determine areas of surplus food management that are lacking in capacity, and where an intermediary could be of value, I will consider the integration, and lack thereof among the goals and operations of different organizations.

The community food security approach emphasizes that food production, processing, distribution, and consumption should be “integrated to enhance the economic, environmental and social health [i.e. sustainability] of a particular place” (Scharf, Levkoe, & Saul, 2010, p. 18). As well, it is suggested that progress towards achieving food security requires a food policy that connects health, welfare, society, and the environment, as well as an alternative way of organizing the international food system (Riches & Silvasti, 2014). This alternative way of organizing the food system is a prime example of an urban transition. Thus, lack of alignment in policies or in how participating organizations approach surplus food management may influence the outcomes (e.g., amount and types of food donated, amount of waste diverted, etc.) as well as the ability to effect change. In other words, change will be difficult if participants’ approaches are vastly different, or if they cannot work with one another due to personal, social, or institutional clashes. By considering the ways in which a range of organizations work on surplus food management, it is possible to gauge the capacity for sustainable outcomes in the context of surplus food management, and point to areas where there is the greatest capacity to work towards these sustainable outcomes.

Finally, it is recognized that the capacity and the role of the municipal government are crucial in food systems management. Certain initiatives in municipalities, namely food policy councils, social planning, and health authorities, have a role to play in promoting food security. For example, food policy councils have thus far been successful in advancing local agriculture, neighbourhood-level interventions, and improved access to retail food (Riches & Tarasuk, 2014). However, food security has been linked to deeper issues of social safety net and income inadequacy, which are generally recognized to be outside of the jurisdiction of municipal governments (Riches & Tarasuk, 2014). This research will focus on strategies that municipalities can employ to promote food security.

Food planners are municipal planners who focus their attention on food-related topics, and act as mediators who consider how food intersects with other areas, where

there are differences in stakeholder values, and where synergistic opportunities exist (Campbell, 2004). Challenges such as differences in stakeholder values have been found to be challenging in the development of Vancouver's food policy (Mendes, 2006). As a result, in this research, I sought out the different perspectives among organizations, to not only assess the current commitment to surplus food management, but also to identify areas where similar types of challenges might arise.

Chapter 2.

Literature Review

2.1. Food systems planning

This section of the literature review contains information on the history and current state of food systems planning. I discuss the historic lack of inclusion of food systems in planning, rationales that mandate its inclusion, what food systems planning entails, and what is to be gained, drawing from principles that arise in Vancouver Food Strategy and associated commentary. The section also discusses ties to the other two conceptual areas, environmental policy integration, and systems thinking for sustainable development.

Food systems have historically not been purposefully and comprehensively included in urban planning (Pothukuchi & Kaufman, 1999). This is suggested to have been in part due to planners' conceptions of the extent of their responsibility in this area, and the perceived disconnect between urban issues and food issues (Pothukuchi & Kaufman, 1999, 2000). However, food is inseparable from other urban issues, including the economy, employment, household spending, waste, pollution, health, transportation, affordable housing, and social issues (Pothukuchi & Kaufman, 1999, 2000). Some examples can help to illustrate this: many urban residents make a living by working in food-related businesses; all urban residents allocate a portion of their income to purchasing food for their own nourishment; 21% of urban waste results from food waste; the quality of food that people consume can affect their health and thus places demands on the health system; chemical inputs for food affect the safety of the water supply; and the quality of a city's transit affects access to food among low-income individuals (*Integrated Solid Waste And Resource Management Plan*, 2010; Pothukuchi & Kaufman, 1999).

In addition to the above links between food systems and other urban systems, the principles of planning dictate inclusion of food issues. According to a report produced by the Association of Collegiate Schools of Planning, one characteristic of planning is that it helps “places better serve the needs of people” (Pothukuchi & Kaufman, 1999, p. 220); considering that food is a basic human need, it warrants inclusion in planning practice. Another characteristic from the above report was the focus of planning on “interconnections among distinct community facets, incorporating linkages among physical, economic, natural, and social dimensions, linkages among sectors” (Pothukuchi & Kaufman, 1999, p. 220); considering the connections between food and other urban systems described above, there is a strong impetus for urban planning practice to include food. The connection among food and these other urban systems suggests that it is not possible to fully address urban issues without considering food.

The link between food and many other subsystems of cities suggests that food issues within urban planning and policy can be likened to sustainability; sustainability is long-term, holistic, and integrates multiple disciplines and interests (Wheeler, 2000). Thus, certain aspects of the sustainability planning approach could help to illustrate the role of food systems in planning. Wheeler (2000) suggests that planning for sustainability in cities requires a holistic approach, i.e. linking planning areas that were previously compartmentalized, as well as linking organizational scales, from site-level to international-level plans. In North America, planning has not historically been integrated. The prevailing belief was in modernism, i.e. specialization in a particular discipline, resulting in many planners with highly specific and compartmentalized expertise (Hertin & Berkhout, 2005).

An example of an integrated sustainability approach to urban food issues is the Five Borough Farm. This project demonstrates some benefits of urban gardens and farms in New York City as well as the ways in which a range of urban agriculture-related activities bring about social, environmental, economic, and health benefits (Appendix A) (“Impact of Urban Agriculture,” n.d.). The Five Borough Farm project exemplifies the systems approach to urban agriculture, due to the way that the project presents its metrics framework: the figure ties each urban agriculture-related activity to benefits in the aforementioned areas. For example, according to their infographic, the effects of environmental education in New York City include: food-health literacy (health benefit),

empowerment and mobilization (social benefit); and awareness of systems ecology and stewardship (ecological benefit) (“Impact of Urban Agriculture,” n.d.). Apart from showcasing urban agriculture initiatives in New York City, the project provides information to aid decision-making. For example, this project makes a case for the implementation of particular agriculture-related activities in New York City by highlighting the range of potential community benefits that would result, some of which are supported by research (“Impact of Urban Agriculture,” n.d.).

The Five Borough Farm project evaluated the role of urban farms in realizing benefits in four areas, but since I did not intend to evaluate the achievement of each surplus food management actor or practice according to predetermined standards, I took a slightly different approach. I applied an integrative, holistic approach by identifying surplus food management-related policies and practices of different actors, and comparing these across actors in different sectors, disciplines, and levels in the organizational hierarchy. I identified areas where policies and practices support one another and where they are antagonistic. As well, I considered whether giving attention to different urban planning areas, such as housing and economic development, could optimize certain aspects of surplus food management.

The holistic nature that is suggested to be critical to both food and sustainability planning does not align with past models of planning, and should not be taken as a standard. Integration is more desirable since incorporating sustainability into all sectors is argued to be necessary to effectively address such complex issues (Holden, 2012). However, as mentioned, there was a drive in previous planning models to isolate various systems from one another, as well as to leave market forces to serve environmental interests (Berger, Flynn, Hines, & Johns, 2001). This assumes that there is always a win-win outcome (Berger et al., 2001). The above qualities are characteristic of ecological modernization, which, in addition to environmental policy integration, has been a major environmental policy paradigm (Langhelle, 2000).

Ecological modernization has its origins in the interpretation of Dutch and German environmental policy (Langhelle, 2000). It countered previous assumptions of ineffective 1970s anti-pollution strategies (Andersen & Massa, 2000; Langhelle, 2000) and the prevailing school of thought that there was a zero-sum trade-off between

economic and environmental interests (Langhelle, 2000). Ecological modernization opposed this, suggesting that promoting environmental interests could simultaneously benefit the economy (Langhelle, 2000), and that technological innovation and continued industrial development are actually the keys to addressing environmental problems (Fisher & Freudenburg, 2001). One study, which reviewed over 300 projects, assessed the effect of ecological modernization policies in Denmark on diffusion of cleaner technologies and associated environmental effects. The research showed that improvements in efficiency and housekeeping practices were offset by increases in production. However, radical changes to existing technology led to more promising results, including enhancements to environmental outcomes, working conditions, and productivity (Andersen & Massa, 2000). Andersen and Massa (2000) note that, although there are success stories of ecological modernization, such measures are less able to address contemporary issues, like climate change, since the response of the climate system to our policy interventions depends on population growth and time lags.

Ecological modernization is praised for recognizing a “major omission in the workings of the institutions of modern society” (Fisher & Freudenburg, 2001, p. 703); this omission refers to the fact that society’s institutions have led to the current ecological crisis, and that ecological costs have not conventionally been internalized in political systems (Blowers, 1997). However, ecological modernization has also been critiqued as being bound to fail, and too good to be true (Fisher & Freudenburg, 2001), for a number of reasons, including the fact that ecological modernization was formulated according to the Western industrial experience (and may not appropriate or desirable in other contexts) (Blowers, 1997). Also, there may not always be options that benefit both economic and environmental interests, so ecological modernization may only be applied in select situations in which the synergies and potential for mutual benefit exists (leaving other important ecological challenges unaddressed). Most notably, ecological modernization does not take into account social issues within its framing of synergistic environmental protection-economic development activities, although social issues are arguably one of, or *the* core tenet of sustainable development (Blowers, 1997; Langhelle, 2000). As Blowers suggests, “What [ecological modernization] neglects to note is that modern society is composed of very divergent interests and that inequalities of wealth and power are endemic” (1997, p. 854). Because of this, ecological

modernization is not an appropriate frame to apply to my study of surplus food management, which is a practice with a strong social component.

Another justification for food systems planning is the potential for planners to address and ease tensions in the food system (Campbell, 2004). Such tensions arise due to “differences in scale, power, fundamental values, or conflicting stakeholder frames, while others occur because stakeholders with compatible interests have not yet developed a common language and agenda” (Campbell, 2004, p. 341). Further, tensions “occur at epistemological, political and institutional, socioeconomic, spatial, community, and organizational levels” (Campbell, 2004, p. 341). These tensions are similarly present in other urban policy systems, such as housing, transportation, land use, and economic development, but food systems currently receive disproportionately less attention considering that their effects are arguably equally far-reaching (Pothukuchi & Kaufman, 1999). The lack of inclusion of the food system in planning is due to the assumption that the system works well enough already, is not plagued with issues, and will be taken care of by market forces, among other reasons (Pothukuchi & Kaufman, 2000). These reasons are inadequate considering the pervasiveness of food in the lives of all people, and that market forces are not primarily motivated by people’s best interest (e.g., their health and well-being). Campbell (2004) suggests that food planners are needed to understand food system characteristics and plan for food systems in the context of the immediate surroundings and needs. As well, interests among different planning divisions may not align with one another, leading to conflict among planners and stakeholders, and possibly achievement in only certain areas (Hertin & Berkhout, 2005; J. Robinson, 2004). Food systems planners can create a meeting ground for the different stakeholders in order to encourage dialogue about the areas of tension mentioned above.

Food systems planning has the potential to alleviate some of the aforementioned tensions. Food systems planning can study the dynamics of the system as a whole, bring together the implicated actors, identify the areas of tension, and consider ways to shift current practices or associated policies in order to satisfy the needs of different groups, or to at least create the greatest possible benefit for all involved. Below are different actors involved in surplus food management and their associated interests:

- grocery stores – desire to get rid of surplus food in the cheapest and easiest way possible (economic interests);
- food distribution organizations – desire to serve clients the most nutritious food possible (social interests);
- redistribution agencies – desire to minimize waste, transport food to people in need, and do this in an economically sustainable way (interests in the three sustainability areas of economic, social, and environmental);
- the municipal government – desire to address issues of hunger and poverty, work towards waste diversion goals (social and environmental interests); and
- the local health authority – desire to ensure the food consumed by regional residents is of adequate quality (health, thus social interests).

Thus, food systems planning has the potential to reconcile the interests of the private, public, and not-for-profit sectors.

Ideas of ecological modernization may downplay the need for food systems planning. This is because ecological modernization posits that initiatives that serve the environment should also be the most economically desirable, which may be true in some senses. For example, the ban on organics in landfills will push organizations to take part in either composting or in the donation of food to social service agencies, which is a more cost-effective option than composting if the food is still viable. However, economic interests may not lead to an ideal system-wide outcome. An integrated and holistic approach to food systems does not guarantee win-win solutions: contrary to the ideas of ecological modernization, there will inevitably be trade-offs and compromises in order to accomplish the range of goals. Considering urban planners' ability and knowledge of the parts of the system, they are best situated to take on the challenge of evaluating: the overarching goals and priorities; the potential for initiatives; and where various plans can be situated and implemented to realize the greatest possible overall benefit.

This literature will assist in considering the potential for food system planning to facilitate the cooperation of food system actors, reconciling differences of opinion, and finding mutually acceptable solutions. For example, there may be a difference in opinion between grocery stores and food distribution organizations involved in surplus food management, with the core motivations being economic and social, respectively. Although these interests are opposed, some compromise that enhances the function of the system as a whole may be acceptable for both actors. Alternately, there may be other actors that can be drawn into the discussion to aid in reaching an acceptable

outcome for both groups. For example, food distribution organizations may prioritize fresh and nutritious products and prefer not to receive donations of sugary or high fat foods from grocery stores. However, the grocery store may be interested in getting rid of its entire surplus, regardless of freshness or nutrition. In this case, there may be specialized waste management organizations that could put the food to use in another way. This would not only involve a change in what food is donated and how the food is handled during the transfer, but it may also require a policy change in each of the organizations, to ensure a more lasting change in each organization's approach to, and practice in, surplus food management.

2.2. System dynamics for sustainable development

I discuss 'systems thinking' concepts, including relevant definitions, and why systems thinking is applicable to sustainable development. I also discuss how more recent thinking around waste management warrants a systems approach. Finally, I outline how I plan to consider systems thinking principles in my analysis of surplus food management in Vancouver.

Systems thinking is argued to be a useful tool in helping to understand complex situations (Flood & Carson, 1993). Surplus food management is a complex situation since it is a practice that involves a range of organizations (ranging from international corporations to local social service agencies), operating at different scales, and all of which participate in the practice for different reasons. The way in which surplus food management happens is also extremely variable, depending on the organization, or the locations of the organization.

Checkland defines a system as being a whole, comprised of component parts, and having emergent properties (Checkland, 1981). For the purposes of this project, I am defining the 'whole system' of surplus food management as involving the movement of food from locations where it is produced or sold to social service agencies where it is then distributed to people in need. There is variation in how the food travels from the source to its destination, as well as in the types of donor and recipient organizations. These different organizations are the component parts of the system, each of which could be considered a subsystem with its own operations and properties. The emergent

property of surplus food management is the movement of food from locations where it is produced or sold to social service agencies where it is then distributed to people in need. This results from all of the organizations working together, and this emergent property is not the purpose of any one of the component organizations.

Within urban policy, problem solving has conventionally been approached in a linear fashion, but for many contemporary issues, a more holistic, systems approach is needed (Hjorth & Bagheri, 2006). Systems thinking emphasizes relationships among components of a whole, and is often used in conjunction with visual representations of systems (Hjorth & Bagheri, 2006). Sustainability, or sustainable development as it is also known, is an area in which systems thinking can be particularly useful (Hjorth & Bagheri, 2006), as it involves the intersection of economic, environmental, and social interests and views society as a system that is constituted by these elements.

The concept of sustainable development originated with The Brundtland Report, which was produced by the UN Commission on the Environment and Development in 1987. The Brundtland Report defined sustainable development as “meeting the needs of current generations without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development, 1987). The report suggested that issues of environmental degradation and impoverishment “had to be resolved simultaneously and in a mutually reinforcing way” (J. Robinson, 2004, p. 372). In other words, if only certain parts of the system are given attention, the potential for achievement, even in those areas where attention is focused, will be limited. The report also suggested that, in order to alleviate poverty and overconsumption, it would be necessary to increase global industrial activity five- to ten-fold, and that this could be achieved under a new approach to development, namely sustainable development (World Commission on Environment and Development, 1987).

The paradigm of waste has shifted from that of ‘disposal,’ which does not pay attention to the source, endpoint, or quantity of waste, with most waste reaching one destination, to that of ‘waste-as-resource,’ which promotes non-disposal options for waste (Watson, Bulkeley, & Hudson, 2008). The consequence of this new paradigm is that there is a much greater number of stakeholders implicated in managing waste than previously, including government officials who administer the program, retail

organizations, organizations that relocate products from one user to another, and citizens (Watson et al., 2008). This is relevant to my project since surplus food management is a practice that follows the new paradigm of waste, seeing foods that were previously categorized as waste as a resource. In surplus food management, a large number of actors are involved, including food growers, producers, vendors, and redistributors, as well as charities, and waste management organizations. For my research, I examined a subset of these organizations, and grocery stores and farms that sell food to the public; food redistributors that collect and redistribute food to not-for-profit organizations; food distribution organizations that give food to people in need. I plan to identify the range of actors involved, and assess how they are oriented in unique ways (based on their goals and priorities), and consider how their goals and priorities influence the function and outcomes of surplus food management.

Sustainable development is sometimes considered paradoxical and unattainable, as it requires the reconciliation of disciplines and stakeholders whose priorities may not align with one another (J. Robinson, 2004). The fact that this approach factors in economic, environmental, and social interests provokes skepticism: the idea of increased industrial activity does not bode well with environmental advocates (J. Robinson, 2004), and businesses may be concerned that addressing environmental issues will compromise their bottom line (Berger et al., 2001). An example of such a conflict that involves food-related interests is a current debate in Metro Vancouver, namely that of the agricultural land reserve: as the population of the region increases, outward expansion is considered desirable, due to the lack of undeveloped space and high property costs in Vancouver. This outward expansion is encroaching on the agricultural land reserve, which is valuable for agricultural purposes and for the food security of the region. In this case, there appears to be a trade-off between development and housing affordability and availability, on the one hand, and food security on the other. The solution to this type of conflict may not be the best-case scenario for the competing interests. However, in considering the implications of different courses of action in the practice of surplus food management as a whole, there is undoubtedly some option that can address concerns of both sides.

The concept of a 'system' has been defined in a number of different ways. On the general side, some authors suggest that "the only things that need to be common to all

systems are identifiable entities and identifiable connections between them. In all other ways, systems can vary unlimitedly” and the entities are chosen based on the investigator’s own interests (Checkland, 1981, p. 107). Checkland and Poulter (2010) define a system as a whole that has component parts and emergent properties that manifest themselves only when all parts are working together. The systems approach is “an approach to a problem which takes a broad view, which tries to take all aspects into account, which concentrates on interactions between the different parts of the problem” (Checkland, 1981, p. 5). Further, systems thinking can be applied to situations that involve: (1) communication; (2) control processes; (3) layered structure; and (4) properties as a whole, i.e. emergent properties (Checkland & Poulter, 2010). Hall and Fagen describe a system as “a set of objects together with relationships between the objects and between their attributes” (1968, p. 81). Reynolds has also stated that identifying systems begins with either the units or the relationships of interest. The following quotation pertains to the units: “in endeavouring to conceive a system which will parsimoniously represent that part of reality which one is interested in studying, one may start by endeavouring to identify and define the significant units and then proceed to try and identify the significant interactions that take place among these units” (Flood & Carson, 1993, p. 70). Of note in this definition is the investigator’s role in the conception of a system, that is, the determination of the system boundaries. This approach is also taken by Checkland, who states that systems thinkers “seek an account of the structure of reality and of the processes observed going on within it in terms of whole entities (‘systems’) which [they] will define” (1981, p. 100). Further, Checkland posits that a

systems thinker will identify/define some entities which are coherent wholes, perceive/invent some principles of coherence which makes it meaningful to draw a boundary around an entity that distinguishes it from its environment, and identify/envisage some mechanism of control by means of which the system-entity retains its identity at least in the short term. (1981, p. 101)

This flexibility in the inclusion of elements is common among the various approaches to system identification. Thus a system can refer to a grouping of elements of interest that were deliberately chosen by the investigator for the purpose of performing some type of analysis on a situation. Because of this freedom of choice in defining a system, Checkland suggests that the investigator states the reason for their attempts to describe

the system so that others may better understand the choice of units or objects included (Checkland, 1981).

Systems thinking can also be described as a mode of inquiry into a particular situation as opposed to simply a designation for a collection of elements. Boulding (1968) posits that in taking a systems approach, one represents phenomena as wholes that are more than the sum of their parts, which becomes useful in that inquiry can be directed to where gaps exist. Soft systems methodology is an approach that is geared towards so-called “problematical situations,” in which there is not necessarily a clear problem, but a sense that something should be done differently, or in which potential solutions seem to oversimplify the situation (Checkland & Poulter, 2010). In the case of surplus food management, some causes for concern are that viable surplus food is wasted at grocery stores while individuals receiving food assistance are not adequately nourished (in terms of quantity and quality), or that food distribution organizations often have financial challenges, but only a subset obtain price-discounted food through surplus food management. This is contrasted with hard systems thinking which is applied more often to challenges with physical systems (Checkland, 1981).

Another consideration is that systems are sometimes arranged hierarchically, with smaller systems nested within larger ones (Checkland, 1981; Hall & Fagen, 1968; Meadows, 2009). Systems that are higher in the hierarchy often have more power, or involve a greater variety of organization types. For example, the surplus food management system could be said to encompass the subsystems of grocery stores, food redistributors, and food distribution organizations. These subsystems are systems in and of themselves because each could be said to involve interacting parts with disparate interests. Taken together, all of these subsystems are united by their involvement in the broader system of surplus food management. Within these hierarchies, it is inherent for the hierarchy to better serve the bottom layers as opposed to the top or overall system: “the bounded rationality of each actor in a system may not lead to decisions that further the welfare of the system as a whole” (Meadows, 2009, p. 191). When working with or within hierarchical systems, Meadows warns against “[maximizing] parts of systems or subsystems while ignoring the whole” (Meadows, 2009, p. 178). Thus the overall system properties should be promoted, e.g., growth, stability, diversity, etc. (Meadows, 2009). It seems that surplus food management has

characteristics of a hierarchical, or nested system. Each actor and their practices constitute a sub-system with unique motivations. Through my research, I consider the goal of surplus food management as a whole in relation to the goals of each actor, as well as how the practices of particular actors influence the function of surplus food management.

Donella Meadows has written extensively about systems and their behaviour, and I apply the following considerations in developing a way of thinking about surplus food management. First, Meadows (2009) emphasizes the importance of bearing in mind the function (purpose) and structure of a system, the two strongest determinants of the system behaviour. According to Meadows (2009), the purpose of a system may not be immediately apparent, but is something that emerges from the observation of how the system operates(2009).

2.3. Environmental policy integration

This section includes some history and definitions of environmental policy integration (EPI), including its potential to address sustainability challenges. I also discuss the different ways of characterizing and applying EPI, as well as which characterizations are applied to my project. Finally, I mention the links between EPI and the other two conceptual areas of the literature review.

The concept of EPI has its origins in 1972, when it appeared as 'ecodevelopment', named because of the recognition of the link between ecological and development goals (Watson et al., 2008). EPI is "the inclusion of environmental concerns in processes and decisions of public policy-making which are predominantly charged with issues other than the environment" (Hertin & Berkhout, 2005, p. 142), and can also be understood as "an operational principle to implement and institutionalize the idea of sustainable development" (Lenschow, 2002, p. 6). The term EPI implies consideration of sustainability generally, as opposed to only the environmental aspect that the name seems to indicate (Lafferty & Hovden, 2003).

EPI has become a widely accepted goal in policy-making, with a multitude of national and international endeavours, in Europe especially (Hertin & Berkhout, 2005;

Watson et al., 2008). In addition, in Agenda 21 (LA21), which is an action plan for sustainable development at the local level, Chapter 28 emphasized the importance of local policy integration (Coenen, 1998). Without horizontal integration of policies among government sectors as well as among other related actors, coordination among sectors that have disparate interests is a major barrier to advancing sustainability (Hertin & Berkhout, 2005).

In terms of addressing climate change in Canadian municipalities, one study found that EPI was something that has been lacking and thought to be preventing success (P. J. Robinson & Gore, 2005). According to one municipal employee, "Government departments [are] organized into 'silos, stovepipes, and solitudes' thus preventing the type of interaction required...for municipal response to climate change" (P. J. Robinson & Gore, 2005, p. 109). Although this refers specifically to climate change, sustainability would require a similar approach.

Despite the accepted potential of EPI, the majority of analyses of EPI have focused on national and international institutional structures (Watson et al., 2008). However, there is recognition of the importance of addressing the local scale, the level of implementation, which can ultimately determine the outcome of EPI (Watson et al., 2008). EPI is considered especially relevant for solid waste management, due to the shift in the paradigm of waste ('disposal' to 'waste-as-resource', as discussed in 2.2); the argument follows then that EPI is needed to successfully coordinate such a system (Watson et al., 2008).

One analysis of EPI was performed in the United Kingdom, in the context of the New Labour government which was aiming to 'modernize' government through a range of top-down initiatives that promote 'joined-up working' (another form of EPI) (Cowell & Martin, 2003). Cowell and Martin (2003) describe EPI according to three dimensions (strategic/operational, intra-/inter-organizational, and horizontal/vertical), and also identify barriers to successful EPI following interviews with business professionals and elected officials. They suggest that in order to understand how EPI occurs, it is important to consider the stakeholders that are promoting EPI, their range of powers, and the different interests that are involved, as these can inform the outcome (Cowell & Martin, 2003). As mentioned earlier, Metro Vancouver sees value in and promotes EPI

(Appendix B), but has a limited range of powers to change governance structures and policies to account for this since Metro Vancouver operates at a more strategic level.

In addition to the dimensions of EPI identified by Cowell and Martin (2003), scholars have characterized integration in a number of different ways. Robinson suggests that in order to effectively promote sustainability, integration is necessary in several different senses:

1. integration over time (assumed in sustainability, considering that the definition includes a consideration of future generations);
2. integration across disciplines (i.e. connections among fields, and use of tools that are “integrative and synthetic”); and
3. integration across sectors (involving the collaboration among actors in different areas of society, e.g., government, institutions, businesses, non-governmental organizations, etc.) (2004, p. 378).

Further, Holden (2012) considers five areas of integration:

1. visions and agendas;
2. governance institutions;
3. communities and voices;
4. policy sectors; and
5. knowledge types and learning processes.

There are additional ways to consider integration, for example across phases of the policy cycle, and among different actors within the same sector.

I considered the extent to which surplus food management is integrated based on some of the aforementioned dimensions. Following with the forms of integration set out by Robinson (2004), I considered integration over time by looking at the temporal durability of surplus food management, namely how surplus food management-related practices and policies are included and supported by organizational and government policies, which have the power to carry the practice forward in the future. This continuation of surplus food management is only suggested insofar as it prevents edible food from being wasted, and not in a way that perpetuates the need for food charity. I also considered integration across disciplines and integration across sectors by

investigating the inclusion of surplus food management in policies among the various surplus food management organizations and the consistency among these policies.

Among the forms of integration set out by Holden (2012), I chose to apply only integration across visions/agendas and across policy sectors (the latter was described in the previous paragraph). These areas are the most salient for my research, considering that the vision/agenda of an organization is the driver of its operations. Similar to my plan to assess goals of actors according to systems thinking, I consider the visions/agendas of the organizations involved in surplus food management, as alignment or misalignment in this area may be able to be related to tensions, problems with system function or ability to achieve objectives.

Watson et al. (2008) reviews the normative justifications for EPI (i.e. that it increases effectiveness and efficiency of sustainability policy) and questions whether EPI should be an ideal to be strived for. In particular, Watson et al. (2008) consider what is the appropriate amount of integration, as well as which stakeholders are creating the EPI goals and standards. Based on this critique of the application of EPI, I consider (according to the discussion above) whether EPI is occurring in surplus food management, and whether maximization of EPI results in the most desirable outcomes for the actors.

This body of literature informs an understanding of how EPI might be employed in the context of surplus food management. I discuss the ways in which surplus food management in Vancouver currently employs EPI, and where potential for improvement by increased EPI exists. As well, I discuss the desirability of applying EPI to surplus food management, and if it ultimately produces favourable results as compared to policies that are separated. I discuss the ways in which surplus food management can benefit from EPI, or if there are irreconcilable differences (among different actors) or insurmountable challenges (with respect to policy opportunities).

The concept of EPI fits well with the other two conceptual areas of the framework. The interdisciplinary nature of EPI lends itself to systems thinking, which is also one of the goals of planning for food systems and sustainability. By considering EPI alongside systems thinking and planning for food systems, I examine the institutional structures (across all urban planning systems, sectors, and disciplines) that can be used

to support surplus food management. As well, by considering surplus food management as a system that is guided by integrated policies, it was possible to consider how policies at different parts of the system interact to produce the result, and what approach is best suited to optimize surplus food management.

2.4. Approaches to food security

Food security is an increasingly accepted goal both in Canada and internationally. To reiterate from Section 1.2.1, it is achieved 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” (*Canada’s Action Plan for Food Security*, 1998, p. 9). As is evident from this definition, food security is a multi-faceted concept and can exist at a range of scales. Thus a range of food-related initiatives can simultaneously contribute to food security. Food security in the context of the developed world takes the form of endemic hunger, which occurs when there is a sufficient quantity of food, but people cannot access it, or obtain adequate nutrients (Sen, 1999). This stands in contrast to food security in the context of international development, which is more linked to famine and general lack of available food (Sen, 1999). Dachner et al. (2009) suggest that the ability to provide food for people in need is beyond the ability of a municipality or any single agency, and requires a sustained commitment from provincial and/or federal governments.

Different conceptual approaches to food issues have been described by various authors (Mendes, 2006; Power, 1999; Winne, Joseph, & Fisher, 1997), who have distinct ideas about classifying food system priorities. The approaches are sustainable food systems (SFS), anti-hunger (AH), and anti-poverty (AP), and are framed in different ways by different academics. Mendes suggests a SFS-AH dichotomy, saying that SFS and AH are “broad approaches to food system organizing” (2006, p. 169). On the other hand, Power (1999) presents a SFS-AP dichotomy, suggesting that SFS and AP are the two main dimensions of food security. For my research, I replicate Mendes’ approach (i.e. SFS and AH as approaches to food system organizing), while incorporating the additional element from Power’s perspective (i.e. AP). Thus, SFS, AH, and AP are taken to be alternate ways of promoting food security.

2.4.1. *Anti-hunger*

The AH approach to food security is principally concerned with meeting immediate food needs, and improving access to nutritious food among vulnerable populations (Campbell, 2004; Mendes, 2006; Winne et al., 1997). The AH approach usually involves food distribution organizations or charities, and emphasizes emergency and federal food assistance programs (Winne, n.d.). The AH approach will continue to be necessary as long as there are people with unmet food needs (Winne et al., 1997). AH efforts may also have the secondary effect of allowing people in need to save money that they would have spent on food, which can then be put towards other expenses, like rent, clothing, or entertainment. AH efforts act on a short-term basis, and are not intended to be long-term solutions. AH advocates are interested in policies that influence the ability for people to access emergency food sources, but focus less on policy in comparison to AP advocates (Winne et al., 1997). Surplus food management has conventionally aligned with the AH approach (Winne et al., 1997).

2.4.2. *Sustainable food systems*

The SFS approach to food security aims to address food issues at the level of the community, supporting local agriculture (Mendes, 2006), and working on issues such as food quality, health, and the environment (Power, 1999). SFS initiatives aim to reconfigure the food system, including how companies and organizations interact with one another, in part through alternative food distribution and marketing channels. The SFS approach is also concerned with how people obtain food, promoting self-reliance, empowerment with food skills, e.g., regarding food growing, preparation, and nutrition (Power, 1999). The SFS approach also promotes decision-making at a grassroots level, whereby community members give input on how they access food (Winne et al., 1997). SFS proponents involve community organizations and community members, and are considered privileged (Allen, 2008), in that they are less concerned about access to food among food-insecure people, and more concerned about food quality, where food comes from, and how it is produced.

SFS is a long-term, proactive strategy, acting on the scale of many years. SFS encourages the building and sharing of skills that people will be able to apply during their lives. It promotes a lasting and sustainable food system in that it improves and

strengthens the structure of the food system and promotes environmentally-conscious ways of growing and distributing food. The SFS approach involves a grassroots change, by giving people tools to change their situation, and that of the community. Thus, the changes happen at the level of the individual and community. This approach stands in contrast to the AP approach, which targets change at higher levels.

SFS is relevant to the analysis of surplus food management because of the link between sustainability and surplus food management: discussions around surplus food often involve resource use (e.g., the food use hierarchy, which articulates how food can be put to the best possible use), environmental impact of food production, transportation, waste, how people in need can participate in the management of surplus food, and how they receive food, as well as connections among local organizations.

2.4.3. *Anti-poverty*

The AP approach to food security is not food-centred by nature, and focuses on deeper-seated issues that prevent people from accessing food, including unemployment, minimum wage, welfare, social programs, and distribution of wealth (Power, 1999). Power (1999) explains the AP approach as relating to the fact that many people cannot obtain sufficient or appropriate food due to lack of money. Addressing these issues requires change in the longer term, but for this project, I will consider more immediate actions that promote the AP approach.

The AP approach to food security is at the intersection of food and social justice. Bedore (2010) explains that justice, in the context of just urban food systems, has different meanings according to different authors. Justice may include issues such as consumer rights, the link between human and environmental health, the quality of food production and distribution, policy change, democracy, rights discourse, decentralization, and a democratic structure in which citizens have more input into food policies (Bedore, 2010).

The AP approach aims to restructure government systems, and is the longest-sighted of the approaches. The AP approach posits that the responsibility of ensuring food security should not fall solely on the people, but that government should play a lead role. AP proponents envision government taking more responsibility for social services

and see the government as being ultimately responsible for people's ability to access food. Thus, the desired change would happen at the level of the provincial or federal government, which would then filter down and have positive effects across the province or country, respectively. In contrast to the other two approaches to food security, the AP approach is not aimed at engaging directly with people in need to change their situations. AP-oriented changes would allow people now and in future generations to realize better outcomes than can currently be achieved.

2.4.4. What is the relationship among the food security approaches

In this section, I situate the different approaches to food security in relation to the definition of the term, as well as consider how the approaches work with one another.

The three approaches to food security can be linked to the definition of food security, although there are additional qualities of each approach that are not explicitly encompassed by food security. The AH approach addresses physical and economic access to food, aiming to make food available for all people. The SFS approach aims to provide safe and nutritious food, and meet the food preferences of its customers, in order to promote a healthy life. The AP approach suggests that economic access to food (ability for people to access food through their own means) is the starting point that is necessary for the other elements of food security to be realized.

The fact that each food security approach prioritizes different elements means that the target demographics are also different from one another. The AH approach is most relevant to people who have trouble obtaining food of sufficient quantity and quality, likely because of lower incomes. This is in contrast to the beneficiaries of the SFS approach, which include people in need who participate in the skill-building and empowerment programs, as well as people who are interested in the quality of food that they purchase, but who do not have trouble affording food. These latter, more affluent beneficiaries of SFS are concerned with how the growing and preparing of food affects the environment and their health. The AP approach is geared to making changes for the population as a whole, by targeting welfare and minimum wage. However, the changes for which the AP approach advocates would likely have the greatest positive effect on lower-income people.

2.4.5. Critiques and intersections of food security approaches

There are critiques of all of these approaches. For example: the SFS approach may not sufficiently address the most pressing concerns of hunger (Mendes, 2006), and the same could be said about the AP approach; the AH approach does little to produce long-term results or reduce need (Winne, n.d.); and, “instead of reducing hunger in a permanent and sustainable way, charitable emergency food programs [part of the AH approach] contribute to maintaining the status quo and preventing more profound action” (Scharf et al., 2010, p. 17). I argue that these approaches are intertwined and complementary, working in different ways towards food security. The symptoms of food insecurity (e.g., hunger) are time-sensitive and should be addressed, but without losing sight of the root causes of hunger and food insecurity.

Power (1999) suggests the utility of capitalizing on the complementarity of the AH and SFS approaches, and that integration between the two can produce win-win outcomes. Power describes an example of an ideological intersection between the AH and SFS approaches to food security: “Both agriculture unsustainability and poverty are based in the larger, capitalistic economic system...the interests of small farmers and the urban poor have a ‘common ideological situation as occupants of marginal positions in the highly capitalized food system’” (1999, p. 32). Within surplus food management-related practices, there is likely a range of practices that are working towards food security, some of which align with AH and others which align with SFS. Complementarities among these should be examined.

Table 2.1 lays out the principles and characteristics of the three approaches to food security, and highlights the differences among them. The approaches presented in the table have been adjusted to be more relevant to my project: I have included only characteristics that are both relevant to food security, and capable of being reasonably addressed in the short term. This is appropriate since I will be better able to evaluate how the approaches to food security factor into the window of surplus food management that I am studying.

Table 2.1. Comparison among anti-hunger, sustainable food system, and anti-poverty approaches to food security

	Anti-hunger	Sustainable food systems*	Anti-poverty
Model	Treatment ^a	Prevention ^a	Prevention
Time frame	Shorter-term ^a	Longer-term, proactive ^a	Longer-term ^a
Aspirations	<ul style="list-style-type: none"> • Improve individual health^{a,b} • Improve access to food among vulnerable populations^c • Provide emergency food for low-income^b 	<ul style="list-style-type: none"> • Build community resources and empower individuals^a • Enhance local decision-making^c • Improve access to healthy food items^b • Connect food producers and eaters^b • Reduce/eliminate environmental risk^b • Promote local, seasonal foods^b • Promote local, sustainable agriculture^b • Promote alternative food distribution and marketing channels^e • Promote self-production^a • Create economic opportunities to support local organizations and people in need^a 	<ul style="list-style-type: none"> • Promote community economic development^d • Advocate for poor^d • Advocate for an increased role of government in providing social services for citizens^{d,e}
Systems that this approach supports	<ul style="list-style-type: none"> • Emergency food^a 	<ul style="list-style-type: none"> • Social networks^b 	<ul style="list-style-type: none"> • Supportive government structures^d
Actors (who is involved)	<ul style="list-style-type: none"> • Food distribution organizations^a • Charities^a 	<ul style="list-style-type: none"> • Community organizations^a • Multi-sectoral partnerships^a 	<ul style="list-style-type: none"> • Food distribution organizations • Welfare advocates^d

* called community food security by Winne et al. (1997)

Note. Adapted from Winne et al. (1997)

^a (Winne et al., 1997)

^b (Campbell, 2004, p. 343)

^c (Mendes, 2006)

^d (Power, 1999)

^e (Scharf et al., 2010)

2.4.6. How I will operationalize the attributes of food security

In order to identify whether each organization employed a given approach to food security, I operationalized each approach, and the attributes listed in Table 2.1.

For an organization to qualify as employing the AH approach, some element of its operations had to involve providing short-term access to food for people in need, namely people who would not otherwise have enough food to eat. Some examples of this include food banks, or other organizations that provide free or low-cost hand-outs of food and prepared meals. This can also be described as ‘emergency food.’

For an organization to qualify as employing the SFS approach, there was a greater number of criteria. One element of the SFS approach to food security is skill-building and empowerment, which could manifest itself in the provision of programming that fosters the acquisition of skills, whether the skills are around food (e.g., shopping, preparation, nutrition) or other topics (e.g., parenting, money management, library usage). Another element of the SFS approach to food security is the connection of people to healthy, local, and sustainably-produced food. Organizations could be said to apply this element of SFS if they prioritize, promote or engage in, local or organic food production, and if they are connected to the local supply chain. A related quality is involvement in alternative food distribution or marketing channels, which includes modes of food provision apart from grocery stores, like farmers’ markets, community supported agriculture, grocery delivery, and novel models that connect producers to consumers. A final element of the SFS approach to food security is providing an opportunity for people to give input into decisions that affect their food. Therefore, organizations that have some sort of participatory process of obtaining and incorporating ideas from the public could be said to employ the SFS approach to food security.

For an organization to qualify as applying the AP approach to food security, it would be involved in advocacy to improve the ability of people to access food. For example, advocating for an increased minimum wage, housing affordability, or improved welfare system (as a means of improving people's ability to access food) would qualify as the AP approach to food security. Similarly, fostering community economic development is another way of operationalizing the AP approach to food security, which includes allowing people with barriers to employment to meaningfully participate in the economy and workforce, and acting as an example of how they can be meaningfully involved in a job.

2.4.7. *Globalized versus alternative food systems*

Campbell (2004) discusses that food systems stakeholders can fall into two groups: the globalized and alternative food systems. The globalized (i.e. corporate or conventional) food system is one that focuses on food as a commodity, efficiency, biotechnology-based agriculture, profit maximization, standardization of food-growing, and large-scale agriculture, along with emergency food provision (Campbell, 2004).

In contrast, the alternative food system includes practices related to self-sufficiency, sustainable agriculture, and environmental justice (Campbell, 2004). The alternative food system looks to: reconnect consumers with nearby food producers (e.g., through direct marketing in channels like farmers' markets and CSAs); focus on local, seasonal foods; protect small, diversified family farms; and empower the community (Campbell, 2004). Another element of alternative food system practices is community-level change to food sources, transportation, access, and nutrition, among others (Campbell, 2004). The alternative food system exists within the structure of the conventional food system, giving rise to some tensions that are experienced (Campbell, 2004).

2.5. Community food security

Community food security is defined as "a situation in which all community residents obtain a safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that maximizes community self-reliance and social justice"

(Hamm & Bellows, 2003). It is a concept that builds from the definition of food security, putting forward a standard for how food is produced as well as how people access food (Scharf et al., 2010).

Rod MacRae, from the Toronto Food Policy Council, created the community food security 'continuum,' which describes the three stages at which community food security can be addressed: efficiency, transition, and redesign (Scharf et al., 2010). These can be seen as complementary efforts in the drive towards achieving community food security. The community food security continuum can be situated in parallel to the previously-discussed approaches to food security (anti-hunger, sustainable food systems, and anti-poverty, respectively).

Employing all stages of the food security continuum, or all approaches to food security, allows food issues to be addressed in a comprehensive way. The efficiency stage entails minor adjustments to existing practices, like improving the quality of food that is distributed through emergency food services, or providing emergency food in less stigmatizing ways (Scharf et al., 2010). The transition stage entails substituting new practices for ones that are considered inadequate, often through capacity-building and fostering self-reliance (Scharf et al., 2010). For example, transition activities might include community kitchens, community gardens, support for community economic development, and involving of people in decision-making (Scharf et al., 2010). The redesign stage entails reframing social problems, and promoting systemic changes, like increased minimum wage and improved social assistance (Scharf et al., 2010).

Scharf et al. discuss their awareness of the limitations of applying the community food security approach, i.e. the

potential conflict between the goal of building economic opportunities for local producers and the goal of increasing the accessibility of affordable food for low-income people. The solution [that they] propose is not to call for cheaper food, but rather to increase incomes to allow everyone to purchase food at its real cost.

(2010, p. 19)

This illustrates a recognized conflict between SFS and AH practices, and suggests that the solution is related to AP.

Community food centres are described as taking a comprehensive approach to food systems, addressing local issues, including immediate hunger, community self-sufficiency and ecological principles, as well as higher-level policy ones, including looking to the government for solutions (Scharf et al., 2010). The Stop Community Food Centre in Toronto, Ontario, Canada runs programming related to efficiency, transition, and redesign; Scharf et al. further discuss that the efficiency- and transition-related programs are subsidized, and that they recognize that the money put towards services “acts as a substitution (obviously severely limited in scale) for the work that ultimately should be supported by the state” (2010, p. 19).

Chapter 3.

Data Collection and Analysis

In this research, I collected data from primary and secondary documents, as well as semi-structured interviews. The data has informed my understanding of the structure and function of surplus food management, an evaluation of the goals and challenges of participating organizations, and determination of the areas where capacity is lacking and surplus food management could be improved. I also assessed the capacity to achieve the goals of surplus food management given the various layers of organizational capacity and relevant policies.

3.1. Characterizing surplus food management as a system

I use literature on systems thinking to characterize surplus food management as a system. Checkland discusses that systems thinking, in addition to being a subject in itself, can be used to talk about other topics: the systems approach “takes a broad view...tries to take all aspects into account [and] concentrates on interactions between the different parts of the problem” (Checkland, 1981, p. 5). This description is apt for my project, as I would like to assess interactions among the organizations involved in surplus food management.

Checkland and Poulter (2010) discuss that nothing is inherently a system, but that a systems approach is applied to particular situations in order to present a way of understanding processes in a structured and productive way. Also, system boundaries are subject to definition by the investigator (Checkland, 1981). It is important to clearly delimit the system because of the interconnections between the system elements of interest with other elements of society, which could easily become intertwined with the elements under study. The scope would quickly broaden, and begin to include other elements that are less relevant to the research question. In this way, the investigator’s

role in delimiting the system is crucial. However, it also introduces the bias of the investigator's pre-conceived notions. I aimed to minimize the bias introduced by my preconceived notions as I determined the bounds of the surplus food management system by expanding my picture of organizations involved in surplus food management. In the early stages of my research, I mapped out the surplus food management system, and added as many actors as possible that are linked to surplus food management.

The 'system' under study in this project will be assumed to include organizations within Vancouver that donate, receive or transport surplus food. I am restricting this study to Vancouver to keep the scope manageable and so that the organizations are all subject to the same municipal bylaws and regulatory environment. However, surplus food management crosses municipal boundaries and involves interactions among organizations in different municipalities throughout Metro Vancouver. Also, although low-income individuals who obtain surplus food are undoubtedly a part of this system and arguably the primary beneficiaries of it, I will not include them in this research. This is because I am interested in how surplus food management functions at the organizational level. I am also interested in the decision-making, practices and processes that influence how surplus food is managed, such as the number of donor and recipient organizations, the amount of surplus food that is available, and where the surplus food travels.

Through my research, opportunities arose which allowed me to speak with representatives of organizations involved in food recovery, but which are located outside of my defined system. I will consider this data and how it might be applicable in the case of Vancouver, but I acknowledge that the organizations are outside of Vancouver's regulatory environment, and thus I may not be able to take into account factors that influence their situations. More details will be provided when the results from these particular interviews are discussed.

3.2. Capacity for food and surplus food management in Vancouver

In Section 3.2.1, I assess the capacity (i.e. funding and planning commitments) in Vancouver and Metro Vancouver for food and surplus food management, beginning with

the shift in priority for food systems in Vancouver, as well as the level of support for food systems planning as a result of this shift.

I then consider departments that have worked to create strategic documents related to food or surplus food management. Although this does not necessarily correlate with action on food or surplus food management, it makes it more likely that the given department has or may allocate the capacity to food- or surplus food management-related projects.

3.2.1. *History of food policy in Vancouver*

Wendy Mendes comprehensively reviews the history of food planning, and the activities that led to the development of food-focused initiatives in Vancouver. In July 2003, a council motion stated support for ‘just and sustainable food systems’ in Vancouver (Mendes, 2006). Mendes describes two awareness-raising periods leading up to this, from 1990-1995, and 1995-2003 (Mendes, 2006). In the early 1990s, discussions among local organizations prompted the creation of the Food Policy Coalition, members of which included a multitude of local food-, health-related organizations, as well as cultural groups, the food bank, Vancouver School Board, and Vancouver’s Social Planning Department (Mendes, 2006). A major concern of this group was hunger and access to food (AH-related concerns), although many of the member organizations were not involved in such initiatives (Mendes, 2006). This was suggested to be in part because of “a lack of capacity on the part of grassroots anti-hunger groups to connect with broader sustainable food system issues” (Mendes, 2006, p. 117). In 1995, there was interest in creating a municipal food policy, argued to be a way of promoting other environmental and social objectives, but there was not support from council since food policy was not recognized as an important policy area (Mendes, 2006). Thus, during this first awareness-raising phase, there was a push to address AH-related issues (i.e. reduce hunger, and minimize barriers to obtaining food among people who do not have enough), although the organizations involved align more with SFS (e.g. organizations with interests in nutrition, community development, farming, and social activism), however the mandate of the fledging Vancouver Food Policy Organisation was to “enhance food security in the region by lobbying government for policies supportive of farmers, and increasing access to local, fresh produce by educating consumers”

(Mendes, 2006, p. 116), which aligns more with the SFS or AP approach to food security due to its emphasis on promoting local agriculture, and education of consumers.

The second awareness-raising phase was marked by hurdles and the loss of allies. At the City of Vancouver, the Social Planning Department and other social-related planning interests were removed from the Corporate Management Team (Mendes, 2006), meaning that these departments could no longer advocate for food in high-level discussions. Another challenge was that the health department and its responsibilities relating to food and nutrition were moved to the provincial level. Another challenge was the shift in provincial government resulted in funding cuts to the Regional Health Authority, and thus removal of that body's funding for the Vancouver Food Policy Organization (Mendes, 2006). A new organization, the Lower Mainland Food Council/Coalition, appeared in the place of the Food Policy Organization, with some of the same members, but largely a different core group (Mendes, 2006). This organization lobbied for the creation of a community-based food organization (or food policy council) to bring together stakeholders from different groups to forge alliances and advance food issues. There was also the desire to engage elected officials in discussions about food planning and lobbying, in the hopes of improving outcomes (Mendes, 2006). Due to this, food issues were framed in terms that were more recognizable to municipal employees, including information on by-laws, regulations, approaches to land use, and existing policies (Mendes, 2006). This made food issues more recognizable and relevant to the city, as well as to the general public, and marked a shift towards more of a SFS-oriented approach (Mendes, 2006). As well, there was a rescaling of food issues to the municipal scale among organizations, namely the City of Vancouver, Lower Mainland Food Coalition, and Vancouver Agreement Food Task Group, which previously associated food issues with other scales (Mendes, 2006).

The City of Vancouver council motion to support just and sustainable food systems suggested the need to develop a food policy council that composes a food system action plan for Vancouver, and to suggest what role Vancouver can play in facilitating the actions suggested in the strategy (Mendes, 2006). There is now permanent support in the municipal government for food issues. As well, the council motion suggested including a city council member, park and school board councillors, Vancouver Coastal Health employee, as well as any other representatives of interested

organizations on the food policy council (Mendes, 2006). The framing of food issues shifted from being more AH-focused, to SFS, in that the framing of food policy as a sustainability issue is credited for being a major contributor to the city council passing the motion for a just and sustainable food system (Mendes, 2006).

Since the passing of the Vancouver council motion regarding promoting a just and sustainable food system, there have been a number of other city strategies and initiatives showing further support. For example, food issues are included in a the Greenest City Action Plan, Integrated Solid Waste and Resource Management Plan and the associated Zero Waste Challenge Strategy, Vancouver Economic Action Plan, The Local Food Action Plan (of the Park Board), Housing and Homelessness Strategy, In particular, in the suite of the Greenest City Action Plan, grants have been disbursed, and the majority are related to food systems, including many urban agriculture, food preparation workshops (“Greenest City Fund,” 2014).

3.2.2. *Governmental efforts within the system of food recovery*

In the last couple of years, likely due to the 2015 ban on organics in landfills Metro Vancouver has put forth a concerted effort to learn more about and improve the process of food recovery. Metro Vancouver has been creating *Food Donation Guidelines*, which will provide information that is specific to different sectors of the food system. It will also include information to educate organizations on what types of practices work well, and what leaders in the field are doing, drawing from interviews and meetings with food processors, vendors, and distributors, and food distribution organizations (personal communication, Metro Vancouver solid waste management employee, 2014).

3.2.3. *Policies pertaining to surplus food management*

In this section, I will discuss policies (municipal, regional, and public health) that pertain to surplus food management, and which represent the capacity for and dedication to food recovery from the organization or government department under consideration. I will justify the selection of the policies that are being analyzed. I will also include surplus food management-related excerpts from the policies, which might be

interesting to compare or contrast to policy/strategy statements from other departments' publications. I will use this information to consider the extent of integration, as well as to (possibly) contribute to the metric of capacity for surplus food management.

I considered as many strategies as possible from different city departments and planning foci, extracting sections that relate to surplus food, in order to understand the breadth of directives that pertain to surplus food management. I am considering parts of strategies that suggest what should be done with surplus food. By considering how these disparate policies approach the practice of surplus food management, I will be able to assess, to a degree, the occurrence of policy integration. I am considering strategies that have a stake in surplus food management in addition to others that are relevant to the city.

Only a few city strategies make direct mention of recovering surplus food, including the Vancouver Food Strategy, the Greenest City Action Plan states that I will attempt to encourage "programs that either use or compost excess food from commercial operations" (*Greenest City 2020 Action Plan*, 2012, p. 67). The Vancouver Food Strategy suggests its desire to "explore pilot 'food recovery' programs and initiatives to channel surplus edible food to people" (*Vancouver Food Strategy*, 2013, p. 120). A bit further afield is one of the strategies of the Regional Food System Strategy that relates to surplus food recovery. The strategy suggests:

Food recovery initiatives will be important in helping to address food needs while reducing the amount of food that goes to waste in the region...Gleaning refers to the collection of crops from farmers' fields that are not going to be brought to market due to harvesting methods or low market prices. Perishable food rescue applies to the collection of over-ripe produce at food wholesalers and retailers. Concerted effort to expand both activities, while assuring the safety of this food, could improve the diets of people dependent on food programs. (*Regional Food System Strategy*, 2011, p. 36)

Vancouver's Healthy City Strategy included that "sharing excess produce and food" is something can help to achieve an equitable and sustainable food system (*Vancouver's Healthy City Strategy*, 2014, p. 23).

These city strategies align with the SFS approach to food security in that they promote making good use of resources, which promotes sustainability, and they also

align with the AH approach to food security in that they promote channelling surplus food to people dependent on food programs.

3.2.4. *Non-governmental efforts towards food recovery*

Major fixtures in food recovery in Vancouver are the Greater Vancouver Food Bank Society and Quest Food Exchange. These are large organizations that redistribute surplus food (among other functions). On an annual basis, they handle 8.5 million pounds of food (“Partners,” 2012) and \$5 million of food (“Quest Food Exchange Facts,” 2014), respectively. There are hundreds of smaller food distribution organizations that are involved in food recovery, often the beneficiaries of the larger redistributors (“Partners,” 2012, “Partners - social service agencies,” 2013).

Another non-governmental effort that was initiated in recent years is ‘New Hope Cuisine’ (of the North Shore Salvation Army). New Hope Cuisine aims to put surplus food to its highest and best use by processing it in various ways, and was regarded as an innovative waste diversion service that helped businesses reduce waste and associated costs (Nichols & Stott, 2013). New Hope Cuisine sorted the surplus food that it received (into edible, inedible, recyclable, and non-recyclable), and also sorts the food prior to giving it to the recipient food distribution organizations (Nichols & Stott, 2013). At its height, it sold frozen meals, provided free food baskets to people in need, donated surplus foods to food distribution organizations, and also prepared food in its catering operation, while composting the food scraps that it could not use for food (Nichols & Stott, 2013). In addition to serving people in need, the food was for sale to the public, and provided opportunities and experience for people with barriers to employment as well as student interns (Nichols & Stott, 2013). In this report, it was suggested that it would be useful to value the service that New Hope Cuisine provided (the collection, sorting, and redistribution of food waste, which was free at the time), in order to determine how much should be charged to, at minimum, cover the costs of their waste diversion-related operations (Nichols & Stott, 2013). The New Hope Cuisine program has continued, but Salvation Army discontinued the catering portion (Shepherd, 2014), the reasons for which require further investigation.

The FoodPrint project (of Farm Folk City Folk) is a campaign that helps to raise awareness around, and reduce consumer food waste. The campaign includes a system for tracking an individual's or household's food waste, and provides tips for food purchasing and preparation that can help to reduce the amount of food wasted ("Foodprint 101," 2014).

The Vancouver Fruit Tree Project is an organization that practices another form of food recovery, namely from fruit trees on private and city property. Some of this food goes to food distribution organizations, as well as to homeowners and volunteers. There was also an associated, but separate social enterprise, Treehouse Treats, which processed harvested fruit into baked goods ("A year of food reflection," 2013). There was such marginal profitability that the organization no longer exists (personal communication).

3.2.5. *Institutional efforts towards food recovery*

One example of an institutional initiative is a project that was executed through CityStudio. CityStudio is a self-described "innovation hub within city hall where staff, university students and community members design and execute projects on the ground" ("CityStudio," 2013). The project, entitled 'Britannia Food Share', was designed to complement an existing after-school program in which teenagers prepare meals together (Gruneau, Wing, Vallee, & Kozinsky, 2014). The CityStudio program worked to supplement the program with food that was recovered from local businesses. In this program, the teenagers had to recruit local businesses to participate, collect surplus food from the participating ones, and then incorporate the food into their cooking program. This was a pilot project that lasted for approximately one month (during the school term when the students were enrolled in the CityStudio program) (Gruneau et al., 2014), and continues to some extent, but not to the extent that it was piloted (personal communication).

3.3. Interviews

I conducted semi-structured interviews, in addition to some follow-up questioning, with eight individuals.

3.3.1. Interviewee organizations: sampling and recruitment

I used purposive sampling to select the interviewees. The organizations are unique from one another, and were selected to be part of a case study. Each organization (i.e. case) was selected independently of one another, and according to the most appropriate case selection strategy. I referred to Seawright and Gerring's (2008) writing about appropriate case selection, which describes seven approaches to selecting cases for case studies (typical, diverse, extreme, deviant, influential, most similar, and most different cases). After having volunteered regularly at a food redistributor (described in more detail later in this section), I developed a general understanding of the workings of surplus food management, as well as of the types of organizations involved. This perspective allowed me to estimate the qualities of the broader 'population' of organizations, and gave me confidence in determining the types of cases I wanted to investigate.

The interviewees have been involved in a range of roles within surplus food management. Some are currently employed at organizations that donate or handle surplus food, while others were previously involved, and others still have some knowledge about the food industry. In what follows, I describe how I chose the organizations, and how I chose and recruited the interviewees.

I interviewed a rural farmer on Vancouver Island. I intended to include organizations from within Metro Vancouver, but I made an exception in the case of the rural farmer. While visiting Vancouver Island, I unexpectedly came into contact with the rural farmer, and after a discussion about my research, was invited to visit the farm and learn about its participation in surplus food management. The individual with whom I spoke is the principal farmer on the rural farm, and has been the spokesperson for interviews in the past. This interview was undertaken because of factors of access.

I interviewed a farmer at an urban farm social enterprise. The urban farm is similar to a grocery store in that it sells food in the city, and has surplus fresh, unprocessed food. However, since the organization also functions as a social enterprise, I was interested in learning how the business model and mode of operating differed from the farm and grocery store models. This organization represented a *deviant* case, chosen as a point of contrast to other food vendors. I chose the interviewee since she is

well-acquainted with the surplus food handling practices, and because of factors of access, since she worked with an Urban Studies colleague. My Urban Studies colleague sent a description of my study to the contact, and asked if she would be willing to speak with me about my research. After the urban farmer agreed, her email address was given to me.

I interviewed a produce manager at a local chain grocery store. I chose this grocery store because it has been involved in discussions about food recovery with Metro Vancouver, and is touted as a leader in managing its organic waste on Metro Vancouver's website. Thus, this grocery store can be classified as a *typical* case. I attempted to make contact with a senior-level employee who would be able to discuss the donation practices from a strategic and organization-wide perspective. However, I could not connect with a more senior employee, so I visited one of the grocery store's locations, and spoke with a produce manager. He was the most senior on-the-ground employee, who was also in charge of managing surplus food, and was willing to share his experiences.

I interviewed an individual who works as president of a firm that provides sustainability consulting services. I chose this individual for a couple of reasons. I learned about him at a Metro Vancouver Regional Food System Roundtable on Reducing Food Waste; at this event, he spoke about grocery stores' perspectives on food waste. I was interested in hearing more about the general perspective of, and issues faced by, grocery stores looking to reduce food waste and donate surplus food. In this sense, this organization could be considered a *typical* case. In addition, this interviewee was the founder, former president and former chief executive officer of a grocery delivery business. I was also interested in learning about food waste in the context of its distinct business model, since it may have a different experience and challenges from the other grocery stores. This organization represented a *deviant* case, chosen as a point of contrast to other food vendors. After the roundtable event where I first saw this interviewee speak, I emailed him with a description of my research, and a request for him to participate.

I interviewed a member of the board of directors of a food redistributor. I chose the organization because this food redistributor is among the largest redistributors in the

region. There are only a couple of large-scale food redistributors in Metro Vancouver, including this organization, so I aimed to represent the entire population in my research. I volunteered regularly with this food redistributor for approximately two years, which is where I became acquainted with the surplus food management system. I asked the executive director if I could interview the organization's staff for my research, and the executive director declined. Since I was unable to speak with a current staff member, I reached out to a member of the board of directors. The interviewee is someone who has been very involved in, and supportive of, the redistributor, and thus who is familiar with the business model and operations. In contrast to the on-the-ground redistribution information that I gained from other organizations involved in surplus food management, this interviewee provided information on the strategic direction of the organization, and shed light onto some of its motivators. I recruited this interviewee by calling the organization where he works, and requesting his participation by phone. My study details and consent form were sent by email.

I interviewed a food redistribution manager at another food redistributor. I chose the organization because, like the first food redistributor, it is common knowledge that this it is among the largest redistributors in the region. Also, this organization was chosen because it is one of only a couple of large-scale food redistributors in the region, and I aimed to represent the entire population in my research. Although its principal operations are not the redistribution of surplus food, that element constitutes a major part. I interviewed an employee at the redistributor who manages the food redistribution elements of the organization's programming, since she would be most familiar with redistribution-related operations. I became acquainted with this employee at several food waste and food recovery events. After speaking with her in person about my project, I emailed her, sent the study details and arranged an in-person interview.

I interviewed a food services coordinator at a local neighbourhood house. The food program at this organization receives surplus food from a number of sources, and thus, I was interested in the organizations' operations as they pertain to this surplus food. The interviewee is the most familiar with the organization's surplus food practices since he manages the ordering and receipt of food at the neighbourhood house. This neighbourhood house could be considered a *typical* case. I chose the interviewee because of factors of access, since an Urban Studies colleague was already connected

to this individual and was aware of the neighbourhood house's receipt of surplus food. I recruited this individual by asking my Urban Studies colleague to inform him about my project, and pass along his contact information if he was interested in participating.

I interviewed a policy consultant and healthy built environment specialist from the regional health authority. I sought an interviewee from the health authority because of the potential food safety issues involved in dealing with surplus food, and how those might influence the amount and types of food redistributed. Thus this was not a sample, but a purposefully-chosen target organization. At numerous food waste reduction events organized by Metro Vancouver, employees of the regional health authority presented in conjunction with employees of the provincial health authority. Among these organizations, there has been a joint effort to revise the guidelines for food banks, soup kitchens, and handling of donated food. After one of the aforementioned events, I followed up with the health authority employees who were present (and who had been involved in working on food waste and food recovery projects). Those employees then referred me to another health authority employee who was thought to be better able to answer my questions. I interviewed this health authority employee along with a junior environmental health officer, who was invited to participate in the interview, and answer questions that were more related to her inspection-related expertise.

3.3.2. *Interview style and line of questioning*

In this section, I describe the style of interview and line of questioning that I used, as well as how I used the data that was collected. I conducted semi-structured interviews; there were pre-set questions that were designed to glean information about the various organizations' roles and challenges in surplus food management, but the structure was sufficiently flexible so that there were opportunities to probe unanticipated, but related topics as they arose. Related topics include ones regarding the communication and relationships among other organizations, logistics of surplus food, distinguishing usable from unusable surplus food, guidelines for what types and quality of food is accepted, and organizations' goals.

3.3.3. Sufficient data quantity and representativeness

I interviewed a representative from organizations that represent different perspectives on surplus food management. I chose not to interview a representative sample of organizations because I was not seeking to generalize for all organizations of a given organization type, but I was interested in learning about the particular operations, approach and perspective of certain types of organizations. Also, for reasons of project scope, I could not expand my scope to a greater number of interviews. Thus, the conclusions that I make regarding surplus food management are not representative of all surplus food management systems, and are not even representative of all of surplus food management within Vancouver. The results and conclusions provide a glimpse into the experience of a handful of organizations, and may point towards areas where tensions are experienced in these specific circumstances and where attention could be directed.

If I had studied a larger sample of organizations, or different organizations, that are involved in surplus food management, the results may have been different. This is because of the diversity of organizations involved in surplus food management. As discussed in Section 1.2.3, the surplus food management system arose organically, in a way that was not pre-meditated. Thus, interviewing different organizations could have revealed operations and challenges distinct from those of the actual interviewees, and that are particular to the context of the given organization. However, I estimate that, since many of the organizations are not-for-profits, the themes that would emerge would be similar to those found in this research (i.e. challenges related to lacking resources, quality of food for people in need, and communication among organizations). In short, interviewing a greater number of organizations might show a wider variety of operational models, but might substantiate the broader themes that were identified as pertaining to the situations of the interviewee organizations.

3.3.4. Coding

The approach to coding reflected the fact that the interview was semi-structured. After transcription, I read through each interview transcript multiple times, and I coded interviewee responses to my questions. In cases where the interviewee divulged insightful information that I had not anticipated, I used Grounded Theory. I considered

the ways in which these other unanticipated concepts or themes arose within and across interview responses, and synthesized any themes that emerged. The main themes that guided my coding are included in Appendix E.

3.3.5. *Analysis of different types of interviewee data*

The data that was collected did not come from the same types of sources. The interviewees had a range of positions within their associated organizations, and some were not directly involved with surplus food management. Here, I describe how I reconciled these various data sources in analyzing the data.

In the cases in which the interviewee was directly involved in surplus food management, either giving or receiving surplus food, or managing the program, I used the data to build my understanding of the operation of surplus food management. I considered the operations of each given organization, based on information from the interviewee, in describing the role and challenges of that organization. As well, I used the interview data to designate the organization's approach to food security. This was the situation of the interviewee from the grocery store, the urban farm, the rural farm, food redistributor 2, and the neighbourhood house.

In the cases where the interviewee was not a direct representative of an organization, but had knowledge about surplus food management, I used the information to inform my understanding of challenges in food recovery and in the food system. The information from these sources was more general, e.g., grocery stores trying to be profitable, food distribution organizations aiming to provide both sufficient *and* healthy food. Although this information was not used to construct an understanding of the operations and logistics of surplus food management, it was useful in illustrating the potential underlying rationale for some of the operations.

3.3.6. *Limitations of the research methodology*

One limitation is that the experiences of the rural farm on Vancouver Island are not directly applicable to Metro Vancouver. The rural farm operates within a spatially distinct surplus food management system, but its general experiences and practices can still be considered in relation to the organizations in Metro Vancouver.

Another set of limitations is related to the interviewees' positions in their respective organizations, discussed in Section 3.3.5. None of the interviewees are involved in all aspects of surplus food management, because of the distribution of responsibilities among various employees or volunteers. Also, none of the interviewees were at the head of an organization, suggesting that, although they had an understanding of surplus food management operations at their organization, and of some related rationales, they may be less able to speak about the underlying reasons for certain practices and policies. The information that the interviewees provided can only paint part of the picture of how surplus food management works. For example, the information that was gathered from the local chain grocery store came from the produce manager of one of the grocery store's locations. Thus, this employee is likely aware of the operational constraints, but the information that he provided may not completely represent the core reasons for the current practices.

Another limitation is the potential for non-response bias, namely capturing the perspectives of only those organizations that were open to speaking with me. Groups that responded may have common characteristics, and similarly, those that did not respond to my requests for information may also share qualities.

3.4. Other data collection

3.4.1. *Experiential data collection*

Although I was not permitted to interview employees of food redistributor 1, the executive director suggested that I could volunteer with the organization to gather the information that I was seeking. Thus, in my description of food redistributor 1, I draw from my personal experiences as a volunteer with the organization, where I volunteered in numerous positions, including assisting with the administration and warehouse logistics.

Prior to and during the research process, I was in contact with a number of local stakeholders who are involved in surplus food management, and who work with the regional government on food-related policy. I had several informal discussions with a Metro Vancouver employee who was doing research for Metro Vancouver's *Food*

Donation Guidelines document. This document will be a resource for organizations looking to donate surplus food, and will facilitate the process and make it easier and more desirable for organizations to donate food as a method of diverting food waste from landfills. The Metro Vancouver employee was working with the interviewee from food redistributor 2, as well as with employees of the local and provincial health authorities to craft the Food Donation Guidelines document. Thus, I spoke several times with the Metro Vancouver employee about the data that she was collecting to inform the guidelines document, and also had the opportunity to attend a feedback-gathering session with a number of representatives of food distribution organizations, which receive food that is redistributed. I am aware of the general premise of the *Food Donation Guidelines* document, but I never saw the material being prepared for it.

I decided not to interview any planners from the City of Vancouver for a number of reasons. First, I determined from a review of municipal strategies and documents that the City of Vancouver was not sufficiently involved with surplus food management. In the Vancouver Food Strategy, I found superficial mention of surplus food management, i.e. a suggestion to explore pilot food recovery programs. Additionally, none of my interviews revealed that the City of Vancouver has been playing a role in surplus food management. It would be interesting to explore the opinion that City of Vancouver planners hold on surplus food management, but I decided to exclude this investigation since my research focused more on the current interactions involved in surplus food management. Additionally, the interest in surplus food management among Metro Vancouver staff seems to stem from its drive to divert organic materials from landfills, in line with the regional waste minimization goals. Metro Vancouver has been involved in crafting the document that encourages participation in surplus food management, but not in terms of policy or execution.

I decided not to interview any employees of the British Columbia Centre for Disease Control (BCCDC). On the one hand, BCCDC has been actively involved in creating the *Food Donation Guidelines* document, which will replace older documents (that were published in 1998) guiding the operations of soup kitchens and food banks. However, since I was thinking about how organizations in surplus food management operate, are linked to one another, and experience challenges, the BCCDC was of less interest to me since it is not directly involved.

Chapter 4.

Results and Discussion

4.1. Introduction to surplus food management organizations

This section includes a description of each of the organizations that I studied. This includes information that I gathered from interviews, written material, and my personal volunteer experiences at one of the food redistributors, discussed in Section 3.4.1. I cover the following points for each organization:

- What the organization is – its purpose, programs, and who it serves, and
- How the organization is involved in food recovery

The choice of terminology should be noted. Any organizations that serve food or have food programming will be referred to as “food distribution organizations.” This is based on the suggestion of one interviewee who has been involved in researching for and writing Metro Vancouver’s forthcoming *Food Donation Guidelines* document. She said that the term “food distribution organization” will be used in this document since it is broad enough to include a range of meal programs, including food banks.

In the context of surplus food management, partnerships will be taken to mean relationships with other organizations that extend further than simply a one-off business transaction. For organizations that are in “partnerships,” an exchange of money may be involved, but the partnered organizations are also vested in one another’s success, and look to support one another when possible. This will be exemplified in the nature of the relationships among organizations involved in surplus food management.

4.1.1. Rural farm

Organization synopsis

The rural farm that participated in my study is an organic, family-run farm on Vancouver Island that has been in business for 27 years. It grows salad greens, as well as a range of fruits and vegetables, and chooses ones that complement each other ecologically. It supplies a British Columbia grocery store chain and community supported agriculture program, and sells produce directly. It also hosts weddings and farm-to-table meals on the farm grounds. The rural farm places a high value on sustainability, its organic certification, customer requests, and its connection with the community.

Practices that relate to surplus food management

The rural farm has surplus produce in the cases when it harvests too much produce for a given order, or when produce is not sold at the farmers' market. The food is donated to a food distribution organization in the City of Victoria; the rural farm either drops off the surplus food, or gives it to volunteers and employees of the food distribution organization who collect it at the end of the farmers' market.

4.1.2. Urban farm

Organization synopsis

The urban farm that participated in my research is a social enterprise, and runs farms at several locations in Vancouver. The farms occupy underutilized urban plots (ones that are currently vacant and slated for development), and produce is grown in moveable aboveground boxes. The organic produce is sold at farmers' markets, to restaurants and other organizations, and is also made available for employees to take home. The urban farm employs individuals who have barriers to employment, and provides a supported employment environment, through which employees are connected with social workers who can refer them to counselling and other social services.

The urban farm focuses on producing high-quality produce that is accordingly more expensive, and sold at farmers' markets and local, higher-end restaurants. The restaurant partners often share values with the urban farm, and similarly value high-

quality, local and organic food, and that create opportunities for local economic and community development.

Practices that relate to surplus food management

After selling food at the farmers' markets and also giving its employees a chance to take what they would like, the remaining food is donated to food redistributor 1, a specific organization that will be discussed in more detail in Section 4.1.5. The urban farm tracks the weight of the surplus food that is donated, and the food is picked up on an on-call basis by the food redistributor. In the past, the urban farm partnered with a restaurant to process surplus produce, converting fresh produce into other food products, like preserves, but this no longer occurs. The urban farm is looking into future opportunities to secure their own facilities, including preparation, refrigerated and freezer space, or share facilities in order to process their produce.

4.1.3. *Grocery delivery business*

Organization synopsis

The grocery delivery business that I considered in my research is an online grocery ordering and delivery service. It specializes in high-quality, local and/or organic produce, and provides an alternative way of obtaining food for people who are already buying organic. The alternative food-marketing model allows customers to order online and for products to be delivered. As well, the grocery delivery business is directly linked to food producers and growers.

Practices that relate to surplus food management

Despite greatly reducing the amount of food waste generated compared to traditional grocery stores, the grocery delivery business still has some surplus food, in part because of its high quality standards. This food is donated to food redistributor 1.

Note regarding the interviewee

The individual who was interviewed about the grocery delivery business was the founder of the company, and no longer works with the business. The interviewee spoke

about the model of grocery delivery in general: it reduces energy consumption and waste, and maximizes convenience for the customers.

4.1.4. Grocery store

Organization synopsis

The grocery store that participated in my research is a local, upscale grocery store with several locations in Metro Vancouver, and one in the Okanagan. It touts the largest stock of natural and organic products in British Columbia.

Practices that relate to surplus food management

The grocery store donates its surplus food on a weekly basis to a food distribution organization (not one of the other organizations in this study) that provides services to people in need. The grocery store only donates dry, non-perishable goods. To maintain high-quality produce, the produce section is culled twice daily. Since the grocery store aims to source local and sustainable produce, it was noted that the produce tends to ripen very quickly, and by the time it is culled, it is already too soft, or wilted to donate. Culled produce is picked up a couple of times per week by a waste management company, and then composted. The food that is still of sufficient quality to be donated is tracked by scanning, so that there is a record of the dollar value of food donated.

4.1.5. Food redistributor 1

Organization synopsis and practices that relate to surplus food management

Food redistributor 1 is an organization that has as its principal function the redistribution of surplus food to people in need. For this reason, the “organization synopsis” and “practices that relate to surplus food management” sections are merged. Food redistributor 1 receives surplus food from over 60 food-related organizations (e.g. processors, distributors, vendors, etc.), and the food is sold and redistributed, most often at a reduced cost, to over 400 food distribution organizations. Food redistributor 1 also has low-cost grocery stores, which sell a subset of the food products at a subsidized cost, and are accessible only to people in need. People are deemed eligible to shop at

these low-cost grocery stores if they are 'referred' by a social service agency. Obtaining a referral requires people in need to discuss their financial need with an employee of a social service agency. The food is then sold for a fraction of the original value, so food redistributor 1 must research market food prices in order to assign proportional marked-down prices to the donated products. The sale of donated food is a major source of income for food redistributor 1, and enables it to cover its operational costs. Fresh food is typically sold in the low-cost grocery stores, while packaged or non-perishable foods are sold to food distribution organizations.

When food redistributor 1 receives food, it is stored in a warehouse before redistribution. There, it undergoes quality control to ensure that it will be safe for consumers. Some of the food is also repackaged, either to transfer food from bulk quantities into individual quantities, or to remove the original packaging, if requested by the donor.

Food redistributor 1 receives some of its food, such as bread and dairy, on a regular schedule, but the receipt of other items is more variable. The stock in the stores depends on what is donated, thus is always rotating. Food redistributor 1 periodically distributes a list of recently received foods, or ones that it would like to dispose of (e.g., because there is a large quantity, or an approaching expiry date).

The food redistributor has an ongoing relationship with the local health authority to discuss food-handling procedures for products that do not already have specific regulations. The food redistributor has also recently forged a partnership with a community garden and a volunteer program for people with disabilities to harvest produce and transport it to the low-cost grocery stores.

Finally, a large part of the operations of food redistributor 1 involves empowerment of people in need and volunteers. Food redistributor 1 has few paid employees and a sizable volunteer base. Volunteers who are eligible to shop in the low-cost grocery stores receive a store credit to compensate them for volunteer time. Food redistributor 1 works with volunteers of all abilities, providing an environment where volunteers can build skills and improve employability. Other programs include the community kitchens, store tours that discuss nutrition and food purchasing strategies, and subsidized FoodSafe courses.

4.1.6. Food redistributor 2

Organization synopsis and practices that relate to surplus food management

Food redistributor 2 exists to improve access to food of people in need through a number of programs. Some of the food that food redistributor 2 receives comes from grocery store returns, described in Section 1.2.5, and some food comes from food drives that collect donations from individuals. One of food redistributor 2's programs involves providing bulk quantities of free dry food and unprocessed produce to food distribution organizations. Food distribution organizations can request this food approximately once per week, and must pick up this food from food redistributor 2. A second program involves perishable and prepared foods that are picked up and delivered on the same day. A food distribution organization can sign up with the program, and based on its specific needs and the number of people that it serves, it will receive deliveries of food one to three times per week. According to the interviewee from food redistributor 2, "The free food can range from sandwiches to produce to trays of spanakopita from a caterer." A third program is two-day food supplements for people in need, which includes a mix of perishable and non-perishable foods. These food supplements are available from 15 depots in Vancouver, Burnaby, New Westminster and the North Shore, and can be obtained once per week.

Due to a change in leadership in 2012, food redistributor 2 has shifted its focus away from the more traditional food bank handout model. In addition to continuing its existing programs, food redistributor 2 now promotes:

- alternative means of food provision (e.g., the curbside market, which aims to improve access to fresh, healthy foods in areas where these foods may be difficult to find);
- higher standards for the food accepted, being especially strict about sugar, salt, and fat content; and
- a greater focus on capacity-building and empowerment programs (e.g., it manages two community kitchen programs, and assistance with employment skills and obtaining a library card).

Food redistributor 2 will be moving its location by 2017, in part because of its need for more space, and the City of Vancouver has agreed to help find a new location.

Food redistributor 2 has been involved in modifying health guidelines associated with food banks and soup kitchens, and has been working with Metro Vancouver, as well as the local and provincial health authorities. In addition, food redistributor 2 is working with the British Columbia Centre for Disease Control to review policies pertaining to food banks and soup kitchens to consider how those regulations apply to organizations that do not fall squarely into one of the existing categories. Food distributor 2 is also working to create standards for the types of food that it will accept, both in terms of nutrition and categorization of packaged foods.

4.1.7. *Neighbourhood house*

Organization synopsis

The neighbourhood house is a food distribution organization that serves and runs programs for a diverse community. Programs are specifically geared towards a variety of age and ethnic groups, including immigrants, new mothers, seniors, and youth. The programming includes social events, instruction and skill-building, cooking, community meals, community gatherings, and music nights, among others. The neighbourhood house serves approximately 3,000 people every year, has few employees, and relies heavily on volunteer labour. It receives funding principally from grants, for which it must regularly apply.

The neighbourhood house is involved in policy advocacy, namely through a forum that brings together community members to discuss a number of issues of community concern (public realm, stormwater management, etc.). This forum is linked to and provides feedback to the city.

Practices that relate to surplus food management

Many of the neighbourhood house's programs involve food, both prepared and unprepared, some of which is surplus. Food is distributed through the programs, as well as in emergency food hampers that are tailored to the situation of the recipient, and are intended to last several days.

The neighbourhood house obtains its staple foods, including flour, oats, sugar, dried goods, canned goods, beans etc., for free from food redistributor 2. The

neighbourhood house interviewee discussed his ability to request certain items from a list that is sent out: “the food redistributor gives me that list, and then...when my supply is running low, I'll send them an email [saying what I want.] ...[However] that wish list doesn't guarantee me what I ask for.”

The neighbourhood house also requests food in response to one-off offers from food redistributor 2 about food that becomes available. The neighbourhood house obtains food from grocery stores, cafés, bakeries, a community garden, other food distribution organizations, a fruit-harvesting program, and individual neighbours who happen to have extra food. Some of these relationships arose through personal connections of both staff members and neighbourhood house patrons. Many of these are long-standing relationships, around which there is an established donation protocol. Donated food often has to be sorted (by employees, and sometimes neighbourhood house patrons) before it can be distributed to community members or incorporated into prepared food because some of it is not fit for consumption. To meet the needs of the program or event, the neighbourhood house supplements its donated food with purchases of food from grocery stores.

The neighbourhood house is closely tied to other food distribution organizations, and food is exchanged among them. The neighbourhood house employee stated:

[The] community centre just down the street [also gets] donations from [the organic grocery store]. But they don't really have a food program there, so [when they] get in a big donation from [the organic grocery store], [they] give away as much of it as they can, and then whatever they've got leftover, they truck over to me.

As well, the neighbourhood house interviewee stated that “there's the [other food distribution organization]. I don't even know what exactly they do, but every once in a while I'll get a phone call from them,” offering some extra produce.

There is much uncertainty regarding the types and quantity of food received, so this requires the neighbourhood house to be flexible in the food that is prepared. The neighbourhood house interviewee further described the informal exchange system that arose among food distribution organizations:

It's purely ad-hoc...I remember one guy was saying, "Hey, the other week, I got five cases of Gatorade, but there's no way that I'm going to serve Gatorade to my participants." And then this other guy said, "I would love to have five cases of Gatorade because then at least my participants would have some electrolytes...because they're not eating or they're on lots of medications... I had a whole bunch of toothbrushes that were donated. We could trade them." And it's purely just this organic mess...there are some of those small little networks around, but there's no concrete cohesive system set in place.

4.1.8. Health authority

Organization synopsis

The health authority serves the City of Vancouver, North Vancouver, Richmond, the Sea-to-Sky Highway, Sunshine Coast, Bella Bella, Bella Coola, the Central Coast, and the surrounding areas. It manages 13 hospitals, as well as provides services related to primary care, community-based residential and home health care, mental health, addiction services, public health, hospital care, and research. It also provides information on personal health for a range of demographic groups, as well as manages an environmental health program, which includes licensing of facilities, food, air, and water safety, and tobacco control, among others.

The health authority emphasized that it has no single perspective on food recovery, but is trying to advance health promotion programs in all ways possible. In part, it focuses on prevention of food-borne illnesses. Environmental health officers conduct regular inspections of food service facilities, and every environmental health officer interprets the provincial Food Premises Regulation, which are rules by which all food service facilities must abide.

The health authority is beginning to focus more on the prevention of chronic illnesses by promoting food security. This was sparked by the 2005 government of British Columbia designation of food security as an area of particular importance ("Model Core Program Paper: Food Security," 2006). The Model Core Program Paper: Food Security guides the operations of provincial health authorities. It draws from Bellows and Hamm (2003) definition of food security, stipulating that food security exists when "all citizens obtain a safe, personally acceptable, nutritious diet through a sustainable food system that maximizes healthy choices, community self-reliance and equal access for

everyone” (“Model Core Program Paper: Food Security,” 2006, p. 3). Thus, the focus on maximizing healthy choices, community self-reliance, and equal access create a slightly different connotation than the definition from Canada’s Action Plan for Food Security, discussed in Section 1.2.1. The health authority is concerned with food security insofar as “many chronic diseases are diet-related and found to have a higher prevalence in food insecure populations” (“Model Core Program Paper: Food Security,” 2006, p. 3). Thus, the provincial government suggests that “it is important for the health sector to be strategically involved in supporting access to affordable, high-quality food” (“Model Core Program Paper: Food Security,” 2006, p. 5).

The population health division of the health authority works on food security goals. The health authority also supports food distribution organizations that serve vulnerable populations, through grants and by providing guidance to them about food practices. The health authority would like to create a supportive policy approach to guide the choice, and delivery, of foods that are provided for vulnerable populations. The health authority also funds food security coordinators through the Community Food Action Initiative. The health authority has, in the past, disbursed funds for urban agriculture projects as well as other varied grants for local food growing projects.

Practices that relate to surplus food management

The health authority focuses on environmental health, but it also has some opportunity for pilot projects and more proactive work. One pilot project of a health authority employee was a food recovery program on the North Shore. Apart from that, the health authority does not actively write about, or participate in, food recovery. However, with the initiation of the 2015 ban on organics in landfills, there is increasing attention on food recovery and encouragement of businesses to donate surplus food. As a result, the health authority recognizes that environmental health officers require increased training on facilities that store or serve surplus food, and on the interpretation of the new guidelines. The health authority is collaborating with a local post-secondary institution that has an environmental health officer program, and environmental health officers are trained to perform food inspections, among other things. The students are considering how Metro Vancouver’s forthcoming *Food Donation Guidelines* document will affect the work of environmental health officers. Finally, the health authority dietitians

are partnered with food redistributor 2 to rewrite the nutritional guidelines that inform food distribution organizations as they screen food donations.

4.2. Goals and challenges

In the analysis that follows, I discuss the major goals of each of the organizations. The organizations' goals have been drawn from interviews, website information, as well as from my personal experiences volunteering at a food redistributor. I also describe specific aspects that align with the food security approaches. It should be noted that each organization has a different mode of operating, thus similar goals may manifest themselves in different ways in the unique context of each organization. I include challenges that pertain to the organizations' operations generally, including, but not limited to their surplus food management-related operations.

4.2.1. Analysis

Information about the organizations' practices as they participate in surplus food management was used to inform my overall understanding of the role of each organization in surplus food management. I also compared practices among organizations as a way of assessing integration. I compiled a list of the organizations' goals, and then evaluated the extent to which each organization prioritizes each of the goals (using a four-level ranking). I used this to determine the areas in which organizations allocate their efforts.

Referring to the organizations' challenges, I considered the potential reasons for these, and how capacity could be built to address these challenges. Similar to the goals, I compiled a list of all challenges and assessed to what degree each of the organizations interviewed experienced the challenges. From this, I identified clusters of commonality and opposition among organizations in order to determine where certain organizations are aligned, as well as types of organizations that experience certain challenges.

I also considered the elements that are suggested to be required for collective impact (common goals, mutually-reinforcing operations, and communication), and opportunity to foster these.

4.2.2. Rural farm

Goals

Overall, the rural farmer aims to grow a range of varieties of high-quality produce. The rural farm highly values its organic status, and the associated record-keeping and verification can be tedious, as is evident in this quotation:

When the inspector comes, he/she...[asks]: "what happened on the 22nd of June? What did you sell? Where did it come from? What field did it grow in? How many rows did it grow in? Who bought it? Show me the receipt. Show me the seed that you bought"...they do, basically a mini audit each time they come.

Minimizing the amount of produce that goes to waste is also paramount, and the ability to donate in a convenient and unobtrusive way is also important. The farmer stated, "It's very easy for us...it's convenient to drop in [at the food distribution organization]. I'm going into Victoria anyway. I take the stuff, I drive into the driveway, drop it off, it's 10 seconds...no forms to sign or anything like that." The surplus produce is delivered when the farmer is already in town, and he prefers not to go through formal channels to donate. When asked about the influence that paperwork would have on his decision to donate, he said, "I have enough paperwork. My god I've got enough paperwork. Being certified organic, I don't know if you know what the paperwork is like. It's serious stuff."

Additionally, the farmer did not seem to be motivated by corporate social responsibility and preferred to *not* be formally acknowledged for his donations. He said, "I'm not there to get a medal for it. I just feel like, 'Here it is, it's good food, run with it.'" The preferences of the rural farm are also in opposition to those of other organizations. For example, another food retailer acknowledges on its website that it produces surplus food and donates to local organizations, therefore the donation has some publicity value for it.

When asked about the advantage of donating food, the farmer is clear that growing and donating surplus food incurs a cost, but that there is still some benefit:

Only...personal gratification. There's no monetary benefit, not at all...we'll have grown the product, we'll have bought the seed, we'll

have looked after it, we'll have harvested and paid someone to do it, we'll have packaged it and paid for the packaging, and there's still a cost [to us to donate]. But it's...such a small thing to do really.

Thus, the rural farm seems to have a social conscience, but one that it is not looking to tout. Along these lines, it is also involved in community giving; “occasionally, [it supplies] a dinner or [fundraiser...and supplies] the product for [free]. [It has] done that for chicken, eggs, salad greens, vegetables, and potatoes.”

Additionally, the rural farm is particularly aware of food safety standards, due to a salmonella scare that happened a few years ago. In response to that issue, the farmer describes their protocol:

We test twice a week, all the floors are all washable floors, washable walls, stainless steel counters that we do the salad on, we have a whole protocol for when it's picked, of washing. We triple wash it, and one of the washes is a sanitizing wash with hydrogen peroxide, and all the countertops and all the containers, everything gets sanitized with hydrogen peroxide...and then it's usually stored in the cooler for 24 hours after that while the test is being done. So we don't ship it unless the test is...negative.

How does this organization think of food security?

The rural farm's operations align with the SFS and AH approaches to food security. Qualities that align with the SFS approach are that the farm:

- focuses on environmental sustainability (being a certified organic farm), which may provide health benefits for consumers and reduce environmental risks;
- focuses on providing high-quality products;
- produces local, seasonal foods;
- promotes local agriculture, self-production and self-reliance;
- relies heavily on partnerships, namely those between the farm and the numerous grocery stores and organizations to which it sells, as well as community organizations to which it donates; and
- believes in the importance of education regarding food preparation, despite not being directly involved in it.

In addition to this strong focus on SFS, the rural farm is also involved in the AH approach to food security, in that it donates its surplus food directly to a food distribution organization.

Challenges

The rural farm did not have any challenges per se relating to its involvement in surplus food management. It expressed that it is challenged to ensure that its business model is workable, but considering that the farm has been in business for 27 years, challenges have not been sufficiently problematic to threaten viability.

4.2.3. *Urban Farm*

Goals

The urban farm is centred on promoting community economic development, building farming skills, addressing the root causes of food insecurity, and fostering self-sufficiency among its employees. These goals are not representative of all urban farming operations.

The urban farm discussed its drive to “[get] rid of [surplus produce] before it goes bad...if stuff goes bad it's not useful to anyone.” Contributing to the community by donating food is important to them: “[we like to] be able to value what we're putting out to the community.” It keeps a record of the value of this contribution by recording the weight of produce that is donated. The urban farm values the current surplus food management arrangement, including the fact that their donations from the urban farm locations: “It'd be hard for us to drop stuff off all the time, so having someone to be able to pick up is really nice.”

The urban farm has a vision of providing some form of culinary instruction to organizations and individuals that receive its food donations, since some of the vegetables that are grown are not as common, and people may not know how to use them: “[it would be good to have]...some education around food preparation so that they can distribute things like spinach or eggplant and people have the resources to prepare them themselves.”

How does this organization think of food security?

The urban farm has operations that correspond with all of the approaches to food security. As a social enterprise, the urban farm is highly concerned with supporting its staff. In order to provide the necessary support for its staff, the urban farm entered into a partnership with another local social enterprise, which connects each of its staff to support workers: "...we are providing...supported employment, but I'm a farm manager not a social worker, so...this year we're piloting a program with [another employment-based social enterprise], where...two fully-funded support workers...are going to help with our staff." This focus on employing and supporting people with barriers to employment demonstrates the AP approach to food security, in that the employees can earn a living, live more independently, gain skills, and gain control of their food supply. This model also acts as a viable example of a poverty alleviation strategy, advocating for the poor, providing employees with income security, and contributing to community economic development. Additionally, this practice provides evidence of the need to encourage the use of a systems approach.

The urban farm also embodies many elements of the SFS approach to food security. The urban farm grows local, seasonal foods, through local, sustainable agriculture, connects food producers to eaters by selling at farmers' markets (an alternative food distribution channel), and improves access to healthy food among employees. The urban farm promotes empowerment, skill-building and self-production in its full-time employment of farmers, which helps them to earn a living wage to support themselves and to grow their own food.

The urban farm also embodies the AH approach to food security in that it donates any surplus produce to food redistributor 2, which then takes the food to food distribution organizations with food programs.

Challenges

The urban farm has limited funds, which restrict its aspirations to advance its operation. For example, the urban farm would like to institute on-site composting, but it is challenged to "[find] the money for that and...[get] a composting system that is compliant with Metro Vancouver's regulations."

As discussed earlier, the urban farm is driven to ensure that the produce it donates is used productively. This was in part because the urban farm learned that some food distribution organizations receive more food than they could use: one food distribution organization was “getting way too much salad.” In response to this, the urban farm interviewee said, “We try to give them something manageable,” and suggested that food should be distributed “...in manageable chunks, so that people aren't getting too much or too little...and they're getting...a [balance of] things. Some vegetables, some bread, not all juice one week, and all yogurt the next week.” This suggests that the urban farm feels somewhat responsible for doling out appropriate shares of food, thus it seems to pay special attention to how much and what is donated.

The interviewee talked about the urban farm's approach to donating surplus food:

It's a fine balance...we still want to be donating food, but...[the proportion of food that we donated] was way bigger two years ago...almost 1/3 of our total gross, which isn't good for us. So, I think we want to keep it at more of a manageable percentage, like 10%.

The interviewee suggested that the urban farm adjusted its practices, and has reduced its surplus in a number of ways: after the first year, the urban farm interviewee said, “Production was more in line with what our markets wanted...[and] now we have a pretty good idea of what the restaurants like,” and “the way we have it now, it's kind of guessed, and then that guesswork has been made more precise both by developing new markets and by shifting the crops that we're growing to fit those markets.”

In the past, the urban farm has processed some of its food in order to make use of what was not sold: “We have gotten a restaurant chef to do [value-adding] for us before, but we would really like to have a facility, and more refrigeration, more freezer space, someone who could do that for us.”

4.2.4. *Grocery delivery business*

Goals

The grocery delivery business values its business model and ability to provide Vancouverites an alternative way of accessing food. The grocery delivery business argues that its business model:

- reduces the costs of a 'middle-man' transport organization, and those associated with running a brick-and-mortar store;
- results in less waste food (because customer orders dictate what the grocery delivery business orders);
- is a better way of supporting and connecting with local farmers;
- allows people to consume products according to what is seasonal; and
- is approximately the same price as the same local organic produce that is sold in grocery stores.

How does this organization think of food security?

All of the qualities of the grocery delivery business described above align with the SFS approach to food security. Additionally, the grocery delivery business values connections with other organizations. It discussed the importance of fostering and maintaining close relationships with the food-producing suppliers, and it has structured its model so as to support its food-growing suppliers. For example, there is a mutually beneficial arrangement through which the grocery delivery business purchases fresh produce from local organic farmers, and returns compost to the farmers. The ability for these local producers to receive organic compost is highly valued, since having organic compost is necessary to maintain their organic designation. This also provides a convenient way for the grocery delivery business to get rid of its compostable food waste.

The model of the grocery delivery business is one that aims to ensure that farmers' surplus food does not go to waste, by preventing farmers from having too much surplus food:

We had...a number of situations where we had farmers producing product and having it ready to go, and there'd be no buyer for it because the weather conditions caused all the food to come ripe at the same time...and there just wasn't enough demand in the market.

The grocery-ordering model encourages customers to purchase seasonal produce, helping the farmer to sell produce that is abundant, thereby reducing farm waste. Additionally, the grocery delivery business encourages its customers to grow their own food (self-production), and on the grocery delivery business' website, there is a wealth of

resources related to diet and healthy eating, which promote skill-building and empowerment.

The grocery delivery business also employs the AH approach to food security in that it donates its surplus food products to food redistributors that then make them available to people in need.

Challenges

The interviewee stated that, for grocery stores in general to be able to justify participating, food donation practices must not be overly costly (e.g., in terms of the labour required to sort food into compost vs. garbage vs. donation). Grocery stores may be encouraged to participate in surplus food management due to the lower cost of donating as compared to compost pick-up, and these, and other benefits can be weighed against the cost of participation. Grocery stores could also incorporate their donations of surplus food into their branding: “retailers, even without the [ban on organics in landfills], would be able to find ways to make the economics make sense, even from a branding value, in terms of publicizing the donations they make to food outreach groups.”

The grocery delivery business is challenged in attracting business, and convincing people of the benefits of the home delivery model. At the same time, the grocery delivery business has been in business for 15 years, demonstrating that the challenge has not been prohibitive.

4.2.5. Grocery store

Goals

As a smaller, local company, the grocery store is committed to providing an exceptional experience for its customers, through the environment of the store, and additional resources and programs that it offers. It strives to be recognized for quality and does not want to be perceived as a discount store. Finally, the grocery store aims to foster relationships with its food providers: on its website, the grocery store writes, “We set aside time to get to know the people who grow and produce the local foods that go home with [our] customers.”

How does this organization think of food security?

The grocery store principally exhibits a commitment to the SFS approach to food security, but also has certain operations that align with the AH approach. It aligns in many ways with the SFS approach because: it is committed to providing high-quality products; it promotes environmental and personal health; it values its relations with other organizations; it empowers people through its educational resources and programming, including nutrition information, cooking demonstrations, and store tours that help people expand their knowledge of food, health, and waste. To facilitate this programming, the grocery store employs dieticians that work at its various locations. The grocery store also aims to develop strong social networks, through its ties with local farmers and suppliers. The grocery store also highly values involvement with the community, evidenced by its contributions of food and money to local organizations.

The grocery store also aligns with the AH approach to food security in that it ensures that any surplus food that is fit for consumption is donated to a food distribution organization.

Challenges

A grocery store employee suggested that the current arrangement of surplus food donation seems to work well at the location where he works. The grocery store's dairy products are not donated because the grocery store does not have extra cold storage, so there is no space to keep the surplus dairy until the donation pick-up.

4.2.6. *Food redistributor 1*

Goals

The majority of food redistributor 1's operations involve surplus food management, and its overall goal is to obtain safe food to provide to food distribution organizations. It aims to obtain nutritious food, and will purchase additional protein and dairy products so that it can provide choice, and a balance of foods. Food redistributor 1 aims to recover and sell as much food as possible to generate revenue to support operations. Food redistributor 1 is constantly aiming to recruit more food vendors or processors to donate food, and, in particular, is seeking to increase the amount of fresh

food donations. A staff member at food redistributor 1 is specifically responsible for food acquisition, namely attracting more food vendors, processors, etc., to donate surplus food to the organization, in order to increase the amount it redistributes. Food redistributor 1 aims to recruit food donors to participate by appealing to the potential for them to receive a tax-deductible receipt, save on waste removal fees, and contribute to the community, as well as reduce the waste that goes to landfills, and contribute to Metro Vancouver's zero waste goals.

The food redistributor 1 interviewee, who is on the board of directors, and whose main occupation is managing his own company, also stated, "A charity's...mission statement is a lot different from a normal company or for-profit. [It's] not trying to increase profit, [it's] trying to increase the number of people that [it serves]." This also demonstrates the way in which food redistributor 1 views its interactions with people in need and other food distribution organizations. Food redistributor 1 is concerned about increasing the reach of its organization, and increasing the number of people in need that it can support.

Another important aspect of food redistributor 1's operations is the meaningful involvement and empowerment of low-income people in its operations, including in the office, warehouse, and stores. Its community kitchens and subsidized FoodSafe training build employability and life skills, and food redistributor 1 values its ability to provide these opportunities for low-income people.

According to the interviewee from food redistributor 1, the organization is continuously aiming to secure more funding, and under new leadership in 2009, the funding challenges have been lessened: "We were always short of cash and getting stuff, and now we're just absolutely blooming," since the new executive director "has been doing a good job of getting donations." Food redistributor 1 is looking for funds to maintain and expand its operations. Speaking about long-term goals, the interviewee stated that it is to grow and be able to do more things, such as open up more stores to address needs in different parts of the region, and run the community kitchen program. Also, in line with awareness of its budget, food redistributor 1 prioritizes the sale of certain products. That is, it pushes to get more expensive items into the stores, in order to increase revenue that is generated from the sale of these items.

How does this organization think of food security?

Food redistributor 1 applies all approaches to food security. It aligns with AH by making food available to low-income people, which addresses short-term food needs. The focus on individual health at food redistributor 1 aligns with both the AH and SFS approaches to food security: food redistributor 1 aims to obtain more fresh and nutritious foods for people in need, and aims to be able to provide balanced foods.

Many aspects of food redistributor 1's operations align with the SFS approach to food security. The low cost grocery markets provide an alternative market for the sale of food, and food redistributor 1 prioritizes skill-building and empowerment among volunteers, and this occurs when these people contribute to the operations of food redistributor 1 as well as in directed workshops on food. Food redistributor 1 also relies on social networks and multi-sectoral partnerships in a number of ways. It connects with: volunteers; community organizations, including various food producers and vendors, food distribution organizations that purchase food, and others with which it partners to execute programs; and volunteer groups from within the region, as well as from other provinces and countries. Food redistributor 1 is conscious of sustainability, in that it contracts composting and recycling services, and tracks the amount of food and materials that it diverts from landfills. Its partnership with a local community garden and assisted volunteer program to harvest local produce and transport it to the stores shows food redistributor 1's support for local agriculture.

Food redistributor 1 employs the AP approach to food security in that it provides an example of a system in which lower-income people are meaningfully involved in an organization's operations. The model of food redistributor 1 also reframes how low-income people access food, and provides an environment in which people have greater autonomy and an increased chance of changing their life situation.

Challenges

One challenge of food redistributor 1 is the receipt of less desirable donated products. Some products include less-needed food items, as well as non-food products that are not helpful to food redistributor 1's operations. For example, after the holiday season, food redistributor 1 received a donation of pet costumes, which volunteers sorted, and food distributor 1 had to decide what to do with. In some cases, the products

can be sold in its stores or to food distribution organizations to generate extra revenue, but these are peripheral to the operations of food redistributor 1, and require additional labour and planning to appropriately manage.

Food redistributor 1 is also challenged when it receives foods that are not yet regulated by food safety guidelines (e.g., gluten free products, supplements). It has to determine the appropriate way of handling them, and for how long they can be stored. In order to deal with this, food redistributor 1 is in contact with the health authority in order to determine unknown details.

Another challenge of food redistributor 1 involves its changing relationships with partner organizations. Although food redistributor 1 is an established organization in Vancouver with long-standing relationships with food distribution organizations, its focus and operations have shifted. Thus, food redistributor 1 continues to refine and standardize its operations, ensuring that it complies with food safety and revenue-reporting requirements. For example, a food distribution organization employee used to select products from the warehouse with little consultation with warehouse staff. Now, food redistributor 1 restricts what the food distribution organization employee can take, and also requires certain paperwork to be completed. There has been resistance and lack of flexibility among certain partners when changes like this are instituted, so food redistributor 1 must work to maintain these relationships while refining its operations.

Food redistributor 1 also has limited storage space, and in particular, cold storage. This prevents food redistributor 1 from increasing the amount of fresh food it redistributes. Finally, food redistributor 1 is sometimes limited in its ability to pick up donations, so it cannot obtain as much food as it would like to. For example, pick-ups do not happen on weekends, and additional donations cannot always be accommodated because of the existing routing of the trucks for a given day.

4.2.7. *Food redistributor 2*

Goals

Similar to food redistributor 1, food redistributor 2 also focuses a large part of its operations on recovering surplus food, but surplus food is not as critical to the operations

of food redistributor 2. Food redistributor 2 has recently raised nutritional standards for the food that it receives. It is trying to “[bring] in lower cost food that has high nutritional value and more...fresh [food], and having that for sale at depots or curbside markets.” As a result, food redistributor 2 is shifting its relationships with food donors to reflect the adjusted standards.

When assessing potential food donations, food redistributor 2 considers whether the food meets the nutritional standards, food safety standards, and whether it is appropriate for the populations that receive it:

There are some wonderful bakeries in Vancouver that make incredible bread, but we can't...use it because: 1) it doesn't come sliced, and 2) the crusts are way too tough and many of the people, especially [people that we serve] don't have good enough teeth to be able to chew that bread. Good old sandwich bread [that is] brown with softer crusts...is really what they need.

Thus, food redistributor 2's awareness of the situation of recipients influences what types of donations it accepts. In addition to screening donated food based on nutritional requirements, food redistributor 2 will not accept food that is over two years old.

The interviewee from food redistributor 2 described her evaluation of donated food based on established nutrition guidelines:

I did an analysis of all of the baked goods...and according to the [guidelines] for food and beverage sales in BC schools, none of these baked goods would have [met the requirements]. They would all be [categorized as] 'do not sell' because of fat and sugar and salt content.

Food redistributor 2 is also striving to change the way that charity food is provided to people:

We're trying to bring back the dignity to the experience of the food bank, and also the way that we run...hubs. ...It's more like a grocery store-kind of concept, with different tables [that] have different products on them, [and] where people can mill, and according to their need, choose different items. [This is instead of] someone standing behind a table and saying, "You're a single person so you get this," and it's a can of beans or whatever. [In the existing model, people] just roll through the line-up...[and] there's always somebody on your left who you're pushing against to move forward, and then there's

always someone on your right who wants to get where you are, and there's a lot of sense of rush and pressure. So really, [we're looking at] changing the model.

How does this organization think of food security?

Food redistributor 2's approach embodies all approaches to food security, but it does so in a slightly different way than food redistributor 1. Food redistributor 2 aligns with the AH approach to food security in that: it provides emergency food to people in need; it is linked to a multitude of food distribution organizations; and it is working to modify policy regarding the operations of emergency food operations (e.g., the guidelines for food banks, soup kitchens, and handling of donated food.)

Food redistributor 2's SFS-related operations include:

- its capacity-building programs;
- its alternative food market styles (its mobile and remote markets that distribute food in places where there are fewer food options);
- its minimum standards for the nutrition of food that it redistributes; and
- its goal of obtaining a greater amount of fresh food from local producers.

Food redistributor 2 is also deeply embedded in social networks, in part because it is a long-standing member of the Vancouver community. Food redistributor 2 has ties to community organizations that donate or receive food, that organize food drives to collect non-perishable food, and that volunteer at food redistributor 2.

Food redistributor 2 employs the AP approach to food security in that it acts as a resource to help those in poverty. In addition to giving people in need access to library cards, food redistributor 2 is beginning to "[address] some of the causes of poverty, which are unemployment, lack of training, and opportunity." These types of factors may influence people's chance of improving their situation.

Challenges

Food redistributor 2 has similar challenges to food redistributor 1, including limited storage capacity, receipt of less desirable or unwanted food products, as well as managing relations with partners in the face of shifting focus. Food redistributor 2 would like to obtain and redistribute more fresh foods, but its refrigerated storage space is

limited: "...we don't have enough refrigerator space here. [So we ask], is there anything we can rent? Are there people we can partner with?" Food redistributor 2 will be moving to a new location in 2017, and thus is not motivated to renovate the existing facilities according to these current needs.

Food redistributor 2 receives many food and non-food products that are not critical to its operations. Among these are highly processed or non-nutritious foods.

We've been getting [snacks and unhealthy snacks] depackaged [i.e. having food separated from non-organic packaging in order to direct the materials to the appropriate waste stream], and of course we get...tons of it. For example, 13,000 lbs. of salty and sweet snacks were recently sent to Earth Renu to be depackaged, and all of those came from Halloween, Easter, Christmas, [and] Valentine's.

In the case of other surplus food, like pet food, food redistributor 2 does not necessarily have them depackaged:

We do try to get any pet supplies...to the pound or the SPCA, but the problem is that they also have their own nutritional requirements, and a lot of the cat/dog food that's out there doesn't meet the nutritional requirements for the animals that they're holding. Or their storage areas are overly jam-packed full, so [the pet food] ends up going to the landfill, because we can't pay for it to be depackaged.

Dealing with these surplus products takes time and energy away from food redistributor 2's principal food-related goals. "About 60% of what we get [from grocery stores] is useful, and 40% is waste." Within the 60% of useful products, some are non-food products that are of use, but food redistributor 2 receives much more than it can use: "we use bleach here for cleaning...but a very small percentage." As a result, some of the products go "to a number of different agencies that come and pick that up."

Food redistributor 2 changed its focus in the last couple of years under a new executive director (who began in summer 2012), leading to increased standards for the quality of the food it accepts. Due to this, food redistributor 2 has been evaluating its sources of food, and deciding whether the food aligns with its revised standards. Food redistributor 2 aims to engage in dialogue with its donors, encouraging them to donate foods that would be appropriate for people in need:

I do talk to some of the donors, and say, "You can't just give us the cuttings [(produce parts that are left after the most desirable parts have been removed)] because we can't use that. Think about it as food that you would eat."

The results of these discussions have been positive, with the donors responding to the feedback. However, the food redistributor 2 interviewee voiced concerns about challenges following turnover in staff, as well as a disconnect between the donor and the endpoint of the donations. To address this, the food redistributor 2 interviewee said: "I hope to illuminate...the effects of the food donation, both good and bad...through a food donor education program," since these details are often "hidden from donors."

Food redistributor 2 has cut ties with some of its donors. In some cases, the relationship ended on good terms, while other donors have been less understanding of food redistributor 2's rationale:

We had a major donor that gave us a lot of baked goods, and we were picking up from 20 different locations, and I said that we're no longer going to be picking up from them. They understood...[and] they were more receptive to the reasons...than some of the smaller bakers...because...they're a bigger operation, and they could perhaps find other food distribution organizations that would be interested in...taking that food... They also have deeper pockets, so waste wasn't as big a concern.

Thus, as food redistributor 2 shifts its operations, it has been challenged to stay on good terms with their sometimes long-standing partners.

The food redistributor 2 interviewee reflects on the quality of certain products: "Yeah, we don't sort...but of course, if you're getting a box of strawberries, the ones at the bottom are inevitably not very good." Additionally, in one of food redistributor 2's programs, surplus prepared food is not sorted prior to delivery to food distribution organizations, so the quality of the donated products can vary.

4.2.8. Neighbourhood house

Goals

The operations of the neighbourhood house do not necessarily require surplus food, but the neighbourhood house chooses to receive surplus food for some of its programming because of the relative price. The neighbourhood house aims to provide food that is as healthy as possible to community members in need. It uses food to attract people to the neighbourhood house for programs. It wants to ensure that community members will be motivated to attend and focus their attention on the session, where valuable information is conveyed. In its involvement with surplus food management, the neighbourhood house is aiming to foster relationships and put into place low-maintenance practices. Nearly all of the donations that the neighbourhood house receives are delivered to its location.

The neighbourhood house receives food from a range of organizations, and below, the interviewee reflects on the importance of food safety and quality:

...If I'm getting donations of a bunch of salmon, I need to know where those salmon came from; I need to know how they were harvested. I need to know things like that. ...If I get something donated, I can't necessarily feed to the masses because of liability problems...and [for meat], I need to know has it been frozen, refrozen, thawed, how long has it been sitting out of the fridge, [etc.].

Although the neighbourhood house has longer-term relationships with some of its food providers, it is also receptive to receiving food from other organizations with which there is no established relationship. This is because of the desire to get high-quality and healthy food. The neighbourhood house distributes healthy and sustainable food to its clients when possible: “ideally, all of the food that I would serve here would come from the Lower Mainland, or Northern Washington...it would be as little processed, as locally grown, ideally organic. But that's dreaming, in a perfect world.”

How does this organization think of food security?

The neighbourhood house has a range of operations that align with all approaches to food security. Much of the neighbourhood house's operations can be categorized as employing the AH approach, i.e. improving community-members' access

to nutritious food. The food is intended to meet immediate food needs and there is recognition that the food provided at these programs may be the only food that the attendees receive on a given day. Food is not always integrated into the structure of the program, which is a phenomenon that has been noted in other literature: “many charitable food programs are ‘add-ons’ to other services; rather than being designed to achieve specific levels of nutritional support, they are constructed to fit within the existing operations, resources, and mandate of the host agency” (Dachner et al., 2009; Riches & Silvasti, 2014, p. 47).

The neighbourhood house aims to employ the SFS approach to food security, by helping to build community, social networks, and skills. However, the types and quality of donated food do not always align with what the staff would choose, and the neighbourhood house has adjusted some relationships due to this. Budget constraints make it difficult to obtain more desirable and healthy foods: the neighbourhood house aims to provide food baskets that are as appropriate to the individual and their family situation, and as healthy as possible. In addition to this, the neighbourhood house also focuses on self-production through many of the food-related programs. For example, in one of its youth programs, “[the youth] come in, they play with food. There's no real structure to it at all. Just, they pick a thing that they want to do, and then they end up doing it.”

In some ways, the neighbourhood house aligns with the AP approach to food security: it provides opportunities for community members to build skills and helps them to be more productive in the community, and increases their ability to meet their own needs, in spite of economic hardship.

Challenges

The health authority spoke about challenges of food distribution organizations like the neighbourhood house, saying: “The main [challenge] is that a lot of the organizations that are getting [recovered food] don't have a food budget...everybody's budgets are getting squeezed smaller and smaller, so it becomes hard.” The health authority is referring to the fact that food distribution organizations would like to provide a certain type of food to community members, but that they have of limited funds, so they struggle to do so. Regarding donated food, the neighbourhood house interviewee said,

“Most of the food is highly processed, not very healthy, but it's free.” Further, the health authority interviewee stated, “Those foods that are highly processed...last well. It's easy, and they're packaged... But that issue for the receiving side is real. You know, that they don't have the budgets for other food.” The result is that donated food is sometimes non-nutritious, damaged, or unusable. This is problematic for several reasons: the neighbourhood house must serve less-desirable food to community members who need more nutritious food; the damaged food must be sorted before use, which the food program coordinator does not always have the time for; and the neighbourhood house must then bear the financial burden of disposing of the food.

The neighbourhood house is challenged to improve the quality of food that it provides for community members. The neighbourhood house employee described the situation of charities that would like to provide food for their patrons: “we're starting off, we're struggling [and trying to figure out] what can be one of those resources. Then you start to build resources, and realize 'okay, you know, we're not getting great stuff.’” “I feel bad, because it's like, 'I know you're starving, and I know you need food, but...here's some shitty food'. But at least it's something.” Also, as discussed in the section on goals, the neighbourhood house is interested in obtaining more fresh and nutritious foods, but is challenged to do so since it does not have sufficient time or staff to see and set up these additional donations. The fact that these organizations are not-for-profit, with declining funding, and trying to serve a range of populations puts them into this difficult situation, taking whatever they can, and following with the mindset that anything is better than nothing. Since its beginnings, the neighbourhood house has improved the quality of food that it provides, in part by stopping receiving food from certain donors, however the administration admitted that there is still room for improvement in the quality of food that is offered to neighbourhood house clients.

The neighbourhood house interviewee reflects on the work involved when the neighbourhood house receives food that requires extensive sorting:

We'll get a case of snow peas or something like that, and there might be three portions of that whole case that are usable...you have to pick through them all...it's almost cheaper to throw it out and buy a whole new case, just because of man-hours it takes to process something like that.

Or, if the product is in good condition, but is not useful to the organization, the organization then must spend the time and money to determine where the products should go. This extra labour and cost can be challenging for the recipient organizations, especially considering limited budgets. The result is that the recipients sort the produce, separating out the good parts and what they can take home.

The neighbourhood house interviewee also reflected on the quantity and quality of food received, and the challenge of putting such programs in place:

I don't feel that we are lacking in the volume of food that we're getting, we may be lacking in the quality of food that we're getting, but again, that could just be that I'm not reaching out to the right organizations. But again, that boils down to, do I have a week to spend searching for these organizations, and developing a relationship with them when there are other things that need to be done.

The neighbourhood house recognizes that the condition of some donated food is not ideal, but does not give this feedback to the donors for fear that the donor would consequently decide to stop donating any items:

A lot of people don't want to complain to the [food donor], because if they do, then they're afraid that [if they] say that this week...[for example,] "I didn't want that case of tomatoes because they were all dented"...next time [they] ask for tomatoes, [the donor] might [say], "...these are the guys that complained about the tomatoes, I'm not going to bother giving it to them."

The neighbourhood house is also challenged because of the unexpected product types that it receives. "I send them a wish list, [but that] doesn't guarantee me what I ask for...when I get my donation...a lot of the time I have no idea what's in there. Nothing at all." One effect of this is that there is great variation and unpredictability in the foods that are prepared and distributed. This can be beneficial for the recipient organization, like in the case of receiving more diverse foods, or products that are more of a luxury. However, if the foods are unfamiliar, the food distribution organization is challenged to determine how to use the food, or whether other food distribution organizations might have a need for them.

An informal exchange network among various food distribution organizations has arisen, through which organizations that are in close proximity will exchange products

that they do not need or cannot use. This is a secondary round of redistribution, after food distribution organizations have received redistributed food. Speaking of the practice of coordinating or supporting this system that redistributes received food, the neighbourhood house interviewee said: "it's all off the side of the desk work...none of it's part of [what] their own actual...daily...weekly, monthly duties are." Speaking about the barriers to further formalizing a system of food exchange among food distribution organizations, the neighbourhood house employee said:

In order to do something like that, you need to pay someone to do that, and in order for you to pay someone to do that, you have to get money, and there's only one way to get that money. And to say to a grantor, "We want money so that we can pay someone to do this," they're not going to say, "Yeah," because they've already got their social mandate that's been put down from top down saying, "We need to help people who are new immigrants," or "We need to help new mothers," or something like that. And [those initiatives are not obviously linked to] food recovery.

The program staff at the neighbourhood house continuously seek out and apply for grants in order to fund staff and programs. A challenge that follows with this is conditions that accompany funding: the neighbourhood house may be required to adjust its programming in particular ways, as specified by granting agencies.

4.2.9. *Health authority*

Goals

Regarding food recovery, the primary concern of the health authority is the health of the population, and how recovered food influences people's health outcomes. Waste minimization is something that the health authority supports, but only after prioritizing health objectives: "we support any food reclamation, like to reduce unnecessary food waste through redistribution, providing it met some of the basic foundations." Thus, the health authority aims to provide guidance for food distribution organizations about what types of food they should accept. As well, it aims to ensure that the food that is provided to people in need is appropriate for their situations: "...in terms of how [food assistance is provided], besides some of the food safety particulars...it's kind of unique to place and time, in many cases."

The health authority interviewee discussed changes that it would like to see among food distribution organizations: “[the health authority wants] to make sure that any food that's donated has got some nutritional qualities, that it's offered with dignity... and fits with their dietary need.” The health authority is also motivated by the desire to reduce rates of diet-related chronic disease among low-income populations, and stated that the health authority aims to ensure “that we're not just trading...hunger for diabetes.” The health authority also wants to change how food distribution organizations allot food: “if [the goal of the organization is] health and well-being, the food should address health and well-being, if [the goal is] around skill-building, then have skill-building in it. The food can't be disconnected from everything else that goes on in organizations.”

How does this organization think of food security?

The health authority focuses on improving health outcomes of community members, which aligns well with both the AH and SFS approaches to food security. It would like to develop guidelines for food distribution organizations so that the food that is received and subsequently distributed to people in need is held to higher nutritional standards than is currently accepted.

The health authority provides funding to many food distribution organizations within its jurisdiction, thus it indirectly supports food assistance programs, which aligns with the AH approach. Some of these organizations may also provide food in innovative ways (empowerment or skill-building programs), so there may be an element of SFS. Also related to SFS, the health authority promotes local agriculture and self-production through grants to local initiatives.

The health authority is also implicitly interested in poverty and AP initiatives: poverty situations are closely linked to the amount of money available to people for food, and is linked to health outcomes. However, its operations are not focused on AP initiatives.

Challenges

Since the health authority is not directly involved in food recovery, the challenges that it voiced represent partner organizations. The challenges relate to the types of food that food distribution organizations accept and give to clients. As discussed in the

section about the neighbourhood house's challenges, the health authority is aware of food distribution organizations' limited budgets and the resulting effect on the food provided to people in need.

4.3. Comparison of goals and operations

4.3.1. *Goals and outcomes of surplus food management*

I consider how the integration among organizations' goals affects the outcomes of surplus food management. Some goals that are valued by participating organizations include: maximizing the food diverted from landfills (of interest to Metro Vancouver solid waste, SFS approach); maximizing the number of meals served to people in need (AH approach); ensuring that all potential donor organizations participate (SFS and AH approaches); and maximizing the nutrition of food provided to low-income people (of interest to the health authority, SFS and AH approaches). Some less apparent goals of surplus food management might be to help people out of poverty, or minimize waste management fees by donating all surplus food (of interest to the donors). Some of these goals may be less expected than others, but are seen in organizations involved in surplus food management.

Defining the outcomes or functions of surplus food management requires a systems-oriented approach; it is suggested that it is necessary to observe a system in order to determine its function. In the current situation, the purpose of surplus food management as a whole seems to be to improve access to food among low-income people by channelling surplus food to them.

4.3.2. *Integration among goals*

The organizations studied prioritize different approaches to food security. Their respective main objectives and approaches to food security mean they cannot dedicate as much attention to the other approaches. However, the organizations are still concerned with the approaches to food security that are not their primary foci.

Here, I consider how the organizations' goals, approaches to food security, and alignment with one another influence the outcomes of surplus food management. Hypothetically, if all organizations were perfectly aligned and worked towards the same goal, then there is the greatest potential to achieve the goal. However, the combination of organizations involved in surplus food management brings a range of goals together, so surplus food management is pulled in different directions. One group of organizations may have complementary goals and practices, but a second group of organizations may be less focused on the goals of the first group. In some cases, one group's practices may even detract from those of another group.

The goal of diverting food from landfills is relevant to all organizations, since any food that cannot be consumed is organic waste that they then have to dispose of. However, organizations do not always have the capacity to compost the food. For example, since food redistributor 2 could not use, or find a recipient for, surplus pet food, the pet food was sent to the landfill. Thus, all organizations are driven to divert food from landfills, but inconsistent dedication to this goal means that it is still only partially met.

The goal of preventing people from going hungry is a goal for which there is coordination across all organizations. Even the food donors, which are the furthest removed from recipients, are committed to giving as much of their surplus food as possible. The goal of alleviating hunger is seemingly achieved, evidenced by the neighbourhood house interviewee's statement that the quantity of food is not lacking. Thus, alignment between donors and recipients in the goal of feeding the hungry could be argued to have led to success.

The goal of improving the nutrition of low-income people is partially realized. Nutrition, per se, has not conventionally been the primary focus of any of the organizations. However, now, food redistributor 2 strongly emphasizes nutrition, and the other organizations aim to balance this goal with their other goals. Food donors donate some non-nutritious food because they prioritize disposing of surplus. Further, food distribution organizations distribute some non-nutritious food to people in need because they primarily aim to provide programs and alleviate hunger, and cannot afford other, healthier options. Thus, although providing nutritious food could be considered to be an agreed-upon ideal among organizations participating in surplus food management, the

goal of hunger-alleviation seems to take precedence, leading organizations to reluctantly provide non-nutritious foods because of a lack of easy access to more nutritious ones. This tendency for organizations to prioritize anti-hunger over nutrition has led to incomplete achievement of this goal.

The goal of providing people resources to move away from impoverished situations is one that is separate from surplus food management and other related goals, although it can be tied into surplus food management if the organization chooses to structure itself in such a way. Thus, the fact that the rural farm and grocers do not prioritize helping people out of poverty does not seem to have a bearing on the other organizations' ability to carry out such AP programming.

The goal of donating all surplus food pertains specifically to food vendors. The fact that there are many food distribution organizations that are seeking food for their hunger-alleviation programming means that this goal is not difficult to achieve. Although the food distribution organizations do not prioritize this goal in the same way that food vendors do, the needs of the different organizations are complementary, leading to favourable outcomes for both.

4.3.3. *Organizations employ greater than one approach to food security*

Although the definition of the approaches to food security, and that of community food security suggest that the three approaches are distinct and have unique qualities, and target change in unique ways, my research found that all organizations involved in surplus food management actually demonstrate qualities of two or more of the approaches to food security.

Several of the organizations employed both the AH and SFS approach to food security (the food redistributors, the neighbourhood house), and this demonstrates that the AH and SFS approaches are tightly linked. For example, the food redistributors focus on providing food to people in need, but are also aware of broader challenges faced by people in need. The food redistributors recognize that these additional challenges are linked to their food-related challenges, and so there are opportunities and services that are aimed to help people meet those needs (e.g., skill-building programs and

workshops). Thus, in this way, organizations, which initially focused on AH initiatives, incorporate SFS practices to complement their services. This scenario is the most true for the food redistributors. The AH and SFS approaches were also found to be linked in the case of the neighbourhood house, which focuses on SFS practices, but increasingly incorporates AH practices. The neighbourhood house holds community programming and skill-building workshops, but these were poorly attended and attendees were not able to fully dedicate their attention, in part because of inadequate access to food. As a result, the neighbourhood house began offering free food along with the skill-building workshops. Thus, there were several different ways in which the AH and SFS approaches to food security are employed by the same organization.

The urban farm was the only organization in my research that employed the AP approach to food security. Although the range of organizations in my research is not intended to be representative of the entire surplus food management system, it may be logical that there are few surplus food management organizations that employ the AP approach. The AP approach requires a longer-range view of the food system and society, recognizing that it is important to focus on underlying issues that are less visible, and less tangible, in order to more completely and more permanently effect change in society and in the food system. The effects of an AP approach are less immediate than those of the SFS approach, and particularly the AH approach. However, surplus food management inherently operates in the short-term, considering the time-sensitive nature of food, and the real-time matching of food supply and demand. Thus, because the AP approach is less immediate than the other two approaches, it may be less likely that the AP approach is applied by organizations that are involved in surplus food management, which are oriented to operate on a short time scale.

4.3.4. Groups of organizational models and approach to surplus food management

Certain types of organizations operate in similar ways, and show a pattern in the types of food security initiatives that they promote. All members of a given group likely experience similar challenges, and policy suggestions would likely apply to all members of a given group.

The first group includes the food redistributors and food distribution organizations. These organizations are involved in supplying food to, and improving the health of, low-income people, with a strong AH element to their operations. Skill-building, empowerment, and fostering self-sufficiency are also important elements of their operations. Organizations in this first group also focus on the SFS approach to food security in some ways. They provide food to people in need through alternative food distribution channels. These alternative distribution channels present an adjusted paradigm around how people in need access food, and move away from hand-outs of food baskets or prepared meals. These organizations value partnerships with other community organizations with the purpose of enhancing programming and sharing resources. Finally, these organizations employ the AP approach in that they act as models for how organizations can involve low-income people with barriers to employment, and in ways that can help low-income people move away from poverty. Overall, this group of organizations could be classified as “community food providers,” which illustrates their role in providing food for people in need, as well as serving the community.

The second group of organizations includes the rural farm, grocery delivery business, and grocery store. All of these organizations are involved in AH practices, in that they donate their surplus food to food distribution organizations. Unlike the first group, these organizations are not directly involved in distributing the food to people in need. They focus to a greater extent on SFS practices, emphasizing characteristics like quality and source of food. In this way, partnerships with community organizations are important for sourcing products. The rural farm and grocery businesses do not play a role in AP measures. This group of organizations could be classified as “food retail,” since they sell food to people. In the case of this study, the organizations happen to be ones that focus on local and organic foods.

The urban farm is a group of its own. In many ways, it resembles the organizations in the second group, with its focus on high-quality, locally-grown produce (SFS), and its donations to food distribution organizations when possible (AH). However, it uniquely incorporates AP practices, being staffed principally by people with barriers to employment. This provides people with barriers to employment not only a way to get involved, like in the case of community food providers, but a living wage to support

themselves. The AP element is a defining component of the urban farm's operations, and it seems to value the AP component equally, if not more than, SFS. This type of organization could be classified as "food-growing social enterprise," a designation that captures its main focus of growing food as well as the integral social enterprise component.

There are different organizational models that contribute to the function of surplus food management. Each type of organization brings benefits to the practice, but each may not be ideally situated to address all aspects of food security. These organizations are brought together to carry out practices related to surplus food management. It is important to carefully consider the different ways in which organizations use their programming to promote food security through, as well as how these groups are situated to do so. This can help point to places where there are complementary resources that could be leveraged to optimize the function of surplus food management.

There are some ways in which the organizations involved in surplus food management are already exhibiting a systems approach, connecting with one another to share resources. For example, as discussed earlier, the neighbourhood house interviewee is connected with other food distribution organizations, since they exchange food items with one another. Similarly, the urban farm interviewee discussed its connection with another organization that also employs people with barriers to employment. The food redistributors have also found ways to work with other organizations in order to complement their services. For example, food redistributor 1 provides a FoodSafe course, subsidized through funding partnerships, so that its clients, who receive food assistance, can gain skills in an affordable way. Additionally, food redistributor 1 harvests vegetables from a local community garden for people in need, with the help of an assisted volunteer program. I suggest that policy-makers and food planners capitalize on such existing and potential synergies.

4.4. Challenges and conflicts regarding organizations' goals and approaches to food security

Discrepancies in motivations and operational preferences can introduce challenges in surplus food management, and might be a barrier to improving the practice through collective impact. I consider the degree of overlap and conflict among the organizations' goals and in their approaches to food security. Conflicts sometimes arose from differences in approach to food security, as well as when resources were limited. The organizations studied are involved in operational aspects of managing surplus food; they tended to focus on treating current problems (more often aligning with AH and SFS), and thus lacked capacity to engage in AP practices. Food programming is incorporated into the organizations in ways that fit with their specific operations and mandates, which is consistent with previous research on charitable food programs (Dachner et al., 2009).

All organizations were aligned in that they are committed in principle to AH practices, but how that commitment is acted out varies. For the food redistributors and neighbourhood house, AH practices are necessary in order to fulfill their mandates, but the grocery store, grocery delivery business, and rural farm could still continue regular operations without engaging in AH practices. Food vendors' lack of ability to donate all surplus viable food detracts from AH efforts, like in the case of the grocery store that could not donate its surplus milk and produce.

4.4.1. *Financial challenges*

Many of the organizations cited financial challenges and the need to maintain economic viability as factors that dictate their practices. Financial challenges are linked to, and lead to, other challenges, and have a strong bearing on operations, so they will be discussed as they pertain to the other issues.

Despite economic viability being a common goal among organizations, interacting organizations that are trying to maintain economic viability might come into conflict. Taking extra responsibility in surplus food management has a cost to participating organizations, especially considering that surplus food management is often an 'off-the-side-of-the-desk' practice. Organizations may consequently aim to minimize

their own responsibility in surplus food management. Culling and sorting products could be executed at the level of the food vendors, food redistributors, or food redistribution organizations, and there is no precise system for determining where the responsibility lies. For instance, if food vendors cannot assume the responsibility of sorting donated products, they may donate a mix of products in a given box. The responsibility to sort the products might be taken on by the food redistributors (meaning added cost). Food redistributors might then sort and cull products prior to redistributing them. Or, if the redistributor also lacks the capacity to sort and cull the products, then the unsorted products might reach the food distribution organizations. Food distribution organizations could choose to take on the responsibility (i.e. cost) for sorting and culling products in order to distribute them to people in need. Alternatively, they could have volunteers or community members take on that responsibility, or they could dispose of the products. Therefore, when a group of organizations participate in an 'off-the-side-of-the-desk' practice, and operate within tight margins, the incapacity to take on responsibility results in offloading of responsibility and cost onto the downstream organizations and people.

4.4.2. *Nutrition and distribution of food*

The neighbourhood house and food redistributor 2 experience tensions due to their desire to provide nutritious food (SFS approach) and their desire to alleviate hunger (AH approach). In an effort to receive higher quality food, the neighbourhood house and food redistributor 2 have become more discerning about the food they will accept, and in some cases, have stopped accepting food from certain donors. By refusing some donations that they judge to be nutritionally inappropriate, they consequently receive less food to provide to community members. Thus, in aiming to achieve SFS goals, they sacrifice potential achievement of AH goals. However, the neighbourhood house continues to accept food products that it would not intentionally choose because it lacks funds. This influences the nutrition of food that it distributes to community members.

According to food redistributor 2, "There's a significant push on non-profits to become enterprising non-profits so that they are less reliant on grants and can stabilize their income streams and be more stable in the community." This push, related to neoliberalism, is further described in Section 4.5.3. Enterprising non-profits are defined by these five qualities:

1. Adopting a mission to create and sustain social value (not just private value),
2. Recognizing and relentlessly pursuing new opportunities to serve that mission,
3. Engaging in a process of continuous innovation, adaptation, and learning,
4. Acting boldly without being limited by resources currently in hand, and
5. Exhibiting a heightened sense of accountability to the constituencies served and for the outcomes created.

(Dart, 2004, p. 414)

Food redistributor 1 is an enterprising non-profit, in that it sells food to individuals and food distribution organizations to recover costs. This business model affects the types of food that are redistributed. Since selling more expensive products results in greater revenue, these products are promoted, although they may not be as nutritious as others. The nutritional quality of products may also factor into the decision of which products to promote. This leads to a potential incompatibility: food redistributor 1 aims to obtain profit from the sale of recovered foods while the neighbourhood house would like to provide nutritious food for people in need. In this situation, food is provided nonetheless, but it may not meet the nutrition standards of the neighbourhood house and health authority.

The grocers and growers place a high value on the production method, source, and quality of the food (SFS approach). This stands in contrast to the neighbourhood house and food redistributors, which prioritize the accessibility and nutrition of food (AH approach). The conflict that results from this is that grocers and growers prioritize growing and/or stocking food that is high-quality and high-priced, and similarly, may have high standards for the food that they donate, and may be quicker to deem products unsaleable when they are below their quality threshold. According to the grocery delivery business, "This is product that we think is fit for human consumption, but our customer is not going to buy it because it's got a slight blemish or it's got a bruise on one side, or whatever." These types of products are desired by organizations that are looking to receive more fresh and nutritious food, and would be ideal for processing.

The neighbourhood house and food redistributors put effort towards setting up channels to distribute food to low-income people, ensuring that food is distributed in a

dignified way, or used as a tool to encourage participation in programming. However, food vendors do not spend time considering this. When it comes to meeting the food needs of low-income people, food vendors are principally concerned that food makes it to people in need, and less concerned with how that happens. This is in part because food vendors are not seeking to be involved in administering food to people in need. There is an opportunity for policy measures to be put into place to encourage the different groups to work together in ways that are not prohibitive to their current functions. For example, since food vendors are less concerned about what food is distributed and in what way, policies could incentivize donation of certain foods and through channels that are beneficial to food distribution organizations. There could be a city policy that exempts food vendors from having to pay costs to donate fresh and healthy food items, or impose a higher cost for donating unhealthy food products (the threshold of 'unhealthy' would be designated by a dietitian).

4.4.3. *Receipt of unusable food products*

One challenge is that the food redistributors and neighbourhood house occasionally receive products that are not usable or useful to them. These organizations must then bear the brunt of sorting, culling, redistributing, or paying for the removal of these products. The conflict arises from mismatched expectations: the donors aim to find a use for their products and minimize waste, and are often not involved in extensive sorting of products pre-donation, and recipient organizations aim to offer food to program participants. Donors expect that donations will be sorted further down the line, while recipient organizations would prefer to receive usable products that are relevant to their programming and that require minimal sorting. They consequently feel that they are left with an unwanted responsibility.

This conflict, mentioned earlier in terms of costs associated with sorting and culling, does not relate so much to approaches to food security. It is mentioned because of its effect on recipients, and because it warrants a policy response, which could help with this administrative load. Offloading the cost (monetary and labour) of dealing with food waste onto charity organizations has been discussed in the literature. When an organization receives food that is questionably usable and appropriate, staff must decide whether there is sufficient benefit for them to receive unsorted donated food as opposed

to paying for food from conventional grocery stores. Food distribution organizations expect to pay a certain amount for the food that they receive, either through money or labour, and as a result, these organizations may be overly accepting of donations, even when they end up effectively taking on a waste management role. Policy can be used to prevent the burden of waste management from falling onto food distribution organizations (or food redistributors). Such a policy might entail more rigorous record-keeping of the quality of received food and waste management costs of the various organizations that handle surplus food. There may be a need to create incentives for food vendors to more thoroughly sort food prior to donating it, or a penalty for food vendors that donate expired or unusable food, or allocating resources towards an organization so that it can take on waste management costs.

Some of the challenges of the neighbourhood house involve its relationship with, and receipt of food donations from, redistributor 2 (discussed in Section 4.2.8). This can be explained in part by the fact that food redistributor 2 is also a recipient of donations, and faces similar challenges; it must similarly deal with undesirable and unwanted products, and in a way that is productive and cost-effective. Food redistributor 2 picks up and delivers prepared foods on the same day, which means that it cannot sort or cull the food, or give recipients notice about what and how much food it will deliver. This then leads to greater responsibility of the neighbourhood house to extract the useful portions of the donation and be flexible in incorporating food into its programs. The challenge is that the type and quality of food from the food donor is unpredictable. Then, because of the direct transfer of goods, this uncertainty is passed along to the neighbourhood house. This is the price that the neighbourhood house and other food distribution organizations pay for receiving free or cheap foods. Food redistributor 2 alluded to its awareness of such challenges: “The people that rely on us, our members and agencies that we support...need stability from us. If there’s any way, through enterprising non-profits that could create the stability, that’s a good thing.”

4.4.4. *Feedback regarding quality or quantity of donations*

As discussed in Section 4.2.8, the neighbourhood house is sometimes hesitant to give feedback to donors regarding the type and quality of food and other products that it receives. This feedback is a control mechanism in the system that, if more efficient,

would be an open channel through which perspectives on how the system is working could be given to partners. Feedback mechanisms in systems are meant to provide a form of accountability, in real time or close to it. Feedback can also provide a pat on the back when things are going well, and or indication of where there is weakness and need for change. In this case, the feedback mechanism is dysfunctional since the recipient organizations withhold feedback.

Some reasons for withholding this feedback are that:

- in addition to the inappropriate products, recipient organizations receive some good products;
- recipient organizations would rather provide something rather than nothing to their clients;
- free food for clients is used as a vehicle for programming, and when food is provided, people are more likely to attend and benefit from educational sessions; and
- the sale of any type of food provides a source of income for the organization.

It is perceived that stating any preference or giving negative feedback regarding foods received will damage the donor-recipient relationship. This demonstrates the awareness of the importance of organizational relationships, and the extent to which the recipient organizations depend on the donors.

As discussed in Section 4.2.3, the urban farm interviewee wanted recipient organizations to receive a manageable amount of food. This demonstrates its SFS orientation, namely that it wants to minimize waste, and wants food to be used productively. This conflict arises because food redistributor 2 collects surplus food, and then takes it directly to food distribution organizations. In the case that there is more food than expected, food redistributor 2 would either have to deliver extra food to its established recipients (if the particular food distribution organization cannot use the food, this could lead to waste at the food distribution organization), or it would need to connect last-minute with additional organizations that could take the surplus. If the food redistributor is unable to find a recipient, then that would lead to additional waste management costs for the food redistributor.

4.4.5. *Continuing relationship on adjusted terms*

The food redistributors in particular have been challenged as a result of various adjustments to their operations, including standardizing operations, and better-aligning operations with mandates. As a result, some details of relationships with donor or recipient organizations have changed, in terms of the types of products transferred, and how the transactions happen. A departure from the status quo can create discomfort for both donors and recipients associated with a food redistributor, requiring negotiation of the terms of interaction in order to deal with the situation. This has been the experience of both food redistributor 1 and food redistributor 2.

4.4.6. *Donors' capacity to handle donations*

Donor organizations face challenges related to managing surplus food that they have set aside and plan to donate. However, this does not seem to pose a major challenge or negatively impact the operations. The grocery store cannot store surplus dairy products prior to donation, resulting in dairy going to waste. Although the grocery store values its contribution of surplus food to local charities, this part of its function is more peripheral, compared to organizations that rely more heavily on donated food. Having sufficient space to manage the products to be donated is a factor of convenience, demonstrating that for some food vendors, if there is not a convenient way to incorporate surplus food donation into its operations, then they may not accommodate additional procedures or costs.

4.4.7. *Desire for low-maintenance process*

Another challenge was suggested to arise at the interface of the farms and organizations that receive their donations. As discussed earlier, the farms appreciate simplicity in their involvement in surplus food management, namely an established, predictable, and easy arrangement through which they donate their surplus food. Although both the urban and rural farms prefer not to waste food, the way in which they donate food creates challenges for food distribution organizations. Receiving donations of unpredictable size and type challenges food distribution organizations to find ways to make use of the foods in their operations. Considering that there is uncertainty of what

food, and how much food will be surplus at farm operations, this challenge may not be reasonably avoided.

The farms' desire for simplicity and convenience in the donation protocol may be hampered by food redistributors' increasingly standardized and formalized donation procedure. The food redistributors considered in this research are larger organizations that are required to submit tax information regarding their donation protocols. As well, detailed records of transactions may be required for general accountability and for fundraising purposes.

4.4.8. *Novel business models*

As a novel model of urban farm coupled with a social enterprise, the urban farm is particularly concerned with its economic viability. The focus on meeting social and environmental goals, and meeting the needs of both types of organizations creates challenges. Similarly, the grocery delivery business employs a novel model of grocery provision, which has environmental and social benefit, and the business is also challenged to be economically viable.

4.5. Synthesis and analysis of challenges and conflicts

4.5.1. *How is surplus food management doing, how much potential is there, and where in the system?*

In this section, I draw from the previous discussion to evaluate the current function of surplus food management. As discussed earlier, surplus food management has its origins in grassroots organizations that arose in an ad-hoc fashion; food assistance programs were initiated for people in need when need became apparent. One study found that a multitude of food distribution organizations were working independently to provide charitable food assistance to low-income people (Dachner et al., 2009). In Vancouver alone, many local food producers and food distribution organizations are involved in redistributing food, and many of these employ unique organizational models. However, despite the fact that the various organizations involved in surplus food management are interested in, and responsible for, the practice (and in

advancing it through collective impact), inefficiencies in how the organizations work together have led to sub-optimal outcomes overall. In addition, certain types of organizations experience a disproportionate amount of these sub-optimal outcomes.

Currently, surplus food management is meeting the needs of the food donors, in that it helps them make use of their surplus product, and in a way that contributes to the community and saves money on waste management costs. On the other hand, recipients of surplus food tend to experience more challenges relating to the outcomes of surplus food management, and ultimately, people in need who receive food assistance bear the brunt of these challenges. Thus, there are opportunities to make improvements to the system as a whole, and in ways that will also improve the outcomes for groups that do not experience the same level of benefit. This will help the system to improve its operational resilience and capacity overall.

4.5.2. *The emergence and resolution of food systems conflicts*

Campbell describes that some food system tensions can result from incompatible stakeholder perspectives or from the lack of a common language or agenda among stakeholders (2004). In the case of surplus food management, it would be an exaggeration to suggest that the stakeholder frames are incompatible, as the organizations involved in principle support similar goals (i.e. getting healthy food to people in need). It is more the case that the stakeholder priorities differ, and in some cases, require attention from policy makers in order to be reconciled. A systems approach can help this reconciliation. The stakeholders being studied have participated in surplus food management for several years, regularly interacting based on an established protocol, so they could be said to have a common language and agenda. Otherwise put, they already show signs of a nascent and emergent systems functioning. However, the organizations involved may not be as conscious of the intrinsic values and needs of their partners, and how their own operations may contribute to or detract from those of their partners. In not seeing themselves as part of the larger functional and policy-supported system, they may fail to even seek synergies, or to recognize ones that appear. The interviewee from food redistributor 2 suggested that she discussed her organization's goals and values with the organization's partners with the intent of reducing some tensions that have arisen (i.e. receipt of food that is not usable).

Conflicts that are the most easily resolved involve those among stakeholders that would like to maintain long-term relationships with one another (Campbell, 2004). Thus, interdependent organizations may be more willing to discuss the terms of the relationships, helping to abate challenges. This bodes well for surplus food management stakeholders since many of the organizations value, and benefit from their long-term relationships. This information is valuable to consider in terms of how organizations participate in surplus food management. The formation of a low number of longer-term relationships with organizations that donate, receive or transfer surplus food, as opposed to many short-term, or one-off ones relationships, leads to stronger relationships, and will make the organizations more likely to seek mutually-beneficial solutions to conflicts in order to continue relationships.

Food redistributors are linked to, and dependent, on food donors, and are also linked to (and dependent on, in some ways) food distribution organizations and people in need. Thus, food redistributors, which are connected to donors and recipients of various organizational models, are at the interface of many organizations, and experience the most interdependence in surplus food management, in comparison to the other organizations. Thus, food redistributors seem to be most challenged to reconcile their operations with different groups, working with partners with different interests, while also keeping their own interests in mind.

4.5.3. *Effect of neoliberalism on not-for-profits*

The neoliberal style of government in Canada has influenced the way that social services are provided, and similarly has an impact on surplus food management. By neoliberalism, I refer to the general shift in governance practices, and this shift is defined “in terms of state withdrawal from service provision, deregulation, increased privatization, and the liberation of markets” (Woolford & Curran, 2012, p. 46). This offloading of social services is often framed as a form of ‘community-building’ (Woolford & Curran, 2012). This section discusses qualities of social service provision under neoliberalism, and ways in which those qualities manifest themselves in surplus food management and the associated organizations.

Neoliberal orientation has meant that social service providers must increasingly harness entrepreneurial principles to address social issues. Not-for-profits are increasingly expected to generate their own incomes (Woolford & Curran, 2012), meaning that not-for-profits, including food distribution organizations, spend more time seeking out revenue as opposed to working on their main programming (Woolford & Curran, 2012). Woolford and Curran (2012) found that, although food distribution organization employees were most motivated to meet the immediate needs of the organizations' clients, they felt powerless in their ability to address issues that they believed to be at the root of social suffering. This demonstrates that social service providers' inaction regarding addressing the root causes of their clients' suffering (following the AP approach) is "less the result of an inability to recognize broader structural injustices and more the result of insufficient time and resources to address larger problems" (Woolford & Curran, 2012, p. 53).

Not-for-profits are also expected to be more accountable, which is a quality that is promoted under "new public management." Following with this, food distribution organizations are expected to show clearly how funding is used, and it is becoming more common for there to be conditions tied to funding, e.g., requirements that the money is used in a particular way (Woolford & Curran, 2012).

Under neoliberalism, a business-like model is seen as a necessity for not-for-profits to maintain economic viability. This can, in part, be achieved by recruiting a board of directors with expertise in business (Woolford & Curran, 2012). This is something that was reflected in the experience and opinion of the interviewee from food redistributor 1, who sits on the board of directors: as the CEO of a company himself, he suggested the importance of having business-minded people at the helm of the organization. This interviewee discussed that this could improve organizational stability, through funding, and treatment of staff, because of HR experience. Speaking of the change from the old to new CEO, he said, "We were always short of cash and getting stuff, and now we're...absolutely blooming." This stated focus on growth and ability to attract funding, at the higher level of this organization, exemplifies the business-oriented approach. He describes the difference between food redistributor 1 and conventional companies, saying:

[A not-for-profit is] not like a company where you can forecast...three years [in the future]...fairly [accurately]. [In a business], we know we get certain levels [of revenue] therefore we can do certain things, [whereas at food redistributor 1], we move forward as we have financing.

The desire for greater accountability among not-for-profits is something that led to challenges for food redistributor 1, discussed in Section 4.2.6. This is another manifestation of the shift to a more neoliberal-oriented system.

4.6. Policy recommendations to address challenges

There may be complementarities or solutions that could be employed to address the aforementioned challenges. Below, I make some suggestions, as well as review those that were put forward by the interviewees. I also consider what challenges those suggestions would address and what outcomes would result from the suggestions. In general, there seems to be a need for an intermediary, namely a body that fills gaps to address the social problem, by involving the range of implicated actors through collective impact. This could take the form of a novel organization or additional resources for organizations involved in surplus food management, which would help to shoulder the burdens that are currently experienced.

4.6.1. *Systems approach to policy recommendations*

It is unreasonable for all organizations to employ all approaches to food security, or for all organizations to employ all approaches equally. Some organizations focus to a greater extent on particular approaches, and have been designed to do so. As written by one food vendor, “We have food; [food distribution organizations] know how to get it to people who need it. [It makes sense for that to happen].” This highlights the particular organization’s recognition that there are specialties, and logical divisions of labour among organizations involved in surplus food management. Surplus food management is a system that has arisen organically, with each organization developing operations that fit with their own unique mandates. By characterizing organizations based on their priorities, it becomes possible to better understand how they are programmed to operate, how they interact with other organizations, and how change might be effected.

In order to design policy to optimize surplus food management and overcome existing challenges, a whole-system approach is needed, which looks to improve the overall outcome as opposed to optimizing one part of the system. This approach to change transcends the responsibility of any given organization, and acts to a greater extent at the level of inter-organizational interactions and information transfer. It is necessary to seek synergies among existing practices and, where needed, introduce novel system-wide policies and practices to optimize system function. For example, people receiving food assistance were noted to have inadequate nutrition. In order to improve the nutrition of food that reaches people in need, it is necessary to build in system-wide processes, which, in sum, contribute to the desired outcome. This systems approach targets and influences all organizations in the system, while not going so far as to dictate all precise details of organizations' operations.

The unique capacities of each of the organizations involved in surplus food management can be enhanced by improvements to the entire system. I review these specialities, and consider the ways in which an intermediary could alleviate organizations' burdens, thus enabling them to focus to a greater extent on their principal goals.

The rural farm specializes in producing high-quality, organic produce for distribution at farmers' markets, a provincial grocery store, and direct-from-farm sales. An intermediary could alleviate the responsibility of transporting surplus produce to the food distribution organization.

The urban farm specializes in producing high-quality produce for distribution at farmers' markets, a CSA program, and local restaurants. It is also designed to provide supported employment for people with barriers to employment, and build farming skills of employees and interns. An intermediary could alleviate the urban farm's concerns regarding the waste of its surplus food, by supplying appropriate quantities and types of food to food distribution organizations.

The grocery delivery business is designed to source and sell food products from local and organic food producers, using a sustainable ordering and distribution model. The business is also committed to providing an enhanced experience for customers, through additional resources on nutrition on its website. An intermediary would allow the

tracking of the surplus food, which would also be attractive to the grocery delivery business, in that that would give it the ability to publicize specific details about the magnitude of its contributions.

The grocery store is geared to selling high-quality foods sourced from local food producers. It also specializes in providing an enhanced customer experience, including an appealing shopping environment and additional programming and resources, like store tours, nutrition advice, and cooking demonstrations. An intermediary would improve the grocery store's ability to donate its surplus food. The intermediary could provide on-call pick-up of products, which could solve the problem of insufficient storage space for surplus dairy. Additionally, the intermediary could help the grocery store fine-tune its handling of surplus organics, ensuring recovery, instead of composting, of produce that is fit for consumption.

Food redistributor 1 specializes in collecting surplus food from food vendors, storing and sorting the food into quantities appropriate for food distribution organizations, and then redistributing it. Food distributor 1 is also positioned to run low-cost grocery stores for people in need, and foster skill-building through its operational model and programs.

The operations of food redistributor 2 are centred on collecting surplus and donated food, storing and sorting it, and then distributing it to food distribution organizations as well as directly to people in need. Food redistributor 2 is also positioned to collect prepared food for same-day redistribution.

For both of the redistributors, the intermediary would enhance their current operations, helping to: develop potential transport and cold storage options, and the volunteer pool; make contact with donors of more healthy food options; facilitate the matching of supply with demand; and facilitate communications among donors and recipients, including conveying feedback.

The neighbourhood house has special capacity to provide a community gathering space, provide resources and programming for community members, and run food-centred programming. A policy intermediary would alleviate several burdens of the neighbourhood house, including:

- the concern about how to pick up donations, since it would deliver food;
- the concern about receiving unexpected, less usable or less wanted types of donated food, since it would be able to approve donations before receiving them;
- the need to cull food extensively upon receipt, since the intermediary would do this; and
- the concern about nutritional quality of food and having to seek better donors, since the role of the intermediary would be to collect and provide feedback on the quality of food to donors in the system without ruining relationships, as well as seek out additional donors of fresh and healthy food.

This proposed intermediary would fill gaps in the system. Its proposed functions include maintaining an online platform to match need with demand, classifying donated foods based on grade of quality, classifying food distribution organizations based on their capacity to handle food of different grades of quality, and formalizing the feedback and reference process.

As demonstrated above, all organizations have their own operational niches, which contribute to food security and surplus food management in unique ways. However, the organizations, some more than others, experience challenges related to their involvement in surplus food management, and dealing with the challenges compromises their ability to execute programs that promote food security and social justice. This research has identified weaknesses in the surplus food management system (like inadequate quality of food for people in need) and suggested shifts in the operations, which would conceivably improve system function. An outcome of this suggested amended function is that it will enhance the individual performance of many of the participating organizations by giving them more capacity to focus on their principal goals. Thus, optimizing system-wide outcomes will strengthen individual parts of the system. Through positive feedback, this will then improve the function of the system and help in the achievement of broader goals.

4.6.2. *What are the limits that exist regarding surplus food management?*

There are limits to the practice of surplus food management, which would prevent achievement of the various goals of the practice. The goals of surplus food management were discussed in Section 4.3.1, and include: maximizing the amount of

food diverted from landfills; maximizing the number of meals served to people in need; maximizing the participation of donor organizations; and improving the nutrition of low-income people. These goals could be considered to be whole-system properties, and each organization focuses its efforts towards a subset of them. Thus, optimization of surplus food management might seek achievement in as many of these areas as possible. Examining limitations and bottlenecks in a system can be a powerful way to address problems (Meadows, 1999).

First, there is a limitation regarding the amount of food sold versus donated. This pertains to the higher goal of reducing food waste, and specifically to food vendors that donate surplus food. Since some food will be thrown away regardless, it makes sense for businesses to donate what they can because they have already forgone profit from those products, and donating can contribute to their corporate social responsibility. As well, considering that disposing of the products would be more costly than donating them, it is logical for businesses to favour donating over disposing of food. However, food businesses must make enough money from their actual sales. According to the urban farm, “As a business, ...we want to keep track of how much we're not selling,” and “the goal was [not] to grow surplus food and donate it.”

Due to lack of knowledge about the opportunities to donate surplus food, misconceptions about liability if a recipient became ill from eating donated food, or perception that donating food would be an unmanageable commitment, many businesses still do not donate surplus food. In order to make it more desirable for businesses to donate surplus food to food distribution organizations, food donation tax breaks have been suggested (Riches & Tarasuk, 2014). However, even now, it is suggested that surplus food management acts to some extent as a government-sponsored corporate food charity system, in which the government decreasingly provides money to the needy themselves or to other programs, allowing businesses to take responsibility for this issue, through food charity (Woolford & Curran, 2012). Thus, with a food-donation-specific tax break, businesses could be pushed to overproduce solely to reap the financial benefits associated with donating. There is a need to monitor the balance of tax breaks for companies' food charity and level of government assistance for people in need to ensure that the government is taking care of the people first and foremost, not businesses.

This first limitation may also be problematic from the perspective of AH or AP advocates in the case that a large proportion of the population receives food from charity sources. This may affect the ability to achieve the goal of alleviating poverty and improving the nutrition of people in need. Since charitable food programs were initiated with the intent of providing short-term relief for people in need, they do not aim to provide a complete and balanced diet for people in need. But in the thirty years since their inception, food banks have grown tremendously, in line with the level of hunger (Riches & Tarasuk, 2014). There are continued high rates of food-insecure people (“HungerCount 2014,” 2014) who are not covered by the social safety net. Thus, it is important to recognize that food assistance should be as healthy as possible, but should not take the place of initiatives targeted at improving the social safety system.

Another limitation that would prevent surplus food management from achieving its goals is poor quality of the food donated to food distribution organizations. My research suggests that food distribution organizations can currently justify their participation in surplus food management because they receive enough food of adequate quality at reasonable prices, saving them time and money; however, there are regular problems with regard to food quality. If the balance becomes tipped in the other direction, and food is consistently of poor quality or poor nutritional value and requires extensive sorting and culling to obtain a small amount of edible food, then it may no longer be time- and cost-effective for the food distribution organizations to receive this donated food.

Finally, there may be a limitation to the number of donors and recipients that are linked to one another, since connections create extra work. The organizations involved in surplus food management generally appreciate long-term relationships with their partners, which take time to establish and maintain. Therefore, although many food distribution organizations would like to receive more nutritious and fresh foods, which would require new partnerships, being linked to many other organizations may be too costly in terms of commitment required. This presents another argument for the value of an intermediary that could assume some of the work of maintaining relationships.

4.6.3. Managing waste and compost disposal fees

The cost of waste management tends to be offloaded onto the various recipient organizations, although, as discussed in Section 4.2.7, recipients expect a certain amount of sorting of surplus fresh products. Metro Vancouver is creating and will distribute *Food Donation Guidelines*, which have information on minimum quality of donated foods, among other things. All organizations should have access to these guidelines and should be accountable to them. If the process of donating food creates too much work for potential food donors, then composting instead of donating food may be more attractive to donors. This is another area where an intermediary could be of use, e.g., in taking on the responsibility of the sorting.

There is also an opportunity for organizations to be more accountable for the quality of food that they give to other organizations. For example, it might be helpful for recipient organizations to rate the quality of food that they receive, and, in cases where recipients repeatedly receive food of insufficient quality, feedback could be given to the donor organization. In this scenario, the challenge would be to encourage food vendors to continue to donate, while improving the quality of donated food. This presents an opportunity for an intermediary to manage the relationships between the donors and recipients, while simultaneously encouraging the donation of food of adequate quality.

Since food redistributor 2 redistributes prepared food, it is under pressure to redistribute as much as possible on the same day. Considering how food redistributor 2 decides on the amount and type of food to give to different food distribution organizations could shed light onto which organizations are left with waste management fees. When the redistributor or food distribution organizations are left with surplus food and products that they cannot make use of before their expiry, then a mechanism to compensate these organizations for this expense would be valuable. An intermediary could take on this responsibility of ensuring that all surplus viable food reaches people in need the same day, by mobilizing transportation and labour.

4.6.4. *Practices relating to fluctuations in donation type and size*

Helping food redistributors dole out appropriate amounts of food

In the case of prepared foods that are redistributed on the same day, the food redistributor may not be aware of the quantity or type of food in the donation prior to picking it up, or the current level of demand of all recipient organizations. This makes it challenging to ensure that an appropriate quantity of food is donated to food distribution organizations. In order to ensure that the donation is as appropriate as possible, a longer exchange between the food redistributor and recipient might be required. This has the potential to reduce the food that is wasted as well as the waste management costs that food distribution organizations often shoulder. However, the extra time that would be have to be spent dropping off the donated food may be untenable for food distribution organizations or the redistributor, as the practice stands. An arrangement that builds in additional time when the food is transferred would be beneficial. In the case that recipient food distribution organizations have low need, the food redistributor might be left with more surplus food at the end of the day, causing an increase in its waste management costs. A mechanism to compensate the redistributor for this expense would be valuable.

Helping food distribution organizations handle various types of donated food products

The challenge of receiving donations of unexpected type cannot always be avoided. The surplus supply most likely will not align with demand of food products. For example, farmers may have a glut of a certain type of vegetable that is less common, and thus less desirable, or there might be a surplus of a unique type of packaged food that is less desirable. However, the food distribution organizations' challenge of trying to use different products can be somewhat alleviated. For example, it might be useful to provide food-specific educational materials with information on what the food is, and tips for preparing it. This will encourage organizations to become familiar with new foods, and also reduce the stress around developing ways of preparing unexpected foods.

4.6.5. Education on range of food quality that is acceptable

In some cases, the quality of donated food is below what is accepted by food distribution organizations, either physically or because of the food type, as discussed in Sections 4.2.7, 4.2.8, and 4.2.9. In these cases, the donated food may require too much sorting or culling to justify its receipt and use. In general, there is a need for education about the quality of food that is considered acceptable by different food distribution organizations.

The reverse of the above occurs when food of adequate quality is not donated because it is perceived to be unusable. There is an opportunity to ensure that fresh products, which are in high demand, reach organizations that want them. When food vendors have particularly high standards for food quality, there may be untapped potential to divert that high-quality food to food distribution organizations that are seeking more fresh foods. Food distribution organizations and food redistributors do not receive fresh foods as often, and recipients of food assistance typically consume little fresh food. As long as the quality has not deteriorated past the point of being usable, the food could be useful to some organizations and help to increase their ability to provide nutritious food for their clients. The *Food Donation Guidelines* document will be a useful educational tool for potential donors, through which they will be able to learn about the minimum standards for food donation.

There is a range of grades (levels of quality) of produce that could be donated. For example, some produce might be appropriate for recipient organizations that process the food before serving, while other produce might be better suited for organizations that distribute raw produce as snacks. It might also be useful to value donations and determine the destination for the surplus food according to the grade of the produce. Along with this, it would also be valuable to collect information on the needs of each food distribution organization, in terms of the minimum quality of food that it can accept. An intermediary could play a role in both valuating the produce and collecting information on the organizations' needs.

4.7. Opportunities for surplus food management

My research points to the need for changes to surplus food management in order to resolve some problems. The changes that I propose relate to maintaining relationships among interacting organizations as well as building in extra capacity to carry out surplus food management tasks. Translated into the context of systems thinking, I am suggesting to address the flow of information as well as system limitations or bottlenecks, both of which are suggested to be areas where leverage can be applied (Meadows, 1999). If these areas are addressed, there is potential to improve the function of the system overall, and consequently address the challenges and conflicts discussed in Section 4.4.

4.7.1. *Coordinating food donation transactions*

The suggested version of surplus food management bears much resemblance to the current arrangement, including similar overall goals and all of the existing actors. However, there seems to be a need for an additional type of organization, namely an intermediary that can take on some of the responsibility of tasks that participating organizations sometimes struggle to execute.

This intermediary would provide a platform that connects food donors with recipients, to view real-time availability and demand for food. The food redistributor 2 interviewee likens such a platform to an online dating service, through which an organization finds a match that is nearby, and with which it shares similar interests. The grocery industry interviewee discusses how the nature of surplus food management leads to challenges, and suggests using social media in a way that mirrors the sharing economy or Craigslist:

I think the friction of the difficulty of finding a buyer or a donation endpoint for food that is highly perishable and only has a very limited time period in which the exchange can happen is particularly challenging, so you need really good ways to allow those parties to find each other. I think that we can go a huge way with those platforms, and there will probably be a number of them, there will be ones that consumers can access, there will be ones that'll be just business...

It needs to...be searchable, and it needs to have pictures that are findable by search engines. Those kinds of things that would be associated with...the other sharing platforms, like car-sharing, where you can find the nearest car to you. [This platform might help you find] the nearest broccoli farm..., [reducing] shipping costs...[for] grocery [retailers].

When asked about a best-case scenario for obtaining surplus food from food retailers, the neighbourhood house interviewee said:

Best case scenario...off the top of my head, would be some sort of website where...all of these stores or donors are members...and they can go on there daily, monthly, weekly, whatever and say, "I have a bunch of this," and then there'd be a list of stuff that's available...and coordinate some way of being able to contact them, [if for example,] Whole Foods has a bunch of apples [that] I would like to use...and they're willing to give them to me.

The quote above suggests directly connecting donors and recipients with one another to post and seek surplus food products on the suggested platform. However, based on the interview data, some organizations may lack the capacity to continuously monitor the status of their offers or requests, and may require more regular and predictable pick-ups or donations. I suggest that the intermediary take on the role of matching the needs of donors and recipients.

Additionally, I support a continuation of the operations of food redistributors 1 and 2, namely that surplus donated food is taken to a storage facility. At the facility, the food redistributor would sort, cull, and take inventory of the donated products. Recording the quantity of viable food that the redistributor receives from each donor would allow it to track the amount of food redistributed, in part so that the donors have a record of their contributions (this information is particularly valuable to those organizations that are motivated to donate because of corporate social responsibility). I do not suggest that the food redistributors or intermediary assume a waste management role. There would be an expectation that the donor organizations would have done a preliminary sort of their products, but, because of the perishable nature of the products, there may be some culling required of the food distribution organizations. I also suggest that the food redistributor repackages and processes food when necessary (e.g., from bulk to smaller packages) to ensure that the quantities are appropriate for the organizations.

In addition to the foods that are stored and sorted prior to being redistributed, I also support a continuation of the same-day transfer of prepared foods from donors directly to recipients, using either a food redistributor's vehicle or, if a vehicle is not available, then the intermediary could play a role in helping to source a vehicle to use. I also suggest longer exchanges between the redistributor and recipient food distribution organization, as discussed in Section 4.6.4.

4.7.2. *Fostering relationships and communication between donors and recipients*

This pairing up of supply with demand is important, in that it can promote the use of surplus food, ensuring that perishable food is put to use as soon as possible. In the suggested donor-recipient matching system, donor organizations would be able to make contact with the intermediary, requesting a pick-up of its surplus food, and the intermediary would coordinate with food redistributors to arrange a pick up on the same day. After culling and taking inventory of the donated food, the redistributor would post an offer of food on the intermediary-managed online platform (with the offer being linked to the donor organization). Similarly, food distribution organizations could post a statement of need on the online platform (or contact the intermediary with details of its statement of need), also linked to their organizations. The intermediary would look to match offers with need, and then suggest a particular transfer. If both organizations agree, based on the type and quantity of food, and the profile and references, then the transaction would be carried out.

However, relationship-building and trust among donors and recipients seems to be highly valued by participating organizations. Donors and recipients seemed to favour longer-term partnerships because of the dependability and predictability of existing partners and an established routine. The interviewee from food redistributor 2 found that donors were concerned about where the food was going – not wanting its food to be sold in a place where it might compete with its other full-price products – and wanted to form more of a relationship with the recipients. The interviewee suggested that the exchange of food between donors and recipients should occur in a way that fosters trust among organizations.

To address this, I suggest that the intermediary should create an environment in which the donors and recipients are familiar with, and feel that they can trust, one another. Similar to other social media platforms, the use of organization profiles and references would be useful. Organization profiles can provide prospective partners an overview of the function of a given organization. The profiles might include relevant information, such as special instructions from donors, like removing branded packaging, or special instructions from food distribution organizations, like their capacity to use various grades of produce, and food restrictions of their clients. There would also be the capacity for organizations to write references about each partner based on the exchange, so that prospective partners have some information on how a given organization acts as a partner. By doing this, it is then possible to view the track record of potential partners, so that even unacquainted organizations can have an idea about how the potential partner operates. Also, a reference system that promotes improvement and learning would be beneficial, so that, if a donor has one poor donation (food of poor quality), then it would have the chance to reconstitute a better rating through repeated donations of higher quality.

The match-making platform and service provided by the intermediary would aim to foster relationships among organizations that work well together. Once two organizations have exchanged food, if there is mutual interest, then they can prioritize exchanging food with one another again. Thus, there would still be the capacity to build long-term relationships, helping the organizations feel a sense of connection to one another, but in a way that is mediated by the intermediary organization. This suggestion can help to make an initial connection between a given donor and recipient organization, but extra attention must be put towards maintaining those relationships as a continuing channel for exchanging food.

I also suggest that this alternate model of surplus food management include transmission of feedback for partner organizations, and for the intermediary. There was a stated apprehension about giving feedback on the quality or types of donations for fear that the donor would discontinue its donations. Thus, building in channels for feedback as a standard part of the process will promote greater donor accountability and more open dialogue about organizations' needs, with the benefit of anonymity provided by the intermediary organization where desired. After each transaction of food, feedback on the

food transferred and exchange process would be requested, from both the donor and recipient. In cases where the quality of donated food is poor, the donor organization and intermediary would be alerted to this. In future exchanges of food, the intermediary could then pay special attention to the food from the given donor. There could also be a mechanism for enforcing standards regarding the quality of donated food. For example, this could be done by imposing a penalty on organizations that repeatedly transfer food that is below a certain quality threshold. Another possibility would be an informal incentive, namely imposing a mandatory instructional session, through which an intermediary representative visits the donor and reviews its practices in order to identify how it may be able to change its practices to meet requirements.

I also suggest that the food redistributors ensure that there is capacity to engage in longer exchanges with the recipient organizations, in order to ensure that the food quantity is appropriate for the organization. This will minimize the offloading of waste management costs onto food distribution organizations, and ensure that they are able to use the food donations that they receive. I suggest that the intermediary should instruct redistributors to prolong their exchanges to improve quality and appropriateness of donated food. Alternately, if the redistributors do not currently have adequate resources for a prolonged exchange, I suggest that the intermediary provides additional resources, through funding or connections with available trucks and labour.

4.7.3. *Improving quality and usability of donated food*

When matching food supply and demand, the intermediary would also promote gauging the quality of the food. The intermediary would require the redistributors to classify the food into quality categories, like “suitable for raw consumption” and “requires processing,” and this classification would be incorporated into postings of food availability and food demand. This information could also be included on recipient organizations’ “profile pages,” for example, in cases the recipient organization does not have a kitchen and will always require food that is “suitable for raw consumption.”

The intermediary might be able to alleviate food distribution organizations’ challenge of identifying and knowing how to prepare unfamiliar food items. Since fresh foods are in high demand among food distribution organizations, even unfamiliar foods

could provide a great benefit to the organizations. I suggest that the intermediary curate materials with information on a range of vegetables and less familiar products, including suggestions for simple and healthy recipes that incorporate given ingredients. I suggest that the intermediary prioritize creating information and preparation guides for fresh and healthy products as opposed to packaged ones. The urban farm interviewee suggested the value in education around food preparation, and also doing it in a way that contributes to skill-building among the people who are accessing food assistance:

I also think some education around food preparation so that they can distribute things like spinach or eggplant and people have the resources to prepare them themselves. ...The community kitchens are great, and...communities...are benefiting from...building those skills.

I also suggest that the intermediary prioritize sourcing more nutritious food. This is something that many surplus food management organizations currently strive to do, but lack time for. The intermediary could encourage food redistributors to be more judicious about the types food that they accept. As well, the intermediary could actively seek out new donors that could provide more fresh and healthy foods, like nearby farms, or produce terminals.

4.7.4. *Surplus food management logistics*

In addition to matching surplus food supply and demand, the food also must be transported. The neighbourhood house interviewee also reflected on how the transport element of the system might work:

How do I get [a potential donation of apples from a grocery store] if I don't have someone to go pick them up? In a perfect world, there'd be a way to...transport that without having to utilize staff wages on something as menial as driving down the street and back.

The grocery industry interviewee reflected on how an alternate system might function:

How can we set up collaborative ways to transport that food at a lower cost? ...By piggybacking on other trips that other people are making. ...It might even be that there will be an intermediary that...will aggregate the connections that have been made, whether it's a purchase or donation, and then deliver them out on a set route, to

both reduce the fossil fuel costs and the associated financial costs of doing dedicated trips.

The intermediary could facilitate transportation of the surplus food, which, as mentioned in the quote above, can introduce efficiencies in aggregating pick-ups and deliveries.

In the New Hope Cuisine model of surplus food management (discussed in Section 3.2.4), the organization that collected the surplus food also collected donors' food waste and depackaged and disposed of food where necessary. In this set-up, the organization charged a fee for its waste management services. This could also be explored, as it would help to cover the costs of dealing with the donors' unusable products, and would create a situation which clearly gives responsibility for waste management to a given organization, instead of it falling to organizations simply because the waste is offloaded onto them.

Ensuring that food distribution organizations receive an appropriate amount and type of food in the first place may reduce the concern and need for the informal exchange of food among food distribution organizations. However, in case food distribution organizations have a persistent need to exchange resources, capacity for this could be added to the same online platform. The neighbourhood house interviewee suggested a self-managed platform:

[Other food distribution organizations and the organization that I represent, the neighbourhood house] have been talking for the past couple of months about trying to set up a listserv or something like that where we can all be in communication and say, "... I have a bunch of this, [does] somebody [want] to trade with that?"

However, the online platform could serve an essentially equivalent function, while removing some of the organizational burden from the food distribution organizations.

4.7.5. Strategies to recruit potential donors

There is no single reason for which organizations donate food, evidenced by the recruitment material that is used by food redistributor 1, and the approaches cited by the food donors. This is important to keep in mind, since promotional materials that appeal to as many motivations as possible may capture more donors. There is a particular

opportunity for framing donor recruitment material around 2015 ban on organics in landfills in Metro Vancouver. Accordingly, it would be ideal to have recruitment material with information on the legislation, costs of the various channels through which organic materials and waste can be handled. As well, there could be minimum quality requirements for food donation, so that food donors do not equate surplus food donation with waste management.

4.7.6. *Alternative paths for surplus food*

There will no doubt be surplus food that is less healthy, thus less of a priority to redistribute to people in need. As well, there may be insufficient demand among food distribution organizations for surplus products that are available. In order to make use of these foods that are still viable, other channels should be explored, such as sale of food in a discounted grocery store that is accessible to the public. This is something that the urban farm interviewee discussed:

I think making that surplus available to people who don't need the best, tip-top-shape food, and maybe reduced price, would be an income generator for the food bank or charity organizations. But there's a lot of possibilities, I mean, I think that value adding is really great...extending the life of a product.

Making surplus food available to the general public in discounted grocery stores could help to destigmatize the experience of obtaining low-cost food. However, if surplus food was sold at a discount grocery store that was open to the public, this could conflict with the wishes of the food vendors, namely that they do not want their discounted, aged products to compete with their full-price products. This demonstrates the influence of neoliberalism on the function of food assistance programs. Businesses can dictate how their donated food is used due to the food distribution organizations' dependence on it.

The idea of value-adding to create prepared food products and meals from surplus fresh foods is a model that was used in New Hope Cuisine. A challenge that the urban farm interviewee cited was the lack of preparation space, as well as organizational capacity, but the intermediary could source space for value-adding activities.

It is important for the intermediary to have ties to various waste management organizations to ensure that, if the food cannot be used by food distribution organizations, then it will travel in the appropriate waste stream. Food redistributor 2 discussed its relationship with waste management organizations, in that it sends packaged foods to a company that depackages the food prior to composting and disposing of the materials. This will be important in achieving waste diversion goals.

4.7.7. *Systems: food security approaches and surplus food management*

As discussed in Section 2.4, the different approaches to food security (AH, SFS, and AP) are sometimes considered to be in opposition, in the sense that progress in one area can impede progress in others. In this section, I consider the interaction among the approaches, and how a systems-based policy approach can be employed to best promote food security, namely through a suite of related policies that apply to different areas of surplus food management.

Surplus food management is an auxiliary element of a number of different systems, in that it plays a role in waste management, the food system, and social services, among others. The organizations involved in surplus food management play essential roles in the city, and are unified by the fact that they handle surplus food. However, these organizations involved do not have capacity to devote their full attention to surplus food management. This parallels how the food system works, in terms of being intertwined with many other systems, and how it was regarded prior to the dedication of city staff and attention.

The three approaches to food security are unique tactics; employing all three approaches simultaneously can advance food security according to different aspects and timeframes, constituting a holistic, systems-oriented approach to food security. The AH approach is the shorter-term view, while SFS and AP approaches are more forward-looking. As mentioned in Section 2.2, the Brundtland Report stated the importance of meeting the needs of people today and in the future, and that issues relating to the environment and poverty should be “resolved simultaneously and in a mutually reinforcing way” (J. Robinson, 2004, p. 372). This points to the importance of dedicating

resources to people's short-term food needs, while also taking a longer view, aiming to prevent similar problems in future generations.

The policy suggestions are intended to maximize the overall function of the system by targeting as many of the participating organizations as possible, instead of focusing on individual parts. Giving attention to any fewer than all three approaches means that food security would not be able to be fully realized. To reiterate from Section 2.2, Meadows warns against “[maximizing] parts of systems or subsystems while ignoring the whole” (2009, p. 178). For example, in the following situations, food security would not be achieved since fewer than all approaches are addressed: sustainably-produced food is consumed by upper and middle classes while lower-income people still go hungry; all of the poor are fed, but in a subsidized system that creates dependence on food assistance and that does not work to alleviate poverty; welfare provides a wealth of resources for all citizens, but people continue to lack skills to provide for themselves, and food does not accommodate individuals' preferences. A balance of the approaches to food security is important and necessary, and is achieved in surplus food management, considering the range of organizations involved.

The policy framework is geared to facilitate positive outcomes for the various organizations involved in surplus food management. Operational constraints may limit the ability for organizations to achieve desired outcomes. For example, providing *nutritious* food assistance is often the goal of food distribution organizations, but is difficult to achieve, especially since organizations often have ready access to less nutritious food, and do not have the time to seek out new sources of donations. In this case, policies could target this issue, facilitating the transfer of more nutritious foods to food distribution organizations, and in a way that is also acceptable to food vendors.

The policy framework places value on feedback mechanisms in order to adjust and improve the function of the system. Feedback is paired with a greater focus on the channels of communication between partnered organizations, which are necessary in the transmission of the feedback. Policy can encourage the monitoring of the types and quality of food received, and can also encourage the communication of this feedback. The aim of establishing such a feedback mechanism would be to improve the quality and appropriateness of food that reaches people in need. Policy can establish a

standardized feedback mechanism through which recipient organizations communicate their opinions on the food that they receive. The diversity of interconnected organizations involved in surplus food management is instrumental to its function. As discussed in Section 4.6.1, no one organization is poised to carry out all functions of surplus food management, or address all approaches to food security. Thus, recognizing and leveraging the unique roles and strengths of the organizations involved can help to optimize surplus food management.

Policy can also be employed to set some rules of participation in surplus food management that participating organizations could be held to. This would help to establish the function and structure of surplus food management, which are the most influential determinants of system function. This information may be covered in Metro Vancouver's forthcoming *Food Donation Guidelines* document. The rules of participation might include the range of quality of food that is acceptable. Policy could be used to encourage the production of documents with information on different methods of preparing donated foods, facilitating the use of foods. Policies could also encourage processes through which organizations exchange information regarding the types of foods or products desired. This increased communication between organizations could reduce offloaded waste management costs. Policy could help to establish a more optimized system of connections between donors and recipients. This could include a donor-recipient matching mechanism, providing a place to facilitate the joining-up of the surplus food management network. It could also establish methods of transmitting surplus food from one place to another. Additionally, policy could be used to formalize a system to exchange donated food products among food distribution organizations.

Policies can be used to direct attention towards the distribution of waste management costs. A policy mechanism is required to assess the quality of food that is donated, and allocate waste management fees in cases where food of sub-standard quality is donated. Waste management fees that are collected from donors could then be given to the food redistributors, which are tasked with paying for the removal of the products.

Policy could also dictate an approach to donor recruitment, namely encouraging the creation and distribution of donor materials that appeal to a range of possible motivations to donate.

Chapter 5.

Conclusions

Surplus food management is a process that involves all of the approaches to food security. Elements of surplus food management that relate to AH tend to be where most challenges are experienced. Based on interviewees' experiences, food distribution organizations struggle to provide food of adequate quality to people in need, despite awareness of what constitutes nutritious foods. Some approaches may improve the outcomes for people in need:

- foster greater awareness among donors of minimum food quality standards;
- foster more conversations among donors and recipients;
- create a channel through which donors and recipients can connect with one another to exchange food products;
- shift the costs and extra responsibilities involved in managing surplus food away from food distribution organizations, potentially supporting expanded capacity at food redistributors, or creating an intermediary; and
- explore the potential for an intermediary to take on the organizational and operational costs involved in surplus food management (this could entail providing more funding and function to existing organizations).

The vision of these organizations suggests the utility of an intermediary that would facilitate the connection and transport food between donors and recipients. The role would involve:

- providing a platform through which food donors and recipients could find one another;
- regularly maintaining postings of product availability and demand;
- providing a platform through which donors and recipients can give feedback on the relationship with the partners, as well as the quality of food that is transferred;
- ensuring that food is distributed to recipient organizations in manageable portions;

- seeking out sources of more nutritious and fresh foods;
- organizing transportation of products (which could entail a substantial amount of coordination, if following with the suggestion of piggybacking onto other trips); and
- providing instructional guides on how to handle and prepare different food types.

In conclusion, this project has determined that surplus food management is a system that involves three different approaches to food security, namely AH, SFS, and AP, and which is able to redistribute a surplus food to people in need, reducing food insecurity to some degree. However, considering the integration among the organizations involved, their challenges, and the ways in which they employ the approaches to food security have shown where there are opportunities to improve aspects of surplus food management.

It is necessary to consider how the approaches to food security can be theoretically integrated to better understand food security instead of framing the approaches as mutually exclusive. In today's society, food security cannot be realized through the efforts of one approach alone. Achieving food security is a long-term aspiration, and requires gradual improvements to the food system. AP efforts, which are longer-term, are needed in order to adjust citizens' access to resources. In the long term, a better welfare system and higher minimum wage can give people more disposable income to obtain food. Since such changes will take time to be put into place, it is important to encourage practices that make the best of the current food system in the meantime. SFS efforts address needs over a medium time frame, and are needed to improve people's abilities and knowledge around food, as well as make the food system more sustainable. Finally, in the short term, there are daily food needs that require attention. AH efforts address immediate food needs, helping people in need to access food through emergency food programs. Thus, all approaches to food security are simultaneously needed, to advance food security, and each approach is uniquely positioned to address different aspects and different time frames of food security.

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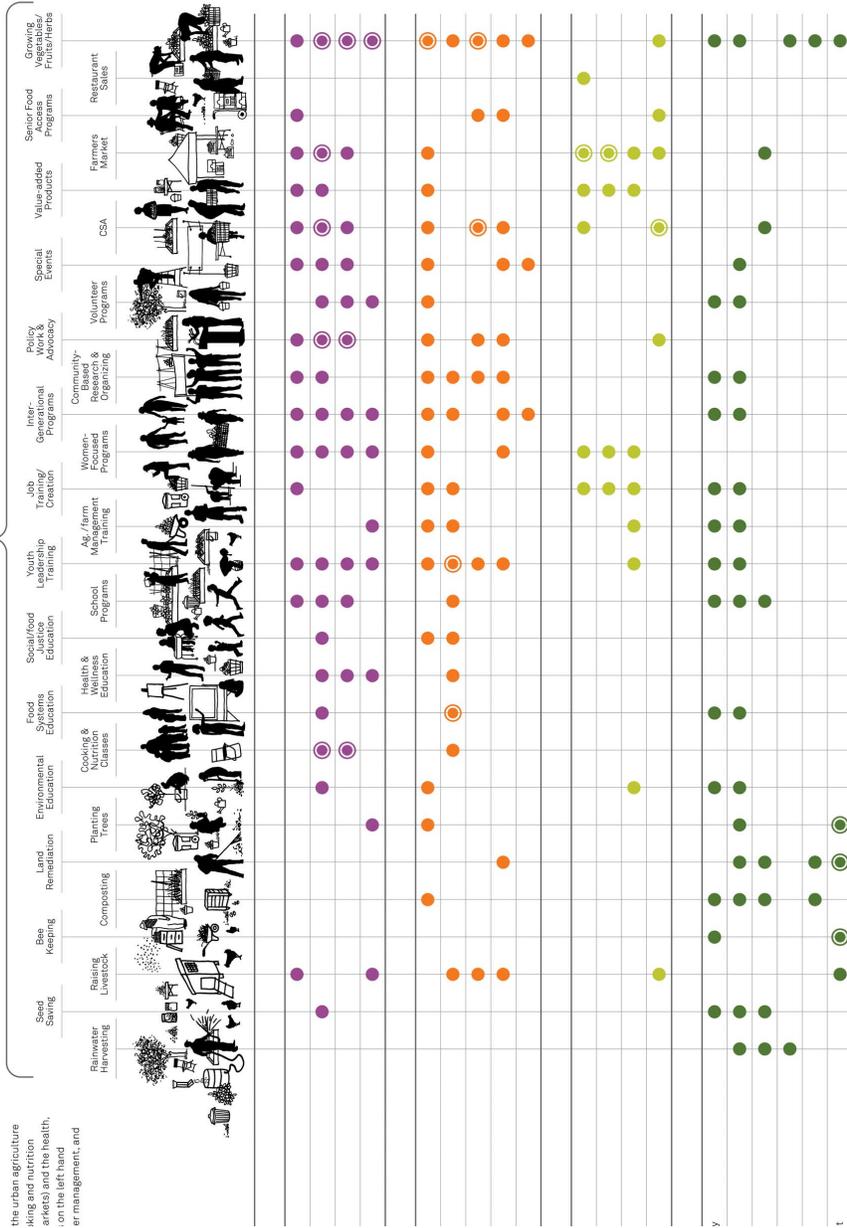
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FRAMEWORK

Activities



Note: Figure from ("Impact of Urban Agriculture," n.d.).

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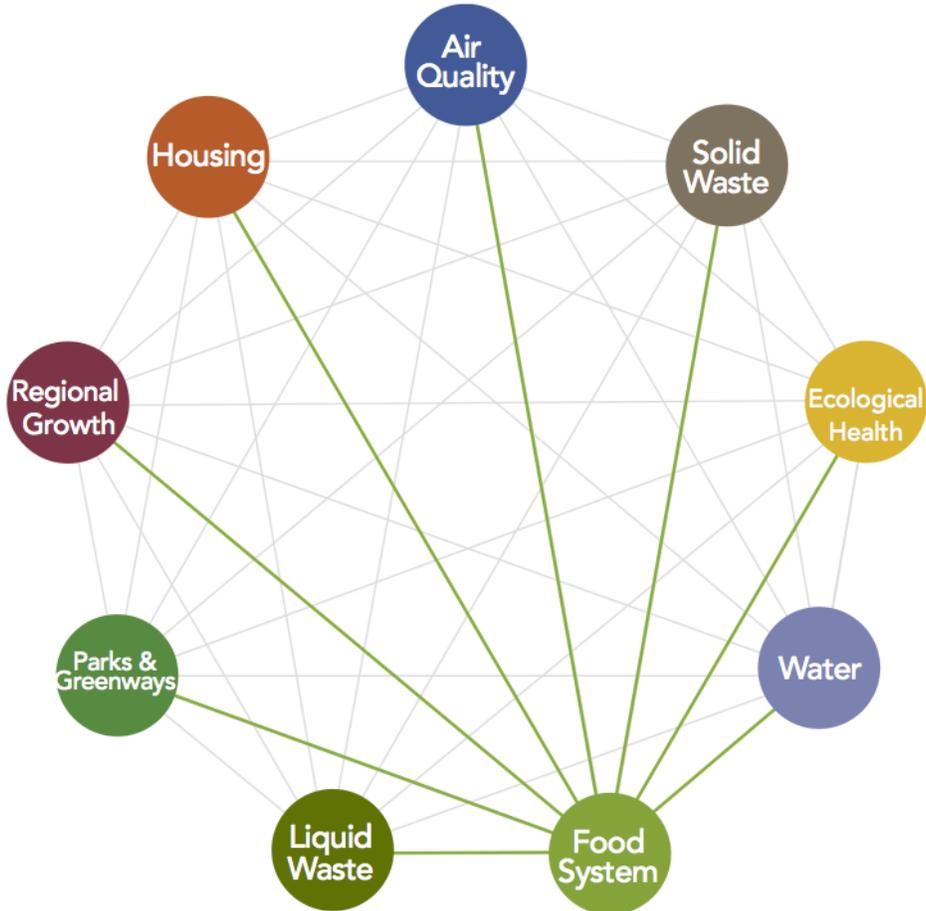


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Appendix B.

Metro Vancouver's interconnected management plans



Note: From (*Regional Food System Strategy*, 2011, p. 21).

Appendix C.

The Vancouver Food Strategy adds value to city priorities that may not be directly food-related



Note: From (*Vancouver Food Strategy*, 2013, p. 14).

Appendix D.

Divulging sources according to ethics requirements

The details of my research ethics require me to keep confidential certain sources of information. I specified in my research ethics study details that the organization type of all of the interviewees would have to be disclosed for analysis, meaning that interview data will be indirectly identifying. Thus, I cannot directly discuss the organizations presented in the interviews, so for these organizations, sources of other details of their function and operations (using publicly available documents) cannot be disclosed because that would betray the confidentiality. I will keep a secure record of these sources of information (according to the ethics details) in the case that I need to refer back to them.

Appendix E.

List of the types of codes that I have used for open coding

Node in NVivo
Current surplus food management
Donated food types
Surplus food management challenges
Surplus food management operations
Surplus food management system structure
Surplus food management with respect to Vancouver
Use of surplus food
Inter-node communication
Intra-node communication
Partnerships
Food planning
Food safety
Food waste
Grocery delivery business model
Health authority model
Motives for involvement in surplus food management
Organizations' priorities
Organizations' indicators for successful surplus food management
Potential for surplus food management
Change in understanding and behaviour
Potential tools to encourage participation in surplus food management
Suggested surplus food management model and solutions